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CONTRACEPTIVE BEHAVIOR IN SEXUALLY ACTIVE COLLEGE WOMEN: A STUDY OF PERSONALITY, BACKGROUND, AND ENVIRONMENTAL INFLUENCES

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CONTRACEPTIVE BEHAVIOR IN SEXUALLY ACTIVE COLLEGE WOMEN: A STUDY OF PERSONALITY, BACKGROUND, AND ENVIRONMENTAL INFLUENCES

By

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ABSTRACT

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The present study investigated the sexual activity and contraceptive behaviors of a randomly selected group of college women. It was hypothesized that various personality, family, environmental, and relationship variables would discriminate between effective and ineffective contraceptors.

A questionnaire was mailed to 480 undergraduate college women. Of the 249 respondents, 173 (73%) reported being sexually active. Of these 173, 59% were identified as effective and 41% as ineffective contraceptors. Discriminant function analysis was able to correctly classify effective and ineffective contraceptors using eight variables relating to personality, family background and social influence. Two major discriminants reflected the subjects' acceptance of responsibility for contraception and the partners' acceptance of contraception.

The eight discriminating variables point to the importance of interpersonal relationships in determining contraceptive use. Further research is necessary to identify additional specific variables that account for differences between the two groups. It

is anticipated that this information can be used to foster effective contraceptive behaviors in young women of childbearing age.

To my family

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INTRODUCTION

Effective contraception is a concern for all women of childbearing age. Though the issue of effective contraceptive behavior has received particular attention recently with regard to the effects of unplanned pregnancies on adolescents, it is important to remember that, as noted by Gerrard, McCann and Fortini, "the problems of unwanted pregnancy exist for most women in the childbearing ages of 13 to 45 and for white and middle-class women as well as minority women and women from lower socioeconomic levels" (1983, p. 154). The issue of effective contraceptive behavior is particularly salient to young women in college because their career aspirations and potential contributions to society are high, and unplanned pregnancy can prevent the completion of their educations and block the attainment of their goals.

Although a range of information regarding correlates of contraceptive behavior in college women is available, much of it is atheoretical, and many studies compare relationships among only a few variables (Whitley & Schofield, in press). There are four major models for explaining contraceptive behavior: the decision model, the career model, the cognitive-affective model, and a 3-factor model based on a meta-analysis of 134 studies of contraceptive behavior (Whitley & Schofield, in press). Although the models overlap somewhat, none includes the array of variables that have

been found to be related to effective contraceptive behavior. Much useful research has been done to identify individual correlates of effective contraception. To better understand the relative influences of these variables, however, multivariate research is needed, based on a framework which can include the many important and interrelated variables. Clearly operationalized definitions of both independent and dependent variables must be established. In addition, research needs to be based on randomly sampled subject populations, rather than those found in family planning or abortion clinics, where situational biases may affect the generalizability of the results.

Research on contraceptive behavior suggests that, despite reporting extensive career and family plans for their futures, a large percentage of sexually active college females are not effective contraceptors (Zelnik & Kantner, 1977). Since unplanned pregnancies can significantly affect the career and family options available to these young women, the lack of effective contraception is paradoxical. It is important to identify the variables which are most related to effective contraception.

This paper proposes that effective contraceptive behavior is influenced by three types of variables; personality, learning (familial/background), and social (environmental/relational). Research is examined regarding the relationship between effective contraception and these influences. Effective and ineffective contraceptors are compared with regard to these variables, and a

research project investigating variables that discriminate between effective and ineffective college female contraceptors is described.

Review of the Literature

The Population

Recent research indicates that in the 1980s a social climate exists in which young college women expect to "marry, have children, obtain graduate or professional degrees, and pursue careers" (Doherty, 1980). For example, according to a 1984 survey of first-year college females conducted by the American Council on Education, objectives considered essential or very important included both "becoming an authority in his or her field" (72%), and "raising a family" (69%). Only 0.1% planned to become full-time homemakers (Meyer, 1985). In a 1986 study, Baber and Monaghan reported that 73% of their sample of college women agreed with the statement, "I WANT IT ALL, TO BE A PARENT, SPOUSE, AND CAREER PERSON, AND AM DETERMINED TO MANAGE IT ALL AND DO IT WELL" (p. 8).

Current research suggests that there may be a considerable difference between young women's expectations for career and family lives and their abilities to plan realistically for achieving these goals (Granrose, 1985b; Schenkel & Marcia, 1972). Recent studies indicate that while career orientation has been increasingly included in the life expectations of women, there have been neither corresponding decreases in family orientation (Doherty, 1980; Baber & Monaghan, 1986) nor accompanying increases in vocational guidance to aid the students' awareness of the possible constraints and conditions of a family focus (Tittle, 1981).

In sum, many young women today are facing their futures with great expectations and very little anticipation of the realities involved. This attitude is reflected in the reported discrepancies between sexual activity and contraceptive behavior. Current research suggests that a substantial percentage of the college female population may be at risk for unplanned pregnancy (Geis & Gerrard, 1984). College women today represent a great resource to society. Their potentials for economic advancement, career development, and contributions to society in capacities other than as mothers and homemakers exceed those of any young women before them. Those who are sexually active without using effective contraception, however, are risking this considerable potential.

The costs of unplanned pregnancy are high. Much has been written recently about the consequences of unplanned pregnancies in the lives of early teenagers. Among adolescents generally, these pregnancies can lead to hasty marriage, early divorce, higher risk of suicide, and low rates of employment (Byrne, 1983). The role-demands of childrearing have been cited as the major reason for women to fail to complete their college educations (Mohney & Anderson, 1986).

The inability to proceed with a career has financial and psychological impacts. In addition to the effects of college drop-out on career options, the effects of discontinuous participation in the labor force are significant (Doherty, 1980). Around half of these young college women report that they expect to stay home with their children for the first several years of their lives (Baber & Monaghan, 1986; Doherty, 1980; Tittle, 1981). This expectation

indicates little awareness of the professional, financial, or psychological impact of removing oneself from the career system. The economic and employment realities of the 1980s are that less than 40% of the U.S. labor force is entitled to a paid maternity leave covering even the first six weeks after childbirth (Kamerman, cited in Baber & Monaghan, 1986), and very few jobs are reserved for longer than the specified maternity leave. Career women who stay at home with their young children may sacrifice not only potential income and career advancement, but also self-esteem. Baker (1985) reports that career women have higher self-esteem than women in general, regardless of occupation; and Stratford (1984) reports that women whose present occupations are at odds with their career plans have lower self-esteem than those pursuing their selected occupations.

As well as affecting career options, unplanned pregnancies can have a significant effect on family lives. Gerrard et al. (1983) cite Freedman and Thornton's longitudinal study comparing marriages begun with and without premarital pregnancies, showing that premarital pregnancies were significantly associated with less education attained by both husband and wife, lower family income levels, more unemployment, and increased number of later unwanted children.

A third aspect of unplanned pregnancy is the decision to continue or terminate the pregnancy, and the possibility of abortion. In this country, no records are kept of pregnancies that end in abortion, but Goldfarb, Gerrard, Gibbons, and Plante (1986) estimate that 33% of 20-29 year-old unmarried females have been

pregnant at least once, and Schilling (1984) found that 1/5 of the female students attending a college women's health center reported having been pregnant at least once, with 41% of those pregnancies ending in abortion. Tanfer and Horn (1985) found that 31 percent of unmarried women who attended college for 1-3 years and had experienced one unintended pregnancy had also experienced a repeat pregnancy. Few studies of college female sexual activity report abortion rates. As with other aspects of research regarding sexual and reproductive activity, demand characteristics and perceived social acceptability may influence the results. Reported abortion rates for sexually active females vary between 6% and 11%, but it is possible that these rates are severely under-reported.

Given these known consequences of unplanned pregnancy, it would seem that effective contraceptive use would be an integral aspect of sexual activity for college women. Research indicates, however, that among college women the rate of sexual activity is much higher than the rate of contraceptive use. This nonuse of effective contraception is not attributable to ignorance. Contraceptive knowledge is available to this population and studies indicate that, except for very young teenagers, lack of knowledge cannot be blamed for lack of contraception (Burger & Inderbitzen, 1985; Cvetkovich, Grote, Bjorseth, & Sarkissian, cited in Gerrard, McCann, & Fortini, 1983; Gerrard et al., 1983). Available statistics for undergraduate females have been fairly consistent since 1972, indicating that between 43 and 65 percent have engaged in sexual intercourse at least once (DeLameter & MacCorquedale, 1978; Oswalt, 1974; Lundy, 1972; Bachrach & Mosher, 1984; Kileen, 1986).

Current research has continued to find high rates of sexual activity among young women and relatively low rates of consistent and effective contraceptive use (Goldfarb et al., 1986). The range of reported contraceptive use is 40% to 60%. Tanfer and Horn (1985) reported that in the 1983 National Survey of Unmarried Women, the average delay between first intercourse and first contraceptive use was eight months, and 20% of their sample used contraceptives only after a first pregnancy. Few studies of sexually active young women students report contraceptive rates of over 50% (an exception is Kileen, 1986, who reported 61% in her college sample of 121 females).

In sum, the literature indicates that possibly a majority of sexually active college females are not using reliable methods of contraception, and that approximately 1/4 of the total college female population is at risk for unplanned pregnancy (Albano, 1982; Lundy, 1972; Oswalt, 1974; Priestnall, Pilkington, & Moffat, 1978). Russo and Brackbill (1973), discussing sexual behavior, pregnancy, and fertility, comment, "as night follows day, so does pregnancy follow sexual activity among highly fecund young persons who do not consistently use contraception" (p. 402). The potential costs of unprotected intercourse in the lives of this population of young women are high. Ineffective contraception at the risk of considerable potential economic, career, familial, and psychological losses represents a paradox. As Rappaport (1981) has noted, "When we pay attention to a paradox, we are more likely than otherwise to find ourselves being useful." If it is possible to identify variables that seem to have a positive effect on contraceptive

behavior, it may be possible to provide opportunities for young women to increase their effectiveness as contraceptors.

Models of Contraceptive Behavior

Previous research on effective contraception has arisen from several explanatory models. No single model, however, has accounted well for the range of contraceptive behaviors. The three major theories which have attempted to explain contraceptive behaviors are the "career" model, the "decision" model, and the "cognitive-affective" model. In addition, a fourth model has been proposed by Whitley and Schofield (in press), based on their meta-analysis of 134 studies of contraceptive behavior in adolescents.

The career model of contraceptive use proposes that there are stages of contraceptive use which 'match' developmental stages and increased acceptance of a sexual identity. In other words, sexual activity and acceptance of responsibility for contraception increase with the age and psychosocial development of adolescence and early adulthood. Proponents of this theory include Chilman (1983) and Lindemann (1974, 1977). Whitley (1986) suggests that the career model views contraceptive use "as a symbol of a woman's sexuality in that it implies a clear intent on her part to be sexually active" (p.4), with effective contraceptive use increasing as the need to reduce guilt and deny sexual activity decreases. It has been noted, however, that while sexual experience may have paralleled developmental stages in the past, adolescents in current society are likely to experience considerable sexual exploration prior to attaining a great degree of psychosocial maturity (Cvetkovich & Grote, 1983).

The decision models of contraceptive behavior are discussed in terms of the contraceptors' cognitions regarding not only the use or nonuse of contraception but also the various alternative outcomes. In these subjective utility models, the woman would weigh the psychological, emotional, social, and relational costs of contraception with the benefits of, for example, 'image management' (not being seen by herself or others as sexually active) or the imagined benefits of pregnancy (Adler, 1979; DeLamater, 1983; Byrne, 1983; and Luker, 1975).

A third theoretical model of contraceptive behavior focuses on both the cognitive (decisional) and affective aspects of contraception. In this model, the 'decision' is not entirely a rational one, and contraceptive behavior is determined by personality variables and irrational factors as well as by logical understanding. Proponents of this model include Geis and Gerrard (1984), Gerrard et al., (1983), Mosher and Vanderheide (1985), and Oskamp and Mindick (1983). This cognitive-affective model of contraceptive behavior has been tested most recently by Gerrard (1986), who found that women who experience feelings of guilt and negativity are much less effective contraceptors than those who are more positive about their sexuality.

In a final model of contraceptive behavior, Whitley and Schofield (in press), after performing a meta-analysis of 134 studies, have proposed that contraception is determined by a combination of personal, social, and situational factors, affected by development, early learning and consequent cognitions, and the current relational and social environment.

The current study approaches contraception from a more ecological perspective than those listed above. Bronfenbrenner (1977) has proposed that research on human development should include awareness of the environmental systems within which the subjects are operating. Using terminology adapted from Brim (1975), Bronfenbrenner identified these systems as the microsystem, the person's immediate context including physical setting, activities, and roles; the mesosystem, which includes the "interrelations among settings containing the developing person"; the exosystem, which encompasses other settings that do not contain but do "impinge upon" the developing person; and the macrosystem, the informal and implicit prototypes for the operation of the culture or subculture. The goal of this ecologically oriented research is to transform the system by "redefining goals, roles, and activities and providing interconnections between systems previously isolated from each other" (p. 528).

Sexual and contraceptive behavior may be described from this ecological perspective. The behavior may be seen as influenced by the immediate setting (the relationships with partners and peer, the situation), by learning, family and religious backgrounds or mesosystems, and by such aspects of the exosystem as the medical establishment's attitudes towards the importance and availability of safe contraceptive methods. The current study focuses on aspects of the micro- and mesosystems affecting sexual and contraceptive behavior as reported by college women. The literature and the methodological issues related to this type of research are reviewed, and personal, learning, and environmental variables which may

discriminate between effective and ineffective users of contraception are examined.

Variables Associated with Contraception

Personal Variables

Studies of personal variables which may be relevant to contraceptive behavior have included such aspects as psychosexual maturity, self-assertiveness, and future orientation.

Psychosexual maturity has generally been defined as an acceptance of the self as a sexual being, including acceptance of responsibility for contraception if pregnancy is not desired (Whitley & Schofield, in press). From their meta-analysis of factors included in 134 studies of contraceptive behaviors in adolescence (including college-aged adolescents), Whitley and Schofield determined that this factor is critical in the determination of effective contraceptive behavior. As Allgeier (1983) points out, "The absence of a self-concept that one is a sexually active person, of course, makes the planning that is necessary to have a reliable contraceptive out of the question" (p.189). Abramson (1983) cites acceptance of the sexually active role as the 'legitimizer' of responsibility for contraception. Although measures of self-esteem have not been found to be related to contraceptive behavior (Burger & Interbitzen, 1985; DeLamater & MacCorquedale, 1978), measures of sexual ideology (Herold & Goodwin, 1981; DeLamater & MacCorquedale, 1978) and positive beliefs and facilitating thoughts regarding the use of contraception (Gerrard et al., 1983; Herold, 1981), which include acceptance of a sexual role for oneself, have been found to be related to effective

contraception. When accepting one's sexuality includes anticipating intercourse, such foresight has been shown to be related to more effective contraception (Herold & Samson, 1980; Sack, Billingham, & Howard, 1985).

Another aspect of personality that has been linked with effective contraception by women is a sense of self-assertiveness, generally associated in the literature with "instrumentality," "masculinity," and nontraditional sex-role behavior (Adler, 1981; DeLamater & MacCorquedale, 1978; Spence, 1984). Joesting and Joesting (1974) found a significant correlation between "equalitarian" views of women's roles and positive attitudes towards contraception. Roper (1983) found that effective female student contraceptors' scores were significantly more "nontraditional" and "instrumental" than those of his subjects who were at high risk for pregnancy. Whitley and Schofield (in press) reported a negative relationship between women's contraceptive use and sex role traditionality. In another study, Whitley (1986b) also reported, however, that while "masculinity," identified by Spence (1984) as self-assertiveness, was highly related to sexual experience, it was not significantly related to contraceptive use. It should be noted that this second study combined male and female subjects, and the results seem to reflect between-gender more than within-gender differences.

In addition to psychosexual maturity, acknowledgement of sexual activity, and self-assertiveness or nontraditional sex role orientation, effective contraceptive behavior has been associated with an orientation to the future, both with regard to careers and

to specific plans for a family (Oskamp & Mindick, 1983; Whitley & Schofield, in press).

The average number of children desired by college women has decreased from four in 1965 (Rabin, 1965) to approximately 2.9 (Tittle, 1981; Baber & Monaghan, 1986), and currently most females report that their career plans will affect their family size and timing (Granrose, 1985a; Tittle, 1981; Stake, 1984). Inferentially, these plans would affect family planning and contraceptive behavior.

Though Stake's 1979 study found planned career commitment negatively related to planned family involvement, Tittle (1981) found that among adolescent females, 95% expected to marry, 92% expected to have children, and 86% expected to work after the births of their children. In Doherty's (1980) college female sample, 90% expected to be married and to work. Granrose (1985a) reported that "for at least 3/4 of the women, the welfare of the child is more important than their career, their own welfare, or their husband's welfare" (p.227). For most young women, then, the coordinating of childrearing and career activities should be included in any type of career and family planning (Granrose, 1985a; Regan & Roland, 1985; Schenkel & Marcia, 1972; Tittle, 1981). Granrose found, however, that only 14% of her 202 college female subjects had a specific plan for coordinating childrearing and career. In her sample, 70% had "general ideas" about combining these two aspects of their futures, while 15% had no related plans. While Granrose's study did not relate directly to contraception, two studies reported by Oskamp and Mindick (1983) did find effective contraception to be associated with future orientation.

In sum, the literature indicates that the positive personal variables of 1) psychosexual maturity and acknowledgement of sexual activity; 2) self-assertiveness; and 3) future orientation positively affect contraceptive behavior.

Background and Learning Variables

In addition to the associations with personal variables, effective contraceptive use has also been related to background and learning variables. Among these variables are included 1) the influences of parental and familial communications regarding sexual activity and contraception, and 2) the effects of religious background, beliefs, and activity.

Parent attitudes and parent communications regarding sexual and contraceptive behavior. Although some studies have found only small associations between parents' attitudes toward contraception and daughters' effective contraception (Daugherty & Burger, 1984; Thompson & Spanier, 1978), research suggests that open discussion with parents regarding the daughters' contraceptive use may be related to more effective contraceptive practice. Cvetkovich and Grote (1983) found that effective contraceptive users reported having parents who were "less strict" in their enforcement of rules than the parents of less effective contraceptors. They also found that the daughters with more sexually "liberal" attitudes reported having the most "liberal" parents. Several studies have shown a positive relationship between parental acceptance of contraceptive behavior and effective contraception (Allgeier, A.R., 1983; Allgeier, E., 1983; Shah & Zelnik, 1981). Other studies have found a relationship between poor communication with parents and poor

contraception (Kelly, 1983; Herold & Goodwin, 1981). The role of the mother-daughter relationship has also been examined. Herold and Samson (1980) found that in their study of 480 young women attending family planning clinics, those who were the most planful and most effective contraceptors had discussed birth control with their mothers. In interviews with mothers and their 10-to-18-year-old children, Rothenberg (1980) found that mothers who were comfortable discussing both sex and contraception had children who were more knowledgeable than their peers regarding these topics. Newcomer and Udry (1985) found that in a study of 270 mother-adolescent daughter pairs, girls who reported that their mothers had discussed birth control with them were three times as likely to have used an effective contraceptive method (defined as one which required planning) at last intercourse than those who reported that their mother had not talked with them. This study highlights an interesting fact - the mothers' reports of these conversations were not related to effective birth control by the daughters, leading the authors to conclude that "the teenagers' perception of the mother's attitude may constitute a valid influence on the teenager's behavior, but it may not reflect the parent's actual belief. Therefore, the effect of parental attitudes on adolescent behavior cannot be examined by asking the teenager to report them (p. 174)."

Religious attitudes and behavior and contraceptive behavior. In addition to exploring family background influences on contraceptive behavior, studies have associated religious background, beliefs, and activities with the presence or absence of effective contraception. Generally, a negative correlation is

reported between measures of religiosity and sexual intercourse, although Daugherty and Burger (1984) reported no significant relationship between young women's perceptions of their church's attitudes towards sexuality and their reported sexual and contraceptive behavior. More frequently, studies that elicit reports on religious behaviors rather than perceptions of the church's attitude find negative associations between sexual and contraceptive behavior and such aspects of religiosity as: rated importance of religion (Alzate, 1978; Paxton & Turner, 1978; Schenkel & Marcia, 1972); frequency of religious attendance (DeLamater & MacCorquedale, 1979; Herold & Goodwin, 1981; Paxton & Turner, 1978); religious attitude (Priestnall et al., 1978; Young, 1982); and intensity of religious beliefs (Mahoney, 1980).

In summary, significant relationships have been found between effective contraceptive use and both of the background variables of familial discussions of sexual and contraceptive behavior and religiosity.

Environmental/relational Variables

Besides the personal and background variables associated with effective contraceptive behavior, there is considerable literature on the influence of two important environmental/ relational variables; 1) acknowledging sexual and contraceptive behavior with friends, and 2) acceptance of contraceptive use by partners.

Peer relations and contraceptive behavior. Studies of the relationship between perceived peer attitudes and acceptance and subjects' effective contraceptive use have approached the question from various perspectives. In their national probability sample of

15-to-19-year-old women, Shah and Zelink (1981) found that women who described their attitudes regarding premarital sex to be more like their friends' than like their parents' were more likely to use medical methods of contraception (pills, IUD, and diaphragm), and were also more likely to have had more premarital sexual experience and more sexual partners. These results are supported by Herold and Samson's 1980 study of young women in family planning clinics, where early contraceptive planning and the use of the pill were related to discussions with friends and partners rather than parents. Rothenberg (1980) found that regardless of age, sex, and racial group, adolescents were more likely to talk about sex with friends than with their mothers, though these discussions were more likely to involve the exchange of misinformation regarding sexuality than were the conversations with their mothers. In a study of college students, Thompson and Spanier (1978) found that for young women, peers were a major source of norms for both sexual and contraceptive behavior, though Daugherty and Burger (1984) report that in their smaller sample the perceived attitudes of peers influenced attitudes about sexuality but not contraceptive behavior.

Sexual partners' acceptance of contraception. Studies of the influence of partners on sexual and contraceptive behavior have focused on the relationship between the partners and the partners' attitudes towards contraception.

Byrne (1983), in his proposal of effective contraception as a 5-step 'career' process, notes that communication between partners is an essential step in the development of effective contraceptive practices. As Burger and Inderbitzen (1985) comment, "Because

effective contraception requires planning before sexual intercourse, discussions about sexual activity and contraception before sexual intercourse would seem to be necessary (p.345)." Studies have found that general communication as well as communication about sexual matters was related to the use of contraception; more communication was associated with more, and sometimes more effective, contraception (Burger & Inderbitzen, 1985; Cvetkovich & Grote, cited in Byrne, 1983). Other studies have also found relationships between effective contraception and both discussion of sex and contraception with one's partner (Herold & Samson, 1981) and partners' influence or encouragement to use contraception (Whitley & Schofield, in press; Herold, 1981; Thompson & Spanier, 1978). In addition, a positive relationship with the sexual partner, including both a longer relationship and more frequent intercourse, has been associated with increased contraceptive use (DeLamater & MacCorquedale, 1978; Sack et al., 1985; Foreit & Foreit, 1981; Geis & Gerrard, 1984). Studies have also suggested a positive relationship between the number of sexual partners a woman has had and her classification as an effective contraceptor (Sack et al., 1985).

In sum, the environmental/relational variables of peer and partner attitudes toward sexual and contraceptive activity seem to have considerable effect on the contraceptive behaviors of sexually active young women.

Summary

Thus far, research has been reviewed that suggests that contraceptive behavior is the result of a combination of personal,

background, learning, and environmental variables. There is, however, a lack of research examining the relative abilities of all of these variables to discriminate between effective and ineffective contraceptors. The importance of the separate variables has been confirmed in the meta-analysis by Whitley and Schofield (in press), but as they note, most studies have been simple correlational analyses of one or two variables and contraceptive use, and a multivariate approach, which could also take into account the intercorrelations among the variables, is necessary to derive a clearer picture of the separate and combined relative influences of these seven variables.

Methodological Considerations

Because the study of contraceptive behavior is what might be called "a phenomenon in search of a paradigm" (Parlee, 1985), many approaches have been applied with the intent to gather data that will fit various pre-existing models. In addition to the effects of the more common research confounds, research regarding sexual activity, contraceptive behavior, and contraceptive effectiveness is especially affected by the operational definitions applied to these three variables.

In the study of contraception, it is obviously important to be able to discriminate between subjects who are and are not potential contraceptors. Therefore, it is important to identify subjects who have some experience with sexual intercourse. The definitional problem arises with the question of how much experience with intercourse subjects should have in order to be included in studies of contraception. "Sexually active" subjects have been defined in

the literature in different ways, including those who have experienced one act of sexual intercourse (Thompson & Spanier, 1978; Burger & Inderbitzen, 1985); those who report engaging in intercourse at least once per month or within the last month (Gerrard et al., 1983); those who report having had sexual intercourse during the three months prior to the interview (Bachrach & Mosher, 1984), or those who report having had intercourse at least once in their lives (DeLamater & MacCorquedale, 1978; Herold & Goodwin, 1981).

In addition to using a variety of definitions of sexual activity, researchers have utilized a range of approaches to the concept of contraceptive consistency, that is, how often subjects report using contraception. There are several problems with attempts to measure the consistency of contraceptive use. The first is that even when the couple rather than the individual is reporting the data, the answers are self reported, and are vulnerable to the usual distortions found in self-report data (social desirability, inaccurate memory, and so forth). In a study of sexually active college couples, Hill, Peplau, and Rubin (1983) found that partners agreed in their reports of the use of medically prescribed contraception at the most recent intercourse, but that the extent of agreement decreased significantly both when they were asked to report use of other types of birth control and with memories of birth control used at their first intercourse.

Herold (1981), reviewing six operational definitions of contraceptive use, cites Kanter and Zelnik's 1973 finding of a strong relationship between the type of contraceptive method used

and consistency of use, "with the medically prescribed methods having a high consistency of use and nonmedical methods having a low consistency (p.129)." In his comparison of the six definitions, Herold proposed that "the operational definition selected to measure contraceptive use can have a considerable influence on the results obtained (139)." Whitley and Schofield (in press) note that even the contraceptive method "usually" used may be used only rarely, and Herold (1981) notes that "regularly," and "always, sometimes, never" are difficult to analyze and subject to considerable recall error. Herold recommends using the episode-specific measure of method used at last intercourse, with consideration of the method effectiveness, without attempting to determine consistency over time. In all cases, the issue of consistency must be considered within some framework of method effectiveness, since, as several authors point out, an ineffective method may be used consistently without achieving the goal of pregnancy prevention (Herold, 1981; Geis & Gerrard, 1984; Sack et al., 1985).

Among studies that have included descriptions of contraceptive use, DeLamater and MacCorquedale (1978) found that 53% of their student female subjects had used birth control. At that time, 80% of the women who had used contraceptives had used the birth control pill. In 1982, a national probability sample found that 68% of sexually active females between the ages of 15 and 19 had used some method of birth control; approximately 70% of them were using medically prescribed forms of birth control (Bachrach & Mosher, 1984). In a 1983 national sample of never-married American women, 54% of the white females who were enrolled in college used the pill

as their primary contraceptive method (Tanfer & Horn, 1985). A 1986 study of 181 college females found that 48% used the pill and an additional 5% used other medically prescribed forms of contraception. Only 61% of sexually active college females reported using any form of birth control "always" (Kileen, 1986).

Researchers agree that a more standard definition of contraceptive use is needed. Geis and Gerrard (1984) suggest that such a measure would include effectiveness, consistency, and user initiative. Sack et al. (1985), however, examined the results of a study using a variety of measures of contraceptive use and discovered that the same predictors applied "regardless of how the dependent variable was divided into various classifications" (p. 180), a conclusion supported by Herold's (1981) study using six operational definitions of contraceptive use.

Contraceptive effectiveness has been measured in a number of ways, including actual effectiveness and theoretical effectiveness (Hatcher, 1980; Herold, 1981), medical or non-medical method (Shah & Zelnik, 1981), "reliable" or "unreliable" methods (Gerrard et al., 1983; Sack et al., 1985), and "coitus independent," "coitus dependent," and "coitus inhibiting" (Geis & Gerrard, 1984). Within these measures, various methods have been considered reliable or unreliable, depending on the decision of the investigator. Thus, for example, the combined method of foam and condoms, which has a fairly high theoretical effectiveness but a lower rate of actual effectiveness, has been considered a reliable method in some studies but an unreliable method in others (Herold, 1981; Whitley & Schofield, in press). This type of inconsistency has severely

complicated interpretation of the literature regarding contraceptive use.

Herold reports that Parcel (1974) had "considerable methodological problems" using a measure which took into account both the effectiveness of the contraceptive and the proportion of time it was used. In their meta-analysis of 134 studies of adolescent contraception, Whitley and Schofield (in press) decided to consider all operational definitions of contraceptive use equally valid. In the study of contraception, the investigator must make an informed choice, bearing in mind Herold's caution that "there probably is no ideal measure of contraceptive use that is satisfactory for all researchers" (p. 143). In this case it is helpful to remember the findings that suggest that fairly consistent relationships may be obtained with any of three or four operational definitions (Sack et al., 1985; Herold, 1981).

In addition to the variety of operational definitions of the dependent variable, effective contraceptive use, studies of contraceptive behavior vary considerably in their approaches to sampling, with regard to both sampling procedures and populations sampled. Subjects in published studies include national probability samples of 15-19 year old females (Shah & Zelnik, 1981; Zelnik & Kanter, 1977), pregnant adolescents in abortion clinics (Luker, 1975), samples from all women of childbearing age (15-44) in the coterminous United States (Bachrach & Mosher, 1984), junior and senior high school students ages 10-18 (Newcomer & Udry, 1985) and college students in introductory psychology, human sexuality, and first aid classes (Dignan, Denson, Anspaugh & C'mich, 1985; Alzate,

1978; Geis & Gerrard, 1984). In their meta-analysis, Whitley and Schofield (in press) determined that of the 134 studies they examined, 89% compared contraceptive users on one or more characteristics. Sixty-nine percent of the samples included only female subjects, and college students (59%) "were the most studied age group...college-age women were the most studied group (57%), followed by high-school-age women (49%)." It is important to remember the findings of DeLamater & MacCorquedale (1978) that while college students may be more subject to social influences than nonstudents, there were no significant differences between the two groups on measures of sexual experience or behavior. It may be concluded, therefore, that while the college student population may differ from the population as a whole in terms of education and SES, random samples of young college women over age 17 may be considered appropriate populations for research on the contraceptive behavior of this age group.

A difficulty with the reliability and interpretability of data regarding sexual and contraceptive behavior, however, arises from the fact that the populations studied are rarely randomly sampled. Not only may self-report data regarding these behaviors be affected by social desirability, but also sample populations may be more likely than the general population to discuss their approaches to sexuality (due to current conditions such as pregnancy or desire for birth control, for those subjects located in family planning clinics, or due to enrollment in human sexuality classes or the choice to participate in this rather than another experiment for Introductory Psychology credit, for college student participants).

Even for most studies which do randomly sample a population, respondents may differ in some ways from those who do not respond. For this reason it is possible that the information gathered in these studies may not ever directly reflect the behavior of a stratified random selection from the general population. The consistency of answers across varieties of age, SES, and location and backgrounds of sample populations suggests, however, that these studies provide at least a foundation for further investigative research.

Summary of the Problem

In considering effective and ineffective contraceptive behaviors among college females, the variables considered so far have been a) psychosexual maturity; b) self-assertiveness; c) future orientation; d) the influences of parental and familial communications regarding sexual activity and contraception; e) the effects of religiosity on contraceptive behavior; f) the acknowledgement of sexual and contraceptive behaviors with friends; and g) the acceptance of contraception by sex partners. Effective contraceptive behavior is related to each of these variables, and in some cases the relative importance of some subsets of them have been proposed. Several aspects of research have been discussed. These are: the specific reasons for this population to engage in effective contraceptive behaviors; the current and proposed models for examining contraceptive behavior; the specific personal, background, and environmental variables associated with effective contraception; and the methodological complications, including varied definitions of the variables and differing sampling

procedures, which must be confronted when studying sexual and contraceptive behavior. To understand the causes of effective contraception among college women, much remains to be learned about the relative influences of the specific personal, background, and environmental variables reviewed above. Also, further examination of these variables may provide support or disconfirmation for the ecological research perspective, thus helping to frame subsequent research. If contraceptive behavior is affected by the ecological systems proposed by Bronfenbrenner (1977), the planning of interventions will need to include awareness of the interconnections among these systems, with recognition that intervention in any one area will affect patterns, roles, and relationships within and among many aspects of the total ecosystem. Additionally, new information obtained regarding current correlates of effective contraceptive behavior may contribute to the empirical baseline both by promoting the use of specifically operationalized definitions and by using appropriate sample populations.

The Current Research

The present study investigated, by questionnaire, the sexual activity and contraceptive behavior of a randomly sampled group of college women. It compared the sexually active students on a number of variables previously associated with effective contraceptive behavior, hypothesizing that specific variables related to personal, background and learning, and environmental/relational factors would discriminate between effective and ineffective contraceptors. The goal was to explore the relative influences of these variables, and to identify those which could correctly classify college women into

either the effective or ineffective contraceptive group, with the hope that identification of the more powerful influences could eventually lead to the development of programmatic tools for increasing the rate of effective contraception both among this population and among the broader group of women of childbearing age, for whom effective contraceptive behavior is an ongoing and vital process. The following variables were investigated in this study: a) personality - psychosexual maturity; self-assertiveness; and future orientation; b) background and learning - familial communication and influence regarding contraceptive activity, and the effects of religious beliefs and attitudes; c) social and relational environment - attitudes and influences of peers, and interactions regarding contraception with partners; and d) sample characteristics - demographic and biographic variables.

The independent and combined effects of each of these variables on effective contraceptive behavior were investigated. Specifically, it was hypothesized that effective contraception would be highly and positively correlated with:

psychosexual maturity
self-assertiveness or sex-role nontraditionally
future orientation
family communications regarding contraception
low religiosity
communication with peers regarding contraception
acceptance by partners of contraception

It was further hypothesized that membership in the groups of either Effective or Ineffective contraceptors could be predicted by these

variables, and that subjects could be correctly classified into these groups on the basis of a combination of these discriminating variables.

METHODS

Subjects

The subjects in this investigation were college women who were born between January 1, 1965 and December 31, 1968, and who were registered at Michigan State University Winter term, 1987. They were drawn by computer, and in order to obtain a sample size with adequate power, the initial sample included every seventh female undergraduate (14% of those whose age placed them in the subject population). This age group was selected because the subjects are beyond early adolescence and are in the process of career and identity development, so it was felt that the relative effects of career and family planning might be especially salient. At this age, however, this group is still within the category of adolescence, allowing reference to a relatively large body of contraceptive research.

For this study, participation was solicited via mail and, because of the very personal nature of the subject matter, all responses were anonymous. Questionnaires were mailed to 488 potential subjects. With attrition attributable to incorrect mailing addresses (17 questionnaires were undeliverable), the responses to the questionnaire totaled 249 (approximately 50%). Of the 249 responses received, eight were eliminated because of too much missing or inconsistent data. Of the remaining 241 subjects, 173 (73%) reported having had intercourse at least once within the last year.

This sample of 173 had a mean age of 20.5 years (SD = .625). The majority were Caucasian (95%). Distribution of ethnic identification, GPA, religious preferences, and mothers' and fathers' educational levels are displayed in Table 1.

To gauge the representativeness of the sample, the 65 respondents who had not had intercourse within the last year were compared to the sexually active sample on a number of demographic variables. Analyses of variance indicated that the groups did not differ significantly in age, GPA, race, or in socioeconomic status as measured by both mothers' and fathers' levels of education.

Measures

This study used the College Student Life Questionnaire, compiled by the investigator, following the guidelines of Dillman (1978) and Warwick and Lininger (1975). The questionnaire solicited information regarding psychosexual maturity, self-assertiveness, future career and family planfulness, family sex and contraceptive communication, religiosity, peer and partner influence on contraception, sexual activity, contraceptive behavior, pregnancy and abortion attitude and experience, perceptions of mother's employment and mothering satisfactions, and demographic and biographic variables. The instrument included both previously developed measures and items developed specifically for this study.

Prior to beginning the research, the questionnaire was piloted with a group of graduate and faculty women (n = 7) with a focus on improving the face validity, as well as on the construction of the instrument and development of items. The measure was then was piloted with a group of undergraduate women (n = 10), who were subsequently

Table 1

Demographic Information (N=173)

Age		
Mean	20.51	
S.D.	.63	
GPA		
Mean	2.90	
S.D.	.41	

Religious Preference	N	%
Catholic	69	40
Jewish	7	4
Protestant	53	31
Other	20	12
None	23	13
	172	100

Ethnicity	N	%
Black (Negro)	3	2
Hispanic	1	1
Native American	1	1
Caucasian	164	95
Asian	2	1
Other	1	1
	173	100

Educational Level	Mothers		Fathers	
	N	%	N	%
1) less than high school	5	3	8	5
2) high school	37	22	19	11
3) some college or technical training	64	37	44	26
4) college graduate	44	25	51	30
5) some graduate work	5	3	9	5
6) advanced degree	17	10	40	23
	172	100	171	100

asked for feedback regarding comprehensibility, length, and general ease of participation. Items, organization, and length were revised where appropriate.

Appendix A contains the entire questionnaire as received by the research sample.

Scale development. From the pool of items, scales were developed to reduce the large number of variables and increase the reliability of measures. Rational and empirical procedures were used during scale development (Jackson, 1971). Reliability data on scales were obtained using the RELIABILITY program of the Statistical Package for the Social Sciences (Hull and Nie, 1981), which provided information regarding item-total correlations and internal consistency (Cronbach's Alpha). Items with low item-total correlations and those whose deletion improved internal consistency were eliminated from the scales. These items were examined for relevance to other scales, and were moved where appropriate, when internal consistency was improved and the move produced a rational fit.

Several of the scales had been rationally defined a priori. They were examined for quality of fit with the obtained data. Generally, scales were developed to be independent and internally consistent, but consideration was given to rational "content sense." In some cases, single items were judged to be the best measure of the variable being considered.

The final scales are described below. The scales are presented in Table 2, with their item-total correlations and internal consistency reliabilities.

Table 2

Subscales of the College Student Life Questionnaire

	Correlation	Alpha
Personality Scales		
Future Orientation: Career Importance		
Mean = 4.59 S.D. = 0.56		
Future career importance	.60	.75
Future employment importance		
1 = Not Important	5 = Very Important	
Future Orientation: Family Importance		
Mean = 4.05 S.D. = 1.02		
Future marriage importance	.72	.75
Future children importance		
1 = Not Important	5 = Very Important	

	Corrected Item-total Correlation
Background Learning Scales	
Family Acceptance of Contraception	
Alpha = .86 Mean = 2.93 S.D. = 1.02	
If I had a problem concerning contraceptive matters, I could count on my parents to be understanding. (R)	.69
My parents have never given me any information about contraception.	.61
If I were to use a contraceptive, I would prefer that my parents not know about it.	.64
I have discussed my contraceptive use thoroughly with my parents. (R)	.62

(table continues)

If my parents knew I used a contraceptive, they would think less of me.	.62
My parents have encouraged me to use contraceptives. (R)	.67
I think my parents' ideas and beliefs about contraceptive use are very similar to my own. (R)	.53

1 = Strongly Agree 5 = Strongly Disagree

Source: Thompson and Spanier, see references.

Note: (R) denotes reversal of scoring for computational purposes.

Parental Provision of Information

Alpha = .70
Mean = 4.36
S.D. = 1.14
Range = 3-6

	Corrected Item-total Correlation
Parents provided reading material	.49
Parents discussed sexual intercourse	.50
Parents discussed contraceptive methods	.55

1 = No 2 = Yes

Religiosity

Mean = 2.49
S.D. = 0.86
Range = 1-4

	Correlation	Alpha
Importance of religion	.67	.80
Frequency of attendance		

(table continues)

Social/Environmental Scales

Peer Acceptance of Contraception

Alpha = .84
Mean = 4.09
S.D. = 0.71

	Corrected Item-total Correlation
If I had a problem concerning contraceptive matters, I could count on my friends to be understanding.	.59
My friends have never given me any infromation about contraceptives.	.48
If I were to use a contraceptive, I would prefer that my friends not know about it.	.58
I have discussed my contraceptive use thoroughly with my friends.	.63
If my friends knew I used a contraceptive, they would think less of me.	.56
My friends have encouraged me to use contraceptives.	.64
I think my friends' ideas and beliefs about contraceptive use are very similar to my own.	.64

Source: T & S. (1978)

Note: (R) denotes reverse scoring.

Partner Acceptance of Contraception

Alpha = .84
Mean = 4.04
S.D. = 0.70

	Corrected Item-total Correlation
My partner would understand if I refused to have intercourse until we had a contraceptive available.	.59
My partner would think I was too eager for intercourse if I was contraceptively prepared for it.	.20
I have discussed contraceptive use thoroughly with my partner.	.67
My partner has never given me any information about contraceptives.	.42

(table continues)

If a pregnancy should occur, my partner and I would handle it together.	.49
My partner and I agree about whose responsibility contraception is.	.65
If I had a problem concerning contraceptive matters, I could count on my partner to be understanding.	.75
My partner and I have carefully planned our contraceptive pattern.	.72
My partner would surely find it displeasing if I asked about contraception right before intercourse.	.48
My partner would insist that we delay intercourse if no contraception was readily available.	.47

1 = Strongly Agree 5 = Strongly Disagree

Source: T & S. (1978)

Note: Elimination of item 2 would increase alpha to .85, but the item was retained for consistency with original scale. (R) denotes reverse scoring for computational purposes.

Frequency of Intercourse

Mean = 3.18
S.D. = 1.27

	Correlation	Alpha
Within last year	.78	.87
Within last month		

1 = less than once a month 5 = 3 or more times a week

Personal Variables

Psychosexual maturity. As defined by Whitley and Schofield (in press) psychosexual maturity includes acceptance of the self as a sexual being and acceptance of responsibility for contraception if pregnancy is not desired. Items concerning this type of self-acceptance, based on items previously used by Herold and Samson (1980) and DeLamater and MacCorquedale (1978) were included in the original measure. The correlations and internal reliability consistencies of these items were low, suggesting that they related to different aspects of psychosexual maturity, and they were retained singly rather than in a composite scale. These items are listed in Table 2.

The following four items were retained: a) When you had intercourse, how often was contraception used?; b) When you have had intercourse within the last month, what percentage of the time were you expecting, anticipating, or planning that it would occur?; c) When a decision is made whether or not to use contraception, who usually makes that decision?; d) What percentage of the time do you (rather than your partner) determine what form of contraception is used?

Self-assertiveness. The M score on the Bem Sex Role Inventory Short Form (BSRI-SF), (Bem, 1981), was used to determine self-assertiveness (Spence, 1984) and sex role non-traditionality. The BSRI-SF includes thirty positive personality characteristics; ten stereotypically masculine, ten stereotypically feminine, and ten filler items. The items were initially selected on the basis of their social desirability, that is, they were characteristics which would be more desirable in this society for one gender than for the other. Subjects are asked to indicate on a 7-point scale how well each of the 30

characteristics describes themselves. The seven answers range from 1("Never or almost never true") to 7("Always or almost always true"). Bem (1981) reports that most subjects complete the short form in 10 minutes. The BSRI-SF has demonstrated internal consistency and test-retest reliability, as well as independence between the 'masculinity' and 'femininity' scales and low correlations with social desirability (Bem, 1981). This scale can be found on page 14 in Appendix A.

Future orientation; career importance. This variable was measured by a two-item scale asking about the relative importance of career and employment in the subjects' futures. This scale initially consisted of 17 items from the questionnaires developed by Granrose (1985a) and Doherty (1980) which solicited information regarding the anticipated importance of a career and specific career plans. After scale revision, removing the items which were not correlated or were not internally consistent, the final scale included only the two items mentioned above. For the final scale, internal consistency reliability was 0.75.

Future orientation; family importance. This variable originally included nine items concerning the anticipated importance of marriage and children in the subjects' lives. These items were taken from questionnaires developed by Doherty (1980) and Granrose (1985b). Again, after applying the scale development procedures described above, the final scale included only two items. It had an internal consistency reliability of 0.84.

Items removed from both the career and the future planning scales were compared with other items for possible scale inclusion, but were

not found to fit into scales. Those that remained unrelated to the variables under consideration were retained if the information they gathered was rationally deemed important to the study; others were dropped from consideration.

Background/Learning Variables

Family acceptance of contraception. One of two scales measuring family sex and contraceptive communication, this variable included seven items developed by Thompson and Spanier (1978), using five likert-type responses ranging from 'strongly agree' to 'strongly disagree.' Thompson and Spanier reported a Cronbach alpha reliability coefficient of 0.86 for this measure, a statistic replicated in the current study.

Parental provision of information. The second measure of family sex and contraceptive attitudes included items concerning specific parental provision of information regarding sexual activity, intercourse, and birth control. This scale, which was developed by the investigator, included three items, and obtained a Cronbach alpha of 0.70.

Religiosity. This background variable was measured by the two items suggested by Herold and Goodwin (1981) and DeLamater and MacCorquedale (1979) regarding the importance of religion and attendance at religious services. Reliability for this measure was 0.80.

Social/Environmental Variables

Peer acceptance of contraception. Peer influence was measured by the 7-item Thompson and Spanier (1978) scale. With the replacement of the word 'friends' for the word 'parent', this scale was identical to

the parental acceptance scale, described above. Thompson and Spanier reported a Cronbach's alpha of 0.78 for this scale; in this study the reliability was a somewhat higher 0.83.

Partner acceptance of contraception. The measure of partner's influence was also derived from a Thompson and Spanier measure with 10 items, using a likert-type scoring categorization ranging from 'strongly agree' to 'strongly disagree'. The authors reported a Cronbach alpha reliability coefficient of 0.82 for this scale; in this study the alpha was 0.84.

Sexual and Contraceptive Behavior

Sexual activity and contraceptive consistency were measured by 6 and 3 items, respectively, drawn from measures by Albano (1985), Roper (1983), Geis and Gerrard (1984), and Shah and Zelnik (1981). These items requested information regarding frequency of sexual activity and frequency of contraceptive use during sexual activity. These items were examined for correlation with the dependent variable, with the intent of creating a composite scale, but after following scale development procedures it was felt that more information would be obtained from the separate items than from a composite score. Subsequently, a scale was developed by the experimenter for 'frequency of intercourse', combining reported frequency in the last month and the last year. The reliability for this scale was 0.87. Items measuring frequency of contraceptive use were not scaled, but were retained.

In addition to the above variables, the measure included 3 items that explored subjects' perceptions of their mothers' maternal and employment satisfaction, 4 items that solicited pregnancy and abortion attitudes and experience, and 13 demographic items requesting

information regarding current educational status, sibling status, current living arrangements, parents' educational levels, and religious and ethnic background.

The final scales are presented in Table 2 along with their item-total correlations and internal consistency reliabilities.

Scale Intercorrelations

Intercorrelations between the constructed scales can be found in Table 3. With three exceptions, inter-scale correlations are low to moderate, indicating that the scales are measuring unique dimensions. Scale intercorrelations indicate that the two measures of family attitude toward contraception are fairly highly correlated (r =.59, $p < .001$). Given the content of the scales, especially the overlapping items regarding parental conveyance of information regarding contraception, this intercorrelation is to be expected. Because it was felt that the two scales tapped somewhat different dimensions of family communication regarding contraception, the second measure was retained. This second measure was also highly and negatively correlated with the Religiosity scale (r = -.53, $p < .001$). The other moderately high intercorrelation, between the scales measuring frequency of intercourse and partner acceptance of contraception (r=.47, $p < .001$), indicates that there is a relationship between the two aspects of sexual behavior, but the correlation is low enough to indicate that the scales do measure different dimensions.

Classification Variables

Contraceptive effectiveness was determined by reported method of contraception used at last intercourse. This item was used as the dependent variable in the study. For purposes of this investigation,

Table 3

Scale Intercorrelations

	1	2	3	4	5	6	7	8	9	10
1. M-Bem Sex Role Inventory	-									
2. F-Bem Sex Role Inventory	.06	-								
3. Career Importance	.15*	-.05	-							
4. Family Importance	-.03	.24**	-.07	-						
5. Family Acceptance of Contraception	.05	.09	.15*	-.10	-					
6. Parental Provision of Information	.16*	.13*	.19*	-.05	.59**	-				
7. Religiosity	-.00	.12	-.01	.17*	-.25**	-.53**	-			
8. Peer Acceptance of Contraception	.02	.04	.05	-.00	.08	-.07	-.25**	-		
9. Partner Acceptance of Contraception	.08	.23*	-.02	.17*	.17*	.10	.17*	-.10	-	
10. Frequency of Intercourse	.08	.08	.02	.19*	.10	.16*	-.08	-.01	.47**	-

*p < .05. ** p < .001.

Note: All available data were used for calculations (N=173).

contraceptive methods were divided into two groups as follows:

Effective: medically prescribed contraceptives (pills, I.U.D., or diaphragm) used at the most recent occasion of sexual intercourse.

Ineffective: any nonmedical methods (including no method) used at the most recent occasion of sexual intercourse.

Items were included in the original measure which allowed comparison between this and other possible definitions of contraceptive use, specifically, reported consistency of use of a variety of contraceptive methods. Table 4 shows the comparisons of subjects reporting use of specific methods "regularly" and "always" with those reporting use of specific methods at last intercourse. Correlations were high between the measures, supporting the decision to retain this definition based on Herold's recommendation that the episode-specific measure of method used at last intercourse, with consideration of effectiveness, is reliable. An additional consideration in the selection of this operational definition was the degree of planning or commitment to contraception implicit in the examination and conversations necessary to obtain medically prescribed as opposed to other types of contraception.

Procedures

The questionnaire was mailed to subjects during the third week of Winter term, 1987. The questionnaire, which was distributed through campus mail to dormitory residents and through U.S. mail to off-campus students, was accompanied by a cover letter explaining the survey and detailing the informed consent information (see Appendix A). A pre-addressed envelope, stamped for off-campus students, accompanied the packet, with a request that the questionnaire be returned before

Table 4

Reported Contraceptive Use

	Regularly		Always		Last Time	
	E	I	E	I	E	I
None						9 (5)[c]
Withdrawal	1 (1)[a]	6 (9)[b]		7 (10)		23 (13)
Rhythm	0	2 (3)		5 (7)		
Foam/Gel	1 (1)	5 (7)		2 (3)		5 (3)
Condom	1 (1)	12 (17)	3 (3)	17 (24)		31 (18)
Foam & Condom	2 (2)	1 (1)		2 (3)		3 (2)
Diaphragm	2 (2)	1 (1)	2 (2)		6 (3)	
Pill	15 (15)	5 (7)	74 (73)	6 (8.5)	95 (55)	
IUD	0		2 (2)		1 (1)	

Note. Percentages will not total 100 because subjects may have reported using several methods in last year.

[a] Percent of total E's reporting method use.
[b] Percent of total I's reporting method use.
[c] Percent of total N's reporting method use at last intercourse.

February 18, 1987. To increase the return rate, a drawing was be available for participants, with a $30.00 gift certificate for dinner at a local restaurant as the prize. Subjects could participate in the drawing by returning a postcard via campus mail, noting their desire to participate. A follow-up letter thanking those who had returned completed questionnaires and asking those who had not done so to please send them in was mailed two weeks after the initial mailing. Due to confidentiality issues and University policy, both the questionnaire and the follow-up letter were mailed from the Assistant Provost's office. The full list of participants was never seen by the investigator.

RESULTS

Summary of Data Analysis Procedures

The data were explored in several different ways. First, the demographic variables were summarized and examined for differences using simple descriptive statistics. This process allowed identification of the sexually active groups, and provided a comparison between them and the nonactives. Second, the sexually active subjects (those who had intercourse at least once in the last year) were compared on items and scales to discover preliminary differences between the groups and to examine relationships among individual variables. Thirdly, a stepwise discriminant function analysis was performed. This analysis allowed examination of the relative contributions of the variables in discriminating between the effective and ineffective contraceptors.

Sample Characteristics

This sample of young women, like those in other studies, reported that they "want it all." Of the total group of respondents to the questionnaire, 95% reported that having a career was an important or very important part of their futures. Other aspects of their futures considered similarly important were: employment (93%), romantic relationships (83%), marriage (75%), and having children (70%). Sixty-eight percent reported having career plans that extended beyond five years into the future, and 73% reported that their career plans

included plans for childrearing. Eighty percent expected to have their first child between the ages of 26 and 30, and 86% expected to compromise their careers in favor of their families. Ten percent (24) reported having been pregnant; of these, 20 (80%) reported having abortions. These statistics and percentages seem to accurately reflect the attitudes and experiences of college women of the 1980s.

The information provided by the sample on the sexual and contraceptive behaviors of these young women also seems to support the previous research. In the present sample, 73% of the respondents were sexually active. Of these, 59% were classified as effective contraceptors and 41% were classified as ineffective. Of the total group of respondents to the questionnaire, 29% were considered to be sexually active and at risk for pregnancy because of ineffective contraceptive methods.

These statistics confirm the possibility discussed in the introduction to this research. Almost 30% of the college female population seems to be at risk for pregnancy, despite the fact that their plans for their futures reflect no intentions to bear children within the next few years.

The Sexually Active Subjects: Comparisons between Effective and Ineffective Contraceptors.

There were 173 subjects in the designated sexually active group, that is, the group of subjects reporting participating in intercourse within the last year. Of these, 140 described themselves as sexually active, 64% of the Ineffective and 93% of the Effective contraceptors. Effective contraceptors, defined as those who used a medically prescribed method of birth control at last intercourse, totaled 102, or

59.1%. The Ineffective contraceptors, defined as those using a nonmedical means of birth control or no method at last intercourse totaled 71, or 40.9%. Among the total group of sexually active women the most frequent contraceptive used was the pill (55%); the next largest categories of contraceptive method were the condom (18%) and rhythm or withdrawal (13%). The distribution of methods is shown in Table 4. Response frequencies for items related to relationship status and sexual and contraceptive activities are found in Table 5.

Once defined, the Effective and Ineffective user groups were compared for differences on the variables and items hypothesized to be discriminators.

Personal Variables

Significant differences were found between the two groups in the areas of psychosexual maturity and career and family orientation. No differences were found in self-assertion or sex-role traditionality. Results are summarized in Table 6. For all variables discussed below, differences between the two groups were significant at the $p < .05$ level (two-tailed t-tests).

Psychosexual maturity. The effective contraceptors reported a higher frequency of planning and anticipating intercourse. Eighty-three percent of the Effective contraceptors reported that within the last month when they had intercourse they had expected it to occur 50% to 100% of the time, while in the Ineffective contraceptors group, the rate was 66%. Conversely, of the Effective group, only 17% reported that they had "seldom, rarely, or never" anticipated intercourse when it occurred, compared with 34% of the Ineffective group. The Effective group reported more frequent use of contraception, with 83% reporting

Table 5

Response Frequencies for Relationship Status

Relationship Status

Contraceptive Use	Single Without SO	Single With SO	Engaged	Cohabit	Total Reporting Significant Relationship
Ineffective	27 (39%)	33 (48%)	8 (12%)	1 (1.4%)	61%
Effective	17 (17%)	68 (68%)	7 (7%)	8 (8%)	83%

Note: Missing; 2 Ineffectives and 2 Effectives

Response Frequencies for Sexual and Contraceptive Behaviors

Do you consider yourself to be sexually active?

Contraceptive Use	No	Yes
Ineffective	26 (37%)	45 (63%)
Effective	7 (7%)	95 (93%)

When a decision is made to use contraception, who usually makes that decision?

Contraceptive Use	Partner	Both	I do
Ineffective	2 (3%)	49 (75%)	14 (22%)
Effective	0	38 (37%)	64 (63%)

(table continues)

When you have had intercourse, how often was contraception used?

Contraceptive Use	Never	Rarely	Seldom	Often	Regularly	Always
Ineffective[a]	11	10	9	13	25	32
Effective	1	1	2	1	12	83

What percentage of the time do you (rather than your partner) determine what form of contraception is used?

Contraceptive Use	Never	Rarely	Seldom	Often	Regularly	Always
Ineffective[a]	17	12	11	23	17	20
Effective	11	1	2	5	13	67

[a] Numbers equal percentages of groups: Ineffective N = 71, Effective N = 102.

Table 6

Significant Between-Group Differences in Personal Variables

Variable	N	Mean	S.D.	df	t
Psychosexual maturity variables					
Frequency of planned sex[a]				156	-2.01*
Ineffective	62	3.90	1.54		
Effective	96	4.36	1.16		
Who usually decides to use B.C.[b]				165	-5.84**
Ineffective	65	2.18	.46		
Effective	105	2.63	.49		
Who decides form B.C.[b]				161	-5.17**
Ineffective	65	3.71	1.75		
Effective	98	5.10	1.65		
Frequency use B.C.[a]				171	-6.49**
Ineffective	71	4.28	1.73		
Effective	102	5.72	.81		
Future orientation variables					
Plan time for childrearing[c]				166	-2.13*
Ineffective	67	1.66	.48		
Effective	101	1.80	.40		
How to resolve career conflict[d]				109	-2.25*
Ineffective	42	1.76	.43		
Effective	69	1.92	.26		

[a] 1 = never, 6 = always.
[b] 1) My partner decides; 2) We decide together; 3) I decide (includes IUD and pill).
[c] 1 = no, 2 = yes.
[d] 1 = compromise family for career, 2 = compromise career for family.
* $p < .05$. ** $p < .001$.

that they "always" used contraception, compared with 32% of the Ineffectives. The Effective group also reported a greater percentage of time they decided alone, rather than with their partners, to use contraception (63% for Effectives; 22% for Ineffectives), as well as a greater percentage of time that they alone decided on the form of contraception (67% for Effectives, 20% for Ineffectives).

Future orientation. The effective contraceptors were more likely than the Ineffectives to have allowed time for childrearing in their career plans (80% and 66% respectively). They were also more likely to expect to resolve career conflicts in favor of their families (93% of Effectives, compared with 76% of Ineffectives).

Background and Learning Variables

No differences were found between Effective and Ineffective contraceptors in family sex and contraceptive communication or in religiosity.

Social/Environmental Variables

Relationship status. The following were statistically significant findings ($p < .05$, two-tailed t-test). The Effective contraceptors reported more consistent partner relationships, with 83% reporting a relationship with a "significant other," compared to 61% of the Ineffectives.

The Effectives also reported more frequent intercourse, with 59% reporting an average of once a week or greater, in contrast with 23% of the Ineffectives. Effective contraceptive users also reported greater acceptance of contraception by their partners than did the Ineffectives. Table 7 summarizes the above results. No differences

Table 7

Significant Between-Groups Differences in Social and Environmental Variables

Variable	N	Mean	S.D.	df	t
Relationship status[a]				167	-2.66*
Ineffective	69	1.75	.72		
Effective	100	2.06	.75		
Partner acceptance[b]				170	-3.34**
Ineffective	70	3.81	.81		
Effective	102	4.19	.58		
Frequency intercourse[c]				170	-5.70**
Ineffective	70	2.56	1.24		
Effective	102	3.60	1.11		

[a] 1 = single with no current "significant other"; 2 = single with significant other, not engaged; 3 = engaged; 4 = living with spouse or cohabitating.
[b] 1 = least acceptance; 5 = most acceptance.
[c] 1 = less than once a month; 2 = once a month; 3 = 2 or 3 times a month; 4 = once or twice a week; 5 = 3 or more times a week.
* $p < .05$.
** $p < .001$.

were found between Effective and Ineffective contraceptors in the category of peer acceptance of contraception.

Summary. Comparison of the items and scales for differences between the two groups revealed significant differences between the groups on variables related to psychosexual maturity (frequency of planned sex, who decides to use birth control, who decides on form of birth control, and frequency of contraceptive use); future orientation, relationship status, partners' acceptance of contraception, and frequency of intercourse. No other significant differences between groups based on comparisons of individual variables were found.

Intercorrelations Among Variables

Simple correlations between the independent and dependent variables may be found in Table 8.

Personality variables. Among the personality variables, the highest correlations were between effective contraception and the psychosexual maturity variables of contraceptive use, person deciding whether or not to use contraception, and person deciding on form of contraception (all $p < .001$). A fourth psychosexual maturity variable, frequency of planned intercourse, was also somewhat correlated with effective contraception ($p < .05$). Self-assertiveness was not correlated with effective contraception, nor were the future orientation/career importance variables, with the exception of "plan to attend graduate school," which was mildly negatively correlated ($r = -.16$, $p < .05$). The items as well as the scale related to future orientation/family importance were also correlated with effective contraception ($p < .05$, see Table 8).

Table 8

Correlations between Dependent and Independent Variables

Personality Variables	
Psychosexual Maturity	
Frequency of planned intercourse	.17*
Frequency of contraceptive use	.49**
Who decides to use contraception	.41**
Who decides on form of contraception	.38**
Self-assertiveness	
M score on Bem Sex Role Inventory	.04
Future Orientation	
Career	
Career importance (scale)	.02
Plan to attend grad school	-.16*
How far do career plans extend	.10
How specific are career plans	.02
Current participation in career job	.07
Alternative career plans	-.06
Family	
Family importance (scale)	.14*
Expectations for marriage	.15*
Compromise career for family	.24*
Career plans include childrearing	.16*
Background/Learning Variables	
Family acceptance of contraception	.08
Parental provision of information	.00
Religiosity	-.10
Environmental/Relational Variables	
Peer acceptance of contraception	-.04
Partner acceptance of contraception	.26**
Descriptive Items	
Frequency of intercourse	.40**
More than one sexual partner in last year	-.07
Importance of romantic relationship in future	.14*
Present romantic relationship	.20*
Have been pregnant	.20*

(table continues)

Plan to have children	.11
Age at first child	-.11
Importance of avoiding pregnancy	-.11
Age	-.05
GPA	-.09
Mother's educational level	-.09
Father's educational level	-.09
Siblings	.11
Mother work outside home	.00
Mother enjoy job	.00
Mother enjoy mothering	-.01
F score, Bem Sex Role Inventory	.03

Background/learning variables. Neither family acceptance of contraception, parental provision of information, nor religiosity were significantly correlated with effective contraception.

Environmental/relational variables. Although peer acceptance of contraception was not significantly correlated with effective contraception, partner acceptance was (r = .26, p < .001).

Descriptive items. From among the descriptive and biographic items, frequency of intercourse emerged as one of the variables most highly correlated with effective contraception (r = .40, p < .001). Other variables which were more modestly correlated included experience with pregnancy, and importance of both present and future romantic relationships (all p < .05). There were not significant correlations between contraceptive style and number of sexual partners, plans to have or importance of avoiding children, and other demographic or background variables (see Table 8).

To identify the relative independent contributions of the variables to the two groups, a stepwise discriminant function analysis was performed, allowing stepwise examination of the variables in empirically determined order of their contributions.

Results of the Discriminant Function Analysis

A stepwise discriminant function analysis was performed to assess prediction of membership in the two contraceptive groups from the pool of relevant variables (see Table 9 for variables included in the analysis). The functional analysis was based on 87 cases for whom there were no bits of missing data (30 ineffective and 57 effective contraceptors), with the function weighted for prior probabilities of group membership. The Wilks method of stepwise inclusion of predictor

Table 9

Variables Included in the Discriminant Function Analysis

Scales
Religiosity [a*]
Partner acceptance of contraception [a*]
Family acceptance of contraception
Parental provision of information
Family importance (future)
Career importance (future)
Peer acceptance of contraception
Frequency of intercourse

Items
Importance of having a primary romantic relationship
Marriage expectations [a*]
Plans to attend graduate school
Future career plans (how many years)
Specific career plans
Career activity participation
Career alternatives
Childrearing/career plans
Anticipated conflict career/family
Present romantic relationship status
More than one sexual partner in last year
Planning of intercourse
Who decides to use contraception [a*]
Experience of pregnancy [a*]
Plans to have children
Age at which plans to have children
Importance of avoiding pregnancy
Age
Presence of career choice
GPA
Mother's educational level [a*]
Father's educational level
Siblings
Mother work outside home [a*]
Mother enjoy work outside home
Mother enjoy being mother

Items not included:
Why stop education with bachelor's
What doing 6 months post grad
Frequency of dating (dropped)
See self as sexually active
Parents use contraception
Know what kind
Frequency of contraceptive use [b]

(table continues)

Times you decide form of birth control[b]
Number of times pregnant, how handled
Number of children
How would handle pregnancy now
Living arrangements, religious preference

---

[a] * = Discriminating variable.
[b] = Effective use confound.

variables was utilized. This method bases the inclusion decisions on the overall multivariate F ratio for the test of differences among group centroids, higher F values producing smaller values of Wilks' lambda (Nie et al., 1975).

The results of the discriminant function analysis, which examined variables for their relative contributions to the discriminating process, differed slightly from those of the simpler comparisons between groups.

Eight predictor variables were found to discriminate significantly between the two groups, accounting for 34% of the variance in group membership (Wilks Lambda = .665, $p < .001$). Table 10 presents a summary description of the discriminant function that resulted from the analysis. Table 11 displays the two groups' means on the predictor variables. The pooled within-groups correlation matrix, presented in Table 12, indicates that the correlations between the predictors were generally low, therefore their contributions can be judged to be independent. The variables are discussed below, in order of entry into the analysis.

The first variable entered into the equation reflected who determined whether or not to use contraception. Examination of the group means in Table 11 reveals that the Effective contraceptors were more likely to make this decision than were the Ineffectives. This variable accounted for 12% of the total variance in the discriminant function. The next entered variable reflected partners' acceptance of contraception. Effective contraceptors were more likely to have accepting partners than were the Ineffectives. After the amount of variance attributable to the first variable was removed, this variable

Table 10

Discriminant Analysis Summary Table:
Effective and Ineffective Contraceptive Groups

Variable Entered	Wilks Lambda	Significance	Standardized Canonical Discriminant Function Coefficients
Who decide to use B.C.	.880	.0010	.867
Partner acceptance	.814	.0002	.491
Mother's education	.769	.0001	-.611
Religiosity	.741	.0001	-.340
F score	.716	.0000	.441
Prior pregnancy	.696	.0000	.321
Marriage expectations	.678	.0000	.322
Mother's job satisfaction	.665	.0001	.266

Eigenvalue	Canonical Correlation	Wilks Lambda	Chi-squared	Df	Significance
.50368	.5787599	.6650369	33.041	8	.0001

Group Centroids

Group 1 - Ineffective Contraceptors	-.96695
Group 2 - Effective Contraceptors	.50892

Table 11

Effective and Ineffective Groups Means of Predictor Variables

Variable	Groups	
	Effective (2)	Ineffective (1)
Who decides to use B.C.	2.58	2.20
Partner acceptance	4.16	3.83
Mother's education	3.33	3.87
Religiosity	2.50	2.62
F score	5.02	4.90
Prior pregnancy	1.28	1.07
Marriage expectations	3.09	2.93
Mother's job satisfaction	3.19	3.36

Note. N=87 for discriminant function analysis; effectives = 57, ineffectives = 30.

Table 12

Pooled Within-Groups Correlation Matrix of Predictor Variables

	1	2	3	4	5	6	7	8
1. Who decides to use B.C.	-							
2. Partner acceptance	-.17	-						
3. Mother's education	.13	.04	-					
4. Religiosity	.04	.30	-.09	-				
5. F score	-.22	.23	.23	.15	-			
6. Prior pregnancy	.08	.00	.07	-.06	-.11	-		
7. Marriage expectations	-.16	.10	-.08	.09	-.16	-.01	-	
8. Mother's job satisfaction	-.19	.01	.43	-.03	.14	-.17	-.08	-

accounted for 7% of the total variance in the discriminant function. The third item entered into the analysis described the mothers' levels of education, and accounted for 4% of the variance not already considered. The group means for this variable indicate that mothers of Effective contraceptors had lower levels of education than did the mothers of the Ineffective group. Together, the first three variables entered into the discriminant function accounted for 23% of the variance in group membership. The fourth variable, religiosity, accounted for an additional 3% of the total variance, and the following variables, F score on the Bem Sex Role Inventory, anticipation of forthcoming marriage, experience of pregnancy, and perception of mothers' enjoyment of employment accounted for 2% each. Again, examination of the group means shows somewhat higher scores for the Effective contraceptors on each variable. Group centroids for the Effective and Ineffective contraceptors were 0.509 and -0.967, respectively. The standardized canonical discriminant function coefficients and the Wilks Lambdas for these variables can be found in Table 10.

After performing the discriminant function analysis on 87 cases, the classification was carried out twice: on the 115 cases with no missing discriminating variables, and on the total group of 173 cases, including all those who had some missing data. The classification results, summarized in Table 13, indicate that for the group with complete data, 81% were classified correctly, while for the entire group of 173, 77% of the cases were correctly predicted by the discriminating variables. Because classification would be expected to be less accurate when cases include missing data, the 77% accuracy rate

Table 13

Capability of Discriminant Function to Predict Contraceptor Groups

Actual Group	N	Predicted Group Membership 1	2
Without missing discriminating variables (N=115)			
Ineffective (1)	46	29 (63%)	17 (37%)
Effective (2)	69	5 (7.2%)	64 (92.8%)
Percent of cases correctly classified - 80.87%			
With missing data (N=173)			
Ineffective (1)	71	39 (54.9%)	32 (45.1%)
Effective (2)	102	7 (6.9%)	95 (93.1%)
Percent of cases correctly classified - 77.46%			

can be seen as a conservative measure of the variables' classification ability. Based on a calculation of tau taking into account the proportions in the analysis sample, this classification produces 53% fewer errors than would occur by chance.

Examination of the classification results for the whole group reveals that the variables were able to accurately predict 93% of the Effective contraceptor population. Ineffective contraceptors, however, were accurately predicted only 55% of the time, and were wrongly placed in the Effective group 45% of the time.

In summary, results of the discriminant function analysis indicate that eight variables discriminate between the ineffective and effective contraceptive user groups. With this sample these variables will accurately classify group members 77% of the time, classifying Effective contraceptors very well (93% of the time), but performing poorly with the Ineffectives. These figures indicate that there is considerable overlap between the groups, though the group centroids were well differentiated.

DISCUSSION

The results of this study confirmed that it was possible to discriminate between users of effective and ineffective birth control on the basis of a combination of variables reflecting personal characteristics, family and religious backgrounds, and social influences, correctly classifying subjects as effective or ineffective contraceptors 77% of the time. Results further indicated that several of the variables associated with effective contraception in the literature are intercorrelated, and that when multivariate analysis is performed, the effects of the individual variables are not as large as simple correlational literature suggests.

These results also provide additional information about the sexual and contraceptive activities of 19-to-21 year old college women, and the relationships between these present activities and their plans for their futures.

Overall, the results of this study indicate that the ecological perspective proposed by Bronfenbrenner (1977) is applicable as a model for sexual and contraceptive behavior. Contraceptive behavior is influenced by the microsystem - the immediate setting, the relationship with the partner and his acceptance of contraception; the mesosystem - the family background variables and degree of religiosity; and such macrosystem influences as marital

expectations. To intervene in these behaviors would require changes in each of these systems and in the ways they affect one another (in Bronfenbrenner's terms, "providing interconnections between systems previously isolated from each other," p.528).

The following discussion examines these research findings with regard to methodology, the major confirmations and disconfirmations of the hypotheses, and suggests avenues for future research.

Methodological Considerations

Operational definitions. For purposes of this study, and because the intent of the investigation was to study all members of the sample who had the possibility of becoming pregnant, "sexually active" was defined as having had intercourse at least once in the last year. This definition leads to the possibility of including subjects whose rate of sexual activity is low. The contraceptive behavior of these subjects, though perhaps less frequent, is no less important in the prevention of pregnancy, and it was for this reason that they were included.

From the 241 responses to this study, 173 subjects (73%) reported having intercourse within the last year, and were defined as sexually active. Of these subjects, only 9 (5.2%) reported using no contraception at last intercourse. As always when interpreting self-report data, it should be expected that the answers are influenced by social desirability. In this case demand characteristics could have led to underreporting of both nonuse and less effective contraception. In this sample the percentage of nonusers was small and they were included in the Ineffective contraceptive group, rather than studied separately.

In general, the contraceptive use rates reported by this sample reflect those reported in the literature, and indicate that among sexually active college women, the pill is by far the most favored method of contraception (54.6%). With the operational definitions used in this study (effective use defined as use of a medically prescribed method at last intercourse), an additional 4.5% of the subjects used effective methods, giving a total of 59.1% of the sexually active subjects who were effectively protected against conception. Of the whole group of college women responding to the questionnaire, 42% were using effective contraception and 29% were not, and could thus be considered at risk for pregnancy. These statistics also reflect those reported in the literature. Comparisons with these above statistics and those found in previous literature provide some validation for the operational definitions used in this study.

One aspect of this sample that should be remembered in the interpretation of these results is that this information was gathered by survey, and that almost one half of the potential respondents did not respond. The most accurate statement regarding these results, therefore, is that they represent the contraceptive behavior of college women willing to respond to this type of questionnaire. Without extensive follow-up, complicated in this case by the investigator's lack of access to the names of the potential respondents, it is impossible to know the reasons for nonresponse. One might speculate, however, that the response rate would be greater for young women who feel positive about their contraceptive use than for those who feel negative. If this were

the case, the number of Ineffective users reported in this investigation would be disproportionately low, thus information regarding their behavior could be less accurate than the information on Effective users.

The Discriminating Variables

Major Confirmations

The combination of variables that effectively discriminated between Effective and Ineffective contraceptive users, correctly classifying them into the two groups, reflected combined aspects of personal, background, and social influences.

Personal Variables

Psychosexual maturity. Defined as acceptance of the self as a sexual being, this variable included the item that was entered first in the discriminant function, "When a decision is made whether or not to use contraception, who usually makes that decision?" The possible answers required choosing among: "I decide (including pill or I.U.D.)," " we decide together," and "my partner decides." Of the total Effective contraceptor group, 63% reported that they alone made that decision, while among the total Ineffective group, the proportion reporting this level of responsibility was 22%. This answer is particularly interesting in light of the fact that 93% of the Effective users take the pill. This response rate would suggest either that 30% of the Effective users who in fact assume daily responsibility for contraceptive use do not acknowledge that responsibility as a part of their self-concepts, or that they feel sufficiently strongly that the responsibility is shared with their partners that they ignored the answer categories in making their

responses. Even without the "correct" answers from 30% of the Effective group, 12% of the variance between the Effective and Ineffective groups can be attributed to their answers on this item, which was the major personal characteristic item among the discriminators.

Future orientation. Among the eight discriminators, one item was related to future orientation. This item, which reflects expectations for marriage in terms of anticipated number of years before marrying, was the seventh item to be entered into the equation, and explained 2% of the variance remaining after 30% had been accounted for. The differences in the two groups on this answer reflect slight differences in the means of responses reporting anticipated marriage within five years or within ten years. Had the response options included a category of "4 to 6 years," most of the answers would have fallen in this category. Group means suggest that the Effective contraceptors plan to marry in slightly less than 5 years, while Ineffectives plan to marry in slightly more than 5, a finding which may reflect the more solid heterosexual relationships of the more effective contraceptors.

Background and Learning Variables

Religiosity. From among the eight discriminating variables, the Religiosity scale score was the fourth item entered into the discriminant function. Religiosity accounted for 3% of the variance remaining in group membership after 23% of the variance had been accounted for. This scale measured both importance of religion in the subjects' lives and frequency of church attendance. As had been predicted, religiosity was negatively related to effective

contraception. For this variable as with several others, the contribution to total variance is slight, and the differences between the groups are small. This result does suggest, however, that though the t-test for differences between group means showed no significant difference on this variable, there is some impact of religion on contraceptive behavior when the variance attributable to other factors is accounted for. Sexually active subjects who were more effective contraceptors were less influenced by and less involved with religion.

Social/Environmental Variables

Partner's acceptance of contraception. This variable was the second entry into the discriminant function equation, and accounted for 7% of the variance in group membership after the first 12% was accounted for. Inclusion of this scale as the second variable in the function supports the findings in the literature that the ability to discuss and agree on contraception with the partner is one of the most important aspects of contraceptive behavior. It is particularly noteworthy, however, that the Effective contraceptor group, of which 93% take the pill, is the higher group in partner acceptance of contraception. It would be interesting to know how much this 'acceptance' of contraception is based on the partner's minimal need to participate in the contraceptive process. This result is also interesting in light of the subjects' apparent desire to attribute some aspect of the decision-making process to their partners, even when taking the pill.

Additional Important Discriminating Variables

Four of the eight variables entered into the discriminant function analysis had not been specifically included in either the scales or the hypotheses. For three of the variables, comparisons of group means had indicated no significant differences between the two groups. These three variables were: 1) the mothers' level of education, 2) the F score on the Bem Sex Role Inventory, and 3) the perceptions of mothers' enjoyment of employment. The fourth significant predictor variable was the biographic fact of having previous experience with pregnancy.

Mother's education. This variable, the third item entered in the discriminant function, had shown no significant difference between the groups, yet it accounted for 4% of the variance between the two groups after 19% of the total variance had been accounted for by the first two items. Although it is a statistically significant finding, and clearly made some contribution to the total difference between the groups, it is difficult to attribute much actual significance to the differences on this variable. The item requested mother's level of education, offering 6 answers ranging from "less than high school" to "advanced degree." The means for both groups indicated that the subjects' mothers had, on the average, some college or technical training, but not college degrees. Examining the frequencies of answer categories, 61% of each group reported that their mothers had some college or technical training. The only obvious difference between groups is the fact that among the Effective contraceptors' mothers, 8% have advanced degrees, compared with 13% of the mothers of the Ineffective

contraceptors. There are two possible explanations for the placing of this item at the third step in this function. The first is that after removing the variances due to the first two variables, the significance of the slight difference in mothers' educations increased. The other explanation is that, after the influence of personal responsibility and partner acceptance for contraception, other differences between groups are minor, though they contribute slightly to the total variance. This would suggest that there are two major and six minor discriminating variables in the equation, an argument which, based on the relatively smaller significance of the other predictor items, seems valid.

F score on the Bem Sex Role Inventory. Like the items discussed above, these scores were not significantly different in early examination of the items, and although they contributed statistically to the discriminant function (2% of the total variance after the first 4 items had accounted for 26%), it is difficult to know how to interpret this finding. The F score on this scale had not been considered in the hypotheses. It can be seen as representing interpersonal orientation (Spence, 1984). To the extent that the group differences can be seen as differences in interpersonal orientation, it could be concluded that the Effective contraceptors are somewhat more interpersonally oriented than the Ineffectives. This finding could be related to their higher ratings of partners' acceptance of contraception and the resulting implications of more satisfying relationships with their sex partners than those experienced by the Ineffectives. This is very

speculative, however, and would require considerable further testing.

Previous pregnancy. This item was entered sixth of the eight discriminating variables, and accounted for 2% of the total variance, after 28% had been removed. Twenty-four subjects, 14% of the sample, reported having been pregnant. Of these, 20 were in the Effective contraceptor group. This represented 20% of the Effective contraceptors, compared with 6% of the Ineffective group. This variable had been included with the demographic/biographic items. As with the other items which account for a very small amount of the variance, it is difficult to know how much importance to attribute to the finding, but it is possibly similar to that of Tanfer and Horn (1985), who reported that 20% of their sample used contraceptives only after a first pregnancy.

Mothers' enjoyment of employment. This variable, the last to be included in the discriminant function, accounted for 2% of the total variance remaining after the previous variables removed 32%. Like the preceding variable, it had been included as a demographic/biographic item, and was based on an exploratory notion that the mothers' modeling might have affected the relative importance of careers to their daughters, therefore indirectly affecting future orientation and thus effective contraception. As with several of the items discussed above, the differences between the two groups were not obvious in comparisons of group means, and the practical significance of the finding is questionable. Examination of the group means and response categories shows that this item was answered on a 4-point likert-type scale on which the

possible answers to "If your mother was employed outside the home, how much would you say she enjoyed her job?" ranged from "not at all" to "very much". The mean ratings were 3.16 for the Ineffectives and 3.17 for the Effectives. When this item was dropped from the analysis, classification abilities decreased, showing that it indeed did improve the overall discriminating ability of the function. The pooled within-groups correlation matrix (Table 12) shows a correlation of .43 between this item and the mother's level of education, suggesting that while employment satisfaction is related to level of education, other factors are also contributory. A tentative conclusion regarding this item would be that in combination with other more important variables, young women whose mothers worked outside the home and enjoyed their work are more effective contraceptors than those whose mothers enjoyed their work less, even after taking into account the probable range of types of employment which depend on mothers' educational levels. This conclusion would suggest that the mothers' modeling has an effect on contraceptive behavior, and that other aspects of this modeling should be explored, for instance, the modeling of mothers' partners and interpersonal relationships.

Summary. Of the eight variables which discriminated between the two groups, four had been specifically hypothesized to be predictors. Two of these were personal variables, related to psychosexual maturity and to future orientation. One was a background variable, religiosity. The fourth was a social/environmental variable, partners' acceptance of contraception. Of the four items entered into the analysis but not

specifically hypothesized to be predictors, one was related to interpersonal orientation (arguably a personality variable), two were related to mothers' education and employment (arguably background variables), and one was related to previous experience with pregnancy. Certainly these results support the hypothesis that effective contraceptive behavior is best predicted by a combination of personal, background, and social variables. The results also suggest that specific personal and social variables are more important, but that in combination, background variables are also significantly influential.

Major Disconfirmations

Although the eight significant predictors included aspects of each of the three main types of variables hypothesized to contribute to the discriminant function, certain variables specifically expected to be included in the discrimination were not. The following section reviews the roles of these variables, with consideration of the possible reasons for their lack of significance.

Personal Variables

Self-assertiveness. The results of this study found no significant relationship between self-assertiveness or sex-role non-traditionality and contraceptive behavior. The findings in this study may support those of Whitley (1986b) that self-assertiveness was related to sexual experience but not to contraceptive use. Further investigation would be needed to clarify these relationships, though it should be noted that in the current study

self-assertiveness scores were not significantly related to frequency of intercourse.

Future orientation. Although this aspect of personality was represented in a minor way in the discriminant function by the item measuring expectations for marriage, the two scales developed by the investigator to measure family importance and career importance were not found to contribute to the prediction of contraceptive behavior. Further, neither of the variables which displayed significant differences between the Effective and Ineffective groups in simple comparisons of group means (Table 6) contributed significantly when variance attributable to other group differences was accounted for. These conclusions suggest that it is not the salience of their plans for their own futures that affects contraceptive use by college women, but perhaps some other variable which has implications for their futures, for instance, their expectations of their relationships with their partners. If this interpretation were accurate, it would support the significance of the social/environmental variable, 'relationship with partner', rather than the personal one, 'future orientation', as an important predictor of contraceptive use.

Background Variables

Family communications regarding contraception. Although two of the eight predictor variables were related to family background, neither of the two scales related to family and contraception were significant in either the simple comparisons of group means or in the discriminant function. It is possible that the relationships reported in the literature between these variables are being

affected by some moderators, such as general attitudes conveyed between parents and children regarding importance of interpersonal relationships, or the value of maintaining career options by, for instance, preventing pregnancy. If this were the case, these moderators could be affected by such variables as mother's level of education or satisfaction with employment, variables which were found to contribute to the discriminant function in this study. Further research could help to clarify the relationships among these variables. It may be the case that more general relationships among family members, both between parents and between each parent and the daughter, contribute to contraceptive behavior in ways unmeasured by this study. Two of the questionnaire items that might have tapped this more general aspect of family background, regarding fathers' level of education and mothers' enjoyment of mothering, did not discriminate between the groups, but further research should investigate broader parental modeling, both positive and negative, for effects on contraceptive behavior.

Social/environmental Variables

Peer acceptance of contraception. This study found no difference between the two groups in discussion of contraception with friends, either in the comparison of group means or in the discriminant function. This result is in contrast to most reports in the literature of the influence of the peer group on contraceptive behavior. It may be the case that many of the studies that report on this topic are based on a slightly younger population, and that by the time adolescents are at sophomore/junior levels in college there is actually little variance in attitudes

regarding contraception. It may also be the case that, as Daugherty and Burger (1984) reported, perceived attitudes of peers influence attitudes about sexuality but do not influence contraceptive behavior. Further investigation should include measurement of the relationships between these variables.

Summary. Several of the variables hypothesized to be significant contributors to the discriminant function analysis were not. These included measures of self-assertiveness, future orientation, family communication regarding contraception, and peer acceptance of contraception. Possible explanations for these findings were considered, with regard to valuable areas for future research.

The Classification

In a discriminant function analysis, the intent is to identify the predictor variables that most accurately discriminate between the identified groups, with the goal of predicting group membership based on the combination of discriminating variables. The "test" of a discriminant function is how well it is able to predict group membership. In the current study, the function itself was based on 86 subjects whose files contained no bits of missing data. The classification was then conducted on two groups, those whose files contained no missing data on the identified discriminating variables (n=115), and the total group of sexually active subjects, 58 of whom had files that were missing some data. As reported above, the classification rate for the first group (n=115) was 81%, and for the second group the 'hit rate' was a slightly lower but still statistically significant 77% ($p < .001$). These results indicate

that the discriminating variables were able to classify 77% of the total group correctly. When the classification results are examined by group, however, it is apparent that there is a discrepancy between the variables' abilities to predict effective and ineffective contraceptive use. The Effective group was correctly predicted 93% of the time, an excellent rate. It should be noted, however, that it is statistically 'easier' to predict membership in the larger group, which in this study was also more clearly defined than was the smaller Ineffective group. Members of the Ineffective group, however, were also predicted to be in the Effective group, 45% of the time. This result indicates that almost half of the Ineffective contraceptors cannot be discriminated from the Effectives on the basis of these predictor variables. Given the similarities in group means on several of the less important predictor variables described above, this result is understandable. It suggests, however, that there may be other variables not included in this study that may be more effective discriminators between the two groups. These variables would most likely be more focused on identifying predictors of ineffective contraception, a subject surely worthy of further investigation. Such research would need to focus on the reported reasons for selecting less effective methods, as well as variables not included in the present study, such as those discussed above. The current findings suggest that both positive and negative models of personal responsibility and efficacy as well as models of interpersonal and family relationships may be important in determining contraceptive use.

Implications for Further Research

Although the results of this study show that certain personal, background, and social variables can effectively classify young women into the Effective contraceptors' group, they also raise several important questions for further study. Since 45% of the Ineffective contraceptors were mistakenly placed in the Effective group by these variables, it is clear that greater understanding of the differences between these groups is necessary. If the long-range goal is to identify the variables which allow sexually active young women to be effective contraceptors, a portion of those variables remains unidentified in this investigation. Questions have also been raised regarding the variables that were included in the study. Further research should examine the relationships between: 1) partner "acceptance" of contraception and partner responsibility for contraception, 2) "interpersonal orientation" and relationships with partners, 3) mothers' and maybe fathers' education, employment, and direct or indirect messages about interpersonal relationships as well as career and family planning, and 4) abortion as a back-up contraceptive method for both effective and ineffective contraceptors. In the present sample, when asked how they would handle pregnancy, this group's responses included: don't know (24%), keep the baby (21%), adopt (7%), and abort (44%). These data suggest that the group's less effective contraceptive practices are not predicated on the notion of abortion as a back-up contraceptive method, but further research should explore that possibility.

In a broader perspective, it is noteworthy that of the Effective contraceptors in this sample, 93% were on the pill. Future research should focus on clarifying the process involved in making the decision to seek and use this versus other methods. This research should include a focus on the medical as well as social aspects of contraceptive use, with a view to determining whether specific methods of "effective" contraception are preferable in terms of their long-range implications both for the health and for the interpersonal relationships of the women using them. In considering alternatives to the pill, this research should include some investigation of the role of condoms in contraception, particularly in light of the current concern with AIDS and other sexually transmitted diseases. Finally, as noted in the Introduction, variables affecting contraceptive use are salient for women for many years. To fully understand effective and ineffective contraception a much broader age range needs to be studied. Because of developmental changes, variables of great importance to contraceptive behavior at one age may have little relevance at another life stage. Preferred contraceptive methods might vary as a function of those changes, greatly affecting the relative abilities of personal, background, and social variables to predict effective and ineffective contraceptive behavior.

Conclusion

Among sexually active college women, effective and ineffective contraceptors can be classified using a group of 8 discriminating variables related to personal, background, and social influences. The two major discriminants reflect acceptance of responsibility for

contraception and acceptance by the partner of contraception. The combination of variables points to the importance of interpersonal relationships in determining contraceptive use, suggesting avenues of further investigation. The significant predictor variables are able to identify Effective contraceptors very accurately, but they are less able to classify Ineffective contraceptors. Further research is necessary to identify more of the variables accounting for the differences between the two groups, in order to use this information to foster effective contraceptive practices in all women of childbearing age.

APPENDIX A

MICHIGAN STATE UNIVERSITY - East Lansing
Department of Psychology - Snyder Hall

February 7, 1987

Dear Participant:

With the changing roles of women in American society, there is currently much interest in the ways college women plan for their family and work lives. To help counselors and advisors understand how best to address the needs of college women in considering these areas, much more information is needed than is currently available. Only women like yourself can provide this information. Your name was randomly drawn from a sample of women enrolled at Michigan State University Winter term. In order for the results to be truly representative of college women, it is important that each questionnaire be completed and returned.

We need to obtain accurate information about the personal plans and activities of college women. Sometimes the worry that their answers might not be kept private stops people from giving us the needed information. To ensure your privacy, you will note that your answers are confidential - there are no identifying numbers or codes on the questionnaire or the enclosed return envelope. Please do not put your name or other identifying information on the questionnaire itself. We hope this procedure will help you provide us with your most honest answers.

Completing the questionnaire should take about fifteen minutes. It is important that all questionnaires be returned, even if incomplete. As a sign of appreciation for your taking the time to participate in this project we have obtained a $30.00 gift certificate for dinner for two at Pistachio's. In your packet is a postcard which you can return to us separate from your questionnaire through campus mail if you would like to be entered in the drawing for this gift. You will note that there are no identifying codes on the card - it is completely separate from your questionnaire, and there will be no way to match your postcard with your answers. It is simply our way of thanking you for taking the time to share this important information with us.

Participation in this research is completely voluntary. To be sure that you understand your rights as a research participant, please read through the statements on the back of this page. A brief summary of the findings will be available beginning Summer term, 1987, in 135 Snyder Hall, the main office of the Psychology Department.

If you have any questions, please feel free to call me at 676-3909. Please return the completed questionnaire in the return envelope provided by February 18, 1987. Thank you for your assistance in the completion of this study.

Sincerely,
Sara Leflar Wood-Kraft

I freely consent to take part in the study of women's career planning and family planning, their backgrounds, expectations, and current experiences with sexual activity and contraception, and their interactions with friends, family, and partners regarding these plans, conducted by Sara Leflar Wood-Kraft as a part of her dissertation research in the Department of Psychology. I understand that the study deals with college women's family planning and career planning; I have been given a clear explanation of my part in this work, which is to complete a questionnaire.

I understand that I am free to decline to participate or to discontinue my participation in the study at any time without penalty.

I understand that the results of the study will be treated in strict confidentiality and that I will remain anonymous. Within these restrictions, results of the study will be made availabe to me at my request.

I understand that my participation in the study does not guarantee any beneficial results to me.

I understand that, at my request, I can receive additional explanation of the study after my participation is completed.

I understand that my compliance in completing the questionnaire constitutes my informed consent for participation in the study.

I understand that participation in the drawing in no way affects the privacy of my questionnaire answers.

College women today have many exciting possibilities and many responsibilities to look forward to. As we have explained, this study is to help us understand more about how college women think about careers and families, and how that relates to sexual activity and contraception.

The first set of questions concerns the many family and career roles you may have, and their significance to you.

Please circle the answer that best describes the importance to you of each of the following possible aspects of your future. For instance, if that aspect is very important, you would circle 5, if moderately important, you might circle 3.

		HOW IMPORTANT IS THIS ACTIVITY?				
		NOT AT ALL IMPORTANT				VERY IMPORTANT
1.	Having a career	1	2	3	4	5
2.	Being employed	1	2	3	4	5
3.	Having a primary romantic relationship	1	2	3	4	5
4.	Being married	1	2	3	4	5
5.	Having children	1	2	3	4	5

6. Choose the sentence that best describes your expectations for marriage (circle number, choose only one).

1) I AM CURRENTLY MARRIED
2) I EXPECT TO BE MARRIED WITHIN A YEAR AFTER FINISHING COLLEGE
3) I EXPECT TO BE MARRIED WITHIN FIVE YEARS AFTER FINISHING COLLEGE
4) I EXPECT TO BE MARRIED WITHIN TEN YEARS AFTER FINISHING COLLEGE
5) I EXPECT TO MARRY AFTER TEN YEARS OR MORE
8) I DO NOT EXPECT TO MARRY
9) I DON'T KNOW

7. If you plan to finish your schooling with a bachelor's degree, which of the following is the most important reason for this decision? (circle one number)

1) A BACHELOR'S DEGREE PREPARES ME FOR THE CAREER I WANT.
2) I CAN GET BETTER TRAINING FOR WHAT I WANT TO DO IN SETTINGS OTHER THAN GRADUATE OR PROFESSIONAL SCHOOL.
3) I'M NOT INTERESTED IN FURTHER EDUCATION
4) I DON'T THINK MY GRADES ARE HIGH ENOUGH TO GAIN ENTRANCE INTO GRADUATE OR PROFESSIONAL SCHOOL.
5) I LACK THE FINANCIAL MEANS TO OBTAIN FURTHER EDUCATION.
6) OTHER (please specify)_____
8) NOT APPLICABLE

8. Do you plan to attend a graduate or professional school? (circle one number)

1) YES ——→When?_____
2) NO
9) UNCERTAIN

9. Which of the following best describes your plans for six months after graduation? (circle one number)

1) WORK FOR MONEY IN THE BEST JOB I CAN GET, BUT NOT NECESSARILY A CAREER-ORIENTED JOB
2) PURSUE A CAREER (AREA OF SPECIALIZATION, WITH UPWARD MOBILITY AND LIFETIME PLANS, REGARDLESS OF STARTING SALARY)
3) OTHER (please specify)_____
9) UNDECIDED

10. How far into the future do your job or career plans extend?

1) ONE YEAR
2) THE NEXT 2 TO 5 YEARS
3) THE NEXT 6 TO 10 YEARS
4) MORE THAN 10 YEARS

11. How specific are your carer plans?

NOT VERY SPECIFIC VERY SPECIFIC

1 2 3 4

Regarding your career plans:

12. Do you currently participate in activities or employment related to your planned career? YES NO

13. If your career plan is blocked, do you have other specific alternatives in mind? YES NO

14. Do your career plans include time for childbearing and rearing? YES NO

15. How much conflict do you anticipate between your educational/career activities and your marriage/family activities? (circle one number)

VERY LITTLE CONFLICT			GREAT CONFLICT
1	2	3	4

16. If you encounter conflict between your career and family plans, how do you expect you will resolve it? (circle one)

1) I WILL MORE LIKELY RESOLVE THE CONFLICT BY MAKING SOME COMPROMISES IN MY FAMILY PLANS IN ORDER TO HAVE A SUCCESSFUL CAREER.

2) I WILL MORE LIKELY RESOLVE THE CONFLICT BY MAKING SOME COMPROMISES IN MY CAREER PLANS IN ORDER TO HAVE A SUCCESSFUL FAMILY LIFE.

8) I DO NOT ANTICIPATE SUCH CONFLICT

9) I DON'T KNOW HOW I WILL RESOLVE THE CONFLICT

The following questions have to do only with heterosexual relationships, that is, relationships between males and females. If they do not apply to you, please continue with question 41 on page 10.

For most college women, these years include acknowledging and exploring their sexuality. In the next section you will be asked a number of questions to help us get some idea of your sexual activity and your contraceptive activity. These are questions confronted by many women during their college careers. We appreciate your sharing with us your personal solutions to these sometimes difficult issues. Please remember that your answers are completely anonymous, and be as honest and precise as you possibly can. If for any reason you find that you are unable to answer these questions, please note that fact on the form and continue on page 10.

17. Which of the following best describes your present romantic relationship status? (circle number)

1) SINGLE WITH NO CURRENT 'SIGNIFICANT OTHER' (SO)
2) SINGLE WITH SIGNIFICANT OTHER (SO), NOT ENGAGED
3) ENGAGED
4) LIVING WITH SPOUSE OR COHABITING (Go to number 19)
5) OTHER (please specify) _____

18. At the present time, how often are you dating, going out, or seeing your 'significant other'? (circle one answer)

1) ONCE A MONTH OR LESS
2) TWO OR THREE TIMES A MONTH
3) ONCE OR TWICE A WEEK
4) THREE OR MORE TIMES A WEEK
8) NOT APPLICABLE

19. Do you consider yourself to be sexually active? (circle one answer)

1) YES
2) NO

20. Have you ever had sexual intercourse? (circle one answer)

1) YES
2) NO

22. Have you had sexual intercourse within the past year? (circle one answer)

1) YES ——————> GO TO QUESTION 24, NEXT PAGE
2) NO

23. If you have not engaged in sexual intercourse within the past year, please choose the answer below that best describes your reasons: (circle one number)

    1) RELIGIOUS OR MORAL REASONS
    2) HAVE HAD NO DESIRE TO
    3) HAVE HAD NO OPPORTUNITY
    4) FEAR OF PREGNANCY
    5) FEAR OF SEXUALLY TRANSMITTED DISEASE
    6) OTHER (please specify)_____

The following questions ask about your interactions with your parents regarding sexual activity and contraception.

When your were growing up, did your parents...

24.	provide you with reading material regarding human sexuality?	YES	NO
25.	discuss sexual intercourse with you?	YES	NO
26.	discuss methods of birth control?	YES	NO

27. Do you know whether your parents used any form of contraception?

    1) YES, I KNOW ——————→ 28. If so, do you know which form?
    2) NO, I DON'T KNOW

    1) YES
    2) NO

Please rate the following items on a scale of 1 to 5, with 1 indicating that you strongly agree with the statement, and 5 indicating that you strongly disagree. (circle one per statement)

(1) STRONGLY AGREE
(2) AGREE
(3) NEITHER AGREE NOR DISAGREE
(4) DISAGREE
(5) STRONGLY DISAGREE

1 2 3 4 5	If I had a problem concerning contraceptive matters, I could count on my parents to be understanding.
1 2 3 4 5	My parents have never given me any information about contraception.
1 2 3 4 5	If I were to use a contraceptive, I would prefer that my parents not know about it.
1 2 3 4 5	I have discussed my contraceptive use thoroughly with my parents.
1 2 3 4 5	If my parents knew I used a contraceptive, they would think less of me.
1 2 3 4 5	My parents have encouraged me to use contraceptives.
1 2 3 4 5	I think my parents' ideas and beliefs about contraceptive use are very similar to my own.

PLEASE RATE THE FOLLOWING ITEMS REGARDING YOUR FRIENDS

1 2 3 4 5	If I had a problem concerning contraceptive matters, I could count on my friends to be understanding.
1 2 3 4 5	My friends have never given me any information about contraceptives.
1 2 3 4 5	If I were to use a contraceptive, I would prefer that my friends not know about it.
1 2 3 4 5	I have discussed my contraceptive use thoroughly with my friends.
1 2 3 4 5	If my friends knew I used a contraceptive, they would think less of me.
1 2 3 4 5	My friends have encouraged me to use contraceptives.
1 2 3 4 5	I think my friends' ideas and beliefs about contraceptive use are very similar to my own.

IF YOU HAVE NOT ENGAGED IN SEXUAL INTERCOURSE WITHIN THE LAST YEAR, PLEASE TURN TO PAGE 10.

30. If you have had sexual intercourse within the last year, how often, on the average? (circle one answer)

1) LESS THAN ONCE A MONTH
2) ONCE A MONTH
3) TWO OR THREE TIMES A MONTH
4) ONCE OR TWICE A WEEK
5) THREE OR MORE TIMES A WEEK

31. Have you had more than one sexual partner during the last year?

1) YES
2) NO

32. How often have you had intercourse within the last month?

1) LESS THAN ONCE
2) ONCE
3) TWO OR THREE TIMES
4) ONCE OR TWICE A WEEK
5) THREE OR MORE TIMES A WEEK

33. When you have had intercourse, how often was contraception used? (circle one number)

1) NEVER ...(0% of the time) ——→ IF YOU ANSWERED
2) RARELY...(01-24% of the time) NEVER, PLEASE
3) SELDOM...(25-49% of the time) ANSWER NUMBER 34,
4) OFTEN....(50-74% of the time) BELOW.
5) REGULARLY(75-99% of the time)
6) ALWAYS...(100% of the time)

34. If you have never used contraception, which of the following best describes your reasons? (circle number)

1) RELIGIOUS OR MORAL BELIEFS
2) DIFFICULTY OBTAINING CONTRACEPTIVES
3) IT ALL HAPPENED TOO FAST
4) OTHER (please specify)_____

35. When you have had intercourse within the last month, what percentage of the time were you expecting, anticipating, or planning that it would occur?

1) NEVER ...(0% OF THE TIME)
2) RARELY...(01-24% OF THE TIME)
3) SELDOM...(25-49% OF THE TIME)
4) OFTEN....(50-74% OF THE TIME)
5) REGULARLY(75-99% OF THE TIME)
6) ALWAYS...(100% OF THE TIME)

36. When a decision is made whether or not to use contraception, who usually makes that decision? (circle number)

1) I DECIDE TO USE CONTRACEPTION (includes pill and IUD)
2) WE DECIDE TOGETHER
3) MY PARTNER DECIDES
8) WE DON'T USE CONTRACEPTION

37. When you have used contraception during the past year, what method(s) have you used? Please indicate how often you have used each method.

NEVER means 0% of the time
RARELY means 01-24% of the time
SELDOM means 25-49% of the time
OFTEN means 50-74% of the time
REGULARLY means 75-99% of the time
ALWAYS means 100% of the time

(Circle one answer for each method)

		HOW OFTEN HAVE YOU USED THIS METHOD?					
1	Withdrawal.....	NEVER	RARELY	SELDOM	OFTEN	REGULARLY	ALWAYS
2	Rhythm.....	NEVER	RARELY	SELDOM	OFTEN	REGULARLY	ALWAYS
3	Foam, sponge, jelly.....	NEVER	RARELY	SELDOM	OFTEN	REGULARLY	ALWAYS
4	Condom.....	NEVER	RARELY	SELDOM	OFTEN	REGULARLY	ALWAYS
5	Foam and condom.....	NEVER	RARELY	SELDOM	OFTEN	REGULARLY	ALWAYS
6	Diaphragm and jelly.....	NEVER	RARELY	SELDOM	OFTEN	REGULARLY	ALWAYS
7	The pill.....	NEVER	RARELY	SELDOM	OFTEN	REGULARLY	ALWAYS
8	I.U.D.....	NEVER	RARELY	SELDOM	OFTEN	REGULARLY	ALWAYS
9	Other (please specify) _____	NEVER	RARELY	SELDOM	OFTEN	REGULARLY	ALWAYS

38. What percentage of the time do you (rather than your partner) determine what form of contraception is used? (sponge, condom, foam, etc.) (Circle one answer)

1) NEVER.....(0%)
2) RARELY.....(01-24%)
3) SELDOM.....(25-49%)
4) OFTEN.....(50-74%)
5) REGULARLY..(75-99%)
6) ALWAYS.....(100%)

39. What form of contraception did you use the last time you had intercourse?

1) NONE
2) RHYTHM OR WITHDRAWAL
3) FOAM, SPONGE, JELLY
4) CONDOM
5) FOAM AND CONDOM
6) DIAPHRAGM AND JELLY
7) THE PILL
8) I.U.D.
9) OTHER (PLEASE SPECIFY)_____

Please rate the following items regarding your most recent sexual partner: (circle one answer per statement)

(1) STRONGLY AGREE
(2) AGREE
(3) NEITHER AGREE NOR DISAGREE
(4) DISAGREE
(5) STRONGLY DISAGREE

1 2 3 4 5 My partner would understand if I refused to have intercourse until we had a contraceptive available.
1 2 3 4 5 My partner would think I was too eager for intercourse if I was contraceptively prepared for it.
1 2 3 4 5 I have discussed contraceptive use thoroughly with my partner.
1 2 3 4 5 My partner has never given me any information about contraceptives.
1 2 3 4 5 If a pregnancy should occur, my partner and I would handle it together.
1 2 3 4 5 My partner and I agree about whose responsibility contraception is.
1 2 3 4 5 If I had a problem concerning contraceptive matters, I could count on my partner to be understanding.
1 2 3 4 5 My partner and I have carefully planned our contraceptive pattern.
1 2 3 4 5 My partner would surely find it displeasing if I asked about contraception right before intercourse.
1 2 3 4 5 My partner would insist that we delay intercourse if no contraception was readily available.

The following questions will help us understand more about your beliefs and attitudes about family planning at this time in your life.

41. Have you ever been pregnant?

1) YES
2) NO ——————→ If NO, please skip to question 45.

42. If you have been pregnant, how many times?

1) ONCE
2) TWO OR MORE TIMES

43. If the pregnancy was unplanned, how was it handled? (circle answer number)

1) HAD AND KEPT THE BABY
2) ADOPTION
3) ABORTION
4) OTHER (miscarriage, etc., please specify)

_____

44. How many children do you have? (circle answer number)

1) 0
2) 1
3) 2
4) 3 OR MORE

45. Do you plan to have children (or more children) in the future?

1) YES ——→ How many? _____
2) NO
9) DON'T KNOW

46. At what age do you plan to have your first child? (If you have children already, please check the age you were when the first child was born) (Circle number)

1) UNDER 20
2) 20-25
3) 26-30
4) OVER 30
8) NOT APPLICABLE

47. How important is it to you to avoid pregnancy at this time in your life? (circle number)

NOT VERY IMPORTANT			VERY IMPORTANT
1	2	3	4

48. If you were to become pregnant now, how do you think it would be handled? (circle answer number)

1) HAVE AND KEEP THE BABY
2) ADOPTION
3) ABORTION
4) OTHER (please specify)_____
8) NOT APPLICABLE
9) DON'T KNOW

The next section asks for more general information about yourself and your background. If you have any other information or comments about your career and family planning, please use the space below to share your thoughts with us. We remind you that this form is completely anonymous, and your answers will help others to understand better how to advise college women like yourself.

The following are some questions about your background.

49. What is your present age:_____ YEARS

50. What is your current major? (Please be as specific as possible. For example: Anthropology, Math, English)

_____

51. What is your current career choice? (Please be as specific as possible. If you do not currently have a career choice, please indicate "none".)

_____

52. What is your cumulative grade point average (GPA)?

_____

53. Which answer best describes your present living arrangement? (circle number)

1) WITH PARENTS OR FAMILY
2) IN DORMITORY OR SORORITY HOUSING
3) IN APARTMENT OR HOUSE WITH ROOMMATES
4) ALONE, OFF CAMPUS
5) WITH SIGNIFICANT OTHER
6) WITH SPOUSE, ON OR OFF CAMPUS

54. What is your religious preference? (Circle number)

1) CATHOLIC
2) JEWISH
3) PROTESTANT (specify denomination) _____
4) OTHER . . . (specify) _____
5) NONE

55. How important is religion to you? (Circle number)

NOT VERY IMPORTANT			VERY IMPORTANT
1	2	3	4

56. How often do you attend religious services? (Circle number)

1) ONCE A WEEK OR MORE
2) OCCASIONALLY
3) ONLY ON SPECIAL DAYS
4) NOT AT ALL

The following questions refer to "mothers" and "fathers". If your living situation growing up did not include both biological parents, please answer regarding the adults who most influenced you and note who they were in the space below.

57. What is your Mother's educational level? (circle number)

1) LESS THAN HIGH SCHOOL
2) HIGH SCHOOL
3) SOME COLLEGE OR TECHNICAL TRAINING
4) COLLEGE GRADUATE
5) SOME GRADUATE WORK
6) ADVANCED DEGREE

58. What is your Father's educational level? (circle number)

1) LESS THAN HIGH SCHOOL
2) HIGH SCHOOL
3) SOME COLLEGE OR TECHNICAL TRAINING
4) COLLEGE GRADUATE
5) SOME GRADUATE WORK
6) ADVANCED DEGREE

59. How many brothers and sisters do you have? (Circle answer number)

1) 0
2) 1
3) 2-5
4) 6 OR MORE

60. When you were growing up, did your mother work outside the home?

1) YES, REGULARLY
2) YES, OCCASIONALLY
3) NEVER (Skip to 62)

61. If your mother was employed outside the home, how much would you say she enjoyed her job?

NOT AT ALL			VERY MUCH
1	2	3	4

62. How much would you say your mother enjoyed being a mother?

NOT AT ALL			VERY MUCH
1	2	3	4

63. Which of the following best describes your racial or ethnic identification?(circle number)

1) BLACK (NEGRO)
2) CHICANO/LATIN AMERICAN
3) NATIVE AMERICAN (AMERICAN INDIAN)
4) WHITE (CAUCASIAN)
5) ORIENTAL/ ASIAN-AMERICAN
6) OTHER--SPECIFY_____

Please rate yourself on the following characteristics, using the following scale.

1 = Never or almost never true of me

2 = Usually not true of me

3 = Sometimes but infrequently true

4 = Occasionally true of me

5 = Usually true of me

6 = Always or almost always true of me

____ Defend own beliefs	____ Have leadership abilities
____ Affectionate	____ Eager to soothe hurt feelings
____ Conscientious	____ Secretive
____ Independent	____ Willing to take risks
____ Sympathetic	____ Warm
____ Moody	____ Adaptable
____ Assertive	____ Dominant
____ Sensitive to the needs of others	____ Tender
____ Reliable	____ Conceited
____ Strong personality	____ Willing to take a stand
____ Understanding	____ Love children
____ Jealous	____ Tactful
____ Forceful	____ Aggressive
____ Compassionate	_____ Gentle
____ Truthful	_____ Conventional

Thank you for helping us with this project. If you would like to receive a summary of the results, please check the appropriate box on the enclosed postcard. Please do not put this information on the questionnaire itself. Also, if you would like to be entered in the drawing for the $30.00 dinner for two at Pistachio's, be sure to mark that on the postcard as well. The postcard should be returned through campus mail. Do not return it with the questionnaire. Mail it separately to insure your anonymity.

Thanks again for your participation.

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