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Social and Psychological Correlates of the Selection Or Rejection of Vasectomy

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SOCIAL AND PSYCHOLOGICAL CORRELATES
OF THE SELECTION OR REJECTION OF VASECTOMY

by

Steven Marc Ratnow

A Dissertation Submitted to the Faculty of the Graduate School
of Loyola University of Chicago in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy

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1974



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VITA

The author, Steven Marc Ratnow, is the son of Gerry and Pearl Ratnow. He was born January 15, 1945 in New York City, where he lived until admission into Emory University, Atlanta, Georgia, in September, 1962. After earning his B. A. with a major in psychology, he studied at the College of William and Mary, Williamsburg, Virginia, from 1966 to 1968, receiving an M. A. in psychology. His work toward the Ph. D. in psychology began in September, 1968, when he was awarded an assistantship at Loyola University in Chicago.

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In 1968, he married the former Sydney Solomon of Savannah, Georgia. They have one child, Jeffrey, two years old.

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CHAPTER I

MALE CONTRACEPTIVE SURGERY

Introduction

Over the last two decades world attention has been focused on population growth. From 1950 to the present, world population rose from 2.5 to more than 3.5 billion. At the current rate of increase, world population is expected to double in the next 35 years (Grindstaff & Ebanks, 1971) with ominous consequences for the supply of material and human resources, the pollution of the environment, and the sheer availability of living space.

While of obvious concern in developing countries already strained to their limits, rapid population growth has begun to preoccupy industrialized nations as well. In the United States, for example, only during the decade of 1930-1940 has there been a net decline in the reproduction rate. These years were characterized by severe economic depression and a low marriage rate among persons over age 18 (Borland, 1972). The post-World War II years brought an era of rapidly expanding population. At first, the trend was encouraging. The "baby boom" was hailed as an economic bonanza. As time went on, however, the increase in population began to cause concern. In a single generation the population had grown by some sixty million. A certain relief was noted when it was discovered that by the late 1960's the birth rate had once again fallen to a level below that of any year since 1950.

Westoff (1972), reporting on the 1970 National Fertility Study, found a dramatic decline in the number of unwanted children per 1000 woman-years of exposure to pregnancy risk. The decline was not attributable to a large increase in the number of couples employing contraception; the proportion of couples using contraceptives had risen only 1.1% between 1965 and 1970 (from 63.9% to 65%). The reduction in the number of unwanted children stemmed primarily from consistent and effective use of contraception. Borland (1972), commenting on the same phenomenon, stated, "Of all children born in 1968, the proportion who were born third, fourth or fifth in the family was the lowest since 1940 (p. 163)." Family size, at this point, is clearly shrinking.

During the last decade, the drop in the reproduction rate in the U.S. has been linked with a shift in methods by which family size is being limited. There has been decreased reliance on coital methods of contraception, e.g., condom or diaphragm, and a corresponding increase in non-coital contraception (Borland, 1972). In 1965, about 37% of the couples surveyed in the National Fertility Study were using non-coital methods of contraception (intrauterine devices, ovulation suppressors or sterilization). By 1970 the prevalence of non-coital contraception had increased to 58%, with a concomitant decrease in the use of coital methods such as condoms, diaphragms, spermicidal agents and withdrawal (Westoff, 1972).

Among the non-coital methods of birth control, there has been a dramatic increase in surgical contraception, particularly among couples in which the wife is aged 30-44 (Westoff, 1972). A survey conducted by the Association for Voluntary Sterilization predicted that 550,000 vasectomies would be performed in 1970 alone (De Lee, 1970). A post-

1970 estimate of 320,000 male sterilization procedures for 1970 was made by Bumpass and Presser (1972).

Despite its increased prevalence, vasectomy has attracted relatively little psychological research. Many of the available reports have focused on the apparent reasons for and on the aftereffects of the surgery, rather than on the characteristics of those who choose vasectomy. Accordingly, this study examined some psychological and sociological variables correlated with the selection or rejection of vasectomy as a form of family planning. Three different groups of married couples were surveyed: 1) those who have never thought of vasectomy, 2) couples who had seriously considered vasectomy but then decided against it, and 3) couples who chose vasectomy as a form of birth control. The criterion variables were certain personality features of the husbands and wives, the innovative nature of the vasectomy procedure, health-related data, and the influence of significant others on the choice of male sterilization. It was hypothesized that the choice of vasectomy or its rejection is related to personality and social psychological variables defining the couples. An attempt was also made to relate the findings to broader issues of personality theory.

The Nature of the Surgery

Vasectomy (a misnomer, strictly speaking, since the vas deferens is severed, but not entirely removed) is categorized as minor surgery and is often performed on an outpatient basis, rather than in a hospital. A variety of surgical techniques are available. Surgery essentially involves cutting the vas in the scrotal sac. The effect of the procedure is to block the passage of sperm cells from the testes to the seminal vesicles.

Ejaculation still takes place and for all practical purposes is unaffected since the sperm account for less than 5% of the volume of the ejaculate. Usually, only a local anesthetic is administered and the entire procedure seldom requires more than 30 minutes. No important physical sequelae have been noted other than the anatomical effects of severing the vas. From time to time, however, voices are raised on the possible connection of vasectomy with later illness. Proponents of surgical contraception have, however, vigorously denied any serious medical aftereffects. The unusual autoimmunization effect on the sperm generated post-vasectomy probably has greater implications for fertility after reanastomosis (rejoining of the severed ends of the vas) than for general physical health (Shulman, 1972).

As usually performed, vasectomy should be permanently effective, though there are a few recorded instances where the ends of the severed vas grow together spontaneously. When reanastomosis does occur, it is most often attributed to failure in surgical technique (Livingstone, 1971). As a contraceptive method, vasectomy is usually presented to the interested couple as irreversible.

History and Prevalence of Vasectomy in the United States

The earliest reported vasectomy, in 1897, was done with no other purpose than that of alleviating infection of the prostate gland. There was no impairment of sexual vitality or physical health as a result of surgery, although it was reported that men were rendered infertile. For a time, the technique gained currency as a method of rejuvenation whereby virility was supposedly prolonged (Borland, 1972). This claim was discredited in the 1920's.

The primary importance of vasectomy during the first 30 years of this century was eugenic, a means of preventing the inheritance of known genetic diseases and stopping the procreation of mental retardates and criminals (Parker, 1967). For many years, the legality of voluntary vasectomy as a contraceptive method, however, was in doubt, at least in the minds of the medical profession. State laws varied, some forbidding it outright, some requiring explicit medical grounds and others apparently leaving the issue to the judgment of the doctor and patient. Particularly in the Western United States, nonetheless, vasectomy began to be less of a rarity by the late 1930's (Poffenberger, 1963).

Despite legal ambiguities, the prevalence of vasectomy has slowly increased, particularly since 1960 when only 2% of American males whose wives were ages 18-39 had had vasectomies (Campbell, 1964). Ferber, Tietze and Lewitt (1967) reported that 45,000 vasectomies were done in 1967. By 1970 the number of vasectomized men in the U.S. had risen to 5% of the total married population (Westoff, 1972). Phillips (1971), analyzing a sample of white wives (ages 20-54) from San Francisco suburbs, found that 16% of their husbands had been vasectomized. She reported that some 10% of all married males in the Western states had been surgically sterilized. Nevertheless, the national prevalence of vasectomy is still low when compared to that of the use of ovulation suppressors, for example (22%) (Westoff, 1972).

Most vasectomized American men are between 30 and 40 years of age (Campbell, 1964; Ferber, Tietze, & Lewitt, 1967; Lear, 1972; Rodgers, Ziegler, Rohr, & Prentiss, 1963). The age range of vasectomized men in Canada (Grindstaff & Ebanks, 1971), India (Bhandra, 1969; Bhatnagar, 1964) and England (Simon Population Trust, 1969) parallels that of the

U.S. Most vasectomized men have been married 8-16 years, have three or
four children and are Protestant.

Reviewing five studies in this country between 1963 and 1967, Presser (1970) found the proportion of vasectomized Catholics to be less than would be expected on the basis of their representation in the population at large. A more recent report by Bumpass and Presser (1972), based on the 1970 National Fertility Study, was confirmatory. The prevalence of contraceptive surgery was twice as high among couples both of whom were Protestant, as among "Both Catholic" couples.

Estimates of the educational and socioeconomic levels of vasectomized men in this country vary across different studies (Ferber, Tietze & Lewitt, 1967; Landis & Poffenberger, 1966; Phillips, 1971; Westoff, 1972). It appears, however, that men with higher incomes and more schooling are more likely to be vasectomized than are men from the general population. Black men are distinctly underrepresented, however, at all levels of education and income (Bumpass and Presser, 1972).

Reference Groups and Sources of Information

Poffenberger and Poffenberger (1965) have devised a conceptual model for the adoption of vasectomy. Their schema relates the influence of different types of communication to the psychological readiness of the individual to undergo surgical contraception. Thus, institutional communication (official attitudes of political and religious groups in the culture) and interpersonal communication (beliefs, myths and the opinions of friends, relatives and acquaintances) interact with one's feelings and motivation concerning sterilization. Given the availability of vasectomy, a person who experiences positive communication about the procedure from his culture and subgroup is more likely to undergo surgery than a person receiving conflictual or negative messages.

Bogue (1967) has observed that a person's perception of what others think of his behavior -- not the "true facts" regarding public opinion -- affects the choice of contraceptive. Birth control procedures, being so intimately involved in one's role as spouse, parent and group member, are particularly liable to the influence of the perceived cultural and reference group values.

Rosario (1971) has also stressed the importance of the potential user's perception of social support from relevant and influential reference groups, accurate or not. Among the Taiwanese studied by Palmore and Freedman (1969) to cite one example, the opinion that modern

contraceptive techniques were socially unacceptable was widespread at the very time that large numbers of leaders and common people were in favor of family planning. The lag between adoption of a practice and wide recognition of its prevalence accounts for the force of "pluralistic ignorance" in shaping decisions regarding family planning.

Institutional and interpersonal communications may sometimes clash. Though institutional emphasis on birth control has been exerted by the Indian government, for example, its effect has been negated by group mores. As Poffenberger and Poffenberger (1965) have noted

Whatever action most Indians take is considered primarily in terms of what effect it will have on members of the extended family and caste group - no matter what may be their own personal desires. If a man goes against the mores of the group, not only his own status is affected, but that of his family as well (p. 341).

Information about opinions of vasectomy, their accuracy, the source of information and its credibility also bear heavily on the decision for or against the procedure. Research done in India (Bhandra, 1969; Bhatnagar, 1964; Chitre, 1964; Kapil, 1968; Poffenberger & Poffenberger, 1962) uniformly revealed that over 40% of the vasectomized men who were studied obtained their information from formal sources such as doctors, social workers and clinic literature, i.e., from credible, authoritative sources.

Other Indian investigators, including Kapil (1968) and Bhandra (1969), have emphasized the importance of other communication channels in the dissemination of vasectomy information. In Bhandra's study, 38% of the vasectomized men had originally heard of vasectomy through friends and acquaintances. Poffenberger and Poffenberger (1962) found that almost all the 56 men they questioned knew their friends' or relatives' attitudes toward vasectomy to be favorable. The most conclusive evidence supporting

the effect of group mores on the choice of contraceptive method was presented by Kapil (1968). In his study, the vast majority of men who underwent surgical sterilization had received information about the procedure from other vasectomized men, friends, or relatives, while a majority of those who did not keep appointments had heard of vasectomy only from government sources and clinic social workers.

Grindstaff and Ebanks (1971) and Ferber, Tietze and Lewitt (1967) reported that 50% of the men in their studies had learned of vasectomy through friends, relatives, or acquaintances. They emphasized, as did Bhandra (1969), the importance of informal communication as a determinant of the selection or rejection of vasectomy. As Grindstaff and Ebanks (1971) observed, "Wife, friend and doctor -- the word-of-mouth communication -- is the single most important first step in diffusion (p. 406)." They reported that 72% of the vasectomized men they studied knew at least one other vasectomized male. Similarly, Spillane, Gillespie and Ryder (1973) found that 85% of the men who had been surgically sterilized and 76% of those who were seriously considering contraceptive surgery knew someone who had had a vasectomy.

Word-of-mouth is particularly relevant to ultimate decision making about vasectomy because of unfavorable attitudes towards and widespread misinformation and ignorance about the procedure. Rodgers, Ziegler and Levy (1967) tapped prevailing attitudes toward vasectomy by having their subjects rate a description of a hypothetical middle-class American couple. The descriptions were similar for all raters, but some were told the couple had had a vasectomy, while others were led to believe that the couple was using ovulation suppressors. An adjective check list and a person description scale were completed by each rater in evaluating

the couple. Significantly less favorable descriptions were assigned to the vasectomy couple than to the couple using "the pill."

Similarly negative attitudes towards vasectomy have been demonstrated among even a supposedly sophisticated sample. In a study of Cornell University students and faculty, 84% of the 1059 respondents favored limiting family size, but only 6% chose vasectomy as the preferred contraceptive method. Fifty-two percent of the males said they would never have a vasectomy, even after reaching their desired family size. There was clear evidence of widespread prejudice against sterilization in this group of well-educated members of a university community. Misinformation about sterilization prevailed even among the Biology faculty, where 14% of those sampled were certain that vasectomy eliminates the male's ability to ejaculate -- a patent fallacy. Other popular misconceptions about the effects of male sterilization included the notions of consequent loss of virility, change of voice and interference with male orgasm (van Tienhoven, Eisner, & Rosenblatt, 1970).

Despite signs of growing public acceptance, the American attitude toward vasectomy remains a compound of mild disfavor, skepticism and ignorance. By the time they act upon their decision, the candidates for male sterilization are usually no longer typical of the general population in their knowledge of and attitudes toward the procedure. Men who choose vasectomy seem most likely to have known others who have been vasectomized or, at minimum, belong to one or more reference groups that approve of male sterilization.

Psychological Variables

Motivation and Rejection

The primary motives for seeking a vasectomy are economic reasons (Banerji, 1961; Bhatnagar, 1964; Ferber, Tietze, & Lewitt, 1967; Grindstaff & Ebanks, 1971; Landis & Poffenberger, 1966), dissatisfaction with current contraceptive procedures (Grindstaff & Ebanks, 1971; Landis & Poffenberger, 1966; Rodgers, Ziegler, Prentiss, & Martin, 1965) and the desire to limit family size (Chitre, Saxena, & Ranganathan, 1964).

Among those choosing vasectomy there is a higher than average history of failure with previous contraceptive techniques (Grindstaff & Ebanks, 1971; Landis & Poffenberger, 1966; Simon Population Trust, 1969). Grindstaff and Ebanks (1971) noted that over 47% of the couples they studied reported having more children than they wanted. Indeed, an average of 1.4 unplanned children had been born to those vasectomized couples before they elected surgical contraception. A comparable result was reported in a British study of vasectomy (Simon Population Trust, 1969). Over 50% of the sample reported previous contraceptive failure, with the resultant average of 1.3 unwanted children.

There has been some speculation, as well, about "irrational" motives on the part of husband, wife, or both for selecting vasectomy. Wolfers (1970), in an ironic cataloguing of these supposedly "deep" urges, included fear of responsibility of raising children, the desire

to deprive the wife of a child, and the wife's desire to castrate her husband symbolically. These notions, derived primarily from psychoanalytic theory and some clinical reports, were dismissed by Wolfers as unfounded concerns of psychiatrists with vivid imaginations.

There are no findings directly supporting the influence of "irrational" motives in the preference for vasectomy. Nevertheless, their reality can not be discounted out of hand. The repercussions of vasectomy (to be described fully in a later section) have been demonstrated on occasion to be psychologically significant and sometimes harmful, however benign the purely medical aftereffects.

There exist only a few studies specifically relevant to the phenomenon of rejecting the decision to undergo male surgical contraception. These investigations focus on program "dropouts" or on the retrospective qualms of people who had undergone the surgical procedure. Typically, research has focused on demographic variables (for example, Bhatnagar (1964) found that more highly educated people were less likely to reject surgery), motivation and fears (Kapil, 1968; Landis & Poffenberger, 1966) and the psychosexual impact of symbolic genital mutilation (Ferber, Tietze, & Lewitt, 1967; Hammer, 1953; Ziegler, Rodgers, & Prentiss, 1969).

Bhatnagar (1964) studied 271 "dropouts" among 671 applicants for male sterilization in India. The major reasons for their not electing surgery were poor hospital facilities, conflicting religious beliefs and misconceptions and fears about the procedure. Unfortunately, the study does not detail the nature of the fears. However, Grindstaff and Ebanks (1971) did delineate the nature of the preoperative fears and misconceptions recalled by a sample of Canadian men who had been vasc-

tomized. Of the 401 men questioned retrospectively, 36% reported fears of reduced sex drive, 31% feared loss of sexual enjoyment and 38% expressed concern over the operation itself; in the typical case, multiple concerns were elicited. Interestingly, fear of pain is not reported in other studies as a significant deterrent to the choice of surgical contraception.

Kapil (1968), in an action-oriented study designed to change the practice of family planning welfare centers in Bombay, found that about half the "dropouts" who had not kept their appointments had never actually made them voluntarily in the first place; over-zealous field workers had not carefully checked the true level of motivation and commitment on the part of prospective patients. For others, who were ostensibly more convinced, Kapil's findings (based on a small sample) produced two indicators: the rejectors tended to give fewer reasons for the initial decision to have surgery than did those who kept their appointments; they tended, as well, to have received their information from official sources, rather than from friends or relatives.

The causes of rejection probably fall under the general rubric of motivational and counter-motivational factors. It is the rare case, however, when a single reason is enough either to impel one towards an important decision or dissuade one from it. In the typical study, the multiple reasons provided by subjects for choosing surgical contraception are usually complementary or aimed at different levels of abstraction. "Not wanting any more children" is a more global statement than the perhaps equally compelling "My wife can't take the pill," or "We had a pregnancy scare." The first reason justifies contraception while the second and third reasons address themselves to the causes behind changing

contraceptive measures. In the same sense, reasons for abandoning the decision in favor of vasectomy can vary from second thoughts about family planning or a reassessment of the virtues and drawbacks of different contraceptives to the more concrete explanations for having missed or cancelled an appointment at a particular time and clinic.

An illustration of the range of motives pro and con regarding surgical contraception is the report of Landis and Poffenberger (1966). In a retrospective study of 330 SS, about one-sixth of the patients who had undergone a vasectomy at the hands of a single California urologist over a five-year period, six reasons were given by the respondents for having the surgery: medical, economic, increase in sexual pleasure, untrustworthiness of other methods, their being too old to have more children and their wives' reluctance to have sexual relations as things stood. The authors did not indicate whether the reasons were abstracted responses to open-ended questions or were tabulations of multiple choice items. The latter seems more likely. Their hesitations and worries over surgery and those of their wives (which would throw light on the causes of rejection in others) were also gathered via an 18-item check list. The worries varied from religious questions (more often adduced by Catholic men than by Protestants) and general qualms about limiting family size or the permanence of later infertility to hesitancy over the effectiveness of surgery. Poffenberger and Poffenberger (1965) have distinguished between "primary" and "secondary" motivations, the first referring to the limitation of fertility, and the second to the specific choice of vasectomy. A more multi-leveled model for both motives and hesitations, however, is probably needed.

Analogues to surgical contraception "rejection" may be sought in the general family planning literature. Greer, Cole and Woodward (1971), for example, in a study which compared women who kept a post-partum family planning clinic appointment with those who missed, found no essential differences between the groups in terms of background and demographic factors. Relative to the "continuers," the women who did not keep their appointments, however, perceived the contraceptive methods offered by the clinic as somewhat less effective, saw the clinic as somewhat less valuable and inviting and were more concerned with possible infringements upon their rights to decide for themselves about family planning methods. While the similarity is far from perfect, the mothers who missed appointments are roughly analogous to those who consider but then decide against a counseling appointment regarding surgical contraception.

It is clear, at any rate, that both the predisposing and immediate factors, conscious and unconscious, must be explored to understand the change of heart regarding male contraceptive surgery (Edey, 1972). No simple schema will do.

Aftereffects

The aftereffects of vasectomy have been ascertained by a variety of techniques, including follow-up questionnaires, interviews and psychological testing.

Questionnaire studies. A follow-up questionnaire study by the Simon Population Trust (1969) noted that 99% of 1012 vasectomized respondents would recommend the procedure to others as a form of birth control.

The remaining 1% had no personal regrets about the surgery, but could not recommend it because of shyness or their perceived lack of authority. Improved sexual gratification was reported by 73% of the men. A majority of them did not notice any change in their general health following vasectomy, but 31% of their wives were reported to have improved health. The authors attributed the latter finding to a reduction of anxiety among the wives over the risk of pregnancy.

The unusually benign aftereffects and enthusiastic patient endorsements of vasectomy are replicated in other studies, as well. In the sample of 401 vasectomized Canadian men studied by Grindstaff and Ebanks (1971), 98% said they would have the surgery again, knowing what they now knew. In addition, 73% of the men reported an increase in sexual enjoyment. Bhatnagar (1964) recorded somewhat similar findings. He found no reported change in the general health of 76% of the 341 men he interviewed; the 10% who reported improved health attributed the change to the vasectomy and its effect of freeing them from worries about pregnancy. Sexual satisfaction remained unchanged for 67% of the men, 20% reported increased sexual satisfaction, while only 12% experienced some sexual difficulties (including two cases of impotence). Landis and Poffenberger (1966) also reported an increase of sexual desire and enjoyment among SS following vasectomy, with no incidence of impotence.

More recent American studies confirm these reports of greater sexual pleasure post-vasectomy. Freund and Davis (1973) noted increased sexual desire and satisfaction and a substantially higher coital frequency among vasectomized men than would be expected for men in their age group who are not surgically sterilized. Similar findings were noted by Uehling and Wear (1972) and by Nash and Rich (1972). In the latter study,

44% of the 68 couples sampled in the follow-up questionnaire acknowledged greater sexual enjoyment and increased sexual activity following vasectomy.

A landmark follow-up investigation was that of Ferber, Tietze and Lewitt (1967) who found the vast majority of the 73 men in their sample to be satisfied with the procedure. Only 15 men suffered minor complications. Sixty-two men reported no change in their general health, but 53 said they were happier and more stable since surgery. When asked if they would undergo surgery again, knowing what they now knew, only one man said he would refuse. Two-thirds of the sample saw themselves as less sexually inhibited following surgery; over three-quarters of the men described their wives as sexually freer since the vasectomy. Interestingly, a significant increase in reported coital frequency (from a mean of 8.4 to 9.8 times per month) prevailed for a long period following surgery -- the men were interviewed, on the average, four years after their vasectomy. The expected coital frequency for men in this age group should have decreased over time, rather than increased.

Only two men said they would not recommend the operation to others. However, 38 men had not, in fact, recommended vasectomy to their friends or relatives, despite their allegedly high satisfaction with the procedure. In fact, 25 men did not even tell anyone about having the surgery. Tension, discomfort and defensiveness were characteristic of almost all Ss around publicly acknowledging that they had been vasectomized. Vasectomy, the authors concluded, diminished self-esteem and stimulated infantile fears and fantasies of impotence and castration. While reluctant to confront the possible disapproval of others, the sterilized men were nevertheless able to cope privately with their own feelings.

Interview studies. Follow-up interviews yield a generally quite favorable impression of post-vasectomy adjustment. Garrison and Gamble (1950) reported that 47 of the 50 men they studied expressed satisfaction with vasectomy. Poffenberger and Sheth (1963) found 87% of their Ss to be fully satisfied with the procedure. Of the men studied by Poffenberger and Poffenberger (1962), 78% felt they would recommend the surgery to others. Rodgers, Ziegler, Altrocchi and Levy (1963) reported that only one of the 41 men in their sample expressed dissatisfaction with the vasectomy. Lear (1972) also found nearly unanimous satisfaction with male sterilization among his patients. He cautioned, however, that the expression of later satisfaction is made more likely by the very painfulness of the original decision to undergo surgery. Cognitive dissonance may be operating to influence the quality and enthusiasm of their post-vasectomy testimonials.

More pessimistic conclusions regarding aftereffects have also been reported. Lee (1966), a Korean researcher, found that despite general satisfaction with vasectomy, 20 of 240 men developed "post-vasectomy neuroses," ascribable to the confusion of vasectomy with castration. Johnson (1964), who studied 83 psychiatric patients hospitalized within one year after vasectomy surgery, found that sterilization "... did seem to play a precipitating role in the illness of 11 men (p. 485)." The effect of vasectomy was unclear for the remainder of the sample.

Apte and Gandhi (1970) found that 16% of the men they studied saw themselves as more nervous and irritable following surgery. Wig, Singh, Sahasi and Isaac (1970) noted that 20% of the 82 men they interviewed developed moderate to severe physical symptoms attributable to psychological causes following surgical sterilization. Parker (1967) provided case history data of marital discord following vasectomy. He suggested that

the response to castration anxiety and the loss of one's reproductive capacity is crucial in determining the nature of post-vasectomy adjustment. Rainwater (1960), in a wide-ranging discussion of sexuality and contraception, has stressed that the ability to impregnate (and be impregnated) signifies adult maturity to the individual. A threat to procreative capacity could, thus, produce the adverse effects noted in some studies of vasectomy. It is interesting, in this view, that the blow to one's self-image as a completely mature adult might fall heavily on either or both spouses in a marriage rendered infertile by surgery. Fitzgerald (1972), in an impressionistic report, has remarked upon the tendency for wives of vasectomized men to develop somatic complaints such as dysmenorrhea and pelvic pain.

Psychological testing. Much of the information from psychological testing on the aftereffects of vasectomy has emerged from a series of investigations begun at the Scripps Foundation, La Jolla, California by Ziegler, Rodgers and their colleagues. In their initial study (Rodgers, Ziegler, Rohr, & Prentiss, 1963) male Ss completed, prior to surgery, the Minnesota Multiphasic Personality Inventory (MMPI) and a questionnaire designed to elicit demographic data and reasons for choosing vasectomy. The MMPI scores for almost all the men were within the normal range. The highest mean score was for the K (correction) scale, implying to the authors that the group had relatively good ego strength. A substantial clustering of low scores on the Mf (Masculinity-Femininity) scale suggested compensatory or exaggerated masculinity in the face of a decision with overtones of demasculinization. The entire group was seen as having chosen vasectomy for primarily rational reasons, though their possibly latent emotional concerns might be identified by follow-up.

In a study of the same group one year post-operatively, the MMPI and a post-vasectomy questionnaire were administered to the 35 men (Rodgers, Ziegler, Altrocchi, & Levy, 1965). Consistent with other studies, the majority reported no change in sexual functioning. Eight men reported improvement, but seven indicated functioning to be worse. Interestingly, however, only one man went as far as to express dissatisfaction with the operation. The mean change in the MMPI profiles indicated significantly more dysphoria, anxiety and defensiveness than had been evinced pre-operatively. [It should be noted at this point, as Wiest and Janke (1972) have discerned, that statistically significant differences on the MMPI do not necessarily reflect clinically significant changes.] Those scoring highest on the Hs (Hypochondriasis) scale prior to surgery were significantly more likely to show negative post-operative changes.

The authors speculated that the negative effect of surgery may have been due to changes in "body image" and ongoing concern over physical health and perceived loss of masculinity. The discrepancy between expressed satisfaction and negative changes was explained by invoking dissonance reduction theory: the couples, having voluntarily submitted themselves to the discomfort and risks of the irreversible procedure, had psychologically invested a great deal in its successful outcome. These considerations would prompt them to endorse surgery rather than admit to the error of their original choice.

Ziegler, Rodgers and Kriegsman (1966), in a further study, administered the California Psychological Inventory (CPI), a structured interview and a self-description scale to a group of 22 "vasectomy couples" and a matched group of couples who had begun using ovulation suppressors.

Pre-operative data failed to differentiate between the groups except for the scores on the So (Socialization) scale of the CPI, where control men scored significantly lower than the vasectomized men.

Following surgery, however, differences between the groups did appear. The vasectomy husbands took a more stereotyped masculine role, were more assertive and socially ascendant and more likely to deviate from societal norms than their counterparts in the "pill" group. The wives of the vasectomized men were more anxious and compliant than their control counterparts. Husbands and wives were more anxious, vulnerable to physical ills and less conforming than control husbands and wives. The general level of adjustment for the control group was considerably better than for the vasectomy group. The operation was seen as demasculinizing; men overcompensated by becoming "culturally masculine."

On a four-year follow-up evaluation, however, the couples using ovulation suppressors and the vasectomy couples did not differ significantly on most variables (Ziegler, Rodgers, & Prentiss, 1969). In the main, the negative aftereffects of vasectomy appeared to have dissipated. One finding, however, deserves attention. Husbands of women using "the pill" showed the anticipated negative relationship between frequency of intercourse and reported sexual difficulties. The vasectomized men who reported increased sexual problems, on the other hand, showed highest frequency of intercourse. The discrepancy supports the inference that the increased-problems, increased-frequency group responded counteractively by becoming more "culturally masculine" and more sexually demanding in an attempt to deny feelings of loss of masculinity.

In sum, then, large-scale studies using questionnaires, interviews and psychological tests of the aftereffects of surgical contraception are virtually unanimous in showing overwhelming expressed satisfaction with the procedure on the part of both husband and wife. The literature attests, in addition, to "no change" or "improvements" in subsequent general health, sexual satisfaction and desire, and marital harmony.

The reported exceptions to the generally neutral or positive responses to vasectomy may, in some instances, be a function of the nature of the sample studied. It is not surprising, for example, that hospitalized psychiatric patients and their wives would be more likely to find a procedure like vasectomy a source of stress and dissatisfaction (Johnson, 1964; Johnson & Miller, 1970). Hammer (1953), in a study that has been seemingly ignored and never replicated, found reflections of some "castration anxiety" in the House-Tree-Person drawings after vasectomy, but Ss were institutionalized, typically of low IQ and eugenically sterilized, rather than genuine volunteers for contraceptive surgery.

Nevertheless, the occurrence of rigidity in conjugal roles and masculine protest (Ziegler, Rodgers, & Prentiss, 1969), somatic complaints among wives of vasectomized men (Fitzgerald, 1972) and among the men themselves (Apte & Gandhi, 1970; Wig, Singh, Sahasi, & Isaac, 1970) following vasectomy can not be dismissed lightly. Some men and their spouses are detrimentally affected by the surgical procedure.

Personality Characteristics

Rodgers and Ziegler (1968) suggested that the selection of a particular contraceptive method is related to both individual and family dynamics. According to the authors, where the husband is ascendant and more socially and intellectually effective and the wife is more subordinate,

a male-centered technique is likely to be chosen by the couple. In families where the wife is relatively more ascendant, conscientious and responsible, feminine contraception is more satisfactory. What traits, in fact, characterize men choosing vasectomy?

Rodgers, Ziegler, Rohr and Prentiss (1963) administered MMPI's pre-operatively to 46 men who had consulted with private urologists and requested vasectomies. In general, the range of scores was within normal limits. The highest mean score was on the K scale (indicative of ego strength, as interpreted by the authors), followed by scores on Hy (Hysteria) and Pd (Psychopathic Deviate). A small subgroup showed relatively low scores on Mf (Masculinity-Femininity), suggesting a possible counteractive or exaggerated masculinity. Other subgroups were characterized by a relatively high score on the D (Depression) scale or a score above 60 on the L (Lie) scale, implying some naivete.

In a later study of both husbands and wives, Ziegler, Rodgers and Kriegsman (1966) found no MMPI differences in comparing 22 couples who had elected vasectomy with a matched sample of those beginning to use ovulation suppressors. The scores had been estimated from the CPI, which includes many items from the MMPI. On the CPI itself, which was administered pre-operatively, the wives of the two groups did not differ significantly, nor did the men except for higher So scores on the part of the vasectomy group husbands. The vasectomized men were seen as less conforming, more responsible and trusting of others than were the controls. No important differences were found on a number of instruments, including a "self-description scale" consisting of close to 80 items.

Unlike the above investigation, which studied a limited N, Grindstaff and Ebanks (1972) surveyed the personality characteristics of a fairly large sample of candidates for vasectomy (N=257). Unfortunately, from the point of view of cumulative knowledge, the authors did not use either the MMPI or the CPI, but the Personality Research Form (PRF) developed by their colleague, Jackson, at the University of Western Ontario. Without a control group as such, Grindstaff and Ebanks compared the PRF scores of the Ss, who were recruited from the private practices of two Canadian urologists, with normative data from over 1,000 male university students from various parts of North America. In general, Ss tended to be somewhat older, more affluent and have more children than a random group of householders surveyed not long before in the same city.

Table 1 shows the differences on 14 of the 15 PRF scales between the vasectomy group, tested pre-operatively, and the "control" group (the normative sample).

TABLE 1

High and Low Personality Research Form Scores of
Candidates for Vasectomy Relative to "Controls"
(From Grindstaff & Ebanks, 1972)

High Scores	Low Scores
1. Achievement	2. Affiliation
6. Endurance	3. Aggression
8. Harm-avoidance	4. Autonomy
10. Nurturance	5. Dominance
11. Order	7. Exhibition
	9. Impulsivity
	12. Play
	13. Social Recognition
	14. Understanding

The pattern of scores depicts vasectomized men as future-oriented, planful and capable of deferring gratification. They are innovative and nonconforming, though not revolutionary in their attitudes. They persevere, as well, at a goal after having carefully considered the consequences of their actions.

Overview

Currently, there are no accurate predictors of the psychological "success" or "failure" of vasectomy. Clinical contraindications for vasectomy include disagreement with one's spouse over its advisability, a seriously floundering marriage (Ferber, Tietze, & Lewitt, 1967), the husband's demonstrated previous unwillingness to accept responsibility for contraception (Ziegler, Rodgers, & Prentiss, 1969) general immaturity (Wolfers, 1970) and demonstrated psychiatric problems (Johnson, 1964).

Clearly, the fragmentary and sometimes conflicting findings on outcome point to the need for additional clarity as to the types of people who choose vasectomy, their motives and the circumstances surrounding the decision. There are several salient features related to the choice or rejection of vasectomy which do emerge (though somewhat equivocally) from the literature:

1. Personality characteristics. The findings of Grindstaff and Ebanks (1972) and Ziegler, Rodgers and Kriegsman (1966) converge on the notion that vasectomized men (and their wives, in some instances) are planful and future-oriented. Those choosing male sterilization make their own decisions, feel capable of directing their own lives, are apparently resourceful and achievement-oriented and are able to defer gratification.

The complex of traits seems related to those measured by the Internal-External (I-E) Locus of Control Scale (Rotter, 1966) reflecting the degree of control experienced by the individual over environmental exigencies. "Internal control" refers to one's perception of events as being the result of one's own actions; the opposite extreme, "external control," points to viewing events as unrelated to one's own behavior and more influenced by destiny, chance or the actions of others.

Externals have thus been found to be less trustful (Joe, 1971), more subject to debilitating anxiety and less able than Internals to react constructively to frustration (Butterfield, 1964; Ray & Khatan, 1968) and to lack self-confidence. In contrast to Internals, Externals are less likely to attempt to control their environment (Phares, 1965) and make fewer attempts to seek information (Davis & Phares, 1967). Joe (1971) noted that Internals show strong tendencies to adopt behavior patterns which facilitate personal control over life situations. Internals have the capacity to delay gratification and to confront their difficulties by direct action, adjusting their behavior as they gain experience (Baier, 1961). Lefcourt (1972) found that Internals were more likely to withstand pressure to behave in a circumscribed manner and to listen carefully to reasoned arguments, irrespective of the prestige of the source of information.

The traits measured by the I-E scale are closely allied to the feelings of efficacy and inner-directedness reported in the literature for couples choosing vasectomy. In the only study directly relating contraception to locus of control, MacDonald (1970) found that single women who practiced birth control were more likely to be Internals than their sexually active counterparts who took no contraceptive measures. Among

married women, there was not a significant relationship between locus of control and contraceptive use. MacDonald suggested that the study be replicated with better controls.

In an intensive clinical study, Keller, Sims and Henry (1970) used the Thematic Apperception Test (TAT), incomplete sentences and an open-ended interview to explore feelings of efficacy, capacity to plan ahead, perception of others, perception of self and need for achievement among 20 couples -- 10 contraceptive "users" and 10 "non-users." Users were characterized by high achievement motivation, a capacity for forethought and a feeling of being able to control their lives. The non-users felt unable to determine their own destiny, were not planful and were more likely to anticipate rejection by others. Though the authors correctly point to the exploratory nature of the study and its limited generalizability (the sample studied only 20 couples, all of whom were lower class blacks), their findings do coincide with the characteristic planfulness, goal orientation and perseverance of vasectomized men reported in the literature.

HYPOTHESIS I

On the dimension of "internal" to "external" those choosing vasectomy are most internal followed by those who consider, but reject the surgery and those who have never considered the procedure (who are the least internal).

2. Innovation. Male surgical contraception meets at least two of the three criteria commonly used to determine an object's status as an

innovation: perceived novelty, relative unpopularity and recency.

Vasectomized men are referred to as innovators by Grindstaff and Ebanks (1971). Campbell (1964), Ferber, Tietze and Lewitt (1967) and Bumpass and Presser (1972) have traced the increased prevalence of vasectomy from less than 2% of the eligible population in 1964 to about 5% of the population at risk in 1970. The proportion of couples in which the husband has been vasectomized (5.5%) continues to be considerably less than those using the pill (22%) or the condom (9.7%) (Westoff, 1972). Even in California and other far Western states, usually thought to be the source of new trends, vasectomy is only slightly more popular than the condom as a contraceptive method (Phillips, 1971).

In a schematic representation of innovativeness based on the normal curve distribution, Rogers and Shoemaker (1971) called "innovators" the initial 2.5% of a population to try a new product or technique. The following 13.5% (two standard deviations from the mean) are "early adopters." The two largest groups -- constituting 66% of the population -- are classified as the "early majority" and "late majority." The remaining 16% are "laggards." Based on national surveys, men vasectomized since 1970 would thus fall into the "early adopter" group. The sample used in this study, chosen from a local population, would most likely be categorized as "innovators," however, because of the general unavailability of male contraception in Chicago before the opening of several clinics in 1971.

Attempts to link innovativeness to specific personality traits have met with mixed success. Much of the research has been conducted in the field of marketing.

Robertson and Myers (1969) administered to 95 housewives the CPI and a questionnaire eliciting information on new product purchases. Though significant correlations were found between innovativeness and three CPI scales (Well being, Sociability and Communality), all the correlations were low, leading the authors to question their practical and predictive value. Tucker and Painter (1961) reported significant correlations between innovation and measures of ascendancy and sociability on the Gordon Personal Profile. Gruen (1960), on the other hand, found no relationship between preference for newness and conformity or other-directedness. After a review of 17 studies of personality traits of innovators, Pizam (1972) was dubious about meaningfully relating personality characteristics to innovativeness. Rogers and Shoemaker (1971), however, include upward social mobility, high level of aspiration and strong achievement motivation among the traits of innovators and early adopters. Other traits characterizing the groups include venturesomeness, openness for change and the willingness to take risks.

An apparent difficulty in establishing an unequivocal relationship between innovativeness and personality is the failure to consider the personal cost for Ss of the innovation in question. Many studies of innovation, including those previously cited, explore attitudes toward new products like cars, phones, deodorants and clothing styles. Innovative action on the part of the consumer involves, in these cases, relatively short-term investments or expenditures. Trying a new product, after all, usually demands a small investment of money for a brief period of time. Even a new car, a more costly and substantial purchase, is seen as eventually replaceable. The consumer operates under a personal calculus (length of

time the product will be used, expense, effort of purchase and the potential loss if the product proves unsatisfactory) which varies across innovations. Minor changes in product use probably are, indeed, unrelated to personality characteristics.

Given the personal investment required for vasectomy and its irreversibility, the cost of finding the procedure unsatisfactory is overwhelmingly prohibitive. Prima facie, a man who obtains a vasectomy is clearly more willing to risk himself and is more "innovative" than one who experiments with an after-shave lotion or a new razor blade.

A recently devised measure of innovativeness, the Personal Values Abstract (PVA) (Gough, 1972) seems particularly apt for research on family planning. The three scales of the PVA, Modernity (My), Femininity (Fy), and Socialization (Sn), were derived from the CPI, the latter two being shortened forms of the Femininity (Fe) and Socialization (So) scales already available on the full form of the inventory. The My scale, concerned with innovativeness, was drawn from a cluster of CPI scales, since no single scale of that test directly focused on the parameters of norm changing and social initiative. People scoring high on the My scale are seen as self-assured, spontaneous, outspoken and interested in new experiences, while low-scorers are seen as diffident, conventional, commonplace and cautious. Gough has himself recognized the applicability of the PVA to studies of the diffusion and adoption of contraceptive practices.

Additional personality characteristics relative to the current study should be ascertainable from the CPI. For example, common descriptions of innovators and early adopters as planful and resourceful should be reflected in scores on the Dominance (Do) scale; the high aspiration level

and upward social mobility of innovators might be tapped by scores on the Achievement via Independence (Ai) scale; openness to change, willingness to take risks, low rigidity and venturesomeness would, predictably, be measured by the Flexibility (Fx) scale of the CPI.

Similar "innovator" qualities on the part of those choosing male surgical contraception were noted on the Personality Research Form (Grindstaff & Ebanks, 1971). Exhibitionism, impulsivity and the need for social recognition were less prevalent among the vasectomized men studied while need for achievement and endurance were less common in the control group. The following descriptions were typical of men choosing the innovative procedure of vasectomy: flexible, planful and free, but not radical or revolutionary in thinking or behavior.

HYPOTHESIS II

Those choosing vasectomy are most innovative and as such, score highest on the Do, Ai and My scales of the CPI, while those who reject vasectomy after seriously considering it are less innovative and, as such, score somewhat lower on the Do, Ai and My scales. However, their volatility and vacillation are reflected by a very high score on the Fx scale. Those who have never considered vasectomy are least innovative and therefore score lowest on the Do, Ai, Fx and My scales of the CPI.

3. Reference Groups. In determining contraceptive choice, Bogue (1967), Palmore and Freedman (1969) and Rosario (1971) have emphasized

perception by the potential user of the approval or disapproval of relevant and influential reference groups. The standards and values of society regarding vasectomy are no secret to the candidate for surgery. Kapil (1968) and Bhandra (1969) clearly demonstrated the importance of word-of-mouth communication in the transmission of attitudes and knowledge about vasectomy. Spillane, Gillespie and Ryder (1973) found that the vast majority of men who had been surgically sterilized or who had seriously contemplated the procedure knew someone who had had a vasectomy. Studies by Rodgers, Ziegler, and Levy (1967) and van Tienhoven, Eisner and Rosenblatt (1970) illustrated the disfavor in which vasectomy is held, peoples' ignorance about the procedure and the many myths surrounding the surgery and its aftereffects.

As noted earlier, at the time of their decision, the candidates for vasectomy are likely to know others who have been vasectomized, to perceive significant people in their lives as looking favorably on vasectomy or, at minimum, to belong to one or more reference groups that approve of male sterilization.

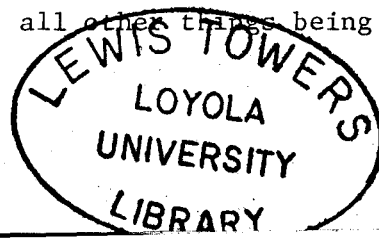
HYPOTHESIS III

Those choosing vasectomy perceive their reference groups (relatives, in-laws, parents and friends) as approving of the procedure and know the largest number of vasectomized men, while those who reject vasectomy after seriously considering it perceive somewhat less approval by these reference groups and know relatively fewer vasectomized men. Those who never consider vasectomy perceive the least reference group approval and, relative to those who had once seriously entertained undergoing surgery, know the fewest number of vasectomized men.

4. Health-related variables. Empirical studies of and speculation about the reasons for rejecting vasectomy have focused on the possible sexual ramifications of sterilization. The fear of potential sexual difficulties and the loss of masculinity and reproductive capacity have been advanced to explain the unfavorable attitudes toward the procedure (Ferber, Tietze, & Lewitt, 1967; Grindstaff & Ebanks, 1971; Landis & Poffenberger, 1962; Rainwater, 1960).

Often neglected, however, because of the all too compelling connection between the male genitalia and sexual performance and feelings, is the fact that, in undergoing vasectomy, one submits oneself to the surgeon's scalpel. The more direct concern of the potential adopter may be unrelated to castration anxiety and more prosaic. Wright (1972), in a discussion of pre-vasectomy counseling, regarded the prospect of pain the most immediate and overriding negative factor for those considering male sterilization.

Studies by Grindstaff and Ebanks (1971) and Landis and Poffenberger (1966) reported that fear of the pain associated with surgery was the primary source of worry for close to 40% of those contemplating vasectomy. Interestingly, despite the fact that fears of a sexual nature were mentioned less frequently than fear of pain, the psychosexual implications of the surgery were emphasized in both studies to the neglect of the worries about pain. Ferber, Tietze and Lewitt (1967), as well, lightly dismissed worries about the pain of vasectomy as no different from the anxiety associated with any surgery. While this may be the case, it is likely that people distribute themselves along a continuum of anxiety at the prospect of surgery. It seems plausible that, all other things being equal,



those who willingly submit themselves to the acknowledged pain and discomfort of the male contraceptive surgery perceive themselves, and/or surgery differently from those who reject voluntary sterilization or never seriously consider it.

The recent study of Boyd, Yeager and McMillan (1973) on the fears and coping mechanisms of 27 pre-operative patients may somewhat clarify the parameters surrounding the choice of vasectomy. Ss were interviewed extensively and administered projective tests prior to non-elective surgery. They were divided post-operatively into "good adjustment" and "poor adjustment" groups. Common to all Ss was the fact that previous surgical experience was related to increased anxiety about the current operation. Though both groups manifested high pre-operative anxiety levels, the "good adjustment" Ss expressed concrete worries about their and their families' ability to cope with surgery, while the "poor adjustment" Ss expressed more fantasies of death and mutilation. "Good adjustment" Ss dealt realistically with the surgery by directly confronting the envisioned problems and frustrations. They were flexible in their solutions and sought to exert control over the relevant possible exigencies. The "poor adjustment" group resorted to denial and magical thinking to ward off anxiety. They were more rigid and less likely to assert control than their counterparts in the "good adjustment" group. Interestingly, 81% of the "good adjustment" group reported their health to be good, but only 45% of the "poor adjustment" group saw themselves in good health. Admittedly, the analogy to minor elective surgery may be strained. Nevertheless, the findings highlight the stressful nature of surgery, the psychologically traumatic effects of previous surgery and the variety of coping techniques used pre-operatively by patients to deal with their anxiety.

In dentistry, a field where the level of discomfort is more comparable to that of vasectomy, the connection between current anxiety and perceived pain tolerance was suggested by Shoben and Borland (1954). They interviewed 15 people who showed no fear and 15 people who were fearful in a dental situation. Thirteen of 14 Ss in the non-fearful group (no ratings were made for one S) had high pain tolerance in the opinion of judges, while only 7 of 15 in the fearful group were rated similarly. Traumatic dental and medical experiences were reported by only about a third of the non-fearful group. Among fearful Ss, however, roughly half had had a history of painful medical or dental treatment. Though the differences were not statistically significant, they suggest that pain tolerance and previous trauma are influential in determining one's response to dental procedures (and, by the authors' extension, to medical surgery).

In sum, the stress of and anxiety over surgery itself seem to be neglected possible factors related to the choice or rejection of vasectomy. Previous surgical experiences, perceived pain tolerance and perception of one's own health all contribute to the decision for or against vasectomy. People who see themselves as having good health, have no previous surgical experience and high pain tolerance would be most likely to undergo male sterilization.

HYPOTHESIS IV

Those choosing vasectomy have had relatively less surgical experience, with its inevitable trauma.

Those who reject vasectomy after seriously considering it have relatively more prior surgical experience.

HYPOTHESIS V

Those choosing vasectomy perceive their pain tolerance level as relatively high. Those who reject vasectomy after seriously considering it see themselves as having relatively low pain tolerance.

HYPOTHESIS VI

Those choosing vasectomy see themselves as in better health than do those who reject vasectomy after seriously considering it.

Summary of Hypotheses

Based on a review of the research literature on surgical contraception and related areas, the following major hypotheses are advanced:

Those choosing vasectomy:

1. exert more control over their environment, are less anxious and more able to cope successfully with frustration. They are "internal" as measured by the I-E scale.
2. are more flexible, innovative, self-confident, resourceful and less likely to conform to social pressure. They score highest of the three groups on the My, Do and Ai scales of the CPI.
3. know more people who have had or approve of vasectomy.
4. have had relatively less previous surgery of all kinds than those who reject vasectomy.

Those rejecting vasectomy after seriously considering it:

1. are more "external" than the vasectomy group, but less external than those who have not seriously considered vasectomy at all.
2. are somewhat innovative and nonconforming and score highest of the groups on the CPI Fx scale, indicating volatility and changeability and score between the other groups on the My, Do and Ai scales of the CPI.

3. know more people who look favorably on vasectomy or have had the surgery than those who do not consider vasectomy but fewer than those who have had a vasectomy.
4. have had relatively more surgery experiences than the vasectomy group.

Those never seriously considering vasectomy:

1. are less innovative but more conforming than the vasectomy group and score more in the external direction on the I-E scale.
2. are less flexible, modern and innovative than the vasectomy group. They score lower than the vasectomy group on the CPI My, Do and Ai scales.
3. know fewer people who have undergone vasectomy surgery than do the other two groups and feel that fewer people will approve of the surgery.

CHAPTER II

METHODOLOGY

Three groups were studied to examine the influence of personality, reference group and health-related variables on the choice of contraceptive method. The groups were: 1) couples who had obtained a vasectomy (adopters), 2) couples who had seriously considered vasectomy and then decided against it (rejectors), and 3) couples who had never seriously considered vasectomy (controls).

Adopter and rejector couples, obtained through a vasectomy clinic in Chicago, and the control group couples, located by telephone survey, were seen in their homes by trained interviewers, husbands and wives being interviewed separately. The instruments administered included a semi-structured interview, the Rotter Internal-External Locus of Control Scale and the California Psychological Inventory.

Subjects

The sample consisted of three groups totalling 110 married couples, all of whom were practicing family planning and had decided against further childbearing. The first group were couples for whom vasectomy was the form of birth control being practiced. Thirty-five couples fell into this category. The second group were married couples

who were using other, non-surgical contraceptive methods; after having given considerable conscious thought to vasectomy, they decided against it, at least for the foreseeable future. This group consisted of 31 married couples. The 44 couples in the third group had never given serious thought to vasectomy or made a gesture towards vasectomy as a possible option. Group I were thus "adopters" of vasectomy, while Group II were "rejectors." Group III, having never considered vasectomy, represented a control group for both the adopters and rejectors.

An attempt was made to assure socioeconomic comparability of Group III (controls) with the other groups by selecting from census tract data Ss likely to be roughly in the middle class, the status of most clients in the vasectomy clinic. Initial examination of the sample revealed that the control Ss were significantly more affluent, better educated and older than the adopter or rejector Ss. To correct for the discrepancy, only respondents meeting the following criteria were included in the data analysis: 1) were age 47 or younger, 2) earned less annually than \$32,000 and 3) had completed less than 18 years of school.

The final sample, then, was comprised of 69 adopters, 62 rejectors and 69 control Ss. As can be seen in Table 2, all respondents were comparable in age, had substantially similar earnings and averaged around two to three years in college.

TABLE 2

Mean Age, Income and Years of
Schooling for the Three Sub-Samples

Group	<u>N</u>	Age	Income	Schooling
Adopters	69	32.4	\$15,600	13.7
Rejectors	62	31.4	\$17,600	14.6
Controls	69	32.8	\$19,100	15.5

Note. -- All differences are not significant at the .09 level.

Referral Source

The not-for-profit vasectomy clinic from which Ss were obtained was the first of its kind in Chicago. Located in the downtown area, the clinic began providing its services in 1971, over a year before this research began. The clientele are mostly middle class, working whites who live in the Greater Chicago area, with the largest number residing in the less affluent suburbs and subdivisions on the outskirts of the city.

By the time of the study, the clinic had established a firm routine for processing clients. Potential vasectomy candidates and their spouses who called were sent some introductory literature and given clinic appointments. On their arrival, they completed an application form, were provided with more written information about preparing for surgery and attended a group lecture describing the medical procedure, including its drawbacks and advantages. To eliminate unsuitable candidates (generally young single men with little heterosexual experience, disturbed people, and couples with severe marital problems), each couple was interviewed individually for 15 to 30 minutes by a counselor who also assessed motivation for surgery and answered any questions about the procedure. If the couple decided to have the vasectomy and the clinic had no objections, an appointment for surgery was scheduled for another day. At that time, the couple presented a consent form prepared by the clinic and signed by both husband and wife.

The surgery, which usually cost \$150.00 (including the fee for the initial interview), was performed by one of several urologists or osteopathic surgeons who worked part-time at the clinic. A sliding scale had been established to help those financially unable to pay the full amount. Clients were given the phone number of their surgeon should they wish to contact him because of post-operative complications. Contact was maintained with the patients following surgery by asking them to provide semen samples at regular intervals to test for the presence of sperm.

Sampling

For Groups I and II, the original plan had involved interviewing prospectively all persons seeking information about possible surgery from the vasectomy clinic. Potential Ss were to have been contacted by the clinic to determine their interest in participating in the study. It was expected that these couples would naturally sort themselves later into adopters and rejectors. Group I was to be comprised of those who followed through and obtained a vasectomy. Group II was to have included a sample of applicants who did not follow through, continued family planning and, two months after the original research interview, had not gotten a vasectomy elsewhere and had no plans to have one within the following six months.

Before the study was begun, the clinic reviewed and approved the interview protocol and the various test instruments. Unfortunately, just before the scheduled start of interviewing, the clinic administration reversed itself, refusing to allow prospective contact with Ss for fear that the interview might somehow discourage clients from having surgery. The final research procedure, then, was to contact (through the clinic) couples who had already obtained a vasectomy (Group I) and couples who had only scheduled an appointment at the clinic, but either cancelled or failed to show (Group II).

Group III was selected on the basis of census tract data from the city of Evanston, Illinois, in an effort to get a sample of couples

roughly comparable in educational and socioeconomic level to those contacting the vasectomy clinic. Ss for this group were obtained by a telephone survey and asked if they and their spouses would consent to participate in a study of family planning. If interest was shown, it was further ascertained that the couple was currently using some form of non-surgical contraception and had reached their desired family size. Unfortunately, no record was kept of the total number of telephone contacts, the size of the potential appropriate sample, and the number of refusals.

All potential Ss from Groups I and II were sent a letter by the clinic describing the study in general terms (see Appendix A). Several days later, E phoned potential Ss to establish their interest in participating in the study and to answer any questions that might be raised. An interview appointment at their home was then scheduled. Forty-four percent of the potential Ss for Group I (adopters) who were called by E agreed to participate, while a somewhat smaller percentage (37%) for Group II (rejectors) consented to be interviewed.

Group I, then, became those couples who had recently had a vasectomy. Group II were those who had cancelled an appointment for counseling and/or surgery and who, two months later, had not obtained a vasectomy and had no plans in the near future (the next six months) to have the operation. The very fact of making and later breaking an appointment is a strong indicator of having gone through a decision process and having later rejected the decision object involved. Group III were couples who had made no plans indicating their interest in vasectomy. They served as a control for the adopters and rejectors.

It was acknowledged that among "rejectors" in the broadest sense, special differences might conceivably obtain between 1) those who formally seek information but proceed no further, 2) those who cancel an appointment for counseling, 3) those who keep the appointment but do not go beyond counseling and 4) those who go so far as to make appointments for surgery, but subsequently cancel. For the purposes of the current study, however, differences within Group II were not pursued.

Data Collection

With some exceptions, interviewing was done primarily by social science doctoral students and their spouses. Interviewers were paid \$5.00 for each S seen. To insure consistency and accuracy of data collection, two major safeguards were used. The first was a two-and-one-half hour training session for the interviewers prior to their beginning data collection. A detailed set of instructions was provided, outlining to each interviewer the types of responses expected from Ss and the likely errors and misinterpretations of the questionnaire. The questionnaire, interviewing technique and interview procedure were reviewed in detail. The second safeguard required each interviewer to examine his or her partner's completed questionnaire immediately following the interview to certify its clarity and accuracy.

Respondent husbands and wives were interviewed in their homes. After initial introductions and a brief period of small-talk, the man and woman on the interview team questioned the corresponding husband and wife in separate rooms. The interviews, including time for the respondents to complete two paper-and-pencil instruments, generally lasted one-and-one-half hours. Few sessions exceeded this length, though the time spent with Ss was often pleasantly prolonged by the offer of coffee and cake following the interview. Informal post-interview time often provided valuable clinical information which was later recorded by the interviewers on the questionnaire forms.

There were virtually no problems encountered by the interviewers in their work, other than those of scheduling (most sessions were held on evenings and weekends). On only one occasion was a session summarily interrupted by a respondent who found the questions "boring" and refused to proceed with the interview.

Various methods were used to gain cooperation from the respondents to complete a 45-minute paper-and-pencil test (the CPI) outside the interview session. Most successful was mailing the CPIs in advance to be completed prior to the interview. In other cases, the CPI was left behind after the interview to be mailed to the researcher. When respondents had to be followed-up by letter and asked again to complete the CPI, a stamped, special delivery return envelope was particularly effective in eliciting a good return rate from Ss.

The data were prepared for computer analysis by two experienced coders and key punch operators. One of the coders was thoroughly familiar with the data, having herself interviewed about twenty respondents. The second coder was trained intensively on the interview schedule. E was available for consultation and for the resolution of difficulties encountered by the coders.

Instruments

1. Semi-structured interview: The general interview contained sections on demographic data, medical and family planning history, self-ratings, exposure to communication media, attitudes toward family planning and population problems, the decision-making process concerning sterilization and rating scales on innovation and reference groups. (An excerpt of the questionnaire is to be found in Appendix B).
2. Rotter Internal-External Locus of Control Scale (Rotter, 1966): The I-E scale consists of 29 pairs of items (six of which are fillers). The respondent must select one choice from each pair. For this study, the scale was presented to Ss as the "General Opinion Questionnaire."
3. California Psychological Inventory (CPI): The CPI is a 480-item true-false questionnaire designed to elicit personality characteristics. The inventory is constituted by 15 personality dimensions and three validity scales. One additional scale, My -- a part of the PVA devised by the author of the CPI (Gough, 1972) -- was also scored.

CHAPTER III

RESULTS

The data presented in this section are limited to those directly related to the research questions raised and hypotheses outlined in the introductory chapter. The presentation follows the sequence in which the hypotheses were originally advanced. Findings not directly related to the hypotheses will be cited in appropriate places through the discussion section.

A few words, first of all, on the format of and reasoning behind the following presentation: the hypotheses on which the study focuses do not specify whether the predictions apply only to the actual candidates for vasectomy (i.e., the husbands) or are equally valid for both members of the couple, either individually or as a unit. There can be little doubt that the decision for or against vasectomy emerges from some implicit or explicit intracouple negotiations, particularly since it is the usual clinical practice to interview man and wife together before making final arrangements for surgery. In Chapter IV, we shall return to a discussion of the relative contributions of each spouse to the decision. For the moment, the results will be presented in the follow-

ing sequence: 1) for husbands only, 2) for husbands and wives combined¹ and 3) for wives only. In each instance, of course, comparisons are made between control, adopter and rejector Ss.

The variables fall into three major categories: 1) personality (Locus of Control and CPI measures), 2) perceived approval of reference groups and 3) perceived health and history of previous surgery. Presentation of the findings, which demand inter-group comparisons, will begin with the results derived from analyses of variance. Where significant differences obtain, t test and X^2 analyses were performed to further explicate the data. Essentially, these operations are simple, single-variable findings which answer questions on the comparability of means or distributions of scores among the various sub-samples.

The richness of the data -- both in terms of the number of variables examined and the interaction of those variables -- would be virtually discounted by making only a series of single-variable comparisons. The presentation will therefore end with findings based on multiple regression analysis. Here, as well, the format will proceed from the less elaborate to the more wide-ranging.

At the conclusion of this chapter, findings will be presented on combinations of the several area-wide groups of variables (personality with reference group, personality with health, and reference group with health), as well as of the whole series (personality, reference group and health).

¹ It will be recalled that a number of Ss were eliminated from the final analysis in order to make the sub-samples roughly comparable in socioeconomic status, age and education. As it turned out, the analysis excluded several more husbands and wives. Thus, there are three half-pairs included in the data analysis.

Personality Variables

Two measures were used in assessing the personality of the husbands and wives who served as Ss for this study: Rotter's scale for Locus of Control and Gough's California Psychological Inventory (CPI). It will be recalled that two hypotheses were advanced on the relationship of personality to the decision for or against vasectomy. Hypothesis I predicts that the degree of internality in Locus of Control is most marked among the adopters, followed next by the rejectors and finally by the controls who had never seriously considered undergoing a vasectomy. The following section provides the findings of this study regarding this Hypothesis, as well as Hypothesis II, which predicts a relationship between the choice of vasectomy and scores on four CPI scales.

Husbands

Table 3 presents the mean Locus of Control scores of the adopter, rejectors and control groups in terms of husbands alone, husbands and

TABLE 3

Mean Raw Scores for Locus of Control for Husbands Only, Husbands and Wives, and Wives Only in the Three Sub-samples

	Adopters	Rejectors	Controls
Husbands	8.50	7.40	8.32
Husbands and Wives	8.78	7.90	9.49
Wives	9.06	8.39	10.95

wives combined and wives alone. It should be noted that, contrary to Hypothesis I, all Ss across groups are Internals, i.e., below the mid-point of the scale. For husbands alone, mean scores between groups differ at most by little over a single scale point. As an inspection of Table 3 suggests, an analysis of variance shows all differences between the groups to be not statistically significant (see Table 4). For males alone, Hypothesis I is not confirmed.

TABLE 4

Summary of Analysis of Variance
For Locus of Control

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
A (Sex)	27.21	1.	27.21	1.80
B (Group)	30.13	2.	15.06	.99
AB	3.34	2.	1.67	.11
WITHIN CELL	2887.03	191.	15.11	

Hypothesis II deals with the aspects of innovation and flexibility, predicting that adopters, as innovators, score highest, relative to the other groups on the Dominance (Do), Achievement via Independence (Ai) and Modernity (My) scales of the CPI. The controls, according to this hypothesis, should score lowest on these three scales and on the Flexibility (Fx) scale in comparison to the adopters and rejectors. The rejectors' scores on the Do, Ai and My scales should be midway between those of the other groups; they should score higher than both groups, however, on Fx.

The analyses of variance for each of the four CPI scales are presented in Tables 5, 6, 7 and 8.

TABLE 5

Summary of Analysis of Variance
For CPI Dominance

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
A (Sex)	67.49	1.	67.49	1.74
B (Group)	185.96	2.	92.98	2.40
AB	101.57	2.	50.78	1.31
WITHIN CELL	6330.64	164.	38.60	

TABLE 6

Summary of Analysis of Variance
for CPI Achievement via Independence

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
A (Sex)	28.30	1.	28.30	1.59
B (Group)	190.46	2.	95.23	5.37**
AB	17.62	2.	8.81	.49
WITHIN CELL	2905.14	164.	17.71	

** $p < .01$

TABLE 7

Summary of Analysis of Variance
for CPI Flexibility

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
A (Sex)	.60	1.	.60	.03
B (Group)	24.19	2.	12.09	.73
AB	32.08	2.	16.04	.96
WITHIN CELL	2714.97	164.	16.55	

TABLE 8

Summary of Analysis of Variance
for CPI Modernity

Source	SS	df	MS	F
A (Sex)	3.97	1.	3.97	.16
B (Group)	314.23	2.	157.11	6.44**
AB	1.80	2.	.90	.03
WITHIN CELL	3995.90	164.	24.36	

** $p < .01$

Note that differences obtained only on the Ai ($F=5.37$, $p<.01$) and My ($F=6.44$, $p<.01$) scales, indicating that the adopters, rejectors and controls differ significantly from one another. Husbands did not differ from wives, nor was there a significant interaction effect. Inspection of the mean raw scores on the four CPI scales for husbands only in the three sub-samples (Figure 1) suggests that the adopters and rejectors are quite similar, whereas the controls differ from both groups. The statistical significance of the differences, as measured by t tests, is presented in Table 9. The adopters and rejectors did not differ significantly on any of the four scales, contrary to the prediction. The control group scored significantly higher (rather than lower) than the other two groups on the Ai and My scales of the CPI. Hypothesis II is thus also not supported.

The relative contribution of the Locus of Control and CPI data to distinguishing between the adopter, rejector and control groups can be further assessed by multiple regression analyses of all the personality variables examined in Hypotheses I and II. This analysis assumes that each of the sub-samples was drawn from different populations. There should be, then, no overlapping scores on any of the scales. The percentage of variance

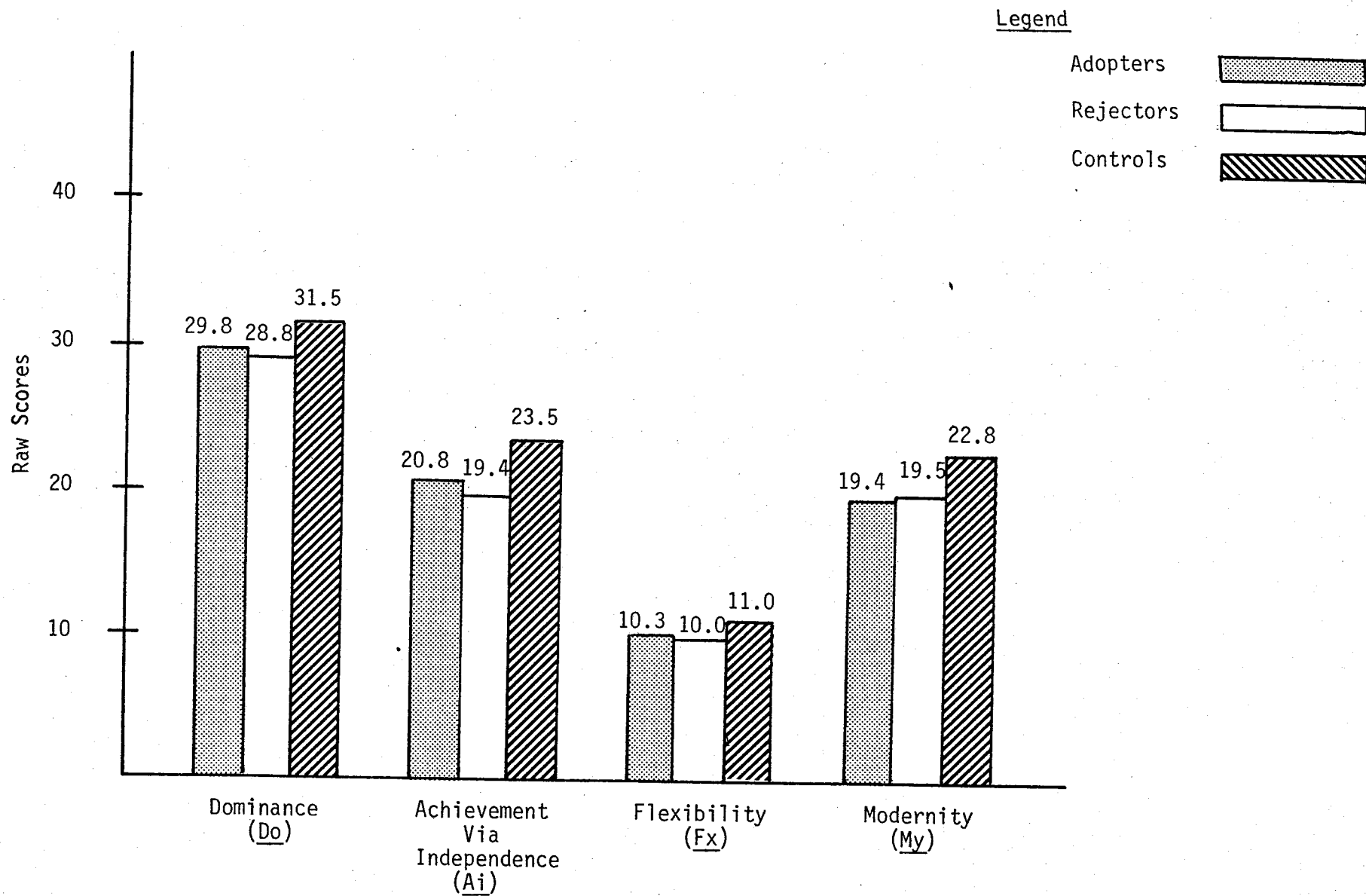


Fig. 1 Mean Raw Scores on Four CPI Scales: Husbands Only

TABLE 9

Significance Levels for Differences among
Sub-samples on four CPI scales: Husbands only

Comparison	<u>Do</u>	<u>Ai</u>	<u>Fx</u>	<u>My</u>
Control-Adopter	.31	.01	.52	.03
Control-Rejector	.09	.01	.39	.03
Adopter-Rejector	.44	.16	.76	.97

Legend:

Do = Dominance

Ai = Achievement via Independence

Fx = Flexibility

My = Modernity

accounted for assesses the degree to which the scores of the variables in question do overlap. The F value indicates the probability that this effect occurred by chance.

For purposes of explication, Table 10 indicates the percentage of variance accounted for by the regression analysis of Locus of Control and the four CPI scales in the several inter-group comparisons. As can be seen, none of the analyses differentiates the groups significantly on the basis of the five variables; the overall percentages of the variance accounted for range only from 8.5 to 14.7. Differences on the My scale seem most important in the control-adopter comparisons, while the higher Ai control group score seems the most important element in the control-rejector comparison. Note, once again, the consistently inconsequential role of the Locus of Control scale scores.

Having moved from individual variables to the multiple regression analyses for the husbands only, let us now look in a similar manner at the scores of husbands and wives combined on Locus of Control and the CPI scales ($\frac{\text{husband score} + \text{wife score}}{2} = \text{couple score}$).

Husbands and Wives Combined

Locus of Control scores for husbands and wives combined are shown in Table 3. Once again, less than a single scale-point separates any of the three groups. As noted earlier (Table 4), no significant differences obtained between the adopter, rejector and control groups, although the trend is in the predicted direction with the adopters being more internal than the rejectors. Note, too, that neither the sex of the spouse nor group membership has a significant effect on Locus of Control scores.

TABLE 10

Percentage of Variance Accounted for
by Personality Variables: Husbands Only

Comparison	LC	<u>Do</u>	<u>Ai</u>	<u>Fx</u>	<u>My</u>	Total % of Variance	<u>F</u>
Control-Adopter	0.0	2.9	1.6	0.0	5.4	9.9	1.03
Control-Rejector	1.6	0.5	11.6	0.3	0.4	14.7	1.48
Adopter-Rejector	3.4	1.3	2.6	0.5	0.6	8.5	1.03

Legend:

LC = Locus of Control

Do = Dominance (CPI)

Ai = Achievement via Independence (CPI)

Fx = Flexibility (CPI)

My = Modernity (CPI)

Note: the total percentage of the variance accounted for (the sixth column) approximates, but does not actually equal, the sum of the individual contributions in the first five columns. Rounding errors account for the slight differences.

Figure 2 shows the raw scores on the four CPI scales. The analyses of variance for each of the variables are summarized in Tables 5, 6, 7 and 8. Here, as is also true of the Locus of Control scores, the interaction of sex and group membership does not exert a significant effect on any of the CPI scales. The probability values for all group comparisons, as measured by t tests, are summarized in Table 11. Again, contrary to Hypothesis II, when significant differences occur, they are in favor of the higher control group scores on the Do, Ai and My scales. The adopter and rejector groups can not be differentiated from one another on any scale; there are no differences among the three groups on Fx.

The percentages of variance contributed by the personality variables are displayed in Table 12. It continues to be the case that only a relatively small proportion of the variance is explained by the five personality variables, although the control group-rejector comparisons show at least a significant differentiation ($F=3.01$, $p < .05$). My (in the control-adopter comparison) and Ai (in the control-rejector comparison) emerge again as relatively conspicuous contributors to differentiating the three sub-samples.

Wives

Reference back to Table 3 indicates there to be no significant differences between the wives in their scores on the Locus of Control scale. Tables 5, 6, 7 and 8, Figure 3 and Table 13 show, respectively, the analysis of variance for each of the scales, the raw scores on the Do, Ai and My scales of the CPI and the significance levels of comparisons between the groups. The pattern is by now familiarly at variance with the predictions

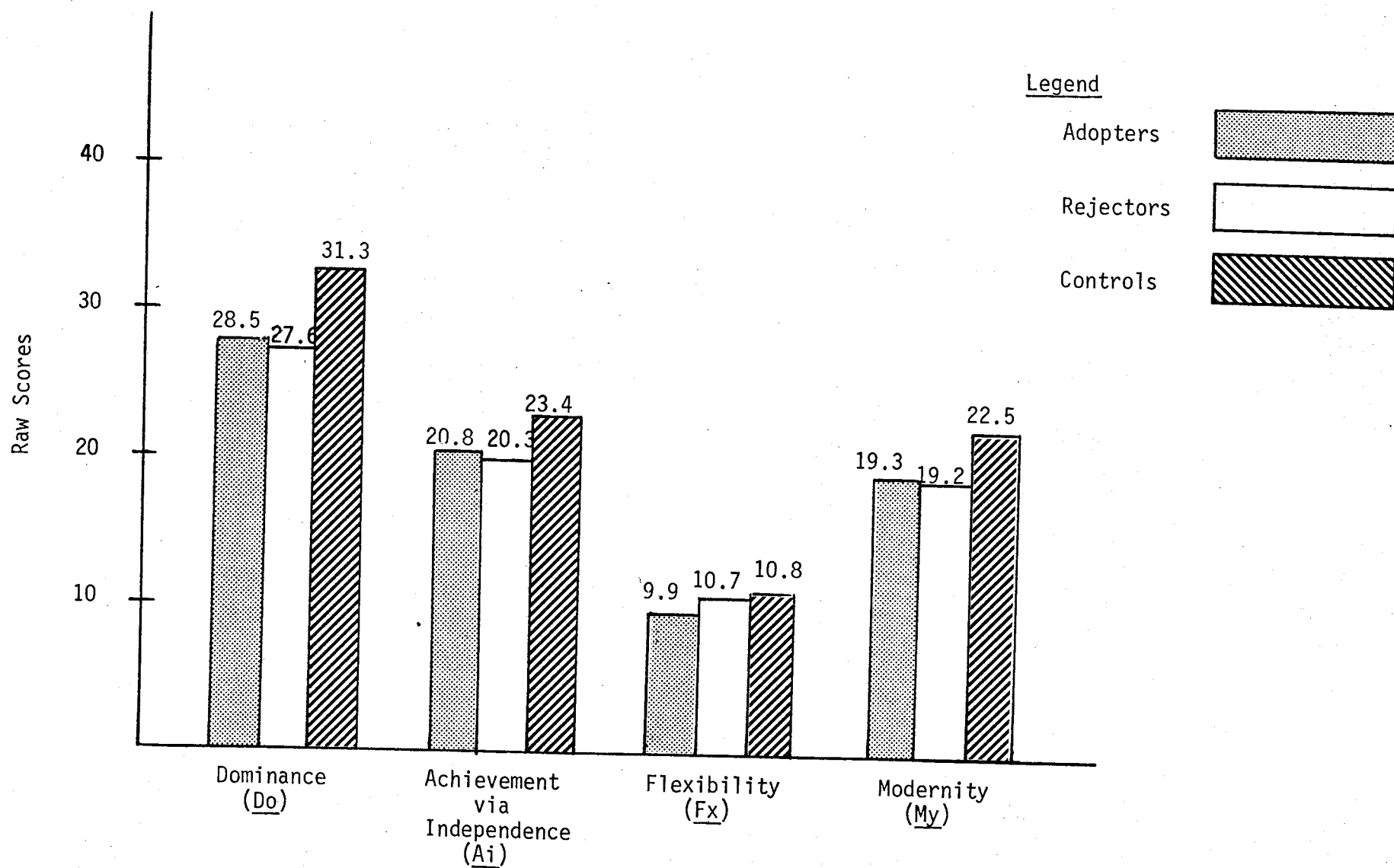


Fig. 2 Mean Raw Scores on Four CPI Scales: Husbands and Wives

TABLE 11

Significance Levels for Differences among
Sub-samples on four CPI scales: Husbands and Wives

Comparison	<u>Do</u>	<u>Ai</u>	<u>Fx</u>	<u>My</u>
Control-Adopter	.02	.01	.17	.01
Control-Rejector	.01	.01	.88	.01
Adopter-Rejector	.41	.43	.26	.88

Legend: See Table 9

TABLE 12

Percentage of Variance Accounted for
by Personality Variables: Husbands and Wives

Comparison	LC	<u>Do</u>	<u>Ai</u>	<u>Fx</u>	<u>My</u>	Total % of Variance	<u>F</u>
Control-Adopter	0.0	2.0	1.4	0.0	6.9	8.6	1.96
Control-Rejector	1.4	0.0	7.9	1.7	2.2	13.3	3.01*
Adopter-Rejector	1.0	1.0	1.2	0.6	0.0	4.0	1.23

Legend: See Table 10

* $p < .05$

TABLE 13

Significance Levels for Differences among
Sub-samples on four CPI scales: Wives Only

Comparison	<u>Do</u>	<u>Ai</u>	<u>Fx</u>	<u>My</u>
Control-Adopter	.01	.02	.18	.01
Control-Rejector	.01	.04	.50	.01
Adopter-Rejector	.66	.84	.07	.80

Legend: See Table 9

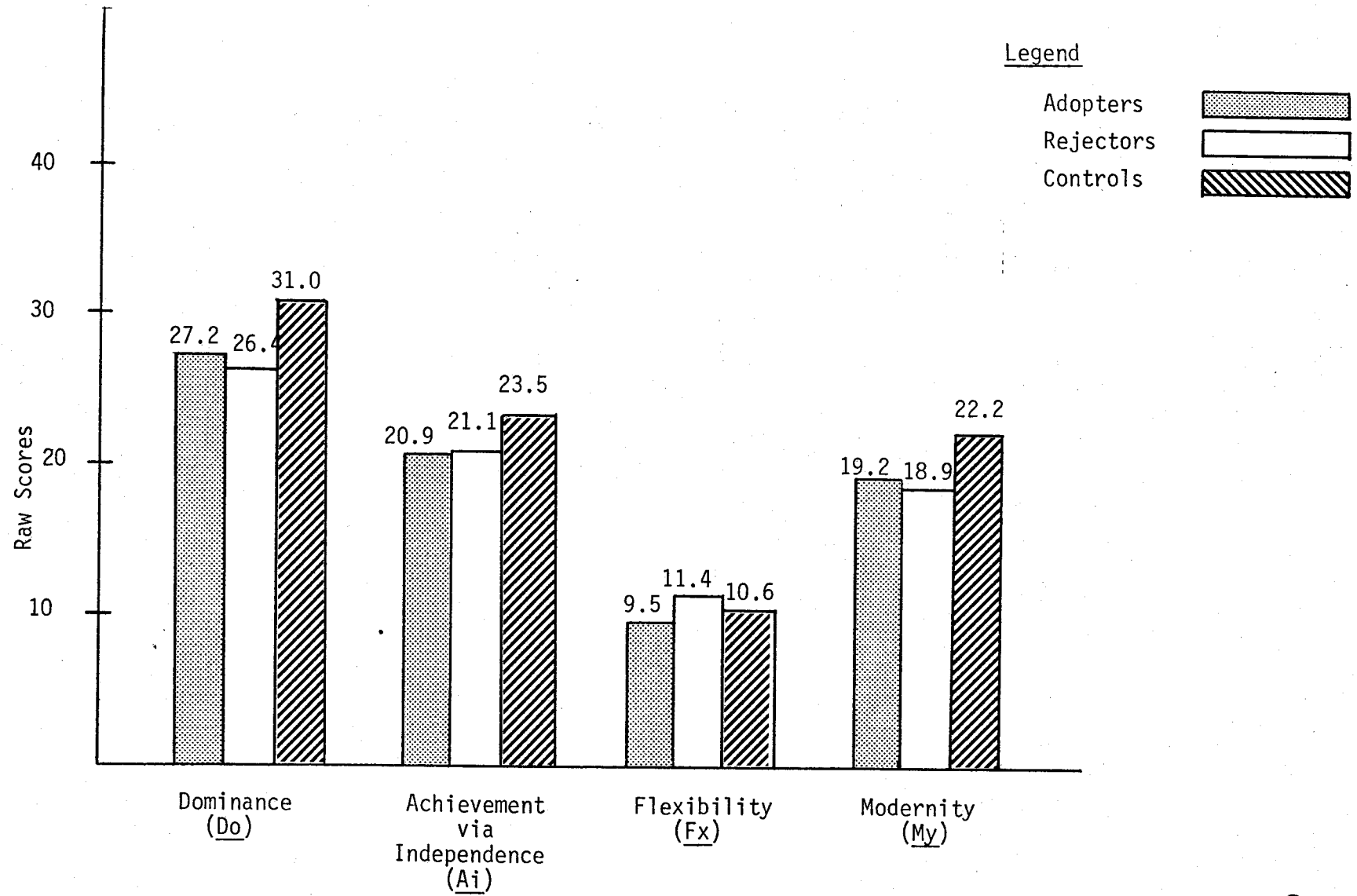


Fig. 3 Mean Raw Scores on Four CPI Scales: Wives Only

derived from Hypothesis II. Controls scored significantly higher on the Do, Ai and My scales than did the other two groups (who did not differ from one another on any scale). There were no differences between any of the groups on Fx.

In the context of all five personality variables (Table 14), only My seemed to show any strength in accounting for differences among groups.

TABLE 14

Percentage of Variance Accounted for
by Personality Variables: Wives Only

Comparison	LC	<u>Do</u>	<u>Ai</u>	<u>Fx</u>	<u>My</u>	Total % of Variance	<u>F</u>
Control-Adopter	0.3	0.3	2.6	0.1	9.6	11.1	1.26
Control-Rejector	0.8	0.2	1.8	4.3	12.0	19.2	2.33
Adopter-Rejector	1.3	0.3	0.2	4.7	3.1	9.7	1.20

Legend: See Table 10

In fact, no combination of the personality variables successfully differentiated between the groups; the variables on the control-rejector comparison did best (close to 20 percent, but still not significant).

Summary of Personality Findings

Hypothesis I, regarding Locus of Control, received no confirmation. No matter what the source of the scores -- husbands alone, husbands and wives combined or wives alone -- when compared across groups of adopters, rejectors and controls, Ss tended to be Internals and similar in the degree of their internality.

Analysis of variance and individual comparison of CPI scores showed Hypothesis II not to be confirmed. Controls tended to score higher than the other two groups on Do, Ai and My, but only the latter two scales seemed at all important in accounting for percentages of the variance. Adopters did not differ at all from rejectors and there were no differences among any groups on Fx.

Multiple regression analysis shows the five personality measures to differentiate significantly between the groups in accounting for the variance only in one instance (controls versus rejectors, husbands and wives combined). In general, the personality variables selected in this study are minimally effective in differentiating between the adopters and rejectors, but are more valuable in distinguishing between the controls and the other two groups.

Reference Group Variables

As an index of the influence of vasectomized friends and acquaintances on the eventual choice of surgery, Ss reported the number of each they knew. The relationship between the choice of vasectomy and attitudes perceived to be held by parents and in-laws, siblings, other relatives and friends was determined by having Ss rate on a five-point scale their own perception of each group's attitude, with scores ranging from strong approval (1) to strong disapproval (5). Appendix C contains the reference group items.

Hypothesis III predicts that adopters know the most vasectomized men, followed next by the rejectors and then by the controls. It was also predicted that the attitudes toward vasectomy of the four reference groups (parents and in-laws, siblings, other relatives and friends) were perceived most favorably by the adopters, while control Ss perceived their attitudes least favorably, with the rejectors' perception falling in between. In presenting the findings, the sequence to be followed will be that of husbands only, husbands and wives combined and, finally, wives only.

Husbands

Figure 4 summarizes the mean number of vasectomized acquaintances known to each group for men only, for men and women combined and for women only. Table 15 shows the analysis of variance for this variable.

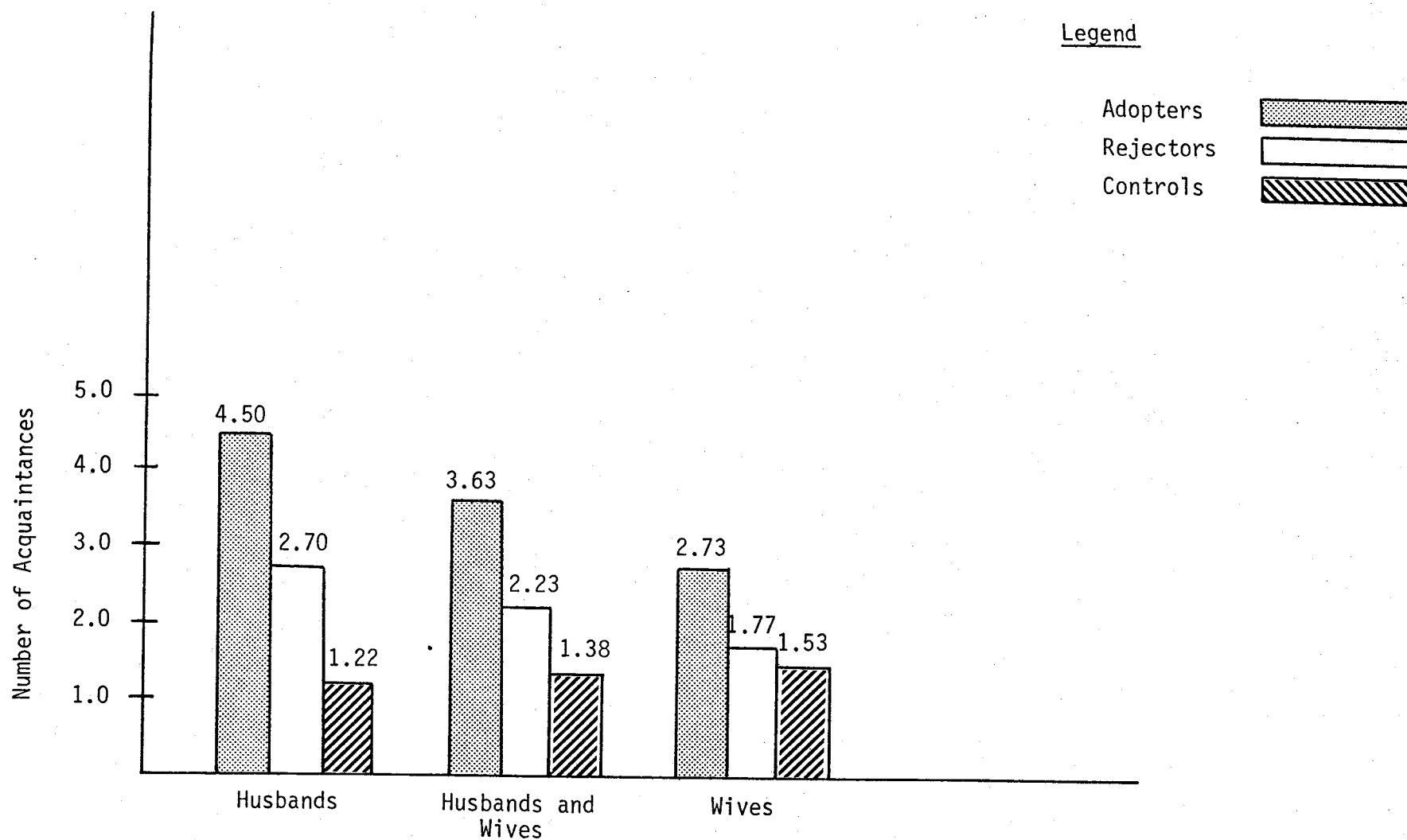


Fig. 4 Mean Number of Vasectomized Acquaintances Known to Husbands Only, Husbands and Wives Combined, and Wives Only

TABLE 15

Summary of Analysis of Variance for
Number of Vasectomized Acquaintances

Source	SS	df	MS	F
A (Sex)	6.64	1.	6.64	10.03**
B (Group)	.66	2.	.33	.50
AB	.48	2.	.24	.36
WITHIN CELL	104.63	158.	.66	

** $p < .01$

No significant differences obtained across the three groups. However, husbands had significantly more vasectomized acquaintance than did their wives ($F=10.0$, $p<.01$). T test analyses of husbands across groups, however, did reveal differences that were in the predicted direction. Across groups, control husbands knew significantly fewer vasectomized men than did their adopter ($t=1.88$, $p<.05$) and rejector ($t=1.74$, $p<.05$) counterparts. Adopters knew more men than the rejectors, though the difference was not significant ($t=1.04$). For men alone, the pattern of acquaintanceship with vasectomized men finds adopters knowing more men than do the rejectors and the rejectors knowing more men than the controls. Thus, Hypothesis III is confirmed.

The mean number of vasectomized friends known to each group for men only, for men and women combined and for women only is summarized in Figure 5 and the analysis of variance is presented in Table 16. Significant differences obtained only between the adopters, rejectors and controls

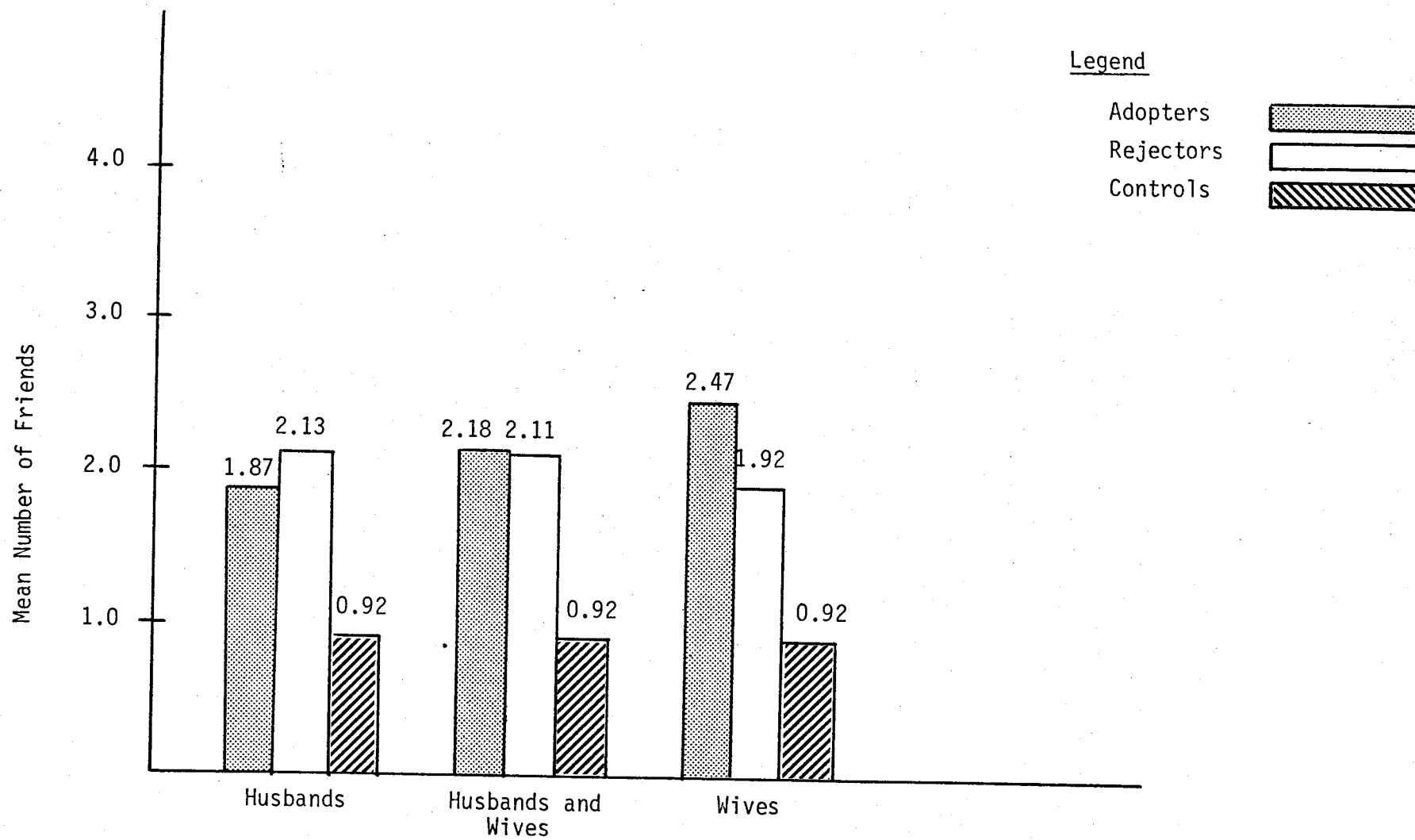


Fig. 5 Mean Number of Vasectomized Friends Known to Husbands Only, Husbands and Wives Combined, and Wives Only

TABLE 16

Summary of Analysis of Variance for
Number of Vasectomized Friends

Source	SS	df	MS	F
A (Sex)	.02	1	.02	.00
B (Group)	36.27	2	18.13	4.53**
AB	7.19	2	3.59	.90
WITHIN CELL	627.90	157	3.99	

** $p < .01$

($F=4.53$, $p < .05$). The sex of the respondent and the interaction between sex and group membership were not related to the number of vasectomized friends reported. Examining the scores for men only, controls had significantly fewer vasectomized friends than did the adopters ($t=1.69$, $p < .05$) or rejectors ($t=1.81$, $p < .05$). Indeed, unlike the case with acquaintances, adopter men reported having fewer vasectomized friends than did their rejector counterparts, though the difference was not significant ($t=1.10$). For husbands only, Hypothesis III is only partially confirmed. Controls, relative to the adopters and rejectors, indeed had fewer vasectomized friends. However, contrary to expectation, adopters tended to have fewer vasectomized friends than did the rejectors.

Tables 17, 18, 19 and 20 summarize, respectively, the analyses of variance for perceived approval of vasectomy by parents and in-laws, siblings, other relatives and friends. Figure 6 shows the mean perceived reference group disapproval scores for husbands only. Though the differences between the groups are not statistically significant, the trend is in the expected direction. Controls generally saw each of the reference groups as

TABLE 17

Summary of Analysis of Variance for
Perceived Approval of Vasectomy by Parents & In-laws

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
A (Sex)	1.21	1	1.21	.75
B (Group)	.54	2	.27	.16
AB	.48	2	.24	.14
WITHIN CELL	296.83	184	1.61	

TABLE 18

Summary of Analysis of Variance for
Perceived Approval of Vasectomy by Siblings

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
A (Sex)	.00	1	.00	.00
B (Group)	2.37	2	1.18	1.17
AB	1.35	2	.67	.66
WITHIN CELL	172.12	170	1.01	

TABLE 19

Summary of Analysis of Variance for
Perceived Approval of Vasectomy by Other Relatives

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
A (Sex)	.00	1	.00	.00
B (Group)	2.66	2	1.33	1.99
AB	1.73	2	.86	1.30
WITHIN CELL	124.52	187	.66	

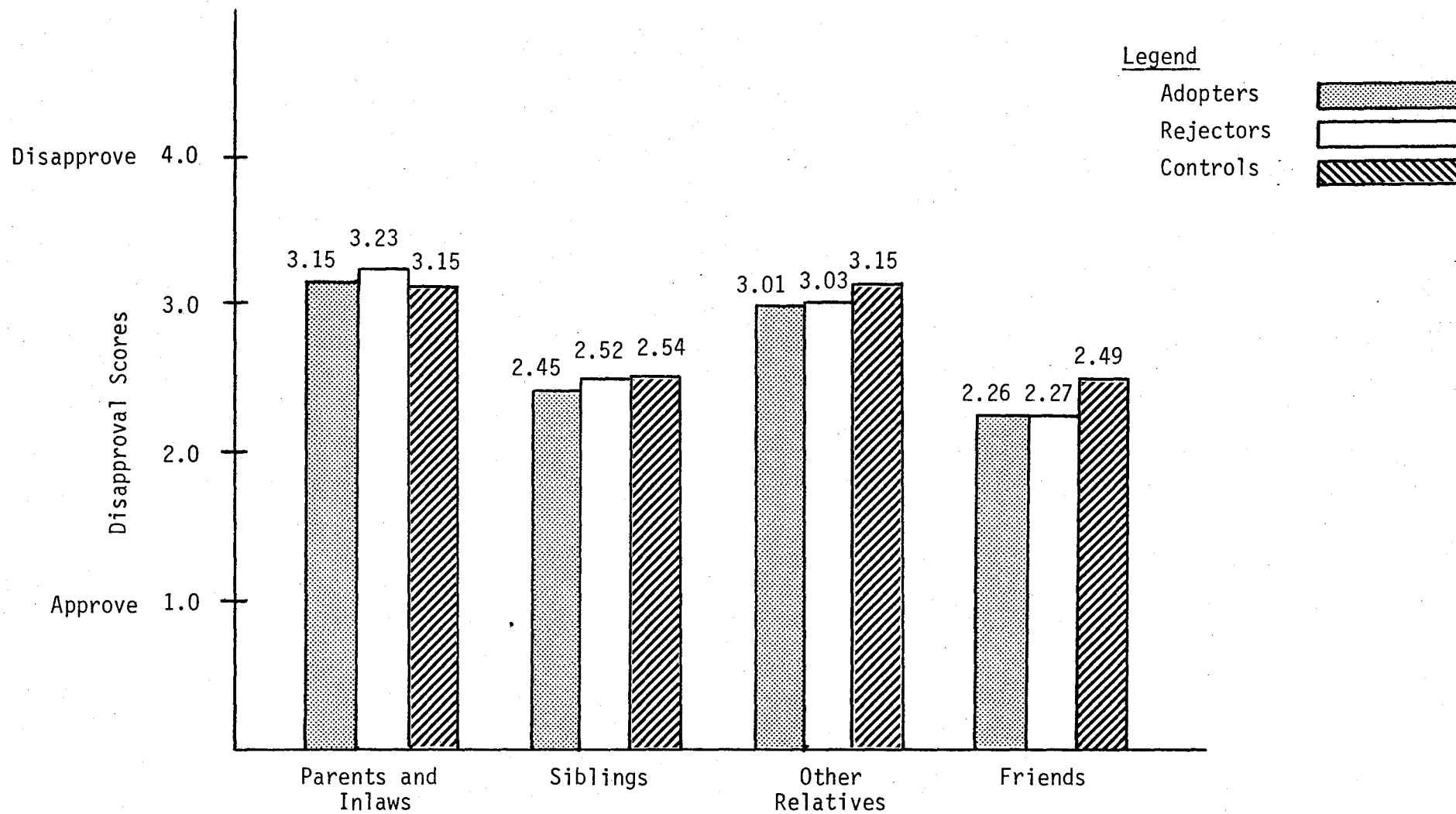


Fig. 6 Mean Reference Group Disapproval Scores: Husbands Only

TABLE 20

Summary of Analysis of Variance for
Perceived Approval of Vasectomy by Friends

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
A (Sex)	.62	1	.62	.89
B (Group)	.56	2	.28	.40
AB	.15	2	.07	.11
WITHIN CELL	131.47	189	.69	

more highly disapproving than did the adopters, while the rejectors perceived each reference group as more disapproving than did their adopter counterparts. Thus, for men only, while this part of Hypothesis III is not supported statistically, the trend is in the expected direction.

Though no significant differences were found in the reference group data, two definable trends were in evidence. First, as previously stated, the controls perceived the greatest degree of reference group disapproval and the adopters the least; the rejectors fell between the poles. Secondly, for all sub-samples, the four different reference groups arrayed themselves in the same order along the approval-disapproval dimension; parents and in-laws were seen as most disapproving, followed by other relatives, siblings and friends, in that order.

The relative contribution of each of the reference group variables in distinguishing between the adopters, rejectors and controls can be illustrated by inspection of the multiple regression analysis for these factors. For purposes of explication, Table 21 indicates the percentages of variance accounted for by the regression analysis of the reference

TABLE 21

Percentage of Variance Accounted for by
Reference Group Variables: Husbands Only

Comparison	Acq	Friends	P & I	Sibs	Rel	Fri	Total % of Variance	<u>F</u>
Control-Adopter	2.0	3.5	0.0	0.0	0.0	1.4	7.0	0.79
Control-Rejector	12.1	0.1	0.1	0.0	0.5	0.0	12.8	0.93
Adopter-Rejector	2.4	0.6	1.8	0.0	1.6	0.6	7.0	0.48

Legend:

Acquaintances = number of vasectomized acquaintances

Friends = number of vasectomized friends

P & I = Perceived approval of Parents and In-laws

Sibs = Perceived approval of Siblings

Rel = Perceived approval of other Relatives

Fri = Perceived approval of Friends

group variables in the several inter-group comparisons. As can be seen, none of the analyses significantly differentiates the groups from one another. The overall percentages of attributed variance range from 7.0 (for the adopter-control and adopter-rejector comparisons) to 12.8 (for the control-rejector comparison). It should be noted that in the control-rejector comparison the vasectomized acquaintance variable accounted for the vast majority of the variance between the two groups. None of the other variables was an important contributor to differentiating between the groups.

Having examined the individual variables and further assessed their relative contributions by multiple regression analysis, let us now look in a similar manner at the scores on the other variables relevant to Hypothesis III for husbands and wives combined.

Husbands and Wives Combined

The mean number of vasectomized acquaintances for husbands and wives combined is shown in Figure 4. While the analysis of variance (Table 15) did not show significant differences across groups, t tests reveal that control Ss knew significantly fewer men than did the rejectors ($t=2.09$, $p<.05$) or adopters ($t=2.30$, $p<.05$). Adopters knew more vasectomized men than the rejectors, though the difference was not significant ($t=1.57$). The data tend to confirm the prediction of Hypothesis III that adopters know the most men, followed next by the rejectors, with the controls having the fewest vasectomized acquaintances.

The couple score is simply the average of husband and wife scores.

Since significant differences were found for husbands alone, it is not at all suprising that the couple data are significant too, particularly in view of the failure of the analysis of variance to produce a significant interaction effect. This phenomenon is consistent for all the variables considered by the current study: no significant interaction effects obtained, signifying that spouses of one sex did not respond differentially from their mates.

Reference back to Figure 5 indicates that the controls had significantly fewer vasectomized friends than did the adopters ($t=2.66$, $p<.01$) or rejectors ($t=2.80$, $p<.01$). Adopters also had more vasectomized friends than did rejectors, but the difference is trivial. As predicted, the pattern emerges of adopters having the most vasectomized friends and the controls the fewest, with the rejectors falling between. Thus, this part of Hypothesis III was confirmed.

Figure 7 shows the mean reference group disapproval scores for husbands and wives combined. Reference to Tables 17, 18, 19 and 20 recalls the analyses of variance for these factors. Though the sub-samples did not differ significantly, the trend was in the predicted direction. Control Ss saw each of the reference groups as more highly disapproving than did the adopters. The control group also perceived parents and in-laws as more disapproving than did the rejectors, but were similar to the rejectors in the degree of disapproval perceived as emanating from siblings and other relatives. The adopters perceived their siblings, friends and other relatives as more favorably disposed toward vasectomy than did the rejectors. Parents and in-laws were perceived similarly by both the

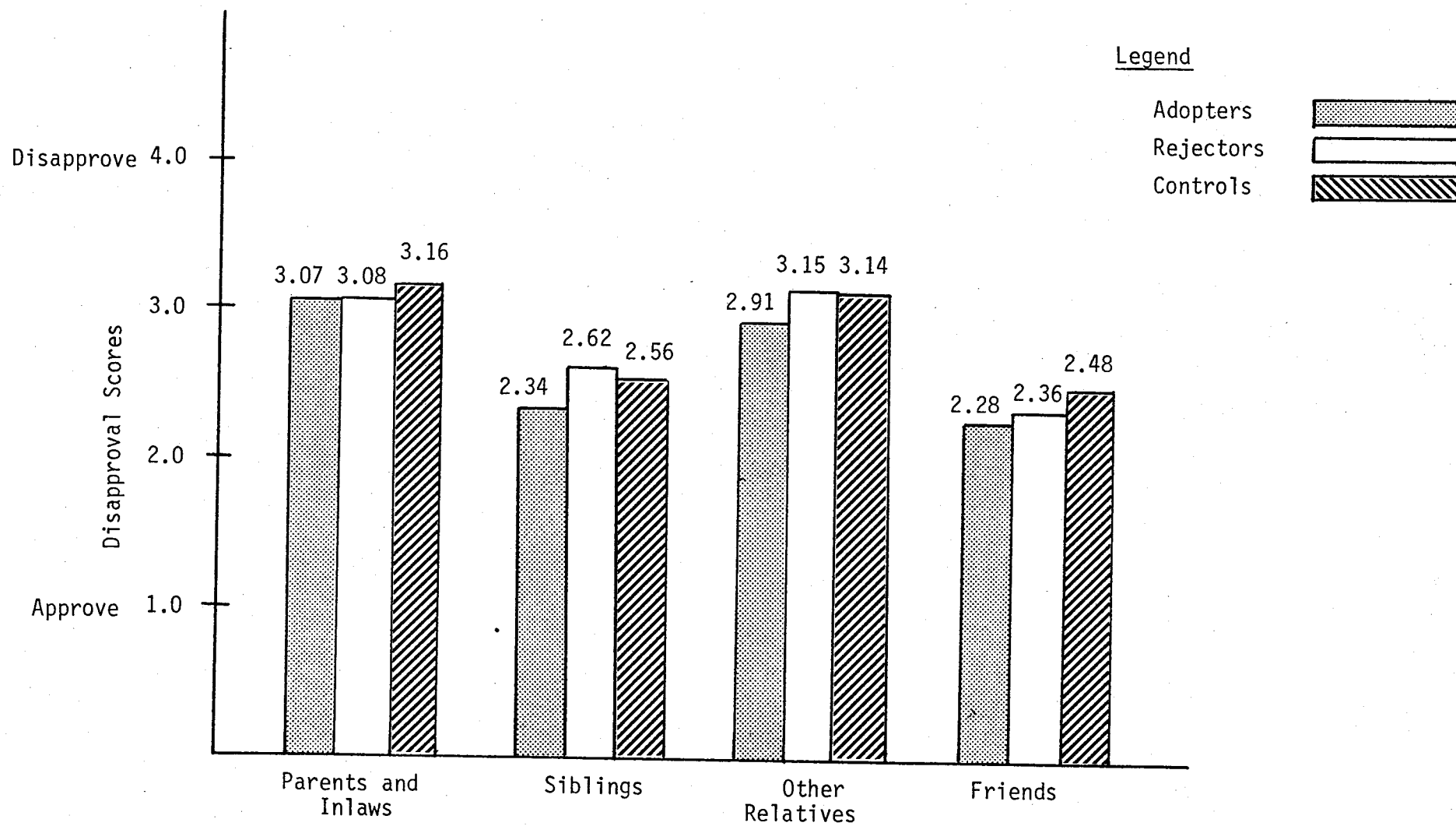


Fig. 7 Mean Reference Group Disapproval Scores: Husbands and Wives Combined

adopters and rejectors. Thus, this part of Hypothesis III was not confirmed statistically for husbands and wives combined, but the direction of the scores generally tended to support the prediction.

Once again, the mean scores for parents and in-laws and other relatives for the adopter, rejector and control Ss indicated that these reference groups were seen universally as most disapproving, whereas friends and siblings appeared to be the most approving of vasectomy. The perceived reference group disapproval scores for husbands and wives combined seem to fall along the same two dimensions first noted when the scores for husbands only were examined. Although the whole of Hypothesis III is not confirmed, there is a trend towards controls perceiving the greatest disapproval, the adopters the least and the rejectors falling between the two. Secondly, all groups saw parents and in-laws and other relatives as most disapproving, while friends and siblings were seen as least disapproving.

Turning now to the relative contribution of each reference group variable in distinguishing between the adopters, rejectors and controls (men and women combined), multiple regression analysis (Table 22) shows the reference group variables to differentiate significantly only between controls and adopters ($F=2.58$, $p<.05$). All reference group measures account for 14.7 percent of the variance between control and adopter Ss and 13.1 percent of the variance between controls and rejectors; a mere 2 percent of the variance between adopters and rejectors is explained by reference group variables. These variables are apparently most important in distinguishing the controls from the two other groups.

TABLE 22

Percentage of Variance Accounted for by
Reference Group Variables: Husbands and Wives

Comparison	Acq	Friends	P & I	Sibs	Rel	Fri	Total % of Variance	<u>F</u>
Control-Adopter	1.3	9.8	0.7	0.0	0.8	1.9	14.7	2.58*
Control-Rejector	12.0	0.0	0.0	0.0	0.4	0.7	13.1	1.91
Adopter-Rejector	0.7	0.4	0.0	0.0	0.9	0.0	2.0	0.29

Legend: See Table 21

* $p < .05$

Among the measures themselves, personal acquaintance with vasectomized men and friendship with men who had been surgically sterilized accounted for the greatest share of the variance (as it did in the regression analysis for men only). The personal acquaintance variable accounted for almost nine-tenths of the 13.1 percent of the variance between control and rejector Ss explained by using all the variables. Similarly, the number of vasectomized men known accounted for more than three-fifths of the 14.7 percent variance explained by differences in the reference group scores among control and adopter Ss.

Wives

To complete the presentation regarding reference group variables, we shall follow the previous format in examining the results for wives only in the three sub-samples.

Reference back to Figure 4 gives the mean number of vasectomized acquaintances known to women only. The analysis of variance, presented in Table 15, reveals significant differences across the three sub-samples. Further t test analyses support this part of Hypothesis III: control women had significantly fewer vasectomized acquaintances than did their adopter ($t=1.80$, $p<.05$) or rejector ($t=1.91$, $p<.05$) counterparts, while the adopters had more vasectomized acquaintances than did the rejectors (the latter difference is not significant). This pattern is quite similar to that reported previously for husbands alone and for husbands and wives combined.

Despite the apparent failure of the analysis of variance in discerning significant group differences (Table 16), scrutiny of Figure 5 and further t test analysis reveal that control wives had significantly fewer vasectomized friends than did the adopters ($t=2.03$, $p<.05$) or rejectors ($t=1.89$, $p<.05$); rejectors had more vasectomized friends than the controls, but fewer than the adopters (again, the latter two differences are not significant). Once again, the pattern is similar to that found for husbands alone and for husbands and wives together and is confirmatory of Hypothesis III.

Perception of the approval of vasectomy by significant people (Figure 8) also follows the by-now-familiar pattern. Though no statistical differences obtained, the trend was in the predicted direction. The adopters perceived the least degree of disapproval, the controls perceived the most and the rejectors fell in between. For all groups, parents and in-laws were seen as most disapproving and friends as least disapproving. Thus, the latter half of Hypothesis III was again not supported statistically, but the trends noted earlier showed themselves once more.

In the context of all the reference group variables (Table 23), only the controls and adopters were significantly differentiated from one another ($F=2.48$, $p<.05$). Indeed, about one-quarter of the variance between these two groups was accounted for by the reference group variables. Among the measures themselves, perceived reference group approval was particularly ineffectual in differentiating the controls from the other groups. Prior acquaintance with men who had been surgically sterilized is important primarily in the control-adopter and control-rejector comparisons, accounting for, respectively, 18.3 and 12.6 percent of the variance. Perceived approval

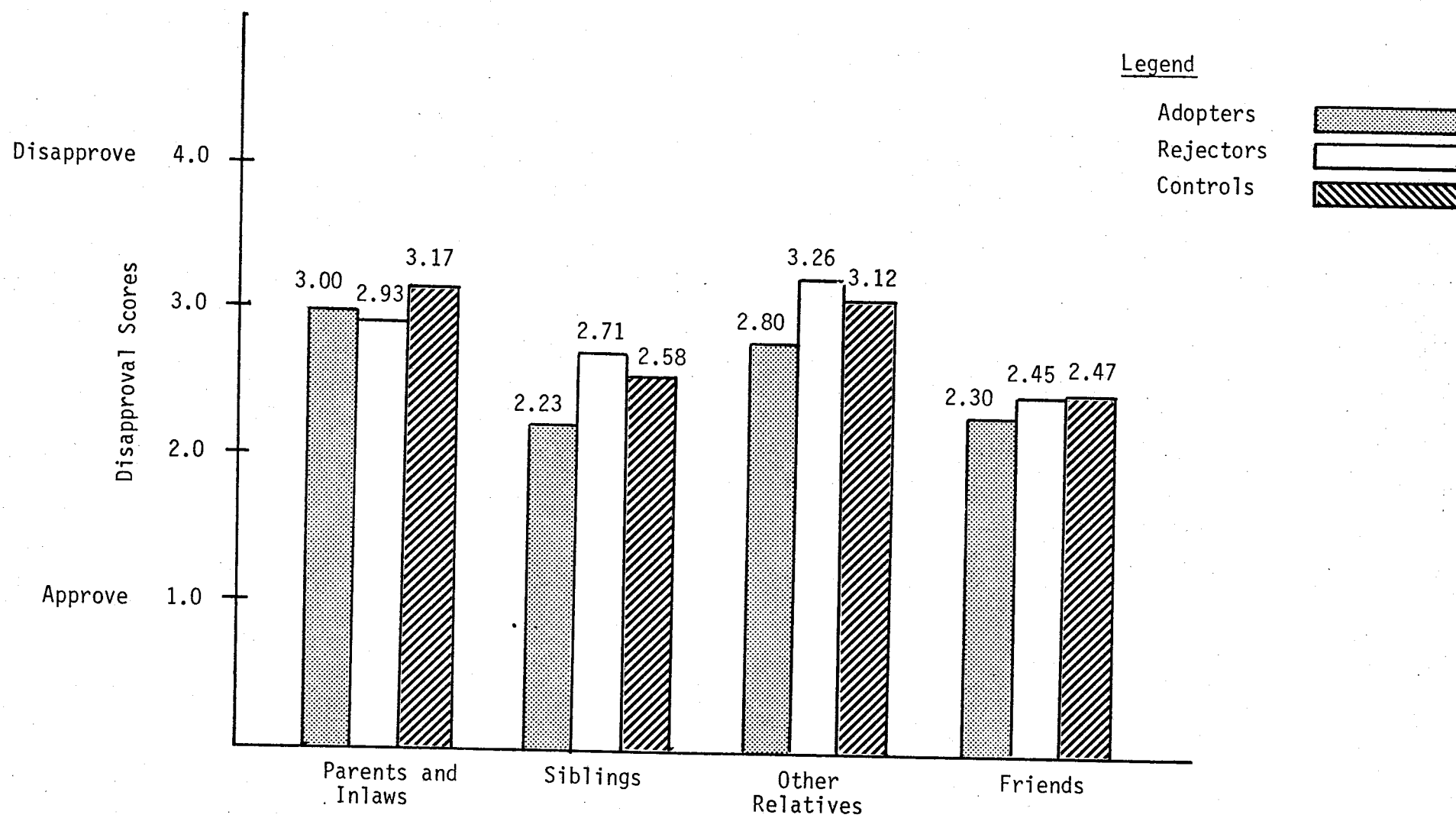


Fig. 8 Mean Reference Group Disapproval Scores: Wives Only

TABLE 23

Percentage of Variance Accounted for by
Reference Group Variables: Wives Only

Comparison	Acq	Friends	P & I	Sibs	Rel	Fri	Total % of Variance	<u>F</u>
Control-Adopter	2.5	18.3	2.3	0.0	1.7	2.5	25.7	2.48*
Control-Rejector	12.6	0.2	0.1	0.0	1.5	1.7	16.3	1.52
Adopter-Rejector	0.7	1.2	2.1	4.2	1.0	2.1	11.5	0.87

Legend: See Table 21

* $p < .05$

of vasectomy by siblings, on the other hand, is the most important variable differentiating between the adopter and rejector sub-samples.

Summary of Reference Group Findings

Hypothesis III regarding the effects on the choice of vasectomy of the extent of personal acquaintance and friendship with vasectomized men and perceived reference group approval was, in the main, confirmed. No matter whether husbands alone, husbands and wives combined or wives alone were compared, controls tended to have the fewest vasectomized friends and acquaintances and perceived their reference groups as most disapproving. Adopters tended to have the most vasectomized friends and acquaintances and saw their reference groups as least disapproving. The rejectors tended to fall between the two groups on both measures.

Multiple regression analysis shows the reference group variables to differentiate significantly between the groups in two instances (controls versus adopters, husbands and wives combined, and wives alone). Personal contact with vasectomized men is most relevant in distinguishing between the controls and the other groups, while perceived approval appears minimally important. In general, adopters and rejectors are quite similar in their reference group variable scores.

Health-Related Variables

During the course of the interview, a number of health-related questions were asked. Perception of health, pain tolerance and recovery rate were measured by Ss' self-ratings on each variable using a three-point scale (below average, average, above average). Ss also reported in their own words all the surgery they had undergone (See Appendix C). The statements were then coded by a rater into four categories: 1) none, 2) minor, 3) moderately severe and 4) major. Minor surgery included superficial procedures like wart removal and the suturing of skin wounds. Moderately severe surgery was defined as any procedure requiring limited hospital stay, such as the setting of fractures or the treatment of serious contusions. Subsumed under major surgery were procedures demanding an extended hospital stay and/or the removal or repair of an internal organ.

As originally conceived, Hypothesis IV referred to the number of surgical incidents reported by each S. In examining the raw data, however, it became clear that the nature of the surgical interventions, rather than their frequency, was the typical focus of the information spontaneously elicited by the interviewers. On further consideration, it was decided to analyze the responses in terms of the severity of the various procedures rather than the sheer frequency of any kind of surgery. Among those reporting any surgery at all prior to vasectomy, the overwhelming majority in all

sub-groups cited only one surgical intervention. Psychologically, if any differences among groups were to emerge, the distinguishing characteristic was most likely to be the kind of surgery undergone, rather than the fact of surgery. Predictions about the severity of surgery and its effect on the choice of vasectomy will be referred to hereafter as Hypothesis IVa.

It will be recalled that Hypotheses V and VI, respectively, predict that adopters report themselves as significantly more tolerant of pain and as significantly healthier than do the rejectors. In the course of administering the questionnaire, the opportunity presented itself to assess perceived recovery rate as well. This variable, too, is therefore included in the following analysis as Hypothesis Va, predicting that adopters perceive their recovery rate as significantly more rapid than that attributed by the rejectors to themselves.

As in the preceding sections of this chapter, analysis of the data for husbands alone will be presented first, followed by those for husbands and wives combined, with the analysis of wives alone presented last. Within each sub-section the presentation will, once again, proceed from single variable analysis to multiple regression analysis.

Husbands

Figure 9 records the prior surgery experience of male S by group. χ^2 analysis of the percentages of men reporting no prior surgery clearly shows that the groups did not differ significantly from one another on that count. Thus, Hypothesis IV, that the rejectors have a significantly greater incidence of surgery, is not confirmed.

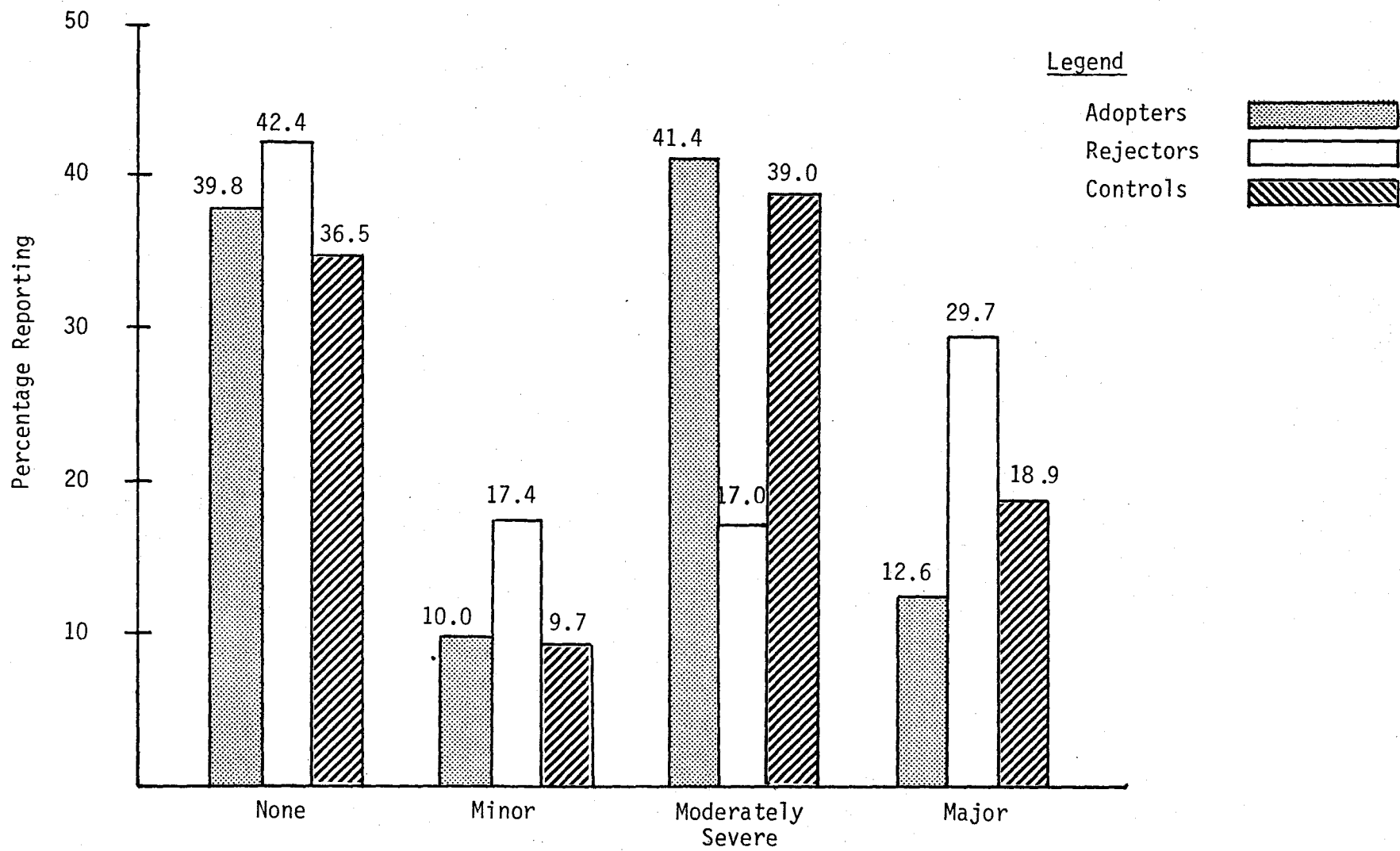


Fig. 9 Percentage Reporting Prior Surgery: Husbands Only

Turning to the analysis of the impact of the relative severity of surgery on the choice of vasectomy (Hypothesis IVa), we find that adopter, rejector and control men did not differ significantly from one another in the distribution of minor, moderately severe and major surgery reported (Table 24). In addition to there being no group differences,

TABLE 24

Summary of Analysis of Variance for
Types of Surgery

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
A (Sex)	1.93	1	1.93	1.87
B (Group)	3.33	2	1.66	1.61
AB	1.92	2	.96	.92
WITHIN CELL	198.65	192	1.03	

wives did not differ significantly from their husbands, nor was there a significant interaction effect. It is interesting, nonetheless, that more than twice as many adopters than rejectors reporting having had moderately severe surgery, whereas almost twice as many rejectors than adopters reported having had major surgery. A relationship, albeit not statistically significant, therefore seems to obtain between the choice of vasectomy and the severity of prior surgery. Among those with prior surgery, men having had major (and minor surgery, too, though the relationship is less clear) are more likely to reject vasectomy than those men who have in the past undergone less severe surgery. Although the differences predicted in Hypothesis IVa are in the expected direction, the hypothesis is not confirmed.

The analyses of variance for perceived health, perceived pain tolerance and perceived recovery rate are presented in Tables 25, 26 and 27, respectively. Significant group effects obtained in the former two variables (health, $F=7.42$, $p<.01$), pain tolerance, $F=4.12$, $p<.05$), but not for the recovery rate variable. Interestingly, only on the recovery rate variable were husbands and wives differentiated significantly ($F=9.40$, $p<.01$). None of the interaction effects was significant.

Further analysis among the men shows (Figure 10) control S to have seen themselves as significantly healthier than did the adopters ($\chi^2=12.6$, $p<.05$) or rejectors ($\chi^2=13.7$, $p<.05$). Adopter and rejector scores, however, were essentially similar. On perceived pain tolerance all men were similar, with the adopters slightly higher in self-appraised endurance. Controls saw their recovery rate as slower than that characterizing the adopters, but faster than that which the rejectors reported about themselves, though the differences were not significant. However, adopters perceived their recovery rate to be significantly faster than that avowed by the rejectors ($\chi^2=9.5$, $p<.02$).

The hypothesized relationships between the husbands' choice of vasectomy and their perceived pain tolerance (Hypothesis V) and recovery rate (Hypothesis Va) were thus tentatively confirmed, though the differences were not significant. The expected relationship between perceived health and the choice of vasectomy (Hypothesis VI) was not borne out: men who considered vasectomy (whether they eventually underwent surgery or not) saw themselves as significantly less healthy than did their control counterparts, while no differences obtained between the adopters and rejectors.

TABLE 25

Summary of Analysis of Variance for
Perceived State of Health

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
A (Sex)	.21	1	.21	.80
B (Group)	4.04	2	2.02	7.41**
AB	.11	2	.05	.20
WITHIN CELL	52.91	194	.27	

** $p < .01$

TABLE 26

Summary of Analysis of Variance for
Perceived Pain Tolerance

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
A (Sex)	.87	1	.87	2.09
B (Group)	3.43	2	1.71	4.11*
AB	1.26	2	.63	1.52
WITHIN CELL	80.42	193	.41	

* $p < .05$

TABLE 27

Summary of Analysis of Variance for
Perceived Recovery Rate

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
A (Sex)	2.62	1	2.62	9.39**
B (Group)	.96	2	.48	1.73
AB	.69	2	.34	1.24
WITHIN CELL	54.17	194	.27	

** $p < .01$

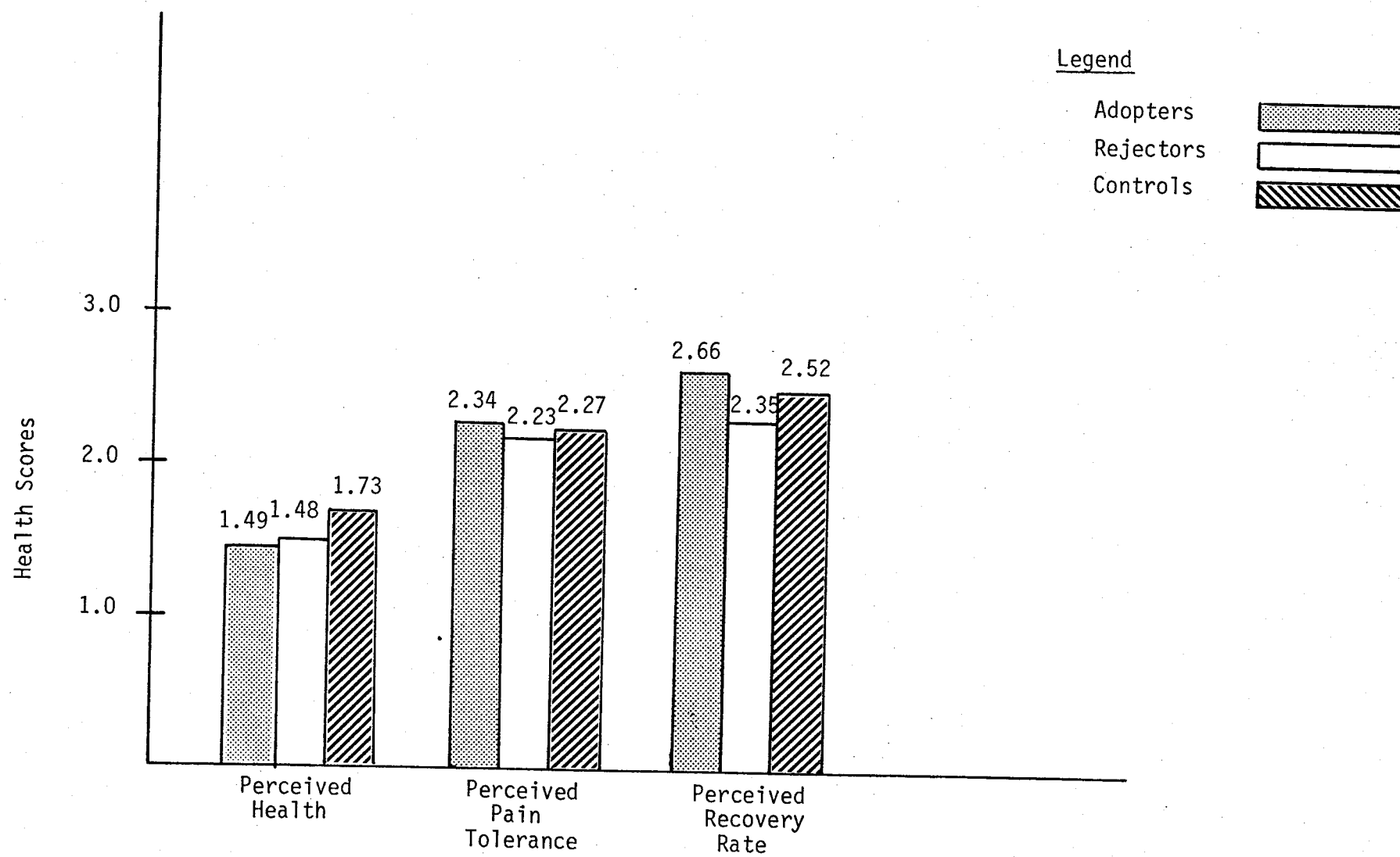


Fig. 10 Mean Health Related Scores: Husbands Only

Turning now to the multiple regression analysis for the men (Table 28), health-related variables accounted for a significant percentage of the variance for the control-adopter comparison ($p < .05$) and for the control-rejector comparison ($p < .05$). The adopters and rejectors, however, did not differ significantly among themselves. The percentage of variance accounted for by using all the health-related variables ranged from 10.9 to 16.4. In comparing control Ss with adopters and rejectors, only about a tenth of the 10.9 percent variance was attributable to health perception, whereas nearly 85 percent was attributable to perceived recovery rate when the differences between adopters and rejectors are examined.

Husbands and Wives Combined

Having completed the analysis of husbands alone, we now turn to the health data derived from the combined scores of the husbands and wives.

The percentages in each sub-sample of men and women combined reporting prior surgery are presented in Figure 11 and the analysis of variance is presented in Table 24. χ^2 analysis of the percentages of men and women reporting no prior surgery shows fewer rejectors than adopters having had previous surgery, though the difference is trivial. Thus, not only was Hypothesis IVa (that rejectors have a significantly greater incidence of surgery than adopters) not confirmed, but also the direction of the difference (though not significant) was opposite to that predicted.

TABLE 28

Percentage of Variance Accounted for by
Health-Related Variables: Husbands Only

Comparison	Surgery	Health	Pain Tol.	Rec. Rate	Total % of Variance	<u>F</u>
Control-Adopter	0.4	10.7	0.7	2.8	14.6	2.56*
Control-Rejector	0.1	11.3	2.2	2.7	16.4	2.81*
Adopter-Rejector	0.6	0.7	0.3	9.2	10.9	1.84

Legend:

Surgery = Prior Surgery

Health = Perceived State of Health

Pain Tol. = Perceived Pain Tolerance

Rec. Rate = Perceived Recovery Rate

* $p < .05$

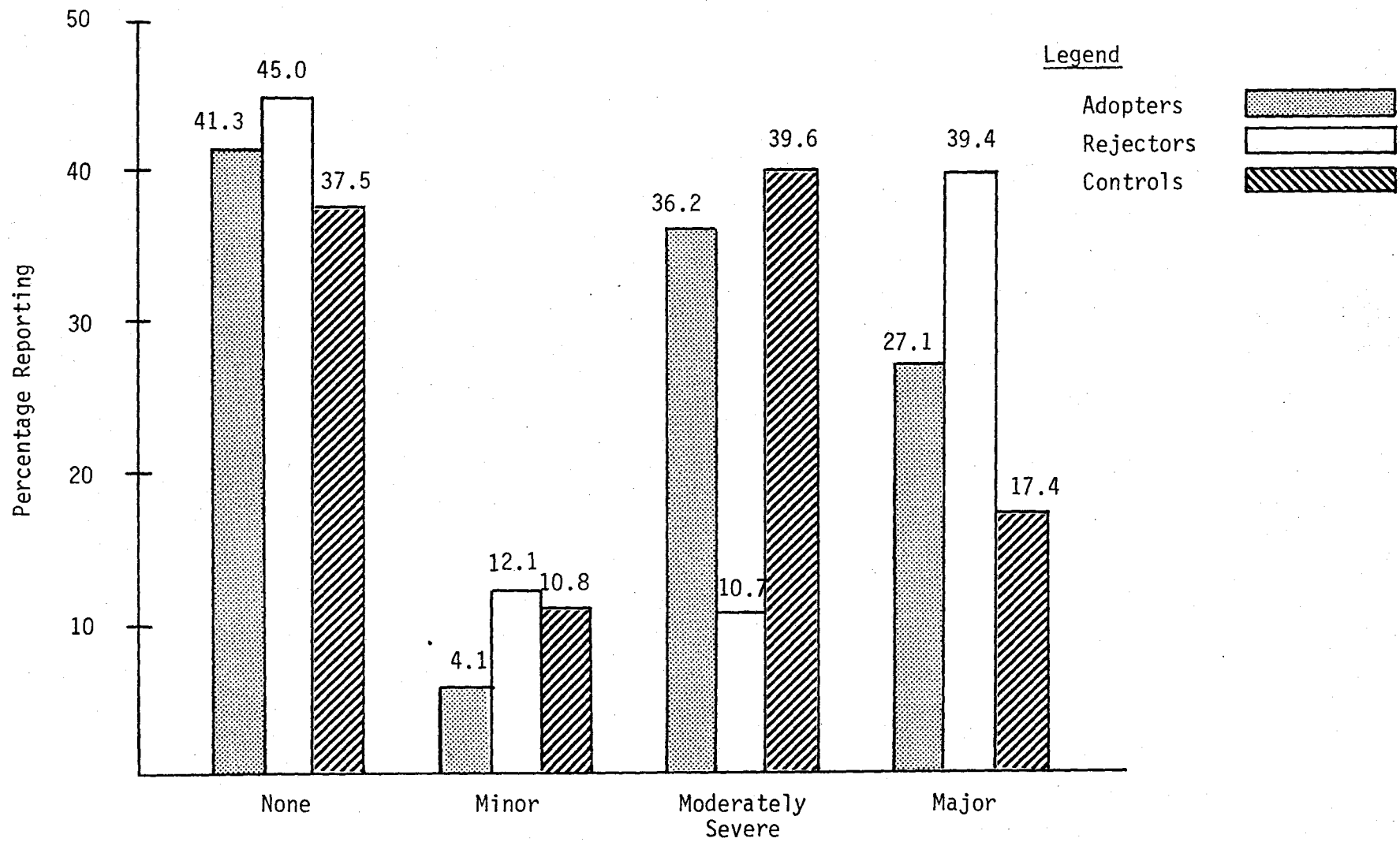


Fig. 11 Percentage Reporting Prior Surgery: Husbands and Wives

Examination of the data pertaining to the severity of prior surgery and its relationship to the choice of vasectomy (Hypothesis IVa) reveals that significant differences obtained between the adopters, rejectors and controls ($\chi^2=17.4$, $p<.01$). Note that the most important difference appears in the history of the rejectors and adopters. Among the adopters, the pattern is reversed. Only 16% of the adopters reported major surgery, but close to 40% gave a history of moderately severe surgery. A similar pattern exists for those reporting minor surgery. Among the potential candidates for vasectomy who had had surgery, the greater the severity of the previous surgery, in general, the less likely the choice of male sterilization. Thus, Hypothesis IVa is confirmed.

Figure 12 summarizes the mean scores for perceived health, pain tolerance and recovery rate for men and women combined. Despite the failure of the analyses of variance to detect significant group differences (Tables 25, 26, and 27), χ^2 analysis revealed that across groups, control Ss appraised themselves to be significantly healthier than did the adopters ($\chi^2=19.5$, $p<.001$) or rejectors ($\chi^2=11.8$, $p<.04$). There were virtually no differences between adopters and rejectors. Therefore, Hypothesis VI was not confirmed.

No significant differences emerged between the groups regarding perceived pain tolerance and perceived recovery rate; the trend was, nonetheless, in the predicted direction. Rejectors reported relatively less capacity to endure pain than did the adopters, while the controls and adopters saw themselves as somewhat more tolerant of physical discomfort. The perceived recovery rate of the rejectors was relatively the slowest and that of the adopters the fastest. Hypotheses V and Va, while not confirmed, did predict the directions of the differences.

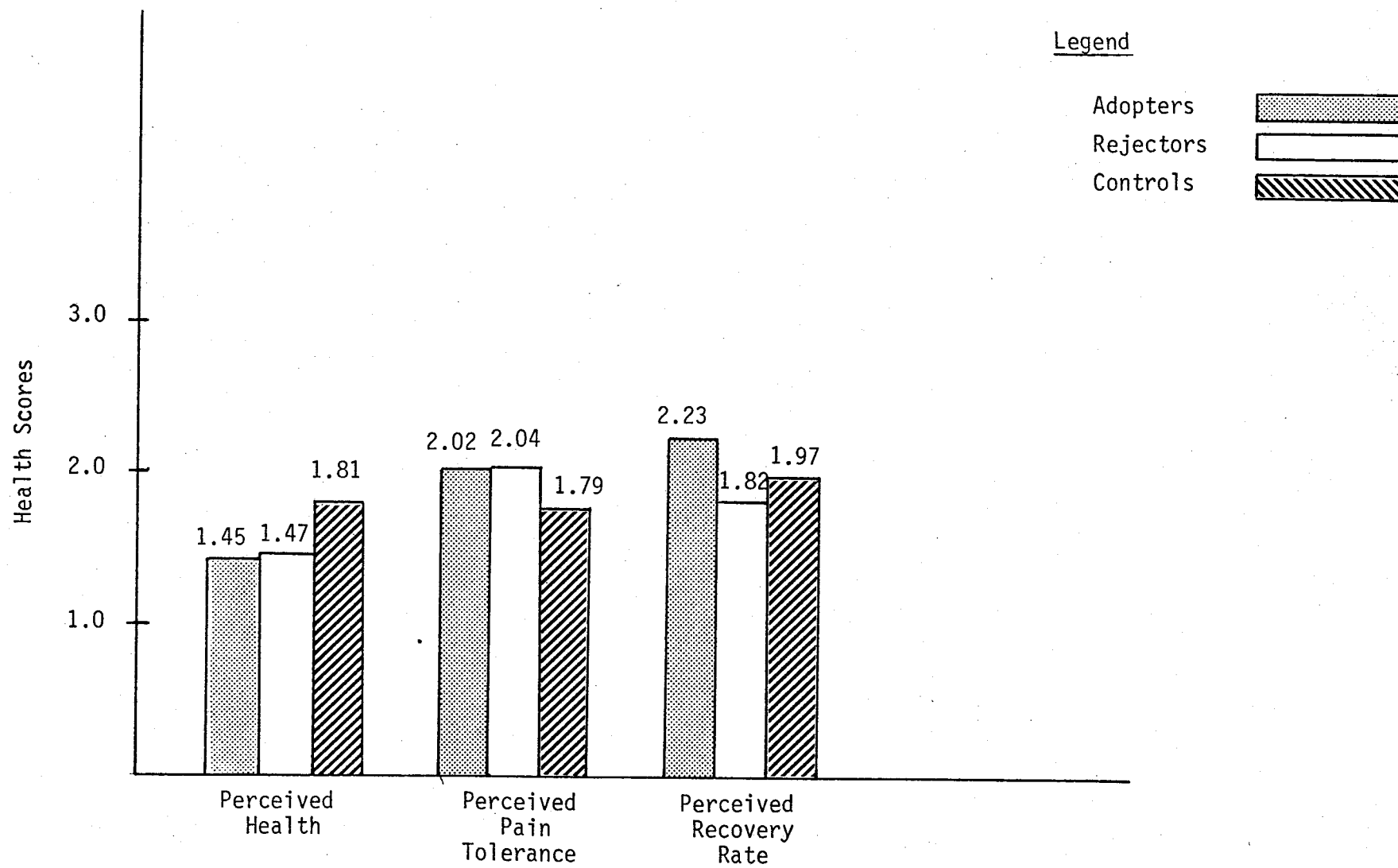


Fig. 12 Mean Health Related Scores: Husbands and Wives

Within the context of all the health-related variables, comparison of adopter, rejector and control Ss (men and women combined) by multiple regression analysis (Table 29) reveals that these factors accounted for a small but significant proportion of the variance between all groups. The percentages of variance attributable to these variables ranged from 9.3 to 13.7. Perception of health status accounted for most of the variance between control and adopter Ss and between control and rejector Ss, while perception of pain tolerance contributed a major share of the variance between the adopters and rejectors. This pattern was noted earlier in the analysis of the scores derived from the husbands only.

Wives

With the data already presented for husbands alone and husbands and wives together, the results for wives alone remain to be analyzed.

Prior surgery experience of women, by group, is recorded in Figure 13. The percentages of women in each group reporting no prior surgery are similar to those found for men only and for men and women combined. There were no significant differences; as in the previous instances, contrary to the hypothesis, the rejectors reported having undergone fewer surgical procedures than did the adopters. Thus, Hypothesis IV is not confirmed.

Turning to the analysis of the impact of the severity of surgery on the choice of vasectomy (Hypothesis IVa), we find once again, that despite the failure of the analysis of variance to detect significant group effects (Table 24), χ^2 analysis reveals significant differences between the adopters, rejectors and controls ($\chi^2=19.3$, $p<.004$). The most striking difference among the women lay, as it did with the men, in the varying

TABLE 29

Percentage of Variance Accounted for by
Health-Related Variables: Husbands and Wives

Comparison	Surgery	Health	Pain Tol.	Rec. Rate	Total % of Variance	<u>F</u>
Control-Adopter	1.0	8.5	4.0	1.2	13.7	5.15**
Control-Rejector	1.9	6.8	0.0	0.5	9.3	4.26**
Adopter-Rejector	0.4	0.8	6.4	1.8	9.5	3.27**

Legend: See Table 28

** $p < .01$

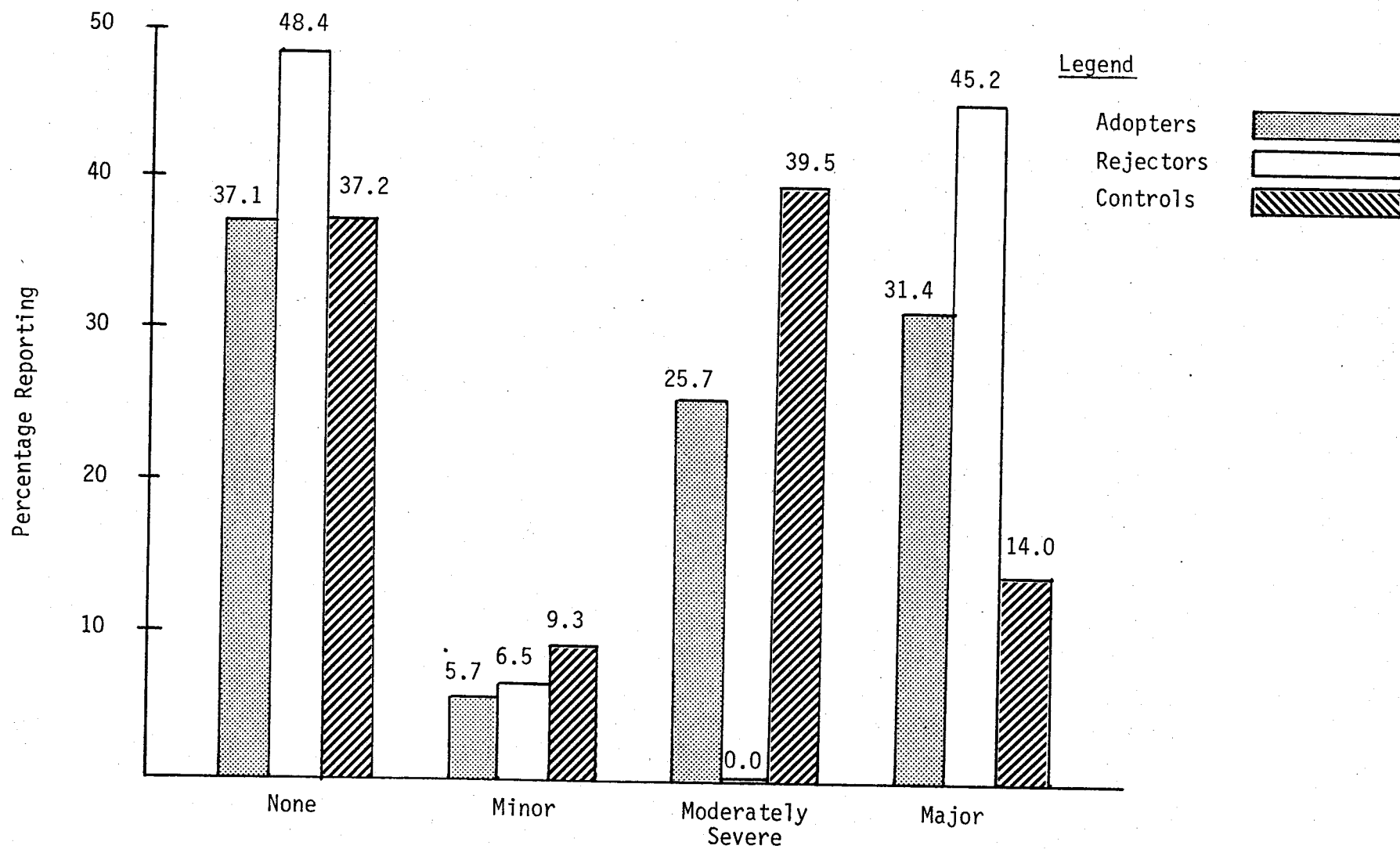


Fig. 13 Percentage Reporting Prior Survey: Wives Only

history of adopters and rejectors with surgery beyond the simply minor. Whereas nearly 26 percent of the adopter women reported having had moderately severe surgery, no rejector women were within this category. Less than one-third of the adopter women reported major surgery, while almost half of their rejector counterparts gave a similar history. Clearly, among those who had undergone in the past some kind of important surgical intervention, the experience of the women contributed to the couples' choice of vasectomy. A history of more severe surgery for the woman made it less likely that her husband would have a vasectomy. Thus, Hypothesis IV is confirmed.

The analyses of variance for perceived health (Table 25) and pain tolerance (Table 26) revealed significant group effects. Comparison of the women's mean scores across groups (Figure 14) by χ^2 analysis reveals that female controls considered themselves significantly healthier than did the adopters ($\chi^2=17.8$, $p<.006$) or rejectors ($\chi^2=19.9$, $p<.004$), while the adopters perceived their health as worse than that reported by their rejector counterparts (not significant). The latter finding opposes the prediction made in Hypothesis VI.

The perceived pain tolerance scores for the control wives were lower than those of the adopters, but greater than those of the rejectors. In both instances, however, the differences were not significant. In addition, adopter wives saw themselves as significantly better able to withstand pain than did the rejectors ($\chi^2=16.1$, $p<.003$). This finding confirms the prediction made in Hypothesis V. No differences obtained among the wives, however, on perceived recovery rate. Hypothesis Va, in reference to the wives only, is not confirmed.

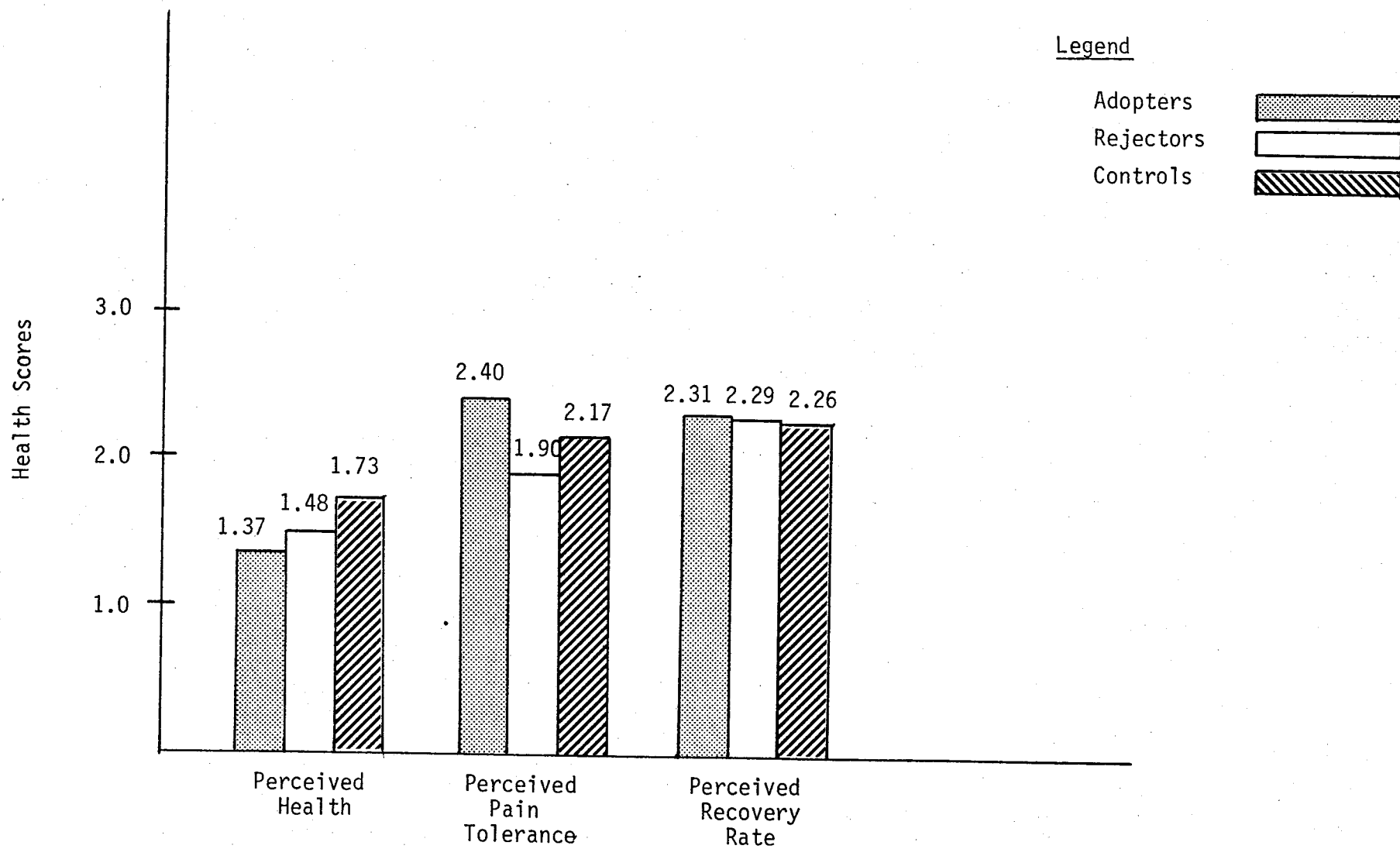


Fig. 14 Mean Health Related Scores: Wives Only

Among the women, multiple regression analysis revealed that health-related variables accounted for a significant share of the variance between all groups, except for the control-rejector comparison (Table 30). The percentage of total variance attributable to health scores ranged from 12.7 to 15.2, not at all unlike the pattern evinced by scores for the men. The relative importance of the women's individual measures differs, however, in an important way from the pattern of the men. For husbands-only comparisons involving control Ss, it will be recalled, 70 to 90 percent of the variance attributable to health-related variables could be traced to the perceived health measure alone. Among the wives, perceived health never accounted for more than half of the attributed variance. Also, for the adopter-rejector comparisons among men, nearly nine-tenths of the attributed variance lay with the perceived recovery rate variable. For the same comparison among the women, nine-tenths of the variance could be attributed to differences in perceived pain tolerance. Apparently, perceived health was more important in establishing the significant differences between control men and the two other groups than it was for the same comparison among the women. In the adopter-rejector comparison, recovery rate was the most important factor among men, while perceived pain tolerance played the more important role among the women.

Summary of Health Variable Findings

Hypothesis IV regarding the incidence of prior surgery was not confirmed directly for any of the comparisons. Nonetheless, an interesting relationship appeared for men, for women and for men and women combined

TABLE 30

Percentage of Variance Accounted for by
Health-Related Variables: Wives Only

Comparison	Surgery	Health	Pain Tol.	Rec. Rate	Total % of Variance	<u>F</u>
Control-Adopter	1.0	7.3	6.1	0.7	15.2	2.91*
Control-Rejector	8.8	3.2	0.6	0.0	12.7	2.26
Adopter-Rejector	1.1	0.3	13.5	0.0	15.0	2.64*

Legend: See Table 28

* $p < .05$

regarding the severity of previous surgery. Those who had previously undergone surgery of considerable severity were less likely later to choose vasectomy. Thus, the nature of prior surgery appears more relevant to distinguishing among the groups than does the fact of having had surgery alone.

Hypothesis V regarding perceived pain tolerance was tentatively confirmed. For men alone, men and women combined and women alone, adopters felt better able to withstand pain than did the rejectors (however, only the wives differed significantly among themselves).

Hypothesis Va regarding perceived recovery rate was also tentatively confirmed. Adopter men perceived their recovery rate as significantly faster than did the rejector men. Husbands and wives combined revealed similar but non-significant differences. However, wives alone were virtually alike in their perceptions of the rapidity of their recovery rate.

Hypothesis VI regarding perceived health was not confirmed. There were virtually no adopter-rejector differences either for husbands alone or husbands and wives combined. Wives alone scored in the opposite direction than expected, though not significantly so.

Health-related variables did fairly well in accounting for the variance among the three sub-samples. In only two comparisons (male adopter-male rejector and female control-female rejector) did these variables not differentiate among the groups significantly. In general, the health-related variables were more successful than the personality or reference group factors in distinguishing between the controls, adopters and rejectors.

Among the several health measures, perceived state of health accounted for the largest share of the variance when controls were compared with adopters and/or rejectors (the controls considered themselves healthier). However, when adopter men were compared with their rejector counterparts, differences in perceived recovery rate were most visible (the adopter men saw themselves as recovering more quickly). Additionally, perceived pain tolerance became most important in the comparison of female adopters with rejectors (adopter wives saw themselves as better able to withstand pain).

Differences in surgical history contributed only a small percentage of the variance in the comparisons of men across groups, but were somewhat more forceful in distinguishing between the women. Rejector men were more likely to have had major surgery than were the adopters, but adopter men were more likely to have had moderately severe surgery. A similar pattern was also evident for the women.

Regression Analyses for All Variables

In the foregoing parts of this chapter, the multiple regression analyses were based on variables within each of the three areas explored in the study: personality, reference group and health-related variables. The following section deals with the results of multiple regression analyses using data from more than a single area. In essence, this merely involved systematically adding information for the analysis in the following manner (let a = personality variables, b = reference group variables and c = health-related variables): 1) $a+b$, 2) $a+c$, 3) $b+c$ and 4) $a+b+c$. The presentations earlier in this chapter, of course, were based on the analyses of variables from a single area (i.e., a or b or c). Once again, the scores for men only will be examined first, followed by scores for men and women combined and ending with scores for women only.

Husbands

The percentages of variance contributed by personality and reference group variables analyzed together in a multiple regression equation are displayed in Table 31. Note that the percentages of variance accounted for by the measures are considerably higher than were found for personality variables alone (Table 10) or for reference group variables alone (Table 21), though the differences between the groups are not significant.

TABLE 31

Percentage of Variance Accounted for by
Personality and Reference Group Variables: Husbands Only

Comparison	LC	<u>Do</u>	<u>Ai</u>	<u>Fx</u>	<u>My</u>	Acq	Friends	P & I	Sibs	Rel	Fri	Total % of Variance	<u>F</u>
Control-Adopter		9.9			4.8		7.3		4.8	4.1		37.3	1.67
Control-Rejector			9.6	11.2		8.6	14.3			7.4		53.1	2.04
Adopter-Rejector		5.8	8.0		5.7		3.5					30.4	1.35

Legend: See Tables 10 and 21

The explanation for the increased percentage of attributed variance when two categories of variables are combined is found in the nature of the relationships of the variables in the regression analysis. To illustrate, Table 32 presents a representative section of the correlation matrix of personality and reference group variables for men only. Examining first the relationship among the various personality measures, one notes that the correlations between any two variables range from .22 to .60. The relationship among the reference group measures themselves ranges from .28 to .32 (ignoring signs). When personality and reference group variables are intercorrelated, however, the correlations never rise above .10, except for one instance (the correlation between My and perceived approval of siblings). In other words, the measures are independent from one another. The moderate correlations among the individual variables within each category (i.e., personality or reference group) reduce the differentiating capacity of the equation. Combining uncorrelated scores (personality and reference group), on the other hand, enhances the capacity to distinguish between the groups.

An analogy further illustrates this point. If one wishes to predict success in college, one might administer three different intelligence or achievement tests to incoming freshmen. If the individual test scores are highly intercorrelated, they provide essentially similar information. The predictive efficiency of the three tests would be only slightly better than that of a single test. However, if one added tests to the battery that are relatively uncorrelated with each other and with intelligence, but are highly correlated with success in college, the

TABLE 32

Correlation Matrix for Six Personality
and Reference Group Variables: Husbands Only

Variable	<u>Do</u>	<u>Ai</u>	<u>My</u>	Acq	Friends	Sibs
<u>Do</u>		.22	.60	-.06	.04	-.09
<u>Ai</u>			.36	.04	-.10	-.09
<u>My</u>				-.04	-.01	-.24
Acq					.30	-.28
Friends						-.32
Sibs						

Legend: See Tables 10 and 21

predictive efficiency of the entire battery would be enhanced. Similarly, in this study, combining variables that are not correlated with each other but are correlated with the choice of vasectomy increases the predictive potency of the regression equation.

Returning to Table 31, we note that Do, My and the number of vasectomized friends are the factors most relevant in differentiating the controls from their adopter counterparts. In the control-rejector comparison, we find that Ai, Fx and the number of vasectomized friends and acquaintances best differentiate the groups. In the comparison of adopters with rejectors, Do, Ai, My and the number of vasectomized friends are the most salient differentiating measures. Referring to Tables 10 and 21 which provide information, respectively, about personality variables alone and reference group variables alone, we find essentially similar patterns. Do, Ai, My and the number of vasectomized friends and acquaintances accounted for the greatest share of the variance in the group comparisons. If these variables are best able to differentiate between the groups, it seems reasonable to assume that they would also have been manifest as significant effects on the various analyses of variance and t tests. This is not necessarily the case. Testing each variable alone assumes that it is totally independent from the others. The regression analysis takes into account the inter-correlations among the variables and allows each factor to "emerge" from and assume its proper relevance to all the other variables in question.

The analysis of personality with health-related factors ($a+c$) and reference group in concert with health-related factors ($b+c$) is similar in two ways to combining personality and reference group variables ($a+b$) (Tables 33 and 34).

TABLE 33

Percentage of Variance Accounted for by
Personality and Health-Related Variables: Husbands Only

Comparison	LC	<u>Do</u>	<u>Ai</u>	<u>Fx</u>	<u>My</u>	Surgery	Health	Pain Tol.	Rec. Rate	Total % of Variance	<u>F</u>
Control-Adopter		8.5			3.6		12.5		5.7	34.0	2.76*
Control-Rejector	3.0		9.9			2.1	11.8			30.1	1.86
Adopter-Rejector	3.0		3.0				1.3		11.0	20.6	1.97

Legend: See Tables 10 and 28

* $p < .05$

TABLE 34

Percentage of Variance Accounted for by
Reference Group and Health-Related Variables: Husbands Only

Comparison	Acq	Friends	P & I	Sibs	Rel	Fri	Surgery	Health	Pain Tol.	Rec. Rate	Total % of Variance	<u>F</u>
Control-Adopter	4.5							9.1		3.4	19.8	.99
Control-Rejector	3.1				2.0			22.3		4.9	36.2	2.06
Adopter-Rejector	1.4	1.9							3.2	12.6	24.1	1.20

Legend: See Tables 21 and 28

First, because of the relative increase in variable independence, combining any two variable categories results in an increase in the attributed variance. Secondly, measures that best differentiated the groups when each set of factors was analyzed separately appeared again when the variable categories were analyzed in pairs. Admittedly, including more than one category of variables in the multiple regression equation increases the overall explained proportion of the variance among the groups. The important variables, however, seem to be substantially those snagged by the analysis of single variable areas (a or b or c). Therefore, the regression analysis for the pairs of categories for husbands and wives combined and for wives alone will not be presented here (See Appendix B). There is, nonetheless, value in examining in some detail the regression analyses of the combined personality, reference group and health-related variables (a+b+c). We return, then, to the results pertaining to husbands alone.

Table 35 summarizes the regression analysis, using all variables. Combining all three sets of factors resulted in a substantial increase in the percentage of variance accounted for. However, only the comparison of controls with adopters was significant ($p < .05$). Examining the mean scores showed that control men saw themselves as healthier, scored higher on the My and Do scales of the CPI, perceived their recovery rate as slower and their relatives as more disapproving and had fewer vasectomized acquaintances than did the adopters. Relative to the rejectors, the controls considered themselves healthier, scored higher on the Ai scale, felt their relatives to be more disapproving and had fewer vasectomized acquaintances. The primary factors distinguishing adopters from rejectors were the perceived recovery rate and the Fx scale of the CPI, with the

TABLE 35

Percentage of Variance Accounted for by
Combining All Variables: Husbands Only

Comparison	LC	Do	Ai	Fx	My	Surgery	Health	Pain Tol.	Rec. Rate	Acq.	Friends	P&I	Sibs	Rel	Fri	Total % of Variance	F
Control-Adopter		9.4			14.5		8.1		5.0	6.7				8.0		61.4	2.33*
Control-Rejector			8.3				20.6			9.3	4.4			8.5	3.2	65.2	1.62
Adopter-Rejector			4.8	6.9					17.6		2.4	2.2				42.8	1.39

Legend: See Tables 10, 21 and 28

* $p < .05$

adopters seeing their recovery rate as faster and scoring lower on the Fx scale. The three most important variables seemed to be My (control-adopter), perceived health (control-rejector) and perceived recovery rate (adopter-rejector).

Husbands and Wives Combined

For husbands and wives considered as a unit, analysis of all three variable categories (Table 36) resulted in establishing significant differences between the controls and both their adopter ($p < .05$) and rejector ($p < .05$) counterparts. The adopters were not significantly differentiated from the rejectors. Note that the overall percentages of the variance accounted for tend to run much lower for the combined husband-wife scores than for the husbands alone. For the latter, the control-adopter comparison, for instance, shows a percentage of 61.4; for the couple as a unit, it is about half, 32.5. Apparently, combining spouses' scores markedly increases the variability.

The controls had fewer vasectomized friends and saw themselves as healthier than did the adopters. Controls, compared with rejectors, had fewer vasectomized friends and scored higher on the My scale of the CPI. The only factor contributing substantially to the difference between adopters and rejectors was perceived pain tolerance, with the adopters reporting greater endurance.

Wives

For wives alone (Table 37), the regression analysis did not produce significant differences between any of the groups. Control women, compared to adopter women, had fewer vasectomized friends, scored higher on the My scale and had a lower incidence of serious surgery. Controls,

TABLE 36

Percentage of Variance Accounted for by
Combining All Variables: Husbands and Wives

Comparison	LC	<u>Do</u>	<u>Ai</u>	<u>Fx</u>	<u>My</u>	Surgery	Health	Pain Tol.	Rec. Rate	Acq.	Friends	P&I	Sibs	Rel	Fri	Total % of Variance	<u>F</u>
Control-Adopter		3.9			3.9		5.9				10.9			2.2		32.5	2.16*
Control-Rejector	2.3				7.2	4.8					13.5					37.5	2.15*
Adopter-Rejector		2.6		2.1				6.8								19.9	1.14

Legend: See Tables 10, 21 and 28 .

* $p < .05$

TABLE 37

Percentage of Variance Accounted for by
Combining all Variables: Wives Only

Comparison	LC	<u>Do</u>	<u>Ai</u>	<u>Fx</u>	<u>My</u>	Surgery	Health	Pain Tol.	Rec. Rate	Acq.	Friends	P&I	Sibs	Rel	Fri	Total % of Variance	<u>F</u>
Control-Adopter			2.5		9.2	7.6			2.9		18.6					47.4	1.44
Control-Rejector				8.9	10.5	8.0			2.2		15.1					53.7	1.96
Adopter-Rejector	3.3			3.7	4.4			8.7			3.2					36.3	1.31

Legend: See Tables 10, 21 and 28

in comparison with rejectors, had fewer vasectomized acquaintances, scored higher on the My and Fx scales and had a lower incidence of serious surgery. The only factor differentiating the adopter and rejector women was the latter's greater perceived pain tolerance.

Summary of Multiple Regression Findings

In sum, the most effective single factor for predicting group membership, as had previously been demonstrated, was the set of health-related variables. Combining pairs of factors increased the percentage of attributable variance.

For all three sets of factors combined, several individual measures were most relevant to the prediction of group membership. For husbands alone, My (control-adopter), perceived health (control-rejector) and perceived recovery rate (adopter-rejector) appeared most important. For husbands and wives combined, the strongly differentiating variable was the number of vasectomized friends known to the groups (control-adopter, control-rejector). For wives alone, the controls were best distinguished from both the adopters and rejectors by the number of vasectomized friends and acquaintances known to the groups.

Summary of Findings -- Chapter III

The major findings of this study are summarized below. The results for each major variable category follow the order of the hypotheses proposed in Chapter II. Once again, the data are generally presented first for men only, then for men and women combined and, finally, for women only.

Personality Variables

Hypothesis I -- Locus of Control: No matter whether husbands alone, husbands and wives combined or wives alone were compared across groups, no differences among controls, adopters and rejectors were found. All Ss tended to be similar in the degree of their internality. Hypothesis I was not confirmed.

Hypothesis II -- CPI scores: Individual comparisons of CPI scores showed Hypothesis II not to be confirmed. For husbands alone, the adopter and rejector groups did not differ significantly on any of the four scales; the control group scored significantly higher (rather than lower, as predicted) than the other groups on the Ai and My scales. For husbands and wives combined and for wives alone, the pattern was similar: the adopters and rejector did not differ from one another, while the control group scored significantly higher (contrary to the prediction) on the Do, Ai and My scales.

Multiple regression analysis showed the five personality factors to differentiate between the groups only in one instance (control-adopter, husbands and wives combined). In general, the personality variables were minimally effective in distinguishing between the groups.

Reference Group Variables

Hypothesis III -- The extent of personal acquaintance and friendship with vasectomized men and perceived reference group approval appeared to distinguish among the groups, in line with Hypothesis III. No matter whether men alone, men and women combined or women alone were compared, the control group tended to have the fewest vasectomized friends and acquaintances and to have perceived their reference groups as most disapproving. Interestingly, all the groups saw their elders (parents and in-laws and other relatives) as more disapproving than their age peers (siblings and friends).

Multiple regression analysis shows the reference group variables to account for a significant percentage of the variance in two instances (control-adopter husbands and wives combined and wives alone). Personal contact with vasectomized men is most important in differentiating the controls from their adopter and rejector counterparts, while perceived approval is minimally important.

Health-Related Variables

Hypothesis IV -- Incidence of Surgery: The mere incidence of prior surgery did not influence the choice of vasectomy; thus Hypothesis IV is not confirmed. However, in all comparisons (men only, men and

women combined and women only) across the adopters, rejectors and controls, those who had previously undergone surgery of considerable severity were less likely later to choose vasectomy. Hypothesis IVa was, therefore, substantiated.

Hypothesis V -- Pain Tolerance: This hypothesis was tentatively confirmed. For men only, men and women combined and women only, the adopters felt better able to tolerate pain than did the rejectors, though only the wives differed significantly.

Hypothesis Va -- Perceived recovery rate: The effect of perceived recovery rate was in the predicted direction, though not statistically significant. Adopter men saw their recovery rate as significantly more rapid than that attributed by rejector men to themselves. Husbands and wives combined revealed similar, non-significant differences. However, wives alone did not differ on this measure.

Hypothesis VI -- Perceived health: Self-perception of health did not have a significant effect on the choice of vasectomy for men alone, men and women combined and for women alone. Hypothesis VI was not confirmed by the data.

Multiple regression analysis reveals that health-related variables did fairly well in accounting for the variance between the three groups. In only two comparisons (male adopter-male rejector and female control-female rejector) did these variables fail to differentiate the groups significantly. Among the several health-related measures, perceived state of health was most important in differentiating the controls from the adopters and rejectors. When comparing male adopters with male rejectors, differences in perceived recovery rate were most

visible, while in the same comparison for women, perceived pain tolerance was most apparent.

Multiple Regression Analysis of All Variables

Several measures were most visible in distinguishing between the three groups. Control Ss were most easily separated from adopters and rejectors on the following variables: personal contact with vasectomized men, My and perceived health. Adopters were most easily differentiated from rejectors when compared on perceived pain tolerance, recovery rate and prior surgery.

For husbands alone, when all three variable categories were combined, only controls and adopters were differentiated significantly. The most relevant variable was My (controls scored higher). For husbands and wives combined, controls were distinguished from both adopters and rejectors. In both comparisons, friendship with vasectomized men was most contributory to the difference. For women only, no significant differences were found among the various sub-samples. Finally, differences between the adopters and rejectors tended to be small on most measures, while differences between the controls and the other two group were somewhat greater.

CHAPTER IV

DISCUSSION

As originally conceived this study had addressed itself to a question which, given the growing interest in male surgical contraception, has both theoretical and practical ramifications: Why do some men undergo vasectomy, whereas others never consider the idea seriously or think better of it after making some steps toward the decision? Eighteen months and over 110 couple interviews later, some leads now look much less promising than they did when the study was first proposed. In the current investigation, at least, personality variables seemed not to distinguish those who elected vasectomy from those who did not. Social psychological factors -- perceived approval of certain reference groups or the degree to which the couples were familiar with men who had already had the surgery -- seemed somewhat stronger differentiators. Health history and self-perceptions of one's tolerance for and recovery from surgery also emerged as meaningful variables in the study -- perhaps the most meaningful, in fact. Withal, much remains to be explained.

Throughout the following pages, the findings will be reviewed in the light of our clinical experience, the empirical results available in the literature of vasectomy and related topics and relevant personality and social theory. After noting some of the limitations of the current study, we shall move to considering the details of the findings regarding

personality, reference groups and the nexus of health-related variables. The importance of multivariate analysis in family planning studies will then be discussed, followed by an exploration of the couples' decision-making process as a focus for research on contraceptive surgery. Perhaps, by the conclusion of this discussion, we shall have no better answers; it is to be hoped, at least, that from this investigation will emerge more pertinent as well as more sharply posed issues for further study.

Some Limitations of the Study

Before embarking on the interpretation of the results and a discussion of their implications, it would do well to analyze some of the study's limitations. Obviously, important methodological and analytic drawbacks could compromise the impact of the findings.

The Validity of Respondent Reports

A global problem relevant to the current-study is that raised by Phillips (1971) on the validity of data collected directly from respondent reports. He cited numerous instances where a measure's validity did not hold up when checked against outside criteria. Clearly, in self-reports of socially aberrant behavior (e.g., arrests or deviant sexual practices), dissembling might be understood in terms of Ss' reluctance to reveal information that might lower their esteem in the eyes of the interviewer. Apparently, however, even in the area of health information, discrepancies are often noted between recorded fact and the version offered by respondents. Cannell and Fowler (1963) found that between one-fourth and one-half of those interviewed gave inaccurate reports of length of hospital stay, month of discharge, diagnosis and the type of surgery they had undergone. Kosa, Alpert and Haggerty (1967) found similar discrepancies with the facts in the information about family health provided by mothers attending a clinic. The explanation for these findings lies, in part,

in selective censorship and the desire to give socially desirable responses, even in an area one would assume to be relatively socially and affectively neutral.

It will be recalled that the current study did not presume to assess the validity of Ss' reports, only the possible differences in their perceptions (e.g., of the approval of reference groups). The questionable historical and social accuracy of the responses is not, therefore, necessarily a major obstacle to the interpretation of the findings, only a caveat against assuming that the reports by Ss are factual. This is not to say, admittedly, that the validity of the reports is unquestionable.

The most critical limitation of the current research is that the data are retrospective, the result of an unwelcome resignation to the realities of field research. The original research plan was to interview prospectively all persons requesting information from a vasectomy clinic about possible surgery. It was expected that Ss would naturally sort themselves subsequently into adopters and rejectors; some would follow through and others would not. Unfortunately, the clinic reneged on the original agreement and allowed interviews only after the couples had either already obtained a vasectomy or had failed to show for the pre-vasectomy screening session at the clinic. For the two clinic groups, then, the data were gathered after the vasectomy decision (pro or con) was made by the couple.

Retrospective data are particularly suspect for several reasons. First, the passage of time increases the likelihood for faulty recall of facts. People cannot often remember the details of pertinent events over an extended period of time. Besides the expected lapses of memory,

there is the added risk of selectivity or outright distortion of information over time, in line with certain defensive needs or personality structures. Finally, abhorring the vacuum of memory loss, individuals tend to reconstruct past events according to how they think they should have been or probably were. In the particular case at hand, the decision around vasectomy, it is possible that Ss "recalled" the choices as being much more deliberate and well thought out than they actually had been. In retrospect, Ss might well have spuriously added to and embellished history.

For the groups that constituted the sample in the current study, the retrospective nature of the data may have influenced the responses differentially. The variables most likely to have been affected by having been interviewed post-surgically included, among others, reference group approval, perceived pain tolerance and health. The adopters had undergone surgery relatively recently, done well and could have been projecting their experiences backward over time. In the case of the rejectors, the very act of refusing the operation might have similarly distorted their recall of their attitudes when vasectomy had still been a live option. The rejectors may have justified their decision against vasectomy by exaggerating (perhaps unwittingly) their poor recovery rate and the severity of their previous surgery, just as the adopters may have moved to exactly the opposite extreme. If this were true, the differences between the two groups that had at least seriously considered vasectomy might well have been after-the-fact, rather than predispositional.

This criticism, however, does not apply equally to all the data collected on Ss. Some of the variables could conceivably be less subject

to the inherent difficulties of retrospective data. The Locus of Control and CPI patterns, for example, which can be assumed to measure relatively stable tendencies, would be unlikely to have changed drastically in the short period following surgery or the decision not to have it, although slight differences could admittedly occur. Similarly, items calling for factual answers, rather than opinions (for instance, incidence of prior surgery) would probably be hardly more vulnerable to distortion just because of the brief interval since the decision concerning vasectomy was acted upon (around three months, on the average). It should be recalled, finally, that the instructional set to Ss was that they respond to the best of their ability as they had felt prior to the decision for or against vasectomy. Still, the exigencies of the current enterprise have at least cast some doubt on the validity of information gathered after the fact. This limitation is, admittedly, not easily dismissed.

The current research shares, as well, in the general deficiencies of questionnaire studies in which two important areas have been identified as possible sources of bias: respondent errors and investigator errors.

Respondent Errors

Among respondent errors, "the guinea pig effect" (Webb, Campbell, Schwartz, & Sechrest, 1966) looms large. The awareness that one is participating in a study can alter the results. Throughout the current investigation, of course, all Ss knew that the interviewers were specifically interested in their attitudes toward birth control and family planning, thereby possibly provoking within Ss certain preconceived notions as to the "real" purposes behind the research. Orne (1962) has discussed the "demand characteristics of the experimental situation,"

the cues and expectancies (accurate or not) imposed by the experimenter-subject relationship. Characterizing the participant in a psychological experiment as someone involved willy-nilly in a private problem-solving task, Orne pointed out that one motive for volunteering for a research project may be the hope of somehow contributing to human welfare or the advancement of science. Prompted by these noble motives, the volunteer has his own stake in the outcome of the study and would probably answer in a manner which would support the hypotheses tested, once he had divined their nature to his own satisfaction. Furthermore, as Webb, Campbell, Schwartz and Sechrest (1966) have noted, "...the experimenter forces upon the subject a role-defining decision -- What kind of person should I be as I answer these questions or do these tasks? (p. 16)." There is, then, a certain self-consciousness inherent in the experimental situation which can becloud the findings.

Aside from their inaccurate second-guessing or the defensive reactions created by the experimental situation (the questions were about an intimate and usually taboo subject), Ss were faced with yet another interpersonal complication by the nature of the interview. Prior to it, Ss probably had not labeled themselves as adopters or rejectors, but had simply accepted their decision for or against vasectomy as one choice in a series of life-decisions. During the interview, the decision around surgery was highlighted -- and by a stranger. The adopters would be most likely to show themselves as favoring vasectomy, having already undergone the surgery. Even the rejectors, however, might be expected to express similar feelings, rather than portray themselves as "quitters." This, indeed, seemed to be the case. Few rejectors allowed

themselves to banish forever the possibility that they would choose surgical sterilization. The thrust of their comments was that it was inappropriate at the time and for the foreseeable future because of external reasons like the cost of surgery, the inconvenience of getting to the clinic or their general busyness.

We know that respondents frequently need to garner the approval of the investigator (Reiken, 1962) and, so to speak, tell him what he wants to hear. Rosenberg (1965; 1969) demonstrated that this factor can significantly influence the outcome of a research study. There is no way of directly assessing which "self" was presented by Ss. The interviewers uniformly reported that all Ss were cooperative and did not seem unusually secretive or reluctant to answer questions. Nevertheless, could it be that despite E's efforts to disassociate himself from the vasectomy clinic, Ss might have believed that the interviewers were firmly in favor of contraceptive surgery... and perhaps answered questions in an appeal to the interviewers' "bias?" Probably not. Ss, as a whole, were a relatively self-confident lot. Scores for all Ss across groups on the Gi (Good impression) scale of the CPI were within the normal range and did not differ significantly from one another. The Gi scale reflects Ss' attempts to impress others favorably and is highly correlated with the Marlowe-Crowne Social Desirability Scale (Megargee, 1972).

Another possible respondent source of error is that all were volunteers and, as such, might have been different from those who had refused to participate. Self-selection of Ss in research on matters sexual in particular has been discussed by Bauman (1973) and Kaats and Davis (1971) as a possible source of bias. Nearly 40% of the people

contacted did volunteer, but the remainder was not accessible. It is our impression from the few indicators available (geographic location, age or having a telephone) that those who refused to participate in the research were not unlike the volunteers. Unfortunately, without access to them, there is no way of knowing in what ways they differ -- if they indeed do differ -- from the volunteers.

Investigator Errors

Turning to investigator effects, the usual major biases such as age, race and sex of the interviewer were not serious sources of error since they would have operated nondifferentially across all groups. All interviewers were roughly comparable in age to Ss and, like them, were white (blacks were not studied, mostly because of their small representation among clinic applicants). Thus, had any bias been present, it would have been uniform across all groups.

Webb, Campbell, Schwartz and Sechrest (1966) noted another possible source of investigator bias: mistakes in recording data and the anticipation of Ss' responses by the interviewers. The safeguards against these errors were threefold: 1) The CPI and Locus of Control scale are self-administered and were scored "blind;" 2) all interviewers underwent careful pre-experimental training and 3) postinterview questionnaire checks were required for all interviewer couples.

The early work of Rosenthal (1966) and his later review of the effects of expectancy on psychological tests (Rosenthal, 1969) have shown rather decisively that investigator bias influences research outcome. How is the effect to be minimized? Conducting blind experiments

seems to be the most promising avenue to follow. One approach is to cull data from a larger survey not specifically related to the current area of interest. For example, large-scale studies of health attitudes and medical information could include material about birth control without arousing a particular set in either interviewers or respondents. This design could not be used in the current study because of the small pool of potential Ss available, nor would it have been effective since all respondents knew that they had been invited to participate in the research as a result of their contact with the vasectomy clinic.

Personality Variables

Locus of Control

One of the more unequivocal findings from the current study is the apparent lack of relationship between scores on the Locus of Control scale and the consideration or selection of vasectomy. Neither for husbands alone, for wives alone or for both spouses combined were the differences significant among the sub-samples of adopters, rejectors and controls. Even if personality factors in general are meaningfully related to family planning, locus of control alone did not seem to show itself very forcefully in the current investigation.

It had been predicted that a significant degree of internal control would be demonstrated by the adopters, relative to the other two groups, in line with the belief that those choosing vasectomy were somehow taking more decisive authority over their own lives and not subjecting themselves any longer to the risks of unwelcome pregnancy. Locus of control has proven itself relevant to contraceptive practice. MacDonald (1970), for example, reported that single women practicing birth control were more internal than those who were sexually active but took no contraceptive precaution. More recently, these findings were replicated by Lundy (1972). In a study of 600 sexually active female undergraduates, the mean Locus of Control score for contraceptive users was significantly more in the internal direction than that of non-users. Keller, Sims and Henry (1970) were apparently also thinking

in terms of locus of control when they characterized "non-users" of contraceptives as having feelings of inefficacy and as not being inwardly convinced that they control their lives. Why, then, did the Locus of Control scale not differentiate the groups in the present study?

It would appear that despite their diversity regarding the choice of vasectomy, the sub-samples included in this study were, after all, similar in their attitudes and general behavior relative to further conception. While varying in the specific contraceptive modalities they had settled upon, all Ss were practicing birth control successfully and planned by their own actions to avoid further pregnancies. In that sense, all could be considered internals, i.e., experiencing themselves as controlling their own destinies (as opposed to those who do not practice contraception at all). In fact, this was the case. All three groups scored in the internal direction.

Confirmation for the current findings is contained in a recent study of birth control practices in India. Carment and Paliwal (1973) found no differences on Locus of Control between vasectomized and non-vasectomized men who were using contraceptives. Locus of Control did, however, differentiate contraceptors in general from men who were not engaged in any effective means of family planning.

Data from the current study would nonetheless raise some questions about the alleged relationship between locus of control and birth planning practices. Take, for example, the matter of unplanned pregnancies. On the basis of information from the interview, Ss could be divided into 1) those who reported a history of unplanned pregnancies

versus those who reported no such history, 2) those who reported no unplanned pregnancies versus those who reported two or more and 3) those whose most recent pregnancy was unplanned versus those who had wished to conceive. It was assumed that couples reporting "accidents" would score in the relatively external direction, whereas those having no such history would be more internal. As can be seen in Table 38, no such differences obtained between the groups.

TABLE 38

Mean Locus of Control Scores and
Unplanned Pregnancy: Husbands and Wives

Response	At least one pregnancy unplanned	Two or more pregnancies unplanned	Most recent pregnancy planned
Yes	8.5	9.0	8.6
No	9.0	9.0	8.6

Pregnancy planning was apparently unrelated to locus of control. This finding does not jibe with the import of several studies differentiating successful contraceptors from those who fail at preventing contraception (Bakker & Dightman, 1964; Rodgers, Ziegler, Kriegsman, & Martin, 1968; Sandberg & Jacobs, 1971). There is general agreement that failure to prevent conception is related to poor impulse control, inability to delay gratification, little desire to control one's life, immaturity and feelings of low self-worth -- factors purportedly measured by an "external" orientation on the Locus of Control scale.

The relative homogeneity of Ss, almost all of whom were "internals," may be the reason that Locus of Control in this study was unable to distinguish between effective and ineffective contra-

ceptors. The range of scores was 1-19 (with 13 the "breaking point" for externality). Nearly 90% of the sample scored 12 or less. In effect, the question of birth planning efficacy and locus of control is thus being posed concerning a group consisting only of internals. Detecting differences on locus of control would naturally be extremely difficult. Other studies, however, probably used samples that varied more widely and randomly along the dimension of internality-externality, providing an extended range of scores. In such a more random sample the degree of internality might indeed be related to whether unplanned or unwanted children are conceived.

California Psychological Inventory

Because of its relative lack of popularity, the recency of its adoption in the Midwest and its being perceived as something of a novelty, for Ss in the current study, vasectomy was clearly an innovative birth control practice. The findings of Ziegler, Rodgers and Kriegsman (1966) and Grindstaff and Ebanks (1971) converge on the notion that those electing vasectomy have a degree of innovativeness about them. These studies used the CPI and PRF (Personality Research Form), respectively, to survey the personality characteristics of candidates for vasectomy. In both instances, vasectomized men were seen as less conforming and more resourceful, future-oriented and willing to take risks than their control counterparts -- characteristics which according to Gough (1973) and Megargee (1972) should be reflected on the Do, Ai, Fx and My scales of the CPI. Contrary to the prediction of Hypotheses II, however, the control group (i.e., the "non-innovators") scored higher than the adopters and rejectors; there were no differences on these measures between the

adopters and rejectors. Among the men, controls scored significantly higher on two of the CPI scales, Ai and My. The control women, as well, scored significantly higher on three of the four scales, Do, Ai and My.

It seems particularly surprising that scores on Gough's My scale, specifically designed to identify those most likely to accept new contraceptive methods (Gough, 1973), would be so misleading in the present instance. Those highest on My (the controls) had seemingly not so much as thought fleetingly of accepting a new contraceptive practice like vasectomy.

Can it be that the My scale should be relegated to use in the developing countries, where the typical question is that of readiness to adopt any artificial interference with the natural likelihood of contraception? In the only other instance in the literature of the application of the My scale (Gough, 1973), with data on couples in California, the scale also did not fare well. My did not differentiate between those who had newly begun using ovulation suppressors and those who had just had a vasectomy. The CPI data on which Gough drew were taken from the Scripps Foundation research of Ziegler, Rodgers and Kriegsman (1966). It could be argued (though Gough does not) that in the California of the early 1960's, when the data were originally gathered, both the "pill" and vasectomy were equally "innovative;" the My scale could therefore not distinguish the two groups from one another. At best, the historicity of that explanation is open to challenge. The present study's findings, however, cannot be so easily explained away. Relative to almost any other contraceptive technique available in the greater Chicago area in 1971 and 1972, vasectomy was undoubtedly an

innovation. Yet control men and women scored significantly higher on the My scale.

To explain the CPI results, it would do well to examine carefully the whole of the CPI profile for men in the three sub-samples (Figure 15). Scores for all males were within 10 standard scores of the mean, indicating relatively small differences between the groups, all of which are within normal limits. However, control men, relative to adopters, scored significantly higher on the following scales: Capacity for Status (Cs), Achievement via Conformance (Ac), Achievement via Independence (Ai), Psychological Mindedness (Py) and Modernity (My). Compared with rejectors, the controls were significantly higher on the above five scales, plus three others: Social Presence (Sp), Responsibility (Re) and Socialization (So). Though no significant differences obtained between adopter and rejector men, the rejectors were considerably lower on Sp, Well Being (Wb), Re, Self Control (Sc) and Tolerance (To). While it is after the fact, clinical interpretation of the profiles (based on Megargee, 1972) may be valuable -- at least as a source for further research.

The CPI, as a whole, shows that the control men were quite comfortable with their lives (Cs, So, Wb), saw themselves as dependable, persevering and conscientious (Re, Ac, So) and felt confident in their ability to deal appropriately with unforeseen circumstances (Re, Py, My). Not feeling the need for any drastic changes, they would be unlikely to make the radical decision to obtain a vasectomy.

While adopter men were also self-confident, reasonable and persevering (Re, Sp, To, Sc), they appeared more restless than their control counterparts, as well as less inhibited and less responsive to social

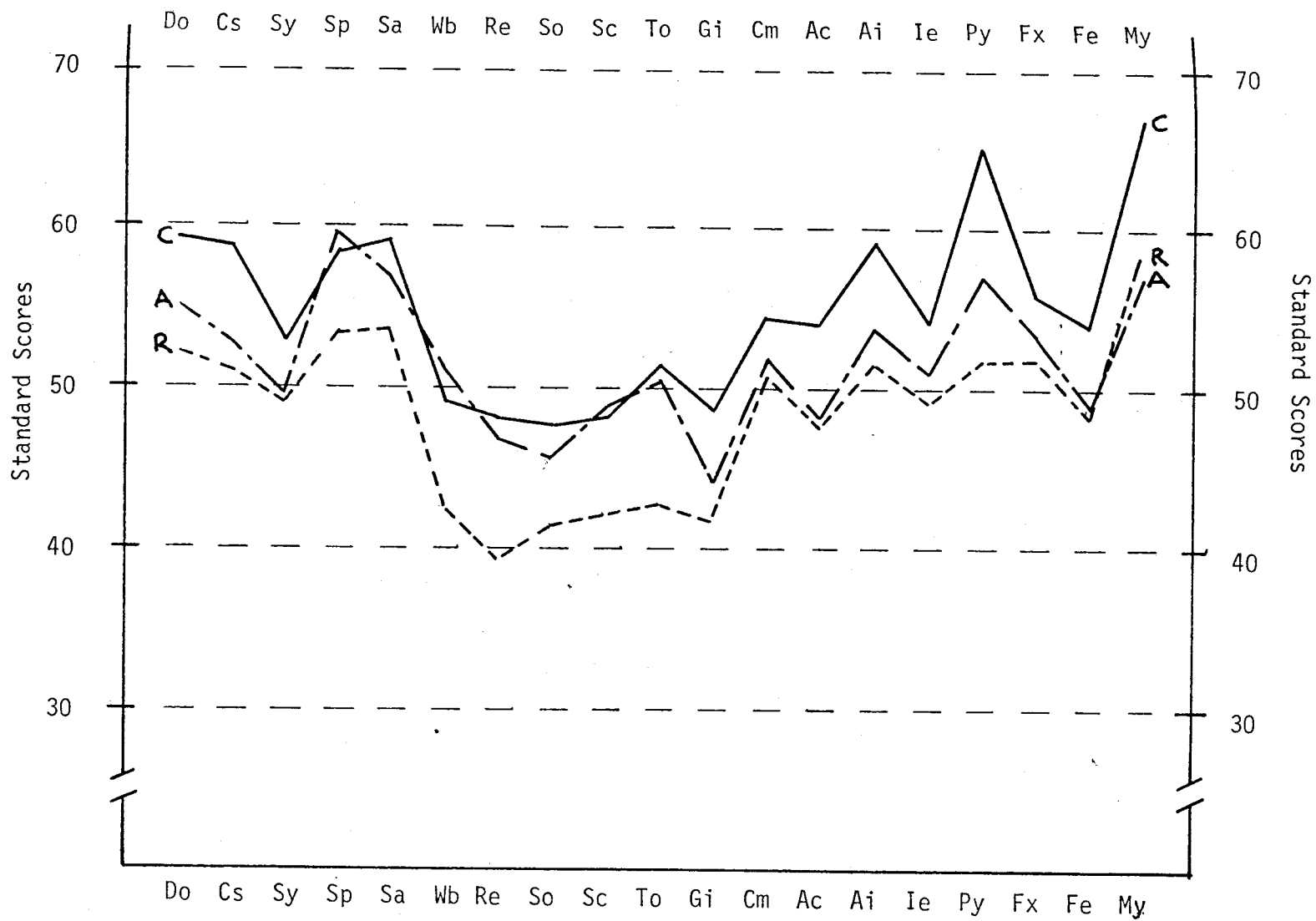


Fig. 15 CPI Scores: Husbands

pressure (Ac, So, Wb, Re). Given a reason to be dissatisfied with their current mode of birth control, they were more likely to consider vasectomy a viable alternative. Their perseverance made them likely to pursue their decision to final action.

Rejector males shared the adopters' feelings of dissatisfaction, relative uninhibitedness and restlessness (Re, So, Ac). Relative to the other two groups, however, they were less reliable and conscientious and more likely to be impulsive and erratic (Re, So, Sc). If more apt to come to the brink of a radical decision, they were also more likely to have sudden turnabouts despite their willingness to act unconventionally.

In sum, the control and adopter men were similar in their self-confidence and planfulness, while the adopter and rejector men were more alike in their opportunism and dissatisfaction.

Among the women (Figure 16), control Ss seemed self-assured and generally content with their present status (Cs, Sa, So). Being comfortable and given to foresight (Re, Ai), they were apparently confident that their destinies would not eventuate in circumstances beyond their control. In comparison, both adopter and rejector women appeared less complacent (Wb, To), more apprehensive and driven by a need to change the status quo (To, Wb, Cs), with the adopter women more likely to follow through on their decisions (Fx).

Let us return to innovation and the hypothesized relationship between seeking a vasectomy and scores on the Do, Ai, Fx and My scales. Interpreting only the four CPI scales without considering the remainder may lead to false conclusions. It is true that the controls were somewhat more planful and innovative than the adopters or rejectors, thereby making

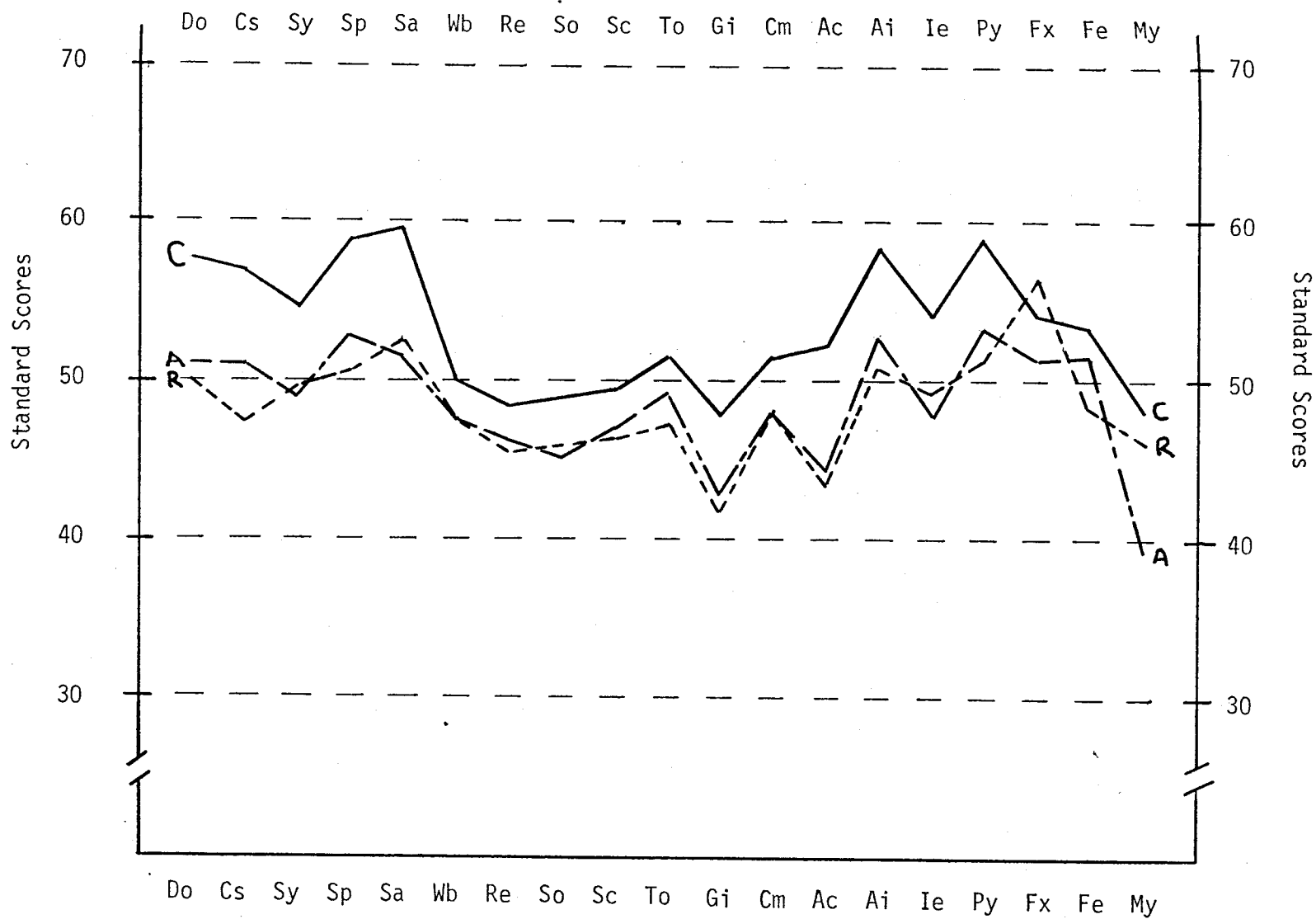


Fig. 16 CPI Scores: Wives

them the more likely to obtain a vasectomy, all things being equal. Innovativeness is not a quality, however, that exists independent from some press in the environment that calls for change. The controls appear to have remained only potentially innovative regarding contraception. As Mischel (1973) has noted, to make effective predictions, personality variables must be considered in unison with situational and other mediating factors.

The controls' satisfaction with the status quo precluded their seeking a novel solution to a problem they did not experience. The adopters and rejectors, on the other hand, confronted with feelings of dissatisfaction, were more impelled seriously to consider male sterilization. Why were they dissatisfied? Apparently, the answer is disarmingly simple: The latter groups had more unwanted pregnancies (or pregnancy scares, perhaps).

Figure 17 presents the percentages of each group reporting prior unplanned pregnancies, failure to plan the most recent pregnancy and history of unplanned children. Only 32% of the controls had unplanned pregnancies, compared to over 60% of the adopters and rejectors ($\chi^2=23.8$, $p=.001$). Almost 60% of the adopters and nearly 65% of the rejectors reported their most recent pregnancy to have not been planned, as opposed to only 20% of the controls. Reports of unplanned pregnancies leading to the birth of children also followed this general pattern. Whereas 31% of the controls acknowledged having had unplanned children, nearly 50% of the adopter and 60% of the rejectors made the same statement ($\chi^2=15.7$, $p=.015$).

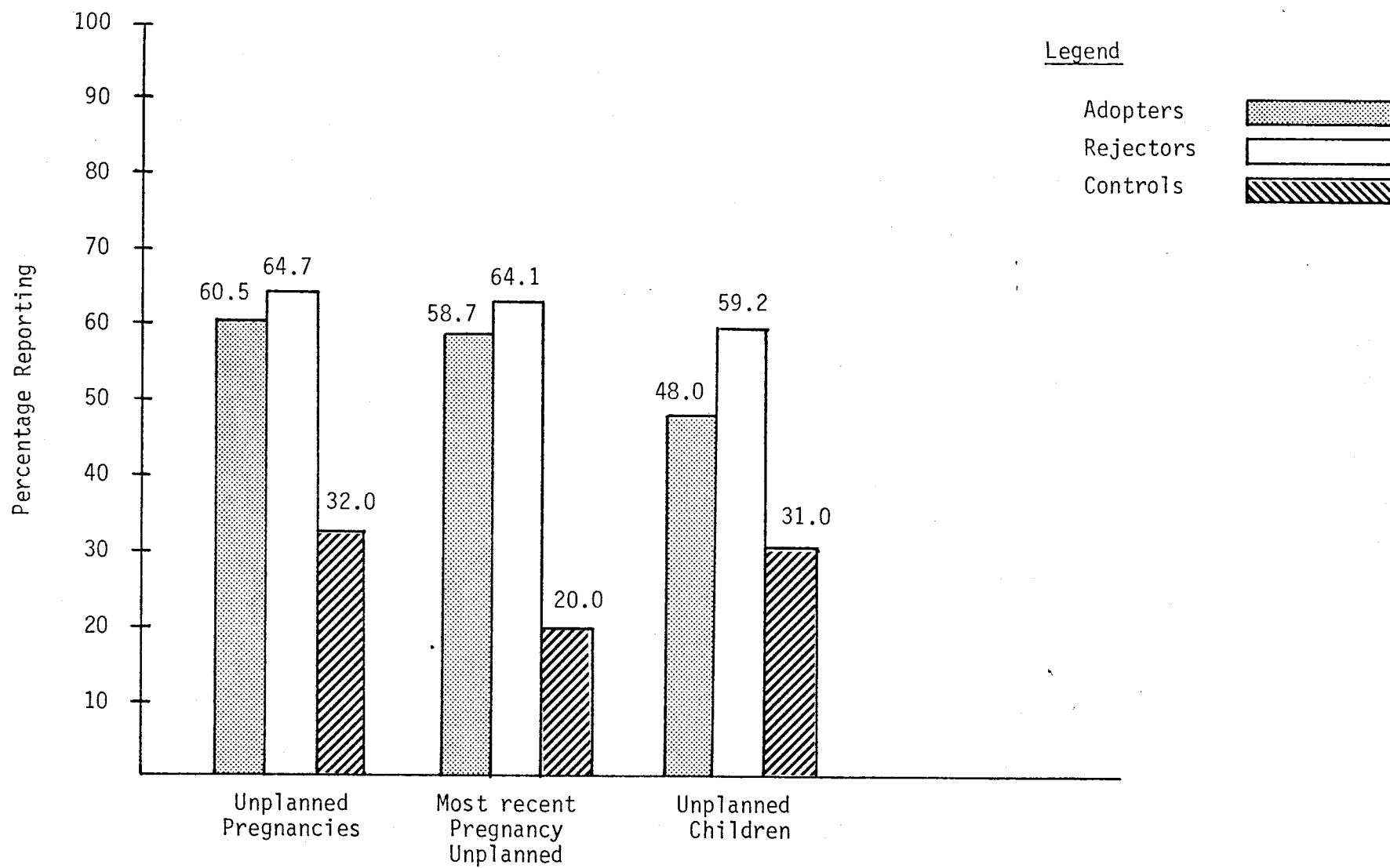


Fig. 17 Percentage Reporting Unplanned Pregnancies, Most Recent Pregnancy Unplanned, Unplanned Children: Husbands and Wives

The controls, then, seem to have practiced contraception more effectively than those who had at least considered contraceptive surgery as a method of birth control, whether they eventually were vasectomized or not. Indeed, the percentage of controls reporting unwanted children and/or pregnancies closely approximates the United States norm of 26% recently reported by Ryder (1973). The adopters and rejectors, however, far surpass the national average in their inability to prevent unwanted conceptions. The data strongly suggest that a major cause of the latter two groups' interest in vasectomy is their failure to have avoided unwanted pregnancies and births.

As noted previously, studies by Bakker and Dightman (1964), Rodgers, Ziegler, Kriegsman and Martin (1968) and Sandberg and Jacobs (1971) showed that failure in contraceptive usage is related to personality factors such as lack of planfulness, failure to assume responsibility and the inability to delay gratification. Controls' personality traits, as measured by the CPI in this study, seem the antithesis of these characteristics. It makes sense, therefore, that the incidence of unwanted conceptions among controls is considerably lower than that for the adopters and rejectors.

In sum, control Ss had relatively little need to consider vasectomy. In comparison, the adopters and rejectors were more restless and dissatisfied and were prompted by previous failures into attempting some change. In their characteristically planful manner, the adopters considered vasectomy and submitted to surgery. The rejectors, in their typically erratic manner, vacillated and eventually turned away from the innovative step.

Castration Anxiety

Besides characteristics assessed by the CPI, might personality concepts drawn from other sources help to elucidate the differences between adopters and rejectors? While not tested in the current study -- and, at best, a construct not easily made operational -- one could hypothesize that rejectors are more subject to unconscious anxiety associated with the symbolic meaning of vasectomy and its equation with castration. This explanation, grounded in psychoanalytic theory, has been advanced in regards to other kinds of surgery as well.

Aside from the anxieties aroused by the realities of bodily injury and the possibility of death, according to Deutsch (1948) and Sternbach (1968), the patient undergoing surgery is subject to the re-evocation of infantile fears of abandonment and punishment at the hands of angry parental figures. The historical residue of these anxieties is cathected to all body parts; later damage inflicted upon any of the organs, goes the theory, recalls and reinstates the anxiety first aroused around the developmental crisis of the Oedipal conflict. This reaction to surgery is not necessarily psychopathological. As Rosen (1952) has noted, "Suddenly having to place one's body safety entirely in the hands of another individual...is bound to resurrect many feelings from the period of childhood no matter how 'emotionally mature' the individual involved (p. 56)."

The reaction to pain has also been linked to the Anlage of childhood. Sternbach (1968) theorized that the experience of pain is associated with earlier childhood transactions around punishment and symbolizes "...the incipient damage that an angry parent might (inflict)

(p. 84)." Janis (1958), in an intensive study of a female analysand, found her experience of surgery and pain to be associated with fears of retribution for long repressed fantasies about her parents.

Whether or not originating specifically in the Oedipal phase of development, the role of childhood anxieties in lending private meaning to surgery and pain is a well-established dictum of psychoanalytic thought. Such unconscious concomitants would seem particularly likely for vasectomy, which is surgery directly upon the male genitalia. Indeed, the possible "de-masculinizing" impact of contraceptive surgery has frequently been commented upon. Several authors (Ferber, Tietze, & Lewitt, 1967; Rodgers, Ziegler, Kriegsman, & Martin, 1968) have noted the mistaken but all too easy connection of vasectomy with castration. Ostensibly, vasectomy could be even more expected to rearouse Oedipal or pre-Oedipal fears of retribution than would surgery on other parts of the body. Some studies have documented the presence of castration anxiety associated with male surgical contraception.

Hammer (1953), in an early experimental investigation of psycho-diagnostic testing that has never been replicated, found clear signs of castration anxiety -- as measured by the House-Tree-Person test -- among men who were about to be vasectomized. His study, however, was done with a population of mental defectives in an institutional setting and may not be valid for other, more "normal" groups. Erickson (1967), in a review of six case histories of "normal" males, found an unusually high degree of emotional disturbance as a consequence of vasectomy. Perhaps too definitively, Erickson viewed vasectomy as a destructive and sacrificial act related to unconscious motivations centering upon

castration and feelings about one's parents. His conclusions are, of course, open to question because of the "clinical," impressionistic manner of data collection and sampling.

Erickson's paper -- while intriguing -- illustrates the major difficulty in assessing the accuracy of the psychoanalytic point of view. Verification is most difficult in "studies" inevitably fraught with biases and lacking either precise measurement or definition of the variables. Thus, while one may consider castration anxiety as a factor in rejecting vasectomy, one is left at present without a testable hypothesis -- not testable, at least, in the usual manner.

Without completely discounting the psychoanalytic standpoint, therefore, the more parsimonious explanation of the current findings -- as will later be shown -- is that concerns about the surgery itself and the realities of discomfort and recovery (rather than the surgery's symbolic associations) are a major factor in the choice of vasectomy.

Reference Groups

The current study examined two aspects of reference group influence upon potential candidates for vasectomy -- acquaintance patterns and perceived approval.

Acquaintance Patterns

There were marked differences among the groups in the extent of their personal contact with vasectomized friends and acquaintances. As predicted, controls knew fewer vasectomized men than did their adopter or rejector counterparts. These findings strongly support those of Grindstaff and Ebanks (1971) who reported that 72% of the vasectomized men they had studied knew at least one other surgically sterilized man. In a similar vein, Spillane, Gillespie and Ryder (1973) noted that 85% of the men in their study who had been vasectomized and nearly 76% of those who were seriously considering contraceptive surgery knew someone who had had a vasectomy.

One interpretation of the findings is that already vasectomized friends somehow impelled the adopters and rejectors towards considering the operation, i.e., group norms helped make vasectomy a viable alternative. According to this view, had their circle of acquaintances been otherwise constituted, the adopters and rejectors might just as readily have given serious attention to another birth control method. The controls, perhaps,

simply had fewer relationships with significant people who had undergone surgical contraception.

Strong empirical evidence exists for susceptibility to group influence. Asch (1956) and Sherif and Sherif (1947), in two classic studies of conformity, found that individual judgments were strongly affected by group pressure. Sherif and Sherif (1964), in a general discussion of the importance of reference groups, posited social support as a necessity for personal stability. Even though one may not actively search for it, they stressed, social support remains a psychological reality for the individual.

On the specific matter of family planning, Bogue (1967) found that adoption of a birth control procedure is based, in part, on the belief that the action will be approved by other persons whose judgment is highly respected. Poffenberger and Poffenberger (1965) noted the great importance in India of reference group acceptance of male sterilization. Men contemplating vasectomy, they reported, carefully considered the consequences of the surgery for the status of their extended family and caste group. The personal approval of potential adopters was secondary to group mores. Palmore and Freedman (1969) also stressed the influence of others on one's choice of contraceptive method. In their study of population programs in Taiwan, they observed that one of the factors militating against the adoption of modern family planning techniques was the failure of people to perceive its actual acceptability to others -- an instance of "pluralistic ignorance," as they dubbed it.

If group pressure can dissuade one from adopting a certain contraceptive procedure, it can also work in favor of adoption. Admittedly, the fact of having had a vasectomy is not generally bruited about by those who have had the operation. Indeed, Ferber, Tietze and Lewitt (1967) found that, despite their avowedly high satisfaction with the procedure, half the men in their study did not recommend the surgery to others; even more surprisingly, one-third did not even tell anyone about having the vasectomy. Apparently, the procedure is a private matter, best discussed only between marriage partners. Perhaps close friends, too, might share such confidences, but it is unlikely that co-workers or neighbors would be gratuitously privy to such intimate information. This is not to say, however, that people refuse to discuss vasectomy at all, just that they are unlikely to divulge to relative strangers the fact of having had the surgery.

It is likely that reference group approval is not a one-way process whereby group members simply and automatically respond to whatever is the reigning doctrine of the constituents. Implicit in the concepts of friendship and acquaintanceship are the communication and transmission of values and attitudes. Given some perceived need for a permanently effective contraceptive method, the adopters and rejectors discussed vasectomy with others; from the research interviews, it was clear that the candidates for vasectomy had, in fact, talked extensively with others about the operation. Discussion provided them with additional information about the surgery itself, as well as evidence for the acceptability of the procedure among their group members. In the process of acquiring information they may have discovered (to their surprise) that, all along, some friends (or friends of friends) had themselves been sterilized. This, then, would have further

impressed them with the acceptability of vasectomy and also expanded their contacts with possible informants about the surgery. The awareness of group approval would grow in tandem with information based upon a widening circle of personal contact with vasectomized individuals; the system spirals upward toward the threshold of commitment and action. The controls, on the other hand, were neither initially inclined toward vasectomy nor initially provided with friends and acquaintances who would make vasectomy a salient topic for consideration. Hence, their quests for information and their attempts to find social approval for vasectomy, weak enough to begin with, were quickly dampened.

For adopters and rejectors, having known relatively many vasectomized men is the convergence of both cause and effect. First, contact with some vasectomized men preceded the decision to explore the possibility of surgery. The atmosphere of intimacy that characterized the friendship led the adopter and eventual rejector to acknowledge openly their interest in the operation. Secondly, contact with other vasectomized men followed the decision to consider the alternative of sterilization. The very fact of admitting to such interest provided additional information and encouragement to pursue the possibility of vasectomy. This, in turn, fostered expanding contacts with vasectomized men, more information and additional group support for the decision.

It is an obviously formidable task to determine the extent to which consideration of vasectomy precedes or is a consequence of friendship patterns. In any event, future research should establish the time sequence and span of the decision around vasectomy, as well as check the accuracy of

Ss' perceptions against the actual opinions of the friends and acquaintances whose attitudes on the subject of contraceptive surgery figure importantly in the minds of the potential adopters. Most likely, the effects of perception interact with "reality." As a group member, one not only follows the norms, one also helps in their establishment. As a determinant of family planning behavior, subjective perception -- even though perhaps inaccurate -- is important (Bogue, 1967; Rosario, 1971), but the historical realities impinging upon the decision-making process cannot thereby be ignored as inconsequential.

Perceived Approval

Findings from this study do not support the notion that the perceived approval of parents and in-laws, other relatives, siblings and friends is important in the choice of vasectomy. One possible explanation for the lack of confirmation is that this study, quite simply, may not have surveyed the reference groups relevant for vasectomy. Parents and in-laws, for example, may not be the ones who influence their children's choice of birth control method (though the primary family may be an important reference group for other areas of Ss' lives). In the matter of family planning procedures, other groups might actually be more influential (e.g., religious or community leaders or the medical profession).

The reference groups chosen for study in the current investigation may have been inappropriate for yet another reason. By selecting the reference groups a priori, we have failed to distinguish the influence of

perceived or aspired group membership from that of actual group membership. There is a potential discrepancy between an individual's actual group membership (as seen by others) and the reference group he himself uses to regulate his standards. People who aspire to a certain group may tend to adopt the norms of that group rather than those of the group(s) to which they actually belong. The nature of the fantasized group or groups must, of course, be determined individually for every S. Could it be that Ss in the current study were responding to norms they saw as operating in groups they hoped to join in the future or "mistakenly" saw themselves as already having joined?

Another explanation for the perceived approval factors not differentiating among the sub-samples within the current study lies in the nature of the questions posed to Ss, which assessed the attitude of the referents rather than the possibilities for their taking some action on behalf of or against vasectomy. Menzel and Katz (1955), investigating the adoption and diffusion of new products among physicians, found that a doctor's decision to prescribe a drug early after its appearance on the market was determined to a great extent by his knowledge that a more influential member of the medical community was already using the drug. Menzel and Katz suggested that people with influence serve as opinion leaders, i.e., models for others to follow. Note, however, that the Menzel and Katz study involves behavior on the part of the pacesetters, not just a favorable opinion concerning the drug. The influential doctors, like the physicians who looked to them for guidance, could and did use the drug in their medical practice.

The notion of modeling behavior, rather than encouraging behavior by professing approval of the concept, appears particularly apt for innovation adoption. For the adoption of a new idea, technique or product, there are, in effect, no behavioral norms (other than those related to the tendency towards innovative behavior, per se). Because of an item's newness there is no history of approval or disapproval by others. The adoption of vasectomy, for example, probably depends more on the awareness that others have already been vasectomized (or would want to be surgically sterilized) than on the perceived approval by others of the abstract idea of "vasectomy." As the question was put to Ss in this study, however, the attitudes of reference groups were gathered on the basis of perceived approval by others of Ss decision for vasectomy, not whether others would conceivably choose vasectomy for themselves were the need to arise. At least, the difference between attitude and action was not made explicit. Perhaps the controls might indeed have distinguished between "approval" in principle and the relative unlikelihood of action on the part of their reference groups.

Related to the above issue is the notion of multiple group membership. Belonging to several groups offers the possibility of conflicting norms which must be reconciled for each individual. Where norm conflicts are too severe or obvious, one is likely to be forced to choose between alternative reference groups. A religious Catholic, for example, would find it difficult to continue his adherence to a group espousing abortion.

Future research should consider the effect of multiple group membership on the choice of vasectomy. Ss might be surveyed on the groups to which they see themselves as belonging or hope to join. Observation and external criteria could be used to assess the objective accuracy of the reports. It may well be that the rejectors, compared to the adopters, for example, are more subject to conflicting group pressures on the issue of vasectomy. These opposing allegiances may lie behind the rejectors' approach-avoidance dilemma. Perhaps this is why in the current study one finds little difference between adopters and rejectors on any dimension other than that of their divergent final decision on whether to undergo the surgery.

In assessing group influence upon the individual, important determinants include the perceived, as well as actual, persuasive force and status of the various reference groups. Clearly, not all groups are equal in the pressures they can exert. Different sanctions with differing consequences may be applied to produce conformity. Thus, a high status group or one which can exert strong pressure (perceived or actual) to conform will have greater influence on a decision than a low status or relatively weak group.

Another issue demanding research is the degree of susceptibility to group pressure characterizing each of the groups in the current study. Might the groups differ in their sensitivity to or susceptibility to either approval or disapproval? For example, though rejectors and adopters might have perceived the same degree of support for vasectomy, the rejectors might simply have required more approval before opting for sterilization. We know from the current research that controls reported

the greatest degree of reference group disapproval, while adopters and rejectors reported the least. Again, could this be more a testimonial to the controls' greater sensitivity to disapproval?

On reflection, however, this cavil does not seem worthy of serious consideration. It will be recalled that all Ss in this study were virtually identical to one another on the Locus of Control scale -- a good index of susceptibility to external influence, according to a number of investigators. Crowne and Liverant (1963), for instance, reported that internals had more confidence in their own judgments (i.e., were willing to wager more money) when making non-conforming responses in an Asch-type task. Odell (1959), similarly, found a significant relationship between Locus of Control and Barron's Independence of Judgment scale, with internals less likely to conform relative to externals. One may thus safely presume relatively equal susceptibility to reference group pressure across all sub-samples in the present study. In future research, it would be interesting to manipulate the degree of group disapproval and measure its effect on the choice of vasectomy.

Health-Related Variables

Throughout our discussion of the current findings, we have noted that the adopters and rejectors were similar in several respects. First, both expressed greater dissatisfaction with their current situations than did the controls. Apparently their histories of unplanned pregnancies and unwanted children contributed to their feelings of relative unhappiness. Secondly, those who had at least considered vasectomy, whether or not they later actually underwent surgery, knew significantly more vasectomized men than did those who had never seriously entertained the idea. The dissatisfaction and the availability of informants propelled the adopters and rejectors towards vasectomy; the controls apparently never felt the need to move in that direction. At this point we have some explanation for the differences between the controls and the other two groups; we cannot, as yet, discern the causes for rejection or adoption of vasectomy once it had been seriously considered. Examination of data on the health-related variables provides some possible explanations.

Perceived Health

Health-related variables, the most successful of the three major factors at explaining a significant percentage of the variance, consistently differentiated the groups. Among the individual health-related items, perceived health accounted for the largest share of the variance between controls and the other two groups. Those who had never considered vasc-

tomy perceived their health to be significantly better than that reported by the adopters and rejectors, who did not differ among themselves. This finding coincides with the general feelings of well-being earlier adduced as characterizing the controls, in contrast to their adopter and rejector counterparts, who experienced themselves as less satisfied and content.

Severity of Previous Surgery

The severity of previous surgery, though relatively unimportant in explaining the variance between groups (when categorized with the other health-related variables), does relate to the choice of vasectomy. Men who had already undergone moderately severe surgery were more likely to follow-through on their interest in surgical contraception. However, men with a history of major surgery (despite its presumed success) were more likely eventually to reject vasectomy.

The same pattern pertains to the women's surgical histories. Adopter wives, in comparison to their rejector counterparts, had had a history of more moderately severe surgery but less major surgery. Apparently, the male rejectors' experience with major surgery, coupled with that of their wives, dissuaded them from electing a contraceptive measure that entailed an operation. The male adopters' brushes with less severe surgery, paired with the similar experiences of their wives, gave them the confidence to undergo another operation.

It seems, therefore, that the relationship between surgery and the choice of vasectomy is more complicated than had been anticipated.

Prior surgical experience, by itself, is not enough to account for differences between adopters and rejectors. The severity of the previous surgery must also be considered.

Recovery Rate

On perceived recovery rate, the adopter men were significantly differentiated from the rejector men, with the latter group seeing itself as the more slow to recoup. The expectation of a speedy recovery apparently encouraged the adopters to pursue their plans to completion. Contraceptive surgery was ultimately relatively unattractive to the rejectors, however, who foresaw a relatively slow (complicated?) post-vasectomy course.

Pain Tolerance

For adopter versus rejector women, perceived pain tolerance was a particularly effective differentiator. Adopter women saw their endurance of pain as significantly greater than that reported of themselves by the rejector women. This was the general (though non-significant) trend in all comparisons between adopters and rejectors. Apparently, the adopter wives had had ample opportunity to demonstrate their endurance. Over 31% of the adopter women (but only slightly more than 12% of their husbands) had had major surgery. The men, knowing that the women had been "sicker" and had already undergone more than enough surgery, may have decided to submit to the next operation rather than subject their wives to additional trauma.

The health-related variables differentiating adopters from rejectors may seem somewhat prosaic. As has already been discussed,

however, this explanation seems more parsimonious than the appeal to more "dynamic" and unconscious factors.

Multiple Regression Analysis

A common concern of researchers in sociology and psychology is the extent of the predictive and explanatory power of data in the behavioral sciences. Among investigators, one school of thought promotes statistical significance as the major criterion for how effectively information is understood. If it can be demonstrated, for instance, that the probability of an effect occurring by chance is only one in one-hundred, according to this view, the explanatory and predictive effect is strong. Another and, in this writer's opinion, more reasonable alternative is to examine the amount of variance accounted for by the variables in question. Phillips (1971), in a summary of several studies addressing themselves to the "power" of analyses, reported that the average "significant relationship" explained only about 10% of the variance. Rosenthal (1966), in a similar vein, estimated that most behavioral research accounts for only 13% of the variance. The current research does not fare much better. Among the personality scores from this study, for example, despite significant differences on t tests, no single variable accounted for more than 15% of the variance. The upshot of the current research, then, was to find differences without distinctions.

Three explanations are often given for the generally poor predictive capacity of behavioral studies (Phillips, 1971). First, researchers may be working with the wrong set of independent variables.

Imagine a project devoted to predicting success in college. Differences in college grades are probably more closely related to intelligence and need for achievement than to anxiety. Focusing on the latter variable would yield relatively little variance, in all likelihood. Secondly, researchers may obscure their findings because of inadequate measurement techniques. Returning to the example of college grades, the investigator may saddle himself with invalid instruments or procedures for getting at intelligence or motivation. Thirdly, a large number of independent variables may operate simultaneously to produce the effect under study. The investigators could emerge with only part of the answer because they ask only some of the relevant questions. Intelligence and need for achievement may be important partial determinants of college grades, for instance, but study habits and illness during the semester must also be considered.

The conceptual narrowness of much research ("one-variable-one effect") finds expression in historically popular assumptions about the nature of personality. The traditional "trait" approach to personality assumes there to be relatively stable and consistent attributes that exert a generalized effect on behavior, regardless of where the behavior is exhibited. Mischel (1973) has argued forcefully that this approach to personality is not supported by empirical findings except where traits are summary statements about an individual's behavior in relatively circumscribed situations. Global conceptualizations are, in fact, particularly ineffective for predicting specific future behavior in specific situations. Personality traits are not underlying entities that cause behavior -- just abstractions of situation-specific behaviors emitted by the person under study.

As viewed by Mischel, an understanding of human personality stresses the interrelationship of behavior and external circumstances as mediated by cognitive activities such as constructs, expectancies, subjective values and the self-regulatory systems of the individual. Personality is inferred from behavior, in itself a product of environmental conditions and "person variables," each moderated by the other. Without knowledge of the circumstances within which behavior takes place, prediction of any accuracy is virtually impossible -- by definition.

Russo has addressed herself to the same prediction issue as it relates specifically to the field of family planning. Like Keller (1973) and Gough (1973), Russo's review of population research led her to conclude that only an insignificant proportion of the variance is typically accounted for by single personality measures. "It is only within given situations," she noted,

that specific predictions from personality measures are likely to become meaningful, yet the interaction between personality and situation has yet to be a major concern for fertility researchers (p. 65).

One might add that demographers, with their concern for situational determinants, would certainly increase the value of their research were they to include in their array of variables some measures of individual and group differences in personality structure and organization.

The value of a multiple-variable investigative approach gains some support from the results of the current study, where the variables in question were divided into three areas: 1) personality, 2) reference group and 3) health-related items. The regression analysis of any one group of variables accounted for less variance than the analysis of any two sets;

the combination of all three factors produced the greatest amount of attributed variance. From Mischel's argument, it is not surprising that any of the variable groups, taken alone, yielded a relatively ineffective estimate of group membership. Using the personality variables as an illustration, we have no reason to assume that general personality tendencies would bear importantly on the highly specific behavior of choosing (or not choosing) a vasectomy. However, the addition of more information contributes more knowledge and makes for more effective prediction. Past history (previous surgical experience and the number of vasectomized men known), "person variables" related to one's subjective experience (perceived health, pain tolerance and recovery rate) and the process of encoding (perceived approval) provide crucial information about the environmental conditions and the person's internal state relative to the vasectomy decision. In contrast to the single factor, the multiplicity of indicators leads to considerably more accurate determination of group membership. The current study, corroborating Mischel's general stance regarding the importance of moderator variables and interaction statements, is specifically relevant to the arguments of Russo.(1971), Gough (1973) and Keller (1973) on the weakness of personality measures alone in explaining the multi-determined choice of contraceptive method.

Decision Making: Husband-Wife Interaction

The hypotheses underlying the current research never specified whether they pertained to husbands alone, to the combined unit of both spouses or to the wives alone. Prima facie, since vasectomy is a male-centered procedure, the characteristics of the female spouse alone would seem to have relatively little relevance to the questions initially posed by the study. At the outset, it had seemed most reasonable to place the primary focus on the husbands and how they are similar to and different from one another across the three sub-samples. Further thought, however, leads one to reconsider this position and wonder if the crucial factors may not be the interaction of the husband and wife in the process of decision making as the spouses negotiate around an important and intimate area in their married lives. The decision for or against vasectomy is made by a couple, not by one spouse alone. In the current study, the surgery had in fact been discussed more or less extensively by husband and wife. The clinic made it a practice to interview both man and wife jointly so as to assess their unanimity concerning the impending surgery. In the contemporary medical world, finally, physicians usually insist that both spouses sign a consent form. Both before and after approaching the clinic the couples were thus known to have discussed the decision. It would therefore seem reasonable to view the adoption or rejection of

vasectomy as the function of characteristics of both marriage partners which are mediated through a decision-making process involving the two of them. The study of the family, a traditionally important topic in sociology, provides a variety of methods for elucidating the nature of decision making.

Heer (1963) described two techniques for obtaining data on decision making and power relations within the family: the reputational and the experimental. The former procedure involves estimates of the power and influence of each spouse as reported by others who are close to the family and know the couple well. The obvious drawback of this method is that an "outsider" is never fully aware of the intricacies of intimate intrafamily negotiations. The experimental assessment of decision making, on the other hand, deals directly with the spouses. One could focus, for example, on a disagreement among the marriage partners and asks the spouses to resolve it. The negotiation process and the results of the discussion would then be analyzed to map power shifts [the "revealed differences" technique of Strodtbeck (1958)]. The more direct evaluation, however, is not without problems of validity. Many of the experimental stimuli are often contrived and artificial and may not accurately reflect the power distribution within the family.

What are the sources of family power? According to Blood and Wolfe (1960), they are two in number. Tradition, the first, encompasses the cultural norms defining the behavior of man and wife. In a church-going Catholic family, for instance, quite apart from the specific details of spouse personality, the major share of power is the husband's, in line

with the patriarchal emphasis of the Catholic religion. The second source of family power derives from the history of the marriage itself, i.e., the resources brought to and developed within the relationship by each spouse. In any marriage, the partner with relatively greater monetary power and attractiveness and a more adequate role-performance is more likely to be the stronger.

Power, however, is not necessarily unidimensional. Spouse influence may vary with the situation. Rather than identify absolutes, Heer (1963) has turned the attention of sociologists to the relative competence and relative involvement of one marriage partner as compared to the other. The husband may know more about insurance than his wife, for example, and would therefore be most likely to influence the type of coverage selected. The wife, because of her greater involvement with the home, may exert the most powerful influence on the selection of its furnishings. Each spouse would exert a determining influence on decisions related to a field of his or her special authority.

We do not lack, at any rate, conceptual tools for the study of family power relationships and the husband-wife decision-making process. In the area of birth control, nonetheless, as Kuthiala (1972) and Fawcett (1970) have noted, empirical research has often neglected these variables. All too often, investigators have made do with guesses about negotiations between the spouses, instead of asking the important questions outright. Examples abound of this type of speculation relating to family planning.

Bakker and Dightman (1964), for instance, examined marriages in which wives often "forgot" to take ovulation suppressors. The authors' analysis of the husband-wife interaction was based entirely on the degree

to which spouses' scores on personality tests correlated with one another; suppositions were then made concerning the nature and quality of the actual dyadic interaction. A similar attempt to reconstruct the patterns of husband-wife interaction was made by Rodgers and Ziegler (1968) in a study of the discontinuance of ovulation suppressors. They, too, devised ratings of spouse personality test scores and extrapolated from these data to the supposed negotiations of the couple around birth control.

Educated guesses about decision making, family roles and the interactional process can never equal the admittedly more troublesome pursuit of the actual facts. Few have emulated Cicourel's work in Latin America (1967) -- grounded in the more clinical and statistically elusive tradition -- which involved a long series of in-depth interviews with families. Only through direct observation of the spouses' interaction and by asking pertinent questions about their perceptions of one another and of one another's role in the family, Cicourel suggested, could the social organization of the family be adequately understood.

Several more narrowly empirical studies have also related couple use of contraceptives to the quality of the dyadic interaction and the spouses' perceptions of their partners. In Puerto Rico, for example, Stychos, Back and Hill (1956) intensively interviewed 72 lower class husbands and wives and had shorter sessions with 3000 others to assess the relationship between interspouse communication and the practice of effective birth control. Lack of communication, they found, resulted in a failure to share knowledge of birth control methods and in a tendency to forego contraception completely or to practice it ineffectively.

Michel (1967), in a more recent study, concluded that the more frequently spouses discussed their general problems, the more often they realized their family planning goal. Equality of husband and wife or wife-dominance in the couple were also related to avoiding successfully excessive fertility.

Apparently, not only is the extent of communication important in family planning, but also the nature of the role-relationships of the marriage partners.

In a near-classic of the population control literature, Rainwater (1965) described three types of role-relationships in marriage: 1) Joint conjugal -- a pattern of shared activity and/or interchangeability of roles predominates. Sharing and mutual involvement are stressed in this system; 2) Intermediate conjugal -- couples value sharing, but still preserve the more formally organized division of labor and activities; 3) Segregated conjugal -- spouses separate activities and divide labor with little interchangeability. Husband and wife, in this system, complement each other and form a unified whole. Effective family planning, Rainwater found, was related to lesser segregation (i.e., more sharing) in the conjugal role-relationships and greater inter-spouse communication.

Deys (1972), in a study of 1000 lower-middle-class vasectomized men in England, distinguished between "role dividers" (corresponding to what Rainwater would describe as those taking segregated conjugal roles) and "role sharers" (those who assumed joint conjugal roles). Among the role dividers, men took the responsibility for birth control, as they did for other major decisions in the lives of their families. The predominant contraceptive techniques practiced among the role divider couples had been

male-centered even before vasectomy. It was not surprising that Deys found that role divider males tended to have had the vasectomy at an earlier age than did the role sharers.

The current study was not designed to explore in depth the process of decision making and the relative contribution of each of the spouses to the ultimate choice. However, given an interest in viewing the contributions of the qualities of both spouses, how should one constitute that unit for data analysis? The simplest approach is that used in this study: addition $\frac{(\text{husband score} + \text{wife score})}{2} = \text{couple score}$. Such a strategy resulted in gaining significant differences between groups when data for each spouse taken alone had not distinguished among the sub-samples. For example, the personality variable effects in the control-rejector comparison were not significant in the multiple regression analysis for husbands alone; combining scores for both spouses did result in significant differences. This phenomenon, however, seems the result of a statistical artifact: when the number of Ss is increased, a smaller difference between groups produces significant effects. Composite scores may, on the other hand, obscure real differences between same-sex spouses in different groups. Consider the multiple regression analysis for all variables for husbands alone, husbands and wives combined and wives alone (Tables 35, 36 & 37). Combining the spouses' scores into a composite reduced the amount of variance accounted for, whereas looking at the spouses' scores separately maximized the group differences. There are, then, some analytic problems around how statistically to handle, in concert, the contributions of the two marriage partners to the selection of rejection of vasectomy.

All models for deriving "couple scores" which characterize the marital unit assume a "threshold" beyond which couples will have moved from inaction to action or from one category to another (against vasectomy to for vasectomy, for example). The additive model used in this research presupposes that the two family members merely pool their past histories, feelings and attitudes to make a decision. If spouse A is pretty much in favor of vasectomy while B, the other member of the couple, is more cool towards the idea, attitude summing may still be enough to bring the couple score above the threshold of commitment. Other models are also viable, however, based on the assumption that the relative strength of the commitment by one or the other spouse is the crucial element for designating the couple as a whole. One could, for instance, view the "couple score" as the product of the individual members' attitudes, rather than the sum. Depending on where the cut-off is set, an extremely negative or positive attitude on the part of any one spouse could carry the day. Perhaps the important factor is the absolute difference in attitudes; beyond a certain disparity in beliefs, then, couple action might be vetoed. Again, the absolute difference may not be as important as the ratio of the two value systems. Here, then, are just four models for characterizing the couple on the basis of "scores" from each spouse -- each of which would lead to different predictions of couple behavior.

CHAPTER V

SUMMARY

Problem

This study examined social-psychological variables related to the selection or rejection of vasectomy (male surgical contraception). Three groups of married couples (all of whom were practicing some form of birth control and intended to have no more children) were surveyed by personal interview and psychological tests: 1) those who had never thought of vasectomy (controls, $N=69$), 2) couples who had decided against vasectomy after seriously considering it (rejectors, $N=62$) and 3) couples who chose vasectomy (adopters, $N=69$). The couples, all of whom were white, were comparable in age, income and educational level. For Groups 2 and 3, data were gathered after the decision concerning vasectomy was acted upon.

The criterion variables were certain personality features of the husbands and wives (measured by the CPI and Locus of Control Scale), reference group variables and health-related variables (surgical history and perceived health, pain tolerance and recovery rate).

Findings

Personality variables: There was a clear lack of relationship between scores on the Locus of Control scale and the consideration of vasectomy. All Ss were "internal." The Do, Ai, Fx and My scales of the California Psychological Inventory were valuable only in distinguishing between the controls and the other two groups. Clinical interpretation

of the entire CPI profile suggested that the controls were relatively more innovative and self-confident, while simultaneously most content with their lives. The adopters, while self-confident, were dissatisfied and less responsive to social pressure, making them more likely to adopt an innovative family planning procedure. The rejectors were similarly dissatisfied and relatively uninhibited, but were more likely to be impulsive and erratic.

Reference Groups: As predicted, controls knew fewer vasectomized men than did adopters or rejectors. However, the perceived approval of parents and in-laws, other relatives, siblings and friends was generally not crucial to the choice of vasectomy. Several explanations for this finding are offered, based on the relevant social psychological literature.

Health-Related Variables: Of the three major factors, health-related variables were the most successful in explaining a significant percentage of the variance between the groups. Among the individual items, perceived health accounted for the major difference between the controls and the other two groups, with the controls seeing their health as significantly better. The severity of previous surgery also related to the choice of vasectomy. Couples with a history of major surgery were more likely eventually to reject the option of surgery. Differences also obtained on the recovery rate dimension. Rejectors saw themselves as significantly more slow to recoup than did the adopters.

Implications: In general, the major distinctions among Ss were between the controls and the other two groups; the latter did not

differ strikingly from one another. The results of the study are discussed as they relate to single-variable versus multivariate approaches to family planning research, personality theory (Mischel), the psycho-analytic dictum of castration anxiety and models of husband-wife decision making.

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APPENDIX A

I. LETTER SENT BY CLINIC TO THOSE WHO HAVE CHOSEN VASECTOMY

Dear Friends:

As you may remember from your initial meeting with us, the Midwest Population Center is engaged in a cooperative research effort with Northwestern University. Dr. Gerald Zaltman is conducting a scientific study of peoples' attitudes toward family planning and birth control, with special reference to vasectomy.

The study involves a personal interview with both husband and wife and requires about one hour's time. The interviewers will be able to see you at your home, at a time convenient to both of you.

Within several days of receipt of this letter, someone from the Midwest Population Center will call to find out if you are willing to participate in the study. If you agree to participate, your name will be given to Dr. Zaltman and one of his assistants will call to schedule an appointment with you. The interview is for research purposes and as such, is strictly confidential.

We hope you will be able to cooperate with this project.

Sincerely,

II. LETTER TO THOSE WHO FAIL OR CANCEL

Dear Mr. and Mrs.

Some time ago you expressed an interest in our vasectomy service. At that time we sent you some information and scheduled a tentative appointment date with you.

A research team from Northwestern University, headed by Dr. Gerald Zaltman of the Graduate School of Management, is conducting a scientific study of family planning and attitudes toward vasectomy. Dr. Zaltman has asked for our help in contacting people who have expressed an interest in vasectomy, but for one reason or another have not followed through or have obtained a vasectomy elsewhere.

Because we respect the confidential nature of your communication with us, we will not release your name to Dr. Zaltman without your consent. Someone from the Midwest Population Center will call you in a few days to ask your help in this research program. If you are willing to help we will give your name to Dr. Zaltman. He or one of his assistants would then call you to set up an hour long interview at your convenience in your own home.

We hope that you will find it possible to cooperate with this project.

Sincerely,

APPENDIX B

TABLE 39

Percentage of Variance Accounted for by Personality,
Reference Group and Health-Related Variables in
Combination: Husbands and Wives

Comparison	Personality and Reference Group	Personality and Health	Reference Group and Health
Control-Adopter	23.6*	20.5**	24.8**
Control-Rejector	26.1	23.8**	22.4*
Adopter-Rejector	9.4	14.3*	11.7

* $p < .05$

** $p < .01$

TABLE 40

Percentage of Variance Accounted for by Personality,
Reference Group and Health-Related Variables in
Combination: Wives Alone

Comparison	Personality and Reference Group	Personality and Health	Reference Group and Health
Control-Adopter	31.1	25.4	35.9
Control-Rejector	30.9	42.1**	23.4
Adopter-Rejector	22.8	25.6	21.3

** $p < .01$

APPENDIX C

QUESTIONNAIRE ITEMS

I. Demographic Data

- a. Age (at last birthday) _____
- b. Race _____
- c. Highest grade completed in school _____
- d. Gross family income _____

II. Pregnancy History

- a. Have you had any unplanned pregnancies? Yes _____ No _____
- b. If yes, how many? _____
- c. Was your most recent pregnancy planned? Yes _____ No _____
- d. Any unplanned children? Yes _____ No _____
- e. If yes, how many? _____
- f. Was your most recent child planned? Yes _____ No _____

III. Reference Group Data

- a. How many men do you know personally (besides your spouse)
who have had a vasectomy? _____
- b. Any friend or relative? _____ Who? _____
Have you ever talked about it with anyone who had a vasectomy?

If "yes," who? _____ When? _____
What did they say? _____

- c. How would you expect your decision to have a vasectomy to be looked upon by your:

	<u>Very approv.</u>	<u>Approv.</u>	<u>Don't care</u>	<u>Disapprov.</u>	<u>Very Disapprov</u>
a. Parents & Inlaws	1	2	3	4	5
b. Siblings	1	2	3	4	5
c. Other Relatives	1	2	3	4	5
d. Friends	1	2	3	4	5

IV. Surgery and Health-Related Data

- a. Have you ever had surgery? Yes _____ No _____

Type of Surgery _____

- b. What is the state of your present general health?

Excellent _____ Good _____ Fair _____ Poor _____

- c. Compared to other people your age, is your tolerance for pain average _____, less than average _____, or better than average _____?

- d. In comparison to those your age, when you are injured, is your rate of recovery average _____, slower than average _____, or faster than average _____?

APPROVAL SHEET

The dissertation submitted by Steven Marc Ratnow has been read and approved by members of the Department of Psychology.

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

Date

May 1, 1974

Signature of Advisor

Robert M. Pugh