1978

Contraceptive sterilization as a life change event: Its effects upon the MMPI and CPI Scales

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CONTRACEPTIVE STERILIZATION AS A LIFE CHANGE EVENT: ITS EFFECTS UPON THE MMPI AND CPI SCALES

A Dissertation

Presented to

the Faculty of the Graduate School

University of the Pacific

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

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by

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December 1978

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Dated December 7, 1976

CONTRACEPTIVE STERILIZATION [illegible]

ITS EFFECTS UPON THE [illegible]

Abstract of Dissertation

Problem: It is essential to determine the relationship between voluntary contraceptive sterilization (both male and female) and [illegible] health, as well [illegible] marital and sexual relations.

Objectives: The major purposes of this study were to: (1) determine whether there are differences between [illegible] subjects [illegible] "psychological soundness" [illegible] marital and sexual satisfaction; (2) develop [illegible] predictors of [illegible] "psychological [illegible]" for sterilization subjects; and (3) develop a scale of [illegible] as they [illegible] affect "psychological soundness."

[illegible] of 1047 subjects who began the study, [illegible] completed [illegible] 214 women [illegible] who had valid [illegible] to be [illegible] in the analyses. [illegible] For the majority of the analyses, there were [illegible] groups [illegible] (a) sterilization subjects, (b) [illegible] of sterilization subjects [illegible]. In [illegible] there was a fourth group [illegible] (for their match). The sterilization [illegible], a medical health clinic and a private medical [illegible] which were located in the [illegible] California cities of Stockton, Sacramento and Oakland. Comparison subjects came from the same three cities.

Each subject completed a lengthy questionnaire [illegible] with demographic data, attitudes toward [illegible] and sterilization, as well as a [illegible] during the previous year. They were required to complete the [illegible] and the [illegible] as well as [illegible] projective drawings. The [illegible] procedures, including [illegible] and two way analyses of covariance, chi-square tests of independence, [illegible] regression analyses.

Results: [illegible] differences, while significant and in a consistent direction, were nonetheless small. The length of time to consider sterilization was the only variable [illegible] to affect the [illegible]. Forty-eight percent of the variance of judges' ratings was accounted for by five independent variables in the regression equation [illegible] outcomes. Sexual and marital satisfaction were relatively unaffected by sterilization.

There were no differences for the various groups of men in terms of "psychological soundness" and sexual and marital satisfaction.

The man's rating of his marital satisfaction was the only variable to interact with sterilization to affect the [illegible]. Only 24% of the variance of the judges' ratings was accounted for by [illegible] variables.

In those analyses where the sterilized men were compared to the sterilized women, the women scored significantly "[illegible]" than the men. The length of time to consider sterilization was the only variable to interact with sterilization to affect the scores significantly.

The Life [illegible] Index (LSI), developed as part of this study, discriminated between those who would have a positive or negative outcome following the study. Those who had higher LSI scores scored significantly "[illegible]" than those who had lower LSI scores. This was true for both men and women.

The Sterilization Attitude Scale also developed as part of this study did not discriminate between those sterilizees who would have a positive or negative outcome following sterilization.

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CHAPTER I

AN OVERVIEW OF THE STUDY

Background

Voluntary contraceptive sterilization has the same goal for both men and women, as the purpose in both cases is to avoid birth of unwanted children. It is not accepted as a method to postpone birth, as other methods of contraception, but as a permanent means of birth prevention. While the end physiological goals and results (rendering incapable of producing offspring) can be considered the same for persons who have a vasectomy or female sterilization, it does not necessarily follow that the psychological results would be the same for both.

This study concerned itself with voluntary contraceptive sterilization in general, and involved both vasectomy and female sterilization individually. Vasectomy and female sterilization were not considered to be the same and were treated individually, yielding two studies in one. Males were studied for psychological, marital and sexual reactions to vasectomy; and females were studied for the same reactions to female sterilization. Although reference will often be made to sterilization as a general term, this distinction should be maintained throughout the research. All hypotheses, while stated as though they referred to sterilization in general, will consider vasectomy and female sterilization individually. Only in those cases where vasectomy and female sterilization are compared, will this distinction not be made.

As part of the study, a life events scale, the Life Situations Index, was developed. This scale was based upon earlier studies. This allowed the researcher to analyze what specific events interact with

either vasectomy or female sterilization to affect subjects' psychological functioning, and marital and sexual relationships. Therefore, a scale that could be used in other situations was refined as a by-product of the central theme of sterilization research.

Prevalence of sterilization. A 1970 National Fertility Study indicated that sterilization was the most commonly used method of contraception among couples where the wife was between 30-44 years of age (Westoff, 1972). The Association for Voluntary Sterilization estimated that 942,000 sterilizations were performed in the U.S. in 1970 for contraceptive purposes. This figure increased to 1,344,000 in 1975. While female sterilization accounted for approximately 20% of the sterilization operations that were done in the year 1970, the proportion changed to 49% in 1975 (Association for Voluntary Sterilization, 1975; Lubell & Frischer, 1976). The shift was due, in part, to advancements in procedures for female sterilization.

While the estimates have often been contradictory, all the evidence suggests that sterilization has been rapidly increasing as a means of contraception. This is not only true of the U.S. but of most of the world. A 1973 nationwide survey revealed that sterilization was the fastest growing method of contraception used by Americans. According to the National Survey of Family Planning Growth of 1973, nearly 25% of all married couples using contraception had chosen sterilization (Pratt, 1975). Over 34% of the couples, where the wife was aged 30-44 and who were practicing contraception, relied on sterilization (Westoff & Jones, 1977).

The National Fertility Study survey of 1975 indicated that contraceptive sterilization was being used by 31% of all married couples

practicing contraception. It had almost eclipsed "the pill" as the most commonly used means of contraception in the U.S. If all sterilizing operations, including hysterectomies, were included the number would have exceeded the number of pill users. For couples who had been married over ten years or had decided to have no more children, contraceptive sterilization was vastly more common than the "pill" (Westoff & Jones, 1977).

Prior to 1970, it was estimated that the cumulative number of Americans who had sterilizations for contraceptive purposes was 2.75 million (Westoff, 1972). The total number of sterilized adults in the U.S. increased by 1975 to 7.4 million (Lubell & Frischer, 1976). By 1977 the number was estimated at ten million (Largey, 1977). With these numbers it seemed important to study the effects of contraceptive sterilization upon possible mental health change.

Vasectomy. The literature concerning the psychological effects of vasectomy is very contradictory. Wolfers and Wolfers (1974) suggested that there were several probable reasons for such a situation, including the different methods of measurement utilized in such studies (Wolfers & Wolfers, 1974). Schwyhart and Kutner did not disagree with the above but also indicated that the rate of attrition of a study was directly related to the conclusions reached in a study. Their research suggested that studies with higher dropouts generally resulted in more positive outcomes (Schwyhart & Kutner, 1973). Pohlman (1975), Bloom and Houston (1976) and Rodgers and Ziegler (1973) suggested that the research designs, as well as measurement devices, explained the discrepancies in conclusions of such studies.

Post-operative structured interview and questionnaire surveys have consistently reported that over 90% of the men who had vasectomy expressed satisfaction with the results of the procedure. It was reported that often there were no indications of change in psychological functioning or in marital and sexual relationships. When change was noted in these areas it was predominatly in a positive direction (Janke & Wiest, 1972, U.S,: Laidlaw & Bass, 1964, U.S.; Landis & Poffenberger, 1965, U.S.; Lear, 1972, U.S.; Poffenberger & Poffenberger, 1963, U.S.; Simon Population Trust, 1972, England). In contrast to these results, in a study in India, Dandekar (1963) concluded that while 92% of the 1191 men in his study reported favorable responses to the operation, over 53% of them reported "weakened sexual functioning" (Dandekar, 1963).

Wolfers, in 1970 utilizing personal unstructured interviews, studied the relationship between vasectomy and mental health with some of the original subjects of the Simon Population Trust study in England. She concluded that 12% of the sample had possible psychological problems post-operatively (Wolfers, 1970). In another study, Johnson (1964), a psychiatrist, studied 83 men who had had vasectomy and were subsequently placed in a psychiatric hospital. He suggested that the lowered psychological functioning of these patients was due, in part, to the vasectomy (Johnson, 1964; Johnson & Miller, 1970).

Parker, Longstaff and Hallock suggested that the risks were so great that "a re-evaluation of the medical and psychiatric reasons supporting the procedures may be warranted" (Parker, Longstaff & Hallock, 1965). The above studies lacked either comparison groups, longitudinal follow-up or objective clinical measures but did suggest that the subject had not

been adequately researched. They also indicated a need for more rigorous investigation into the effects of vasectomy on psychological functioning.

The most comprehensive research previously completed on the psychological effects of vasectomy, is that of Rodgers and Ziegler. They and their associates had two main studies, both of which were longitudinal, while the second also utilized a comparison group. The results of the first suggested that fifteen of the 35 vasectomy males who completed the posttesting showed significantly increased psychological disturbance on the Minnesota Multiphasic Personality Inventory (MMPI) Rodgers & Ziegler, 1973; Rodgers, Ziegler, Altrocchi & Levy, 1965; Ziegler, Rodgers & Kriegsman, 1966). The second study indicated that while there were some adverse effects after one or two years, this trend was reversed in a follow-up after four years.

The Rodgers and Ziegler samples were small and not necessarily representative of all vasectomy acceptors and the studies were conducted when vasectomy was less common and less acceptable to the public. Hence the results may not be relevant today when vasectomy appears to be more common and acceptable. The present study followed some of Rodgers and Ziegler's procedures but with larger and more varied samples. Female sterilization was also added as part of this study, while it was not included in the Rodgers and Ziegler series.

Female sterilization. The literature concerning female sterilization is as ambiguous as that concerning vasectomy. There has been, however, much less research done upon the possible psychological, marital and sexual effects of female sterilization than vasectomy. Generally the results of female studies were related to the research methods and instrumentation of the research. The results, however, were less predictable in

female studies than in studies of vasectomy.

One study of female sterilization indicated that 96.4% of all patients reported improvement in "social and mental well-being", while the remainder reported poorer mental health after the operation. Between 7% and 9% showed decreased marital and sexual satisfaction (Black & Sclare, 1972). Thompson and Baird, in their study of female sterilization, indicated that some groups might be adversely affected (Thompson & Baird, 1972). Another study showed that 8.3% of the women who had been sterilized were less happy since the operation, while over 90% expressed satisfaction with the procedure (Paniagua, Tayback, Janer & Vasquez, 1972). These studies lacked comparison groups and objective measures and were also done retrospectively.

In 1964, Ellison, in Australia, studied 20 female sterilization patients who were psychiatric patients at the time of the follow-up. The study suggested that the psychological problems, primarily depression, were due partly to the sterilization (Ellison, 1964). Lu and Chun, in a Korean study, reported that 28% of the women in their study had lowered psychological health, based upon their subjective evaluation (Lu & Chun, 1967). Both studies lacked standardized measuring instruments and comparison groups and were done retrospectively without pre-measures.

Twenty percent of the women in another study were reported to have had poor psychological outcomes. The female sterilization (tubal ligation) group was compared to a group of hysterectomy patients and was considered to be generally more healthy psychologically after posttesting. This study by Barglow and his associates yielded somewhat different results than two earlier studies; one of which was a clinical study and the other which was a "quasi-experimental design". All three studies by Barglow

and associates had serious selection problems which may have severely limited the generalizability (Barglow, 1964; Barglow & Eisner, 1966; Barglow, Gunther, Johson & Meltzer, 1965).

While some of the studies of female sterilization have suggested that positive psychological change occurred subsequent to the operation, the majority indicated that some women had possible adverse effects. Generally, the female studies were less favorable than were the studies of vasectomy. The majority of studies had serious problems in methodology, measurement or sample selection which make generalizations somewhat questionable. Certain designs yielded somewhat more favorable results than others.

Life events and health. Almost fifty years ago Harold G. Wolff found evidence that linked common events with many illnesses, previously never thought to be "psychosomatic," for example "colds, skin diseases and tuberculosis" (Dudley & Welke, 1977, p. 46). Since that time many researchers have studied the relationship between one or two recent life events and subsequent illness, including mental illness. One such study related increased blood pressure to subjects experiencing job loss (Kasl & Cobb, 1970). Others have linked death of a spouse with increased occurrence of illness (Madison & Viola, 1968). Health change has also been linked with marital problems, job mobility and separation from home (Parens, McConnville & Kaplan, 1966; Sheldon & Hooper, 1969; Syme, Hyman & Enterline, 1968).

A few researchers have also attempted to develop scales of life events to predict illness onset (Myers, Pepper & Marches, 1969; Paykel, Prusoff & Uhlenhuth, 1971; Rahe, 1971). The scale by Rahe and his associates has become a prototype for other scales (Appendix A). It was

developed by asking people to rate the importance of various life events. Scores were then given to the different events as people had rated them. Stress was linked to life changes which were, in turn, linked to illness. The Rahe scale suggested that any change, whether positive or negative, resulted in increased likelihood of illness.

In an attempt to replicate the Rahe scale, Paykel and associates did follow-up research and subsequently developed a new scale (Appendix B). Several new items were inserted, some were reworded and yet others were deleted. The research suggested that "upset" rather than "change" events could serve as better predictors of illness (Paykel, et. al, 1971).

Another scale was developed for predicting mental distress from life events. This scale was similar to the scale by Paykel, in that negative events were the best predictors of the onset of mental distress (Myers, et. al., 1969).

The scales developed through the above studies have attempted primarily to predict the onset of illness from one's life situations. However, given the rapidity of change and the method of development of such scales, they may not reflect the importance of specific life events today. Innumerable events, particularly dealing with sexuality, were not included in the scales. One important event which was missing and relevant to this study was voluntary contraceptive sterilization. This refers to both vasectomy and female sterilization, which was included in a scale developed for this project.

Other Instruments. Throughout the many studies of sterilization there have been many means utilized for measuring psychological health and adaptation. Some were subjective evaluations while others were more objective, employing standardized instruments. One of the more

researched measures of psychological health used in some of the studies was the Minnesota Multiphasic Personality Inventory (MMPI). The California Psychological Inventory (CPI) also has been used and considered to be a relatively effective measure of psychological health.

The combined version of the MMPI and the CPI by Rodgers has the advantage that both instruments could be used simultaneously, yielding two complementary measures of psychological health dealing with somewhat different variables. Both have been used extensively in research. They have been established as relatively valid measures of psychological health and as reliable personality tests (Dahlstrom, Welsh & Dahstrom, 1975; Gough, 1975; Megargee, 1972). The inventories include subscales which measure different aspects of mental health. The MMPI measures psychological weakness and pathology such as depression and hypochondriasis, while the CPI assesses personality strengths such as sociability and flexibility and is considered to be a measure of social interaction. The instruments could be self-administered and therefore might have eliminated biases often caused by examiners.

Statement of the Problem

Since there is an increasing popularity of contraceptive sterilization and since there is a lack of clear-cut evidence concerning the possible psychological, marital and sexual effects, it is important to determine the relationship between voluntary contraceptive sterilization and mental health, as well as marital and sexual relations. The problem is equally important for both vasectomy and female sterilization; therefore, all questions should be answered for both. Specific questions are as follows:

1. Is there a relationship between changes in expressed marital satisfaction and sterilization?

2. Is there a relationship between changes in expressed sexual satisfaction and sterilization?

3. Does negative or positive mental health change, as measured by the MMPI-CPI, occur after sterilization?

4. Are certain subgroups, as identified by demographic data, pre-treatment MMPI-CPI scale scores and life events, more negatively or positively affected by sterilization than other subgroups?

5. Is there a difference in the psychological effects of vasectomy and female sterilization (is one more positive or more negative than the other)?

Objectives

There were six objectives in the study, four of which were the main focus of the research, while the remainder supported the first four. Therefore, this section was subdivided into two sections; 1) central objectives and 2) supporting objectives.

Central objectives. The major purposes of this study were to:

A. Determine whether there is a difference between sterilization and comparison subjects on changes in expressed marital and sexual satisfaction.

B. Determine whether there is a difference between sterilization and comparison subjects on the dependent variables of the MMPI and CPI outcomes. These comparisons were made while controlling for: 1) age, 2) ethnicity, 3) religion, 4) socio-economic status, 5) pre-sterilization MMPI-CPI scale scores, 6) marital status, 7) occupation, 8) number of children, 9) life events scale scores 10) education, 11) several specific

life events, and 12) additional demographic variables.

C. Determine whether vasectomy or female sterilization has more negative or positive psychological effects than the other.

D. Develop optimal predictors of mental health change as measured by the wholistic ratings of the MMPI by judges, utilizing life events, demographic data and pre-treatment MMPI-CPI scale scores, with sterilization, as predictor variables.

Supporting objectives. Whereas the main focus of the research was to study the effects of sterilization on marital and sexual relations and psychological health, it was also necessary to determine what other life events could confound the results. The following objectives were included to develop a life events scale. The supporting objectives were to:

E. Rank the relative importance of vasectomy and female sterilization in a life events scale, as all events contribute to change in psychological health as measured by the judges' wholistic ratings of the MMPI.

F. Develop a scale of life events which is an extension of either the scale by Rahe, et. al.or Paykel, et. al., with the addition of several new items including sterilization.

Hypotheses for Implementing the Central Objectives

Hypotheses one through seven were tested for both vasectomy and female sterilization; therefore, instead of seven hypotheses there were, in reality, fourteen hypotheses. There were also two additional hypotheses, numbers eight and nine, which compared vasectomy to female sterilization.

The hypotheses for objective A were as follows:

H_1 There is a negative relationship between sterilization and change in expressed marital satisfaction.

H_2 There is a negative relationship between sterilization and changes in expressed sexual satisfaction.

H_3 There is an increase in the frequency of intercourse among sterilizees in comparison to non-sterilizees.

Increased negative psychological adjustment on the MMPI scales means high scale scores, while on the CPI scales increased negative psychological adjustment usually means lower scale scores. For all hypotheses utilizing the MMPI scales there will be a wholistic rating by judges as an additional measure of psychological adjustment. In the following hypotheses, the term "personal soundness" will refer to these three components.

The hypotheses for objective B were as follows:

H_4 The sterilization subjects will experience a decrease in "personal soundness" (the method of measurement will be posttest scores covaried by pretest scores).

H_5 There is a difference between specific groups of subjects who have had sterilization (in terms of: 1) age, 2) ethnicity, 3) religion, 4) socio-economic status, 5) education, 6) marital status, 7) occupation, 8) number of children, 9) specific life events and 10) pre-sterilization MMPI-CPI scale scores) on the MMPI-CPI scale scores and judges' wholistic ratings of the MMPI profiles (as measured with posttest scores covaried by pretest scores).

H_6 Individuals who had higher scores on the life events scale will experience a decrease in "personal soundness" compared to those who scored lower (main effects of sterilization and life events, as well as interaction effects is expected).

H_7 Individuals who had lower scores on the sterilization attitude

scale prior to the operation will experience a decrease in "personal soundness" compared to those who scored higher on the sterilization attitude scale (this will be studied only for the main effects of sterilization attitude prior to sterilization).

Objective C was to determine whether the changes in "personal soundness" were more negative or positive for women who had a tubal ligation or for men who had a vasectomy. As such, the two treatment groups compared were male sterilizees and female sterilizees.

The hypotheses for objective C were as follows:

H_8 The female sterilization subjects will experience lowered "personal soundness" compared to the vasectomy subjects (the method of measurement will be the posttest scores covaried by the pretest scores).

H_9 There is a difference between specific subgroups of vasectomy and female sterilization subjects on the judges' wholistic ratings of the MMPI profiles. (The subgroups will be broken down in the same manner as in hypothesis four).

Significance of the Study

Sterilization is rapidly increasing as a means of contraception in the United States in spite of lack of scientific evidence of the possible psychological side-effects. If it is true that sterilization is more risky for some groups than for others, it is necessary to ascertain which groups these are. There is a need to determine whether there is a relationship between contraceptive sterilization and marital and sexual satisfaction. There have been a few studies utilizing life events as a scale to predict physical health change, although this has not been done adequately with psychological health. Even those studies using life events as predictors have neglected sterilization as a significant event.

Overview of the Research Methodology

The research was a longitudinal study with pretesting and posttesting of all subjects. The design utilized was a "non-randomized control group pretest-posttest design" (Campbell & Stanley, 1963).

The target population was those individuals who were planning to undergo the procedure of contraceptive sterilization. The sample consisted of 1047 subjects who agreed to participate in the study. Some subjects were individuals, both male and female, who were anticipating voluntary contraceptive surgery. When possible, spouses were included in the study. Other subjects were individuals, not married, but were also planning to have surgical contraception, although there were few such individuals. The remainder were individuals selected to be participants of the comparison group. Another comparison group, consisting of those men who planned to have vasectomy and later decided against having one, was added later, together with their mates. This group was included only in analyses utilizing one-way Analyses of Variance. Hence, in most cases the study concerned itself with three groups for each sex.

The sample was drawn from three northern California cities: Sacramento, Oakland and Stockton. The sterilization groups were drawn from two hospitals, a public health clinic attached to a hospital and a private practice in these cities. The sample was broken into four groups: 1) vasectomy subjects, 2) female sterilization subjects, 3) comparison subjects and 4) subjects where the husband decided against having a vasectomy. The sample was then divided into subgroups by sex, thus yielding a total of eight groups. (Table 1-1 illustrates these groupings.)

Table 1-1

Groups in the Study

Vasectomy (Vas)		Female Sterilization (F.S.)		Decided Against Vasectomy (D.A.V.)
Men	Vas	F.S. Mates	Comparison	D.A.V.
Women	Vas Mates	F.S.	Comparison	D.A.V. Mates

All subjects were given the MMPI-CPI, a 52 item Life Situations Checklist, an 8-page questionnaire (Appendix D) and were asked to make projective drawings prior to any treatment. The questionnaire included demographic data and questions concerning attitudes toward sterilization. The questionnaire also elicited information concerning a variety of topics involving personal, marital, parental and sexual life. Most of the persons who planned to have sterilization subsequently had their operations. Approximately one year later, all subjects were required to complete the same tests and information, including drawings, as they had done in the beginning of the study; the questionnaires were suitably modified to reflect post-operative data.

The hypotheses were tested by several statistical methods. Descriptive statistics and tables were utilized to describe the sample and subsamples. A Pearson Product-moment Correlation Coefficient matrix, Chi-square Tests of Independence and Contingency Coefficients, Step-wise Multiple Regression Analyses and One-way and Two-way Analyses of Covariance were utilized. The level of significance for all tests of hypotheses was determined at the .01 level.

Definitions

1. Life events are those events that individuals are constantly confronted with. Some of these events are completely under the control of the person (taking a new job), while others are outside of his control (death of a family member, etc.).

2. Voluntary contraceptive sterilization is contraception by surgically preventing the egg and sperm from uniting. The person chooses this as a means of preventing future pregnancies. It should be considered permanent, although, in some cases, it can be reversed.

3. Female sterilization is the surgical procedure of severing or cauterizing the Fallopian tubes to prevent the egg from meeting with the sperm. There are many specific procedures but five or six are most commonly used (this limited definition does not include hysterectomy). Most methods no longer require hospitalization.

4. Vasectomy, technically, is the removal of the vas deferens (tubes) in males, But, as used in practice, the term refers to the severance or cauterization of the vas deferens to prevent the sperm from being ejaculated with the semen.

Delimitations of the Study

Those individuals who were to have other forms of sterilization (notably hysterectomy) were not included as part of the study. All sterilizations, both male and female, were for contraceptive purposes rather than being merely the by-product of other operations.

There was no attempt to determine whether any differences existed between those individuals who had different specific procedures of sterilization (e.g. whether a woman had a laporoscopic or culdoscopic operation was not relevant to the study). Procedures routinely used for

females did not require overnight hospitalization. Women who were planning to have sterilization in conjunction with birth or termination of pregnancy were not included. There was also no attempt to determine whether differences existed between those who had local or general anesthetic in connection with the operation; as almost all women had a local anesthetic.

An inherent weakness of a study such as this is the method of sample selection. It is morally, if not virtually impossible to randomly select and assign subjects to sterilization and non-sterilization groups. Even if this were possible the fact that the subjects were forced into the sterilization or non-sterilization group would tend to cause resentment. This, in turn, would confound the results of the treatment.

Organization of the Dissertation

This chapter has been a brief overview of the study, which is followed in subsequent chapters by a deeper analysis of the design and data. Chapter two is a review of the literature related to the topics of this study. Included in the review is a discussion of the prevalence of both vasectomy and female sterilization for contraceptive purposes. Studies concerning the psychological, marital and sexual effects of vasectomy and female sterilization are reviewed and critiqued. A review of those studies linking life events with change in physical and psychological health is also included.

The research methodology and procedures of the study are explained in chapter three. The population and sample are described and the selection procedures are discussed. The measuring instruments, including both standardized and newly developed instruments are examined also in chapter three. The MMPI and CPI have been standardized and used heavily in research while the life events scale and the sterilization attitude

scale were developed specifically for this study. The life events scale was developed by using two other scales and making necessary revisions. Chapter three concludes with a presentation of the methods of data collection and of the statistical procedures used to complete the objectives of the research and test the hypotheses.

Chapter four presents an analysis of the statistical findings of this investigation. Tables and charts as well as descriptive statistics are used to describe the sample. Statistical analyses of the data are presented to fulfill the objectives. Each objective and hypothesis is treated and explained individually in chapter four.

Chapter five brings together the results of chapter four into a cohesive whole. The emphasis is placed upon a discussion of the results and also includes interpretations of the data. The final chapter is a summary of the entire study and concludes with recommendations for future study.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

This chapter is an overview of the studies which have contributed toward a better understanding of sterilization as a significant life event. This chapter will discuss four major topics: 1) prevalence of sterilization, 2) vasectomy studies, 3) female sterilization studies, and 4) studies of life events.

This first section discusses the prevalence and distribution of sterilization throughout the world but primarily the United States. The second section is an overview and critique of the studies concerning the psychological effects of vasectomy. Section three concerns itself with female sterilization investigations. The final section deals with studies of the effects of various life situations or psychological health. This section was included as sterilization is now, more than before, a significant life event which may effect, psychological health, as well as marital and sexual relations.

Prevalence of Sterilization

During the 1960's and 1970's throughout the world there has been a rapid increase in the prevalence of sterilization, both male and female. Prior to the early 1950's relatively few sterilizations for contraceptive purposes were done. At that time only 4 million couples relied on sterilization for contraceptive purposes. Yet, by September, 1977, it was estimated that over 65,000,000 people throughout the world had undergone a sterilizing operation. Contraception was, by far, the most common reason for the operation since the mid-1950's. Based upon growth rate

estimates, it was anticipated that over 200,000,000 people will have chosen sterilization by 1985 (IPAVS, 1977; Lubell & Frischer, 1976).

According to Stokes (1977), contraceptive sterilization more than tripled between 1970 and 1976. In 1976 sterilization led all other contraceptive methods. Table 2-1 shows the increase in the use of the various contraceptive methods throughout the world.

Table 2-1

Use of Sterilization World-wide: Estimated Number of Couples Controlling Births by Sterilization and Other Methods (in millions)

Method	1970	1976
Sterilization	20	75
Pill	30	55
Condom	25	30
IUD	12	15
Other	60	65
Total	147	240
Abortion	30-55	30-55

Source: AID and the population Council. From B. Stokes, Filling the Family Planning Gap. Worldwatch Paper 12 (Washington, D.C.: Worldwatch Institute, 1977). Reprinted with permission.

Contraceptive usage in the United States. The National Fertility Study (NFS) of 1975 indicated that 79% of all American couples were practicing contraception (Westoff & Jones, 1977). According to both the NFS estimates and estimates made by the National Survey of Family Planning

Growth (NSFPG), this figure rose from 50.4% in 1960 to 63.9% in 1970 and 72.9% in 1973 (Draper, 1976; Westoff, 1972; Westoff & Jones, 1977; Westoff & Parke, 1972).

In the 1975 figures it was estimated that, of those practicing contraception, 31.3% relied on male or female sterilization while 34.3% were relying on oral contraceptives (Westoff & Jones, 1977). Other methods of contraception; (coitus interruptus; condoms; the rhythm method; interuterine devices; diaphrams; foams; jellies and other spermicides) have gradually been used less and less (Draper, 1976; Westoff & Jones, 1977).

Increased prevalence of sterilization in the U. S. (1965-1975). The proportion of female contraceptive sterilizations among married women in the U.S., aged 15-44, increased from 4.5% in 1965 to 5.5% in 1970 to 14% by 1975. The proportion of married men who have been sterilized increased from 3% in 1965 to 5% in 1970 to 11.1% by 1975 (Draper, 1976; Gillespie & Spillane, 1973; Westoff & Jones, 1977). Therefore, the total proportion of sterilizations among married couples, with wife aged 15-44 rose from 7.5% in 1965 to 25.1% in 1975. (Westoff & Jones 1977). Westoff and Jones suggested that the 1975 figure should be considered as a low estimate.

Among those couples in the U.S., where the wife was aged 30-44, sterilization was the most popular method of contraception in 1973. Approximately 34% of this group of couples relied on either vasectomy or female sterilization. The growth trend appeared to be continuing as 47% of a sample of women between 25 and 34 indicated then that eventually they would seek sterilization for themselves or their husbands (Draper, 1976). Westoff and Ryder (1977) indicated that many younger

couples were expecting to be sterilized.

By 1975, among women who were practicing contraception and were married 20 to 24 years, the use of sterilization increased from 37% in 1970 to 55.7%. For those married 15 to 19 years it rose from 32% to 51.6% and for those married 10 to 14 years the increase was 13% from 30.4% to 43.3%. This made sterilization the most popular method of contraception for couples married over ten years (Westoff & Jones, 1977). These numbers were similar for those couples who had decided not to have any more children. In 1970, 35% of married couples who had six or more children had been sterilized (Presser & Bumpass, 1972).

Comparison of prevalence of vasectomy and female sterilization. While both vasectomy and female sterilization have increased in the U.S. during the last decade, the proportion between them has shifted twice. Before 1960, it was estimated that 75% of all sterilizations were performed on women. This figure started shifting in 1965 (Presser & Bumpass, 1972). In 1970, of the estimated 942,000 sterilizations in the U.S. approximately 20% were female procedures. Another shift occurred by 1975 when 1,344,000 sterilizations were performed. Female sterilizations accounted for 49% of the 1975 figure (Lubell & Frischer, 1976; IPAVS, 1977). The shift to increased female operations can be attributed, partly, to newer and more efficient female sterilization methods.

Sterilization was equally prevalent among the white and black couples in the U.S. In 1973, 23.5% of all white contraceptive couples and 24.4% of all black contraceptive couples had been sterilized. The male procedure was more common among white couples, while female sterilization was more prevalent among black couples, with vasectomy almost unheard of among black couples (Draper, 1976; Presser & Bumpass, 1972). There has

been evidence to suggest that the trend is changing toward some in the proportion of white female operations and black male operations. There is substantial evidence suggesting that fertility patterns of Blacks as well as Catholics are converging with those of whites and non-Catholics (Westoff & Ryder, 1977).

Regional differences. Regionally, there have been wide differences in the frequency of vasectomy and female sterilization. In 1970, while only 5% of the males in the entire U.S. population had had vasectomy, 12% of the men in the Western United States had undergone the operation. Vasectomy was rare in the South where female sterilization was much more prevalent. (Presser & Bumpass, 1972; Rochat, 1974).

While vasectomy was rare in the South, female sterilization was rarer in the West than in the other regions. Female sterilization was more prevalent in the South than in any other area. Eight per cent of the women in the South had been sterilized, while the total U.S. figure was 5.5% (Presser & Bumpass, 1972; Rochat, 1974). When considering the prevalence of female procedures among Blacks, this may help explain the higher number of female operations in the South. Additionally, the regional differences may be attributed, in part, to the difference in attitudes of the medical personnel in the regions.

Cumulative figures. The total number of sterilized persons in the United States in 1969 was estimated by the NFS to be 275,000. Men and women were equally represented in this figure (Westoff, 1972). The NSFPG estimates indicated that the total number of sterilizations had increased to 7,400,000 by June, 1975 (Lubell & Frischer, 1976). The NFS figures for 1975 was set at 7.9 million totally and 6.8 million for contraceptive purposes (Westoff & Jones, 1977). By the end of the year the total

number of sterilizations in the U.S. was approximately ten million at the end of 1977 (Largey, 1977).

Sterilization Internationally. The growth rates of sterilization in many parts of the world has been as it has been in the U.S. Today, there are 78 officially established government programs providing sterilization with 16 other governments providing family planning services. It has been suggested that the most comprehensive and well developed program is in People's Republic of China (IPAVS, 1977; Nortman, 1978). In Latin America, where absolute numbers are still quite low, the rate of growth has been phenomenal (Viel & Sanhueza, 1976).

Female sterilization has been extremely popular quite some time in Puerto Rico, a pioneer in the usage of the operations for contraception. By 1947-1948, seven percent of all ever-married women had been sterilized. This figure rose to 16% by 1953-1954, and then doubled to 32% by 1965. These figures seem large when considering that 80% of Puerto Rico's population is Catholic. Male operations, however, are almost non-existent in the country (Presser, 1970).

In 1953 India became the first nation to have a national birth planning program. Initially, the program emphasized education concerning contraceptive methods; however, since 1965 the country has increased the use of sterilization. The sterilization rate increased threefold from 1965-1969. With the increase of absolute numbers, there was also an increase in the proportion of male sterilizing operations. Whereas in the 1950's most sterilizations in India were female, the majority of sterilizations in the 1960's and 1970's were vasectomies. In 1967-1968 80.6% of all sterilizations were among males. Sterilization clinics were set up at temporary locations in many cities. (Gulhati, 1977;

Presser, 1970). During one period, from April through December, 1976 it was estimated by the Minister of Health and Family Planning that over seven million sterilizations were performed (Landmann, 1977). This figure, however, needs to be viewed cautiously.

While the use of sterilization has not been as impressive in every part of the world as in India and Puerto Rico, there has been a tremendous rise in its usage. Africa and parts of Europe have lagged behind other parts of the world, but it is expected to increase in Africa as the people become more educated about birth control methods (IPAVS, 1977).

Studies of the Effects of Vasectomy

While Wolfers and Wolfers stated that attacks "of frenzy (about vasectomy) are building toward a crest now, in the 1970's" they were unable to find conclusive evidence concerning the psychological, marital and sexual effects of the procedure (Wolfers & Wolfers, 1973, p.9). This, they concluded, was true even though there have been numerous studies investigating the after-effects of the operation. The results of the various approaches to research have been contradictory, suggesting that the research methods, measuring devices or sample selection, or all three have been less than satisfactory.

Wolfers and Wolfers maintained that any position could be supported by the methdology and questions designed in the study (Wolfers & Wolfers, 1973). There have been trends in the literature that suggest that the results were often related to the research design used by the researchers. However, as statistical methods have improved, there also has been a corresponding improvement in the studies of vasectomy (Wolfers & Wolfers, 1973, chap 3).

Relationship between vasectomy results and the research design. Research, concerning the effects of vasectomy can be classified into four categories: 1) "retrospective survey studies" using no comparison group, 2) "retrospective psychiatric and clinical" interviews, no comparison groups, 3) "quasi-experimental" designs with or without comparison groups and, 4) longitudinal studies with comparison groups (Pohlman, 1978).

Generally, the differences in the research methodologies appeared to account for the divergent results of the studies. To over simplify greatly, those studies utilizing the first and third methods have tended to support the thesis that the effects of vasectomy were positive. Those employing methods two and four tended to suggest that the effects of vasectomy were negative.

The studies can also be distinguished by the method of measurement employed by the researchers. These are divided, basically, into three categories: 1) surveys and questionnaires; 2) and structured interviews and; 3) standardized psychological tests (Bloom & Houston, 1976). All the vasectomy studies conveniently complied to this categorization, with some research studies, such as the series by Rodgers and Ziegler, using more than one method of measurement.

As with research designs, the studies employing these differing measuring procedures reflect the importance of selecting uniform methods of measurement. When knowledge of the measuring instrument was available, the results of the study were often predictable, as different methods generally yielded different results. Surveys and questionnaires, dealing with post-operative sexual behavior and satisfaction, marital happiness and satisfaction with the operation, have generally yielded positive results. Studies relying on psychiatric and clinical interviews and

standardized psychological tests, to the contrary, have indicated that the emotional, marital, sexual and psycho-social effects of vasectomy were less favorable.

Typically, those studies utilizing the first research design (retrospective study with no comparison group) involved surveys, questionnaires and structured interviews with transparent questions about what already occurred. It was obvious that those studies using the second design (retrospective psychiatric and clinical interviews, no comparison groups) relied upon clinical judgments of psychotherapists and clinicians. The third design (quasi-experimental, with or without comparison groups) relied equally on surveys or standard psychological tests.

Design four (longitudinal studies with comparison groups) was generally the most superior in methodology and measurement techniques. Usually relying on standardized psychological tests and often supported by extensive questionnaires, these studies appear to have sometimes yielded conscious and unconscious responses which frequently contradicted each other. The psychological tests suggested negative results, while the questionnaires indicated that the subjects were satisfied with the operation (Bloom & Houston, 1976; Pohlman, 1978).

Retrospective vasectomy studies. Early studies typically analyzed the effects of vasectomy by using surveys, asking questions of vasectomy, after the operation had already been performed. The questions were usually straightforward and required direct answers about marital and sexual relations, and feelings about vasectomy since the operation. In the majority of cases, the results indicated that most men (90% and more) were satisfied with vasectomy and appeared to be more content with marital

and sexual relations. Notable exceptions to this were the studies done by Wolfers (1970) in England, and Dandekar (1963) in India.

Retrospective studies typically resulted in the vasectomy men reporting that: 1) they were satisfied with the vasectomy (Dandekar, 1963, India; Ferber, Tietze & Lewit, 1967; Laidlaw & Bass, 1964; Landis & Poffenberger, 1965; Poffenberger & Poffenberger, 1964), 2) their family and marital relations improved (Laidlaw & Bass, 1964; Poffenberger & Poffenberger, 1964) and 3) they were better adjusted sexually (Garrison & Gamble, 1950; Laidlaw & Bass, 1964; Landis & Poffenberger, 1965; Poffenberger & Poffenberger, 1964). The results and interpretations of other retrospective surveys, in most cases, supported these conclusions (Grindstaff & Ebanks, 1971, Canada; Lee, 1966, Korea; Simon Population Trust, 1969, England).

Garrison and Gamble were among the first to investigate the effects of vasectomy. The results were similar to a study done much earlier by Popenoe (1929). Their research focused primarily on the sexual functioning of 50 individuals after the operation. According to the researchers, the majority indicated that there was no change in sexual behavior, while 18% reported increased sexual activity and only 10% showed decreased activity. Where decreased sexual activity was noted the authors offered reasons other than the vasectomy, suggesting that the change was not dependent upon the operation (Garrison & Gamble, 1950).

Laidlaw and Bass (1964) obtained responses from 442 men who had received a vasectomy. Approximately 99% indicated that they would have consented to have the operation again, were they to do it again, while 65% stated that their family relations were better (Laidlaw & Bass, 1964). These results were very similar to those found in another retrospective

survey of 330 patients by Landis and Poffenberger (1965). Once again, 99% responded that they were satisfied with the vasectomy and would consent to another operation "had they to do it again," while an equal number said they would recommend the operation to their friends. One third of this group also stated that their relationship with their wives improved, attributing this to better sexual adjustment after the operation (Landis & Poffenberger, 1965).

In another study 29 couples were surveyed, of which nine were also interviewed. All the husbands and wives with the exception of one of each said they would recommend the operation to others. All men stated that they would have the vasectomy if they had to do it again. The conclusions about the psychological effects of vasectomy were unequivocally positive in this investigation (Poffenberger & Poffenberger, 1964).

Grindstaff and Ebanks (1970) found positive reactions to the vasectomy. They obtained the vasectomy sample, as well as another group for background comparisons retrospectively. Typically, the questions were straightforward, suggesting that at least on a conscious level vasectomy men were satisfied with the operation. These results and conclusions are not at all unlike other researchers' conclusions with retrospecitve surveys. Studies done in Great Britain (Simon Population Trust, 1969), Korea (Lee, 1966), India (Dandekar, 1963) and the United States (Ferber, et. al., 1967; Sobrero & Kohli, 1975) showed that, as above, over 90% of vasectomy patients and, where studied, most spouses were satisfied with vasectomy as a method of contraception.

While the findings of retrospective studies have been generally positive, some studies have shown that some individuals have difficulties after the procedure. This is true even in studies where the vast majority

of subjects indicated that they were satisfied and would do it over again. In a study in India 53% of the 1191 men stated that they had experienced "weakened sexual functioning and drive," yet 92% of the sample felt favorable toward the vasectomy (Dandekar, 1963).

Wolfers (1970), in England, found problems in 12% of her sample of 82 vasectomy men. The subjects were part of a previous study done by the Simon Population Trust (1969) where all conclusions were positive. Wolfers offered psychiatric appointments to any subject who felt that he would need or benefit from such a session. Since her approach was slightly different from that of the Simon Population Trust seven of the people, who earlier had indicated no problems, requested appointments. An additional three were also contacted because their answers suggested possible problems (Wolfers, 1970). The results of this study by Wolfers led her to conclude that the choice of vasectomy may be ill-advised under certain circumstances (Wolfers & Wolfers, 1973).

This brief review of the retrospective studies suggests that overall the subjects have been satisfied with vasectomy. However, they have suggested that if given the questions in alternative format, the conclusions of the studies might have been different as in the study by Wolfers. The Rodgers and Ziegler studies, to be discussed later, utilized both questionnaire surveys and psychological inventories, yielding two different positions. The conscious responses were generally positive, as the studies above indicated, while the less obvious patterns shown through psychological testing were often negative (Rodgers & Ziegler, 1973). As an explanation for these conflicting results the researchers hypothesized that vasectomized men react defensively and distort their attitudes when the effects may have, in fact, been negative (Rodgers, Ziegler, Altrocchi & Levy, 1965).

Psychiatric and clinical studies of vasectomy. As with surveys, the psychiatric and clinical studies under discussion were done after the operations had already been done, without any preoperation analysis. These studies typically started with "emotionally ill" subjects and surveyed how many had been sterilized. There was no attempt to select comparison groups, either emotionally ill patients who had not been sterilized or psychologically healthy persons who had been sterilized. Often the therapists concluded that there was a cause-effect relationship between the sterilization and subsequent emotional illness. Such studies were generally done by therapists who place strong emphasis upon the belief that individuals view vasectomy as a form of castration and, therefore, commonly resulted in negative responses to the procedure.

In a case history study, Johnson analyzed the cases of 83 psychiatric patients, all of whom had had a vasectomy prior to hospitalization. Johnson reported that several subjects described themselves as feeling inadequate after the operation and that the wives of many indicated that they had sexual difficulties following their husbands' vasectomies. Twenty-nine husbands and fifteen wives reportedly become promiscuous for the first time following the vasectomy. Nineteen percent of the patients reported that they regretted having been sterilized. The researcher emphasized that eleven of the vasectomy men were placed in mental hospitals within one year after the operation. The underlying assumption was that the psychological problems were a result of the vasectomy (Johnson, 1964; Johnson & Miller, 1970).

The conclusions of the studies of Johnson and Miller supported the conclusions of Erikson's study of 1954. In his case studies, Erikson indicated that the psychological impact of vasectomy, while profound,

was often not manifest until long after the operation had been completed. The summary suggested that, for many men, vasectomy represented a form of castration. Erikson stated that while vasectomy was often requested as a contraceptive device, it usually had a much deeper psychological meaning (Erikson, 1954).

In another clinical study the researchers, both marriage counselors, found that among 26 cases there was generally decreased sexual satisfaction, as well as increased marriage problems after vasectomy. The problems were existent before the procedure, but, according to the researchers, after the operation one or the other marital partner was less "able to cope with these difficulties." Only one woman had any awareness that the operation could have contributed, in any way, to the increased difficulties. Therefore, it appeared that, if asked, most of the patients would have said the operation was psychologically healthy (Barnes & Johnson, 1964).

This study also showed that sexual promiscuity increased after the operation. Four women and six men began extramarital sexual relations after vasectomy while all but one of those who had acted out sexually prior to the operation continued to do so. According to the report, the marital problems become more serious for most of the cases after the vasectomy. The authors viewed vasectomy as a real threat to marriages, which often leads to divorce. Supporting the claims of Erikson, the results indicated that the initial psychological impact was obscured until later, in many cases (Barnes & Johnson, 1964).

The most recent clinical study of vasectomy patients was much less negative than previous investigations. Of 250 males who had vasectomy, only two had subsequent psychiatric problems, both depressions. One was associated with breakup of marriage within a year after surgery. These

two cases could not be determined to have been directly attributable to the vasectomy, as they may have reflected pre-existing difficulties (Squires, Barb & Pinch, 1976).

Vasectomy research using "quasi-experimental" designs. The studies in this category were classified as "quasi-exterimental" because there was an attempt to control for some of the weaknesses that were detected in other studies. They were also included because there was either no comparison group or because they were done retrospectively with comparison groups. Such researches were somewhat weakened by selection procedures, less than adequate experimental designs and, in some cases, inadequate measuring instruments. The results have tended to suggest that the psychological effects of vasectomy were either positive or, at worst, unchanged. However, possibly because of the diversity of the research methods and designs, there appeared to be more divergence of results.

Bush (1974) studied 40 couples a few weeks before vasectomy and again about three months post-operatively. Questionnaire items included marital and sexual adjustment, physical and psychological functioning, and a scale developed in the study to "objectively measure men's and women's masculinity and femininity." Eight of the couples were also interviewed to give perspective to the questionnaires.

The results were somewhat contradictory. Some items seemed to imply that sexual functioning improved; others that it got worse; and Bush judged either no change or an improvement in sexuality overall. He was unable to find any successful pretest predictors of adverse reactions to vasectomy. Since 38 couples claimed to have been happy with vasectomy and only two expressed regret vasectomy was accepted as positive. The instruments were transparent and subject to criticism; and the study

lacked any comparison group.

Janke and Wiest (1972) studied 33 vasectomy men with 33 non-vasectomy men in a private pre-paid health plan in Portland, Oregon. The design was not longitudinal but included an intricate computerized matching process. The results indicated that the vasectomy subjects suffered no greater degree of "marital, job or general living stress" than the control subjects. Janke and Wiest concluded that the evidence did not support the earlier studies that suggested that vasectomy subjects exaggerated their masculinity in an over-compensatory maneuver. Actually, the results indicated that the vasectomy men's psycho-social adjustment was superior, "possibly a function of reduced anxiety" (Janke & Wiest, 1972). These conclusions have been questioned and the study criticized in detail by Pohlman (1978).

Longitudinal studies with comparison groups. These investigations were generally superior in methodology to the other three designs previously discussed. The researchers studied vasectomy subjects and comparison subjects both before and after treatment, usually utilizing standardized measuring instruments. The results in such studies have been less positive than survey studies, suggesting that when directly asked about the effects of vasectomy, subjects would probably imply satisfaction with the procedure; yet when measured indirectly the subjects' responses were different. Such contradictions could be viewed as an attempt to rationalize one's behavior. The work of Rodgers and Ziegler and their associates has, to date, been the most comprehensive of all studies of the psychological effects of vasectomy. They have conducted two longitudinal studies which suggested that vasectomy resulted in adverse psychological reaction one to two years later.

Their pilot study was conducted in LaJolla, California with 48 men

about to have vasectomy. Of the original sample, 35 completed post-testing which included the MMPI and an extensive questionnaire. The follow-up testing was completed one and two years post-operatively. While 34 of the 35 indicated that they were satisfied with the operation, seven reported decreased sexual functioning and the MMPI profile analyses indicated that 15 had increased psychological disturbance. Only two subjects showed improvement on the MMPI profiles. According to Rodgers, Ziegler, Altrocchi and Levi (1965) the results supported "the negative observations of some clinical observers" and suggested that some men may have defensively exaggerated their satisfaction with the operation (Rodgers, et. al., 1965; Rodgers, Ziegler, Rohr & Prentiss, 1963).

The second study, also longitudinal, included data from wives and comparison couples. After urologists had scheduled vasectomies, 48 couples were interviewed and given questionnaires as well as self-administered tests (CPI). Forty-two couples completed the pre-treatment data. A comparison group of 42 couples, where the wife was using the "pill" was selected and completed the tests and questionnaires. Of the 42 vasectomy couples and 42 "pill" couples, 22 couples from each were matched while the others were excluded from most comparisons. Follow-up information was obtained four months later, utilizing the MMPI rather than the CPI as used in the beginning. The procedures were repeated one to two years after the start of the study and again four years after the study began (Ziegler, Rodgers, & Kriegsman, 1966; Ziegler, Rodgers, Ziegler & Prentiss, 1968).

The results after one to two years supported the results of their first study, suggesting that vasectomy affected psychological functioning negatively. However, after the four year follow-up there appeared to be

no difference between vasectomy and comparison couples. Rodgers and Ziegler concluded that this study "underestimated" the degree of adverse psychological reaction to the operation, because of the ameliorating influence of the intensive interviewing and testing procedures (Ziegler, 1966).

While excellent in many ways, these two studies have been subject to questions and criticisms. Both studies were done over fifteen years ago when vasectomy was less common and acceptable than it is today. The subjects, therefore, were probably different from vasectomy patients since the sterilizing procedure is more common and acceptable. The first study lacked a comparison group. The samples, in both studies, were not representative of the general vasectomy population as the subjects were all from upper-middle class backgrounds and had above average educations. The method of measurement, in the second study, could be questioned as the CPI was used in pretesting and the MMPI was used in posttesting. The researchers did, however, extrapolate MMPI scale scores from the CPI pre-tests to have at least estimated MMPI measures from both pre- and post-testing. The small sample sizes were also a limitation in these studies.

In another longitudinal study with a comparison group, Houston and Horenstein administered the Tennessee Self-Concept Scale to 20 vasectomy men and 20 comparison subjects. Six-month and eighteen month follow-up tests were administered. Of the original 40 men, seventeen in each group completed the follow-up testing. The results indicated that there were no differences in self-concept between treatment and control subjects at time of the follow-up. The authors' conclusions, however, suggested that vasectomy adversely affects psychological functioning (Houston & Horenstein, 1974).

Kendall also studied the effects of vasectomy upon the self-concept. The results were contradictory to Houston and Horenstein's concerning the self-concept. Kendall concluded that vasectomy men had lower feelings of self than comparison subjects on posttesting (Kendall, 1972).

Canfield (1972) compared 24 couples of vasectomy men and wives with 24 non-sterilization couples and concluded that no changes occurred. The follow-up was done only six months after the beginning of the study. Each subject was given the Holtzman Inkblot Test and the Marriage Adjustment Scale (Canfield, 1972).

The studies done by Houston and Horenstein, Kendall and Canfield contained some strong features. Nevertheless, the studies either lacked sufficient sample size or adequate measures of psychological adjustment or methods of sample selection. The groups in the Kendall study were radically different from each other, which may have caused serious problems. These problems may or may not negate the findings of the studies, but the need for further research is underlined.

Psychological Effects of Female Sterilization

Even the limited sophistication of the research used in studies of vasectomy was not in evidence in the projects reporting the effects of female sterilization. There have also been fewer studies dealing with the female operations.

One of the major limitations of the studies of female sterilization has been the inability of the researchers to readily identify the reasons for the sterilization. In some cases, the "voluntary contraceptive" aspect of sterilization was confounded by including women who obtained the operation for medical purposes. In other situations, the sterilizations occurred in conjunction with childbirth or abortion, therefore, weakening

the conclusions of the studies considering "voluntary contraceptive sterilization". In other studies, there were tubal ligation patients co-mingled with hysterectomy patients. Therefore, it seemed important to be more careful in sample selection for female studies than for male studies.

While longitudinal studies with comparison groups were used a few times in the vasectomy research, there has been less use of such studies in the research of female sterilization. There have also been very few studies which have utilized any comparison groups in any research design. Generally the comparison groups were comprised of hysterectomy patients rather than a more comparable non-sterilization group.

The female sterilization studies have also suffered from a lack of objective measuring instruments. The majority of the researches have relied on retrospective questionnaires and a few have utilized clinical evaluations, also retrospective, while standardized measuring instruments were seldom utilized.

The studies of female sterilization, like the vasectomy studies, were categorized according to research designs. The four categories were: 1) retrospective surveys, with no comparison groups, 2) retrospective psychiatric and clinical studies, which used no comparison groups, 3) quasi-experimental designs, and 4) longitudinal studies using comparison groups.

Generally, the results of the studies in each category were not as easily predictable as those of the vasectomy researches. Overall the studies indicated that the marital, sexual and psycho-social effects of the operation were less favorable for female sterilization subjects than for vasectomy subjects, but one must immediately add that the evidence

is fragmentary. Almost all female studies showed negative results and therefore it was a question as to what degree of problems were existent in each study.

As with vasectomy research, the female literature showed several pitfalls and weaknesses, thus confounding the results of the studies. Some major problems noted throughout the literature were: 1) lack of adequate sample sizes, 2) poor research designs, 3) inadequate measuring devices, and 4) lack of non-sterilization comparison groups. New briefer sterilization procedures such as laparaotomy and "mini-lap" may have different effects from longer methods; few studies permit us to identify which women had which type of procedure.

In their review of the literature, Schwyhart and Kutner (1973) concluded that sample attrition greatly weakened the interpretations of the researchers in many studies. They also stated that sample attrition was directly related to the reported degree of satisfaction with the procedure. In their summary, it was shown that in those studies where attrition was lower, the percentage of persons who regretted the operation was higher. They suggested that the prevalence of regret had been greatly underestimated and could be as high as 25% had the dropouts been followed (Schwyhart & Kutner, 1973). Their argument was well supported by an analysis of the studies.

Retrospective survey studies of female sterilization. The interviews and questionnaires were generally well-structured with items asking direct questions as to sexual and marital satisfaction as well as feelings about the sterilization since the operation. The results have tended to be more positive in survey studies than in the studies using other designs.

Almost all studies indicated that the women expressed general

satisfaction with the procedure, ranging from 78% (Ekblad, 1961) to 99% (Adams, 1964, U.S.; Chinnatamby, 1963, Ceylon; Lu & Chun, 1967, Hong Kong). This, nevertheless, often conflicted with other questions in the surveys which suggested that women were often confronted with sexual and psychological problems post-operatively. Studies in India (Rakshit, 1966; in Puerto Rico (Paniagua, Tayback, Janer & Vazquez, 1972), in Scotland (Black & Sclare, 1972) in England (Thompson & Baird, 1972) and in the United States (Enoch & Jones, 1975; Kopit & Barnes, 1976; Norris, 1964) suggested that over 90% of the subjects expressed satisfaction with the operation; yet in each study there were subjects who had post-operative sexual and psychological problems.

The study in England by Thompson and Baird yielded results which were contaminated by the method of selection. This research not only included subjects who had the procedure for contractptive purposes but also included subjects who obtained the operation because of medical reasons. The researchers concluded that in those cases where sexual relations had worsened, psychological problems existed prior to the operation. However, the pre-treatment data was not obtained prior to the operation but was obtained after the procedure had been done. Therefore, it was uncertain what the psychological status of such subjects had been for sure before the operation (Thompson & Baird, 1972).

Rakshit, in India, while concluding that the women were subjectively satisfied with the procedure, found that 25% had "lessened sexual drive" and as many as 36% had post-operative psychological problems (Rakshit, 1966). A study in Puerto Rico with 519 tubal ligation subjects support the results of Rakshit's study. The majority of the subjects indicated that they were satisfied with the procedure; yet, the study showed that

24% of the women said they had decreased sexual activity and decreased frequency of orgasm post-operatively. Fourteen percent of this study also expressed that their marital relations had worsened (Paniagua, et.al., 1972). Without comparison groups and pre-operative data, conclusions concerning the effects of the operation could not be considered to be conclusive.

In a study of 168 women who had a tubal ligation in connection with childbirth, including Caesarean section, Black and Sclare (1972) concluded that most were satisfied and as many as 96% had shown an improvement in social and mental well-being. Yet, in analyzing the results, the authors stated that 39 of the 168 (approximately 23%) had experienced "deteriorations in adjustment." This sample, however, included individuals who had the operation for medical purposes as well as 37 individuals who had "definite evidence of psychiatric disorder before being sterilized" (Black & Sclare, 1972, p. 165). Such a selection problem also seriously limited the conclusions of Ekblad (1961). His study included 31% who had antecedent "psychiatric disorders." Once again, without any comparison groups and accurate pre-operative data these conclusions were greatly weakened.

Two American studies (Enoch & Jones, 1975; Kopit & Barnes, 1976) also showed the vast majority of women expressing satisfaction with the operation. The data appeared to contradict the general expression of satisfaction. Kopit and Barnes pointed out that 86% reported similar or improved mental health and sexual relations while the remaining 14% were not as positive. The authors suggested that the psychological problems were more common among the divorced women in the study. However, since 48 of the original pool of 187 subjects did not respond, and since there

was an over-representation of divorced women among the non-respondents, there were strong possibilities that the conclusions could have been altered if non-respondents were questioned (Kopit & Barnes, 1976). This was especially true if the thesis proposed by Schwyhart and Kutner is correct.

Enoch and Jones (1975) summarized their study by stating that the operation was "safe, satisfactory in many cases and had many secondary benefits." In this summary, the authors were referring to the psychological, sexual and marital effects of the procedure. Nevertheless, approximately one fourth of the patients claimed that they felt intercourse was a "waste of time" and over 50% suffered some form of psychiatric problem subsequent to the operation. Problems emerged, typically, between three months and two years after the operation (Enoch & Jones, 1975).

In summarizing the survey researches it could be concluded that women either had more problems post-operatively or at least reported the problems more often than did the vasectomy men. The researchers, in most cases, chose samples which were not representative of the majority of female sterilization patients. Therefore, the generalizability of such studies was questionable. With this as a problem and other weaknesses inherent in retrospective studies without comparison groups which affect internal validity, all the researchers suggested that additional investigations be done.

Clinical studies of female sterilization. Two studies fell into the category which could be considered to be clinical research of case histories without comparison subjects. One study by Ellison (1964) in Australia concerned itself with women who were psychiatric patients at a

hospital during follow-up. The other study (Barglow, 1964) was one in a series of researches done by Barglow and associates from 1964 to 1966. Both of these researches included hysterectomy patients and tubal ligation patients simultaneously. As with survey studies, the main problems of these studies were that they: 1) lacked comparison groups, 2) did not have representative samples, and 3) were done retrospectively.

In this study, Ellison (1964) interviewed 20 hospitalized psychiatric patients who had undergone either a tubal ligation or hysterectomy. The researcher diagnosed 80% as having severe depression, which in most cases was linked to the operation. However, he also pointed out that the hysterectomy patients, in the study, may have had histories of depression previous to the operation. He did not make such allowances for the tubal ligation subjects. The conclusion was that the sterilizing operation adversely affects the psychological functioning of the individuals (Ellison, 1964). The author failed to present data on the psychiatric adjustment of (1) sterilized women who were not admitted to a mental hospital or (2) as well as, women who were in a mental hospital and had not been sterilized.

By far the most penetrating studies of female sterilization were done by Barglow and his associates. One of the series of four studies (Barglow, 1964) was a clinical analysis of 190 women who had undergone either a tubal ligation or hysterectomy. Barglow found that 152 of the subjects had post-operative fantasies and symptoms of pregnancy which reportedly helped them in the long term. Thirty percent of the sample displayed more immature responses such as hysterical conversion. Some women even continued birth control methods other than the sterilization and others attempted to have the operation reversed. The study suggested that hysterectomy affected psychological functioning more adversely than did

the tubal ligation (Barglow, 1964).

One of the most serious limitations of the study was the non-representative sample used in Barglow's study. The majority of the subjects were black, came from a low socio-economic background and had very little education. An additional weakness of the study was the intermingling of tubal ligation and hysterectomy patients. These problems seriously limited the generalizations concerning the effects of contraceptive sterilization.

Quasi-experimental designs of female sterilization. The studies within this category were methodologically stronger than the designs of those in the previous two categories. The researchers, in this category, used comparison groups and in one instance (Schwyhart, 1974) there was an objective measure. There were no studies which had pre-operative data on the subjects in this category.

Schwyhart (1974) compared three groups in his study of the effects of female sterilization. Of the 951 subjects, 258 had a tubal ligation, 477 were the wives of vasectomy men and 216 had hysterectomies. The results suggested that on different scales of the MMPI, each group did worse than the others. The major goal of the study was to predict outcomes on the MMPI scales from a knowledge of the subjects' demographic data prior to the operation. The researcher, however, was unable to make such predictions as the most variance of any dependent variable was only eighteen percent attributable to any independent variable (Schwyhart, 1974).

In another study, Barglow and Eisner (1966) in Switzerland utilizing a comparison group, analyzed the effects of sterilization on 162 patients interviewed. Of these 162, the researchers compared 20 patients with an additional 50 subjects who had decided not to be sterilized. This

carefully done study revealed no important post-operative differences in personality between the two groups. Nevertheless, Barglow and Eisner reported that 15% of the 162 sterilized subjects who had been interviewed had new incidence of depression and anxiety after the operation.

This study was a follow-up of another study done earlier where 833 persons responded to questionnaires. The Barglow and Eisner follow-up of the 162 subjects included 122 of the earlier 833 persons. A comparison of the questionnaire responses of these 122 with their interview responses indicated that more showed regret about the operation during the interview. While only 4% indicated that they regretted the procedure on the questionnaires, 15% stated that they regretted the procedure during the interview. This suggested the possibility that when given the opportunity to verbalize their feelings, the subjects may have felt less compelled to report satisfaction with the operation. It also may have meant that with increased time there was increased dissatisfaction with the procedure. These findings and hypotheses are somewhat parallel to those of Wolfers about vasectomy.

Both the Schwyhart and Barglow and Eisner studies lacked an exclusively non-sterilization comparison group, which may have limited the researchers' ability in making judgments about the effects of the sterilization. There was also no pre-operation data, which might have indicated that the groups differed from each other in the beginning. If this were true, then the results would have been redically different under different conditions.

Longitudinal designs and female sterilizations. In a well designed longitudinal study, Barglow, Cunther, Johnson and Meltzer (1965) compared the psychological effects of tubal ligation and hysterectomy. The twelve

hysterectomy women and ten tubal ligation women were "willing" to accept the obstetrician's choice of operation; therefore, the researchers were able to randomly assign the women to the treatment groups. All were clinically interviewed both before and one year following their operations.

The results suggested that, as in the earlier study by Barglow, tubal ligation patients had better long-term psychological outcomes than hysterectomy patients. Two of the ten tubal ligation subjects and nine of the twelve hysterectomy subjects were rated as having poor outcomes, totalling 50% of the sample. Good adjustment was associated with the fantasy of becoming pregnant; and this fantasy occurred almost unanimously among tubal ligation patients, but rarely in the hysterectomy group (Barglow, et. al, 1965). This conclusion paralled the findings of the 1964 Barglow study, where fantasy of pregnancy was said to have been helpful in working through the loss of the ability to become pregnant.

While the conclusions reached in this study indicated less adverse outcomes for the tubal ligation patients, one did not know how they would have compared with strictly non-sterilization subjects as there was no group made up of such individuals. The results were also of questionable generalizability because of the lack of a representative sample of female sterilization women. The women were all black with an average of eight living children among those having normal deliveries and five living children among women who had Caesarean deliveries. When this study was done all sterilizing operations required hospitalization, whereas more recently developed procedures are typically done on an outpatient basis.

Life Events and Health

Various authors through the years have emphasized the importance of life situations as a key influence on mental and physical health.

Thomas A.C. Rennie and his associates, in a study of the Midtown Community Mental Health Research Project, felt that the etiology (sources) of mental disturbance was the primary goal of social psychiatry (Langner & Michael, 1963, p. 2). Despite his untimely demise, his colleagues prepared a summary of their work which places proper focus on this important factor of life context events. This emphasis stands in contrast to the historical Freudian emphasis on internal factors as the major determinants of mental health, and it stands in contrast to other major trends in psychotherapy and personality theory.

Social psychiatry concerns itself with those forces in the environment that affects a person's ability to adapt, and adjust to changes in his environment. Unquestionably, there are hereditary factors which predispose persons to mental illness; however, the focus of the Midtown Project was on demographic variables and life situations and how they affected mental health (Langner & Michael, 1963).

There is no question today that the causes of mental disorder (or illness) are multiple in nature. However, even the "effects of constitutional differences and predispositions to mental disturbance may be exacerbated by social conditions" (Langner & Michael, 1963, p. 5) such as poverty, early childhood deprivation and traumatic experiences. When suggesting that certain experiences contribute to mental health change, it is not meant to exclude other possible contributive factors; therefore there is room in such a framework for endowment and other factors.

It was not until Harold Wolff and his associates began studying the relationship between life events and different physical illnesses that stress was viewed as a major precipitant of illness (Dudley & Welke, 1977). As was mentioned in chapter one of this study, many illnesses have since

been linked with life events singly. The Wolff and Holmes series of studies even indicated that visits by mothers-in-law were a common health problem in North America (Holmes, Hawkins, Bowerman, Clarke, Joffe and Masuda, 1972).

Throughout the series begun by Wolff and continued by Holmes, hundreds of tuberculosis patients were interviewed. In almost all cases, the researchers found that the patients had increased life changes immediately prior to the onset of the illness. A variety of events, including financial problems, jail sentences, job losses and changes, injuries and separations, were related to onset of tuberculosis. Positive change was also found to correlate with the onset of illness in this series of researches (Hawkins, Davies & Holmes, 1957).

In reviewing the effects of traumatic experiences, one author suggested that being "scared to death" or "dying of a broken heart" are in fact a reality, based upon his studies with 4500 widowers (Engel, 1962). In another study Seligman interviewed 55 women, average age of 82, who were about to enter a nursing home. Asked if they had any freedom of choice, 38 responded positively, while the remainder responded negatively. Ten weeks later 16 in the second group were dead while only one in the first group had died (Seligman, 1975).

The previous studies were cited as only a few examples; but ideas of this type have been continually suggested in social science thought in recent decades. This in turn eventually has led to efforts to measure and quantify the influence of the environment on health.

Since evidence suggested that illness rates and even death increased after single, meaningful life changes, it appeared to follow that a broader view of life events would be even more valuable in predicting future illness. There have been several studies which have analyzed several life

events simultaneously with the intention of predicting stress and physical illness. Several life changes were linked to upper respiratory illness among college students, childhood illnesses, increased illnesses among spouseless mothers and symptoms of mental distress (Jacobs, Spilken, Norman and Anderson, 1970; Berkman, 1969; Meyers, et. al., 1969).

There have also been attempts to quantify the significance of specific life events. Three scales are most notable. The scales by Rahe and associates, Paykel and associates and Myers and associates were more widely accepted than others. The first two scales (Rahe, et. al., 1971; Paykel, et. al., 1971) were developed in order to predict physical illness onset while the scale by Myers, et. al. was used to predict mental health problems. In all three cases, scores were given to each event as it contributed to change. The ratings were subjectively obtained, but since then the scales were extensively researched in various countries (Masuda & Holmes, 1967; Myers, et. al., 1969; Rahe, Mahan & Arthur, 1970; Paykel, et. al., 1971).

Scales by Dr. R. Dean Coddington have been developed for special populations ranging from young children to high school seniors (Dudley & Welke, 1977). Wyler, Masuda and Holmes (1970) published a scale which was related to life change and seriousness of illness. This scale not only predicted onset of illness, but also found a correlation between ammount of life change and the seriousness of illness. In other words, the authors concluded that the greater the amount of life changes, the more serious the illness.

Most researchers found no differences in the results of their scales across cultures. Therefore, there was strong evidence to suggest that life events contribute to illness onset across cultural groups. There

was, however, indications that suggested that the significance of various life events for children change as they grow older. In all scales there were many items; yet, not one study included sterilization as a significant life event which contributed to change in physical and psychological health. There was also a noticeable lack of questions dealing with sexual matters. There also has not been a scale developed specifically for persons who have been sterilized recently. The additional possibility that some events today have either less or more impact than they did in the 1950's and 1960's when the above scales were being researched requires continued revisions.

CHAPTER III

THE PROCEDURES

The study was a quasi-experimental, longitudinal design using one treatment and two comparison groups for both male and female studies of sterilization. In some instances, a third comparison group was added. The design could not be considered strictly experimental since the vasectomy and female sterilization subjects were self-selected rather than randomly selected and assigned. Additionally, there were no perfect control groups for the sterilization groups; indeed the decision to have the operation already made the groups different.

The population and sample are described in this chapter. Included is an overview of the research, which consisted of obtaining pretreatment and posttreatment data. This also required that some of the couples be interviewed as well. The information collected at the beginning of the study was requested again, approximately one year later.

The MMPI-CPI (Rodgers' combined version) was used as a means of measuring psychological health and adaptation. Questions dealing with a subject's preceptions of his and his spouse's marital and sexual satisfaction were used to obtain a measurement of expressed marital and sexual satisfaction. A sterilization attitude scale was developed to determine whether there were differences among those subjects who had different attitudes toward sterilization. The criterion variables, in this instance, were the scales of the MMPI-CPI and judges' wholistic ratings of the MMPI profiles. A list of life events was developed from two other scales, then given to subjects to complete. These items were scaled and later used in analyses for this study.

Those subjects who completed the above questionnaires, drawings and personality inventories were compared to determine whether differences existed between treatment and comparison groups after the operations were done. In all comparisons males and females were separated and were not compared with each other, except for hypotheses eight and nine. For specific tests of hypotheses the groups were divided into subgroups according to predetermined characteristics.

Population and Sample

Below is a description of the population being studied. A brief view of the cities in the study is given. The sample is described and the method of selection and assignment is explained.

Population

The target population being studied was those couples where the husband or wife was planning to have voluntary contraceptive sterilization. This included those men who intended to have a vasectomy and those women who anticipated a tubal ligation. The operations on the women were not the in-patient type but were those considered to be "quickies," where overnight hospitalization was not required. Wives of vasectomy men, and husbands of sterilized women, were also included as part of the target population because sterilization might also affect one's mate. This was important, also, because of the link between psychological adaptation and marital and sexual satisfaction.

The parent population was drawn from three northern California cities: Sacramento, Oakland and Stockton. These cities were selected because they were different in many ways; and because of their proximity to the research project which was centered in Stockton. Close proximity was necessary because of the need of the presence of the researchers in

these cities on many occasions.

Sample

This section is subdivided into four subunits. Each identify different aspects of the sample utilized in the study.

Identification. Oakland is a large city in the metropolitan Bay Area of San Francisco. The total population of the entire area is over three million, while Oakland has a population of approximately 850,000. There is a large population of Blacks and many factory workers and laborers. The economy is supported by heavy industry with many factories in the surrounding area. It was expected that many of the subjects would be from the working class and would also be black.

Sacramento is somewhat smaller than Oakland but had a population of approximately 600,000 in its metropolitan area. The community is culturally diverse and large segments of its population were from different socio-economic backgrounds. The city is in the northern section of the San Joaquin Valley, a fertile agriculture area. The economy is sustained by agriculture and light industry. Sacramento is the California state capital.

Stockton is the smallest of the communities studied. It had a population of approximately 125,000. Located in the central portion of the San Joaquin Valley, Stockton is a railroad hub and also has an inland seaport. The city derives its income from agriculture, light industry and transportation. It is culturally diverse and is often targeted by the Federal Government for funding for its programs for minorities.

Source of the sample. Two hospitals, a public health agency clinic attached to a hospital and a private medical practice were chosen for the study. One of the hospitals was in Oakland while the other was in

Sacramento. They were both Kaiser Permanente Hospitals. The community health agency clinic was part of the Sacramento Hospital in Sacramento. This clinic, while part of a hospital, was essentially separate, therefore it will be referred to as a clinic hereafter in this report. The private practice was that of K. Lyle Moore, M.D., in Stockton. He indicated that he had conducted over 14,000 vasectomies during his many years of medical practice.

Because of Moore's longstanding willingness to perform vasectomies, during times when the procedure was less common among men, people from the surrounding area came to him for the operation. Therefore, his practice yielded a sample from a somewhat larger area than Stockton. His practice, in the past, has also been a source of subjects for vasectomy studies by Thomas and Shirley Poffenberger (e.g. Poffenberger & Poffenberger, 1964).

The hospitals, clinic and private practice were chosen because of the volume of sterilizations performed; all had different requirements for potential sterilizees. The Kaiser Permanente Hospitals had a weekly group sterilization class for potential sterilizees and their mates. One week the class would be for males planning to have a vasectomy and their mates; and the next week the class would be for females who anticipated sterilization and their mates. The Oakland Kaiser Permanente Hospital encouraged both husband and wife to attend, while the Sacramento Kaiser Permanente Hospital required both to attend. The community health clinic in Sacramento required that couples attend an individual counseling and screening session with a social worker. The session usually lasted about 45 minutes. The physician in the private practice had no pre-vasectomy screening or counseling requirements.

Selection of the sterilization sample. The original intention was to have paramedical and medical-office personnel in urologists' offices and hospitals secure the sample through their daily routine. A small sample of medical practices was selected to determine the effectiveness of this procedure initially. It was then to be implemented in several cities in various parts of the country. This method, however, proved to be impractical as the office personnel had little time to devote to "motivating" prospective subjects for the study. They were only able to convince the most highly cooperative persons to complete the lengthy procedures of the research project.

Since it was anticipated that a study of the extremely cooperative atypical individuals in various parts of the country might be less generalizable than a more typical spectrum of subjects from a more limited geographical area, the focus of the sample selection was limited to northern California. Therefore, the three northern California cities were selected as target areas for the study. The research personnel were able to secure the sample themselves by traveling between these cities and overseeing the entire process. All subjects of the study were offered five dollars each for the pretesting and posttesting, for a total of twenty dollars per couple for those completing the entire program.

All subjects who contacted the agencies and doctor about contraceptive sterilization in a given time block during late 1972 and early 1973 in the four settings were asked to participate in the study. The mates of the potential sterilizees were also requested to participate. Those (919) who accepted selection into the study were given the necessary questionnaires and tests to complete. There were 828 sterilization subjects and mates who completed questionnaires in the research project. Of the total

376 were vasectomy males and 281 were mates of vasectomy males while 131 were female sterilization patients and 60 were their mates.

Selection of the comparison sample. The comparison group consisted of 113 females and 86 males. Therefore, the total number of subjects who entered the study was 1047 by completing, at least, some part of the study (see Table 3-1). Since the study required lengthy and tedious testing and completion of questionnaires, it was difficult to obtain comparison subjects. In order to do so, it was necessary to pursue several avenues. The comparison subjects came from the same northern California cities as the sterilization subjects. Some were from the Oakland Kaiser Permanente Hospital attending a multi-phasic evaluation program. Others were secured through parent organizations and yet others came from a family planning agency in Stockton. None of these people, nor their mates, had had a contraceptive sterilization, nor did they plan to have one in the near future.

Another comparison group was added later, during the course of the study. This group consisted of those "vasectomy subjects" who later decided against the operation. They, and their mates, were added as an additional group for comparison because it was anticipated that they would differ from the sterilization and non-sterilization groups. There were 13 males and 13 females in this group. There were not enough women who decided against sterilization to warrant adding another comparison group.

With the inclusion of the "decided against vasectomy" groups, the total sample consisted of four groups of males and four groups of females. The groups were: 1) vasectomy, 2) female sterilization, 3) non-sterilization and 4) "decided against vasectomy." This yielded a total of eight groups in the study. However, in most statistical studies, the "decided against

vasectomy" group was eliminated.

Table 3-1

Pretreatment Breakdown With Those Who Decided Against Vasectomy Taken Out of the Vasectomy Group

	Vasectomy	Female Steril.	Non Steril. Comparison	Decided Against Vasectomy	Total
Women	363	60	86	13	522
Men	268	131	113	13	525

Characteristics of the sample. The original sample consisted of those subjects who agreed to participate in the study. There were 1047 subjects who completed only the pretreatment questionnaires. There were 882 subjects who completed all the pre-treatment questionnaires, plus the personality inventories and drawings. Of this group, 437 were females and 445 were males. A total of 516 completed the entire pre-treatment and post-treatment information (252 female and 264 male). The data reflects four points at which attrition of the sample occurred: 1) after agreeing to participate, 2) after completion of the pre-treatment questionnaire, but before the personality inventory, 3) after completing all pre-treatment data and 4) after completing the post-test questionnaire without the post-test personality inventories. For a more complete breakdown of these numbers, see Table 3-2.

The pre-sterilization sample was primarily white, even though efforts were made to include as many Blacks and Mexican-Americans as possible. Blacks and Mexican-Americans each accounted for approximately 5% of the total. There was, however, a larger percentage of blacks in the female sterilization sample (Table 3-3). The subjects ranged in age from 19

Table 3-2

Research Design Overview, Sample Size, and Attrition

	VAS Planned		FS Planned		No-Sterilization Comparison		Totals		
	M	F	M	F	M	F	M	F	Both
1. Present day of Sales pitch	444[+]	268[**]	1[**]	248	*	*	-	-	-
2. Agreed to participate	404	**	**	210	*	*	-	-	-
3. Completed 200-item questionnaire	376	281	60	131	86	113	522	525	1,047
4. Also completed 700-item inventory MMPI-CPI	310	230	59	115	76	92	445	437	882

Sterilization	Had Vas		Decided Not to								
	M	F	M	F							
Posttesting (typically 1974)											
5. Completed questionnaire	217	151	13	13	35	76	44	60	309	300	609
6. Also completed MMPI-CPI	178	125	13	13	31	60	42	54	262	252	516

[+]This does not include all men from K. L. Moore's practice as the number who were asked to participate is unknown.

[*]Data was unavailable.

[**]At Oakland Kaiser Hospital, mates were not always present: potential sterilizees who agreed to participate were asked to take materials home to absent mates. Therefore, the items with the asterisks in Row 2 is unknown.

years to over 50 years of age, with a mean age of 33 for males and 30 for females (Table 3-4). The sample had a wide spread as to education (Table 3-5), combined income (Table 3-6), and religious preference (Table 3-7). Virtually all were married (Table 3-8), although some were single men. In many cases both husbands and wives particiapted in the study, although this was not a requirement. Some couples were married less than one year, while others were married for over fifteen years (Table 3-9). Some had been married only once; others had been married three times or more (Table 3-10). Some subjects had no children; others had as many as five or more (Table 3-11). The youngest child of the subjects ranged in age from younger than one to over 16 years of age (Table 3-12).

Table 3-3

Race of Respondents - Original Groups

	Men			Women		
	VAS	FS	COMP	VAS	FS	COMP
Black	4.3%	18.3%	5.8%	4.6%	23.8%	5.3%
Oriental	1.3%	5.0%	2.3%	2.5%	4.6%	1.8%
White	86.9%	66.7%	80.2%	85.8%	63.1%	86.7%
Mex-American	3.2%	3.3%	9.3%	5.3%	3.8%	4.4%
Other	4.3%	6.7%	2.3%	1.8%	3.8%	1.8%

Table 3-4

Age of Respondents - Original Groups

	Men			Women		
	VAS	FS	COMP	VAS	FS	COMP
19-Younger	-	-	1.2%	1.4%	-	-
20-24	8.0%	3.3%	18.6%	15.7%	1.5%	5.3%
25-29	28.0%	21.7%	26.7%	35.6%	13.0%	22.1%
30-34	28.3%	26.7%	27.9%	28.1%	26.0%	37.2%
35-39	18.4%	23.3%	12.8%	10.7%	28.2%	22.1%
40-44	9.6%	11.7%	11.6%	6.4%	16.8%	8.8%
45-49	5.9%	11.7%	1.2%	2.1%	13.0%	4.4%
50-above	1.9%	1.7%	-	-	-	-

Categories for women were different than for men. They were: 1) 15-younger, 2) 16-19, 3) 20-24, 4) 25-29, 5) 30-34, 6) 35-39, 7) 40-44, and 8) 45-older.

Table 3-5

Highest Year in School

	Men			Women		
	VAS	FS	COMP	FAS	FS	COMP
Grade School	5.1%	6.8%	1.2%	4.6%	6.1%	-
High School	20.5%	20.3%	11.6%	39.6%	30.5%	12.4%
Some College	36.3%	27.1%	22.1%	28.2%	34.4%	34.5%
In College	12.8%	10.2%	23.3%	12.1%	9.9%	27.4%
Bus/Trade	12.3%	23.7%	20.9%	4.6%	9.2%	7.1%
4 yr. College	4.5%	6.8%	2.3%	7.8%	6.9%	8.8%
Grad School	8.5%	5.1%	18.6%	2.8%	3.1%	9.7%

Table 3-6

Combined Family Income

	Men			Women		
	VAS	FS	COMP	VAS	FS	COMP
Under 4000	2.2%	1.7%	8.1%	4.0%	8.8%	5.3%
4000-7999	7.8%	13.3%	11.6%	9.5%	23.2%	16.8%
8000-11,999	28.5%	18.3%	18.6%	30.2%	24.8%	25.7%
12,000-15,999	31.2%	28.3%	30.2%	27.3%	17.6%	26.5%
16,000-19,999	16.4%	20.0%	20.9%	16.7%	12.0%	15.4%
20,000-24,999	9.1%	13.3%	5.8%	7.6%	11.2%	7.1%
25,000-over	4.8%	5.0%	4.7%	4.0%	3.2%	2.7%

Table 3-7

Religion

	Men			Women		
	VAS	FS	COMP	VAS	FS	COMP
Protestant	42.6%	31.7%	37.2%	47.0%	39.7%	36.3%
Catholic	19.0%	13.3%	23.3%	21.0%	16.8%	22.1%
LDS	2.7%	1.7%	5.8%	3.2%	.8%	6.2%
Jewish	1.6%	10.0%	4.7%	1.8%	8.4%	3.5%
No Preference	26.5%	35.0%	23.3%	20.6%	25.2%	24.8%
Other	7.0%	8.3%	5.8%	6.4%	9.2%	7.1%

Table 3-8

Marital Status

	Men			Women		
	VAS	FS	COMP	VAS	FS	COMP
Married	94.9%	86.7%	88.4%	96.4%	62.6%	82.3%
Engaged	.3%	-	5.8%	.7%	.8%	3.5%
Divorced	3.5%	3.3%	-	1.1%	12.2%	1.8%
Steady Friend	.8%	1.7%	4.7%	1.1%	9.2%	8.0%
Separated	-	6.7%	-	.4%	8.4%	1.8%
Single	.3%	1.7%	1.2%	.4%	3.1%	2.7%
Divorced/ Steady Friend	.3%	-	-	-	2.3%	-
Widow	-	-	-	-	1.5%	-

Table 3-9

Year - Present Marriage

	Men			Women		
	VAS	FS	COMP	VAS	FS	COMP
Not Married	2.4%	7.0%	8.3%	2.8%	23.4%	15.0%
1 or less	5.7%	5.3%	8.3%	6.4%	7.8%	6.2%
2	5.7%	3.5%	11.9%	5.3%	6.3%	13.3%
3-5	21.5%	15.8%	21.4%	19.6%	15.6%	19.5%
6-9	28.5%	33.3%	28.6%	34.2%	18.8%	31.0%
10-14	23.1%	22.8%	13.1%	20.6%	18.0%	10.6%
15-more	13.0%	12.3%	8.3%	10.7%	10.2%	4.4%
N.A.	-	-	-	-	-	-

Table 3-10

Number of Times Married

	Men			Women		
	VAS	FS	COMP	VAS	FS	COMP
Once	79.1%	73.3%	82.6%	81.5%	68.9%	76.4%
Twice	17.4%	23.3%	8.1%	14.9%	24.6%	10.0%
Three or more	2.7%	3.3%	1.2%	3.2%	4.9%	2.7%
Never	.8%	-	8.1%	.4%	1.6%	10.9%

Table 3-11

Number of Children

	Men			Women		
	VAS	FS	COMP	VAS	FS	COMP
1	16.3%	23.7%	23.2%	15.5%	18.4%	24.0%
2	46.7%	37.3%	28.0%	44.6%	38.4%	35.4%
3	14.6%	11.9%	9.8%	15.8%	12.8%	9.4%
4	6.9%	5.1%	7.3%	6.1%	4.0%	4.2%
5	2.2%	-	-	1.8%	1.6%	-
6 or more	.6%	1.7%	-	.7%	5.6%	1.0%
None	12.7%	20.3%	31.7%	15.5%	19.2%	26.0%

Table 3-12

Age of Youngest Child

	Men			Women		
	VAS	FS	COMP	VAS	FS	COMP
Less than one	23.8%	4.4%	20.0%	27.5%	11.1%	18.4%
1-2	21.6%	22.2%	33.3%	21.5%	24.1%	37.7%
3-4	13.2%	17.8%	16.0%	14.7%	13.9%	19.4%
5-8	22.1%	20.0%	14.7%	16.6%	17.6%	14.3%
9-11	12.0%	15.6%	2.7%	14.3%	15.7%	3.1%
12-15	3.9%	20.0%	12.0%	3.8%	13.0%	10.2%
16-older	3.4%	-	1.3%	1.5%	4.6%	1.0%

Research Methodology

Is was not possible to randomly assign men and women to sterilization and non-sterilization groups. Instead, the subjects, obviously, selected themselves into the various groups. For females these were female sterilization with three comparison groups: vasectomy mates, non-sterilization comparison women and wives of men who decided against vasectomy. The number of women who decided against sterilization was too small to make another comparison group. The men were either classified as vasectomy subjects, mates of female sterilization subjects, non-sterilization subjects, and those who "decided against vasectomy."

One limitation of a non-randomized design was that the groups might have had significant differences in the beginning, thus possibly confounding the results of the independent variables. To alleviate this problem, all subjects were pretested with the criterion variables of

the study. These pretest data were later used as co-variates with the posttest data, thus adjusting for any pre-treatment differences on the various dependent variables.

After the subjects were selected and grouped according to the above criteria, each was required to complete the questionnaires and checklists. The questionnaires and checklists were usually completed at the hospital or clinic, under circumstances guaranteeing that the husband and wife answered without either spouse being aware of the responses of the other. When this was not possible, the subjects were identified and kept separate for some analyses. This was especially important because of the nature of some of the questions. By having the questionnaires completed at the hospital or clinic the research team was assured of receiving at least this infomation, in order to have the data on all subjects for descriptive purposes.

The MMPI-CPI combined version by Rodgers was also given to all subjects immediately after selection into the study. Since the inventory could be self-administered, the subjects were allowed to take it home and complete it there. Research indicates that this does not noticeably affect the results (see Instrumentation).

Sterilization classes. The sterilization subjects from the hospitals underwent an education class concerning the procedures prior to the surgery. The Sacramento Kaiser Permanente Hospital required the presence of both the husband and wife while the Oakland Kaiser Permanent Hospital required only the attendance of the sterilizee but encouraged the mate also to attend. The classes were presented by a trained hospital staff member. The community health clinic at the Sacramento Hospital required that each couple attend a 45 minute counseling session with a social

worker, Thus, the clinic interviews consisted of three people; the clinician, the wife and the husband. The physician at the private practice in Stockton required no routine pre-sterilization counseling or education classes. His policy appears to have been "vasectomy with no questions asked."

Interviews. It was desired that the research team interview some of the sterilization couples in the study to secure additional information. Since the Sacramento health clinic's procedures were more conducive to setting up interview sessions with the research team, all interviewed couples came from this clinic. As the couples finished their counseling session at the clinic 62 were extensively interviewed by a research member utilizing a semi-structured interview schedule. Additional interviewing was done with the same subjects after the sterilization procedures were completed, approximately one year later.

Post-treatment. After all pretesting, counseling, education classes and interviews were completed, those subjects who had decided to be sterilized underwent their surgery. The operation followed at different intervals for the subjects. Eight of the female sterilization subjects decided against having the operation. Five additional couples switched from vasectomy to female sterilization. Four couples switched from the comparison group to the female sterilization group. These individuals and their mates were withdrawn from the posttest analyses of the study.

Those "vasectomy subjects" who later declined the procedure, and their mates, were placed into a new group for purposes of comparison with the original sterilization group. The men were compared to the vasectomy men and the husbands of the female sterilization women, while the wives of men deciding against vasectomy were compared with

the female sterilization women and the wives of the vasectomy men. Comparisons were made with this group in only those hypotheses using one-way analyses.

Those subjects who were interviewed by the research team prior to the surgery were again interviewed after the operation. A semi-structured interview approach, with a standard interview schedule, was used in both pre- and post-interviewing.

Approximately one year after pretesting, all subjects were supposed to complete the same information and tests that they completed earlier. This included a second checklist of life events, applying now to those events that had occurred between the previous checklist and this latest one. Projective drawings, while not used as part of this study, were once again required of all participants. Because of the length and complexity of the interviews, questionnaires, life events checklists and tests, and because of migration, approximately 45% of the original sample did not complete posttesting.

Instrumentation

There were several instruments used in this research. The MMPI and the CPI were two standardized inventories that were used as measures of psychological health and adaptation. Two additional instruments were developed for this study. The first was a sterilization attitude scale which was developed with another sample in the early phases of the study. The last test was a scale developed as part of this study. It was a scale of life events as they contribute to change in mental health.

MMPI-CPI

Rodgers' combined version of the MMPI-CPI was used as a measure of psychological health in the study. The combined inventory consisted of

708 items, some of which contributed only to the CPI scales and the MMPI scales and yet others which were common to both the MMPI and CPI. The CPI items, whether or not they contributed also to the MMPI, represented approximately the first 400 items of the combined version. The content of the CPI was considered to be less objectionable than that of the MMPI (Gough, 1975; Megargee, 1972).

The combined version yielded results for the scales of both of the inventories, and yet was less time consuming than taking both individually. Therefore, two approaches to mental health were obtainable with less time consumed. Individually the MMPI consisted of 566 items and the CPI had 480 items. Hence, the combined instrument had approximately 340 fewer questions than both inventories individually.

Test administration was the same for both inventories. The examinee had to read the questions and answer true or false on all items. The reading and conceptual level of the MMPI items generally required that the examinee be over 16 years of age. The CPI generally required that the respondent have a reading level of at least the fourth grade. On both inventories the tests can be administered verbally. Scoring could be done by hand or computer. The computer scoring often yielded profiles alone (as in this study) or with complete printouts explaining the results. Many of the newer scales and research-oriented scales were included in the computer programs for both the MMPI and the CPI.

MMPI-CPI scales. While this is an over-simplification, the combined version of the inventories gave two views of personality, one of psychological weakness and pathology (the MMPI) and the other of favorable and positive aspects of personality (the CPI). The MMPI was made up of 14

scales of which ten measured psychopathology and weaknesses, such as schizophrenia, depression and hypochondriasis. The CPI was made up of eighteen scales, in general designed to measure strength and positive characteristics of personality such as responsibility and socialibility. These eighteen scales were placed into four groups to aid in interpretation.

The inventories also included "validity" scales which controlled for faking either good or bad, lying, non-responsive testing and making corrections for some scales. These scales aided in determining the validity or invalidity of specific profiles.

As a broad generalization, elevation of scores on the MMPI scales indicated "poorer" mental health, whereas elevation on the CPI generally meant better social adjustment and strength of personality. According to Megargee (1972, p. 140) scores below the mean on the CPI scales indicated problem areas. Some scales were curvilinear, suggesting that very high (as well as low) scores were unfavorable (Megargee, 1972, p. 33).

The MMPI and CPI were developed empirically using criterion groups (Edwards, 2970). The MMPI was developed during the 1940's within psychiatric wards in Minnesota with people who had been diagnosed with the pathologies being tested by the specific scale, such as schizophrenia or hypochondriasis. Comparison subjects were persons who had been considered to be psychologically healthy (Edwards, 1970, p. 53; Dahlstrom, et. at., 1975, p. 7). The CPI was developed in California with subjects who were considered as healthy individuals rated as high on a variable similar to the individual scale being measured. These subjects were compared with subjects who had low ratings on the same variables (Gough, 1975, p. 18).

MMPI-CPI reliability and validity. Test-retest reliability for the scales of both inventories has been shown to be generally good, ranging from .49 to .90 with a median of .80 (Buros, 1965; Buros, 1972). Two scales on the CPI did fall rather low on one reliability check; the communality (cm) and the psychological mindedness (py) scales (Gough, 1975, p. 29)). These figures differ from study to study, but long-term coefficients were in the .60s and .70s (Megargee, 1972, p. 29).

Concurrent validity has been shown to be good for personality inventories. This has been based upon many studies done with the inventories (Gough, 1975, p. 20-24; Marks, Seeman & Haller, 1974). There were no correlation coefficients in the original development of the MMPI but the scales predicted the diagnosis of new psychiatric patients in 60% of the cases (Buros, 2965, 1972). Subsequently, the MMPI has been validated in hundreds of studies. Correlations have had wide ranges but the median has been around .70. The CPI had validities of .48 to .66 when "expert" judges' ratings were used as the outside criteria (Buros, 1965, 1972; Dahlstrom, et. al., 1975). The CPI has also been used in hundreds of studies for validating new scales. The results were somewhat contradictory, depending upon the methodology of the researches.

MMPI wholistic ratings. While the MMPI-CPI inventories yield valuable information for individual scales, scale by scale analyses might miss the focus of a wholistic view of the person's psychological adjustment. To gain clinical judgements that could be quantified, three expert judges (W. Grant Dahlstom, Harrison Gough and William Eichmann) were asked to make independent wholistic evaluations of each of the profiles in this study. Gough is the developer and author of the

California Psychological Inventory and also a recognized authority on the MMPI. Dahlstrom is a co-author of the Handbook for the MMPI (Dahlstrom, Welsh & Dahlstrom, 1975). Eichmann is an expert on the MMPI.

Only Gough was aware of the purposes of this present study, or that two profiles were present (pre and post) for most subjects. The judges sorted the profiles (both pre-treatment and post-treatment simultaneously) into nine categories ranging from very poor to very good "psychological soundedness." Numbers of cases for each category were predetermined for the judges, resulting in a forced distribution. Thus, means and standard deviations of all three ratings were identical. This provided quantification of qualitative clinical judgments for further study.

Eichmann and Dahlstrom sorted only MMPI profiles while Gough used both MMPI and CPI profiles in making ratings. Nevertheless, and although the judges worked independently, inter-rater reliability was .89. In checking for intra-rater reliability each judge was blindly given 30 male profiles two times, along with the hundreds of other profiles. The intra-rater reliability was high for all three judges, the coefficients being .92, .90 and .96.

MMPI-CPI self-administration. The MMPI and CPI can be administered either in the presence of the examiner or at home. In such instances, where the test is taken home special care need be taken to insure that the test was not taken lightly.

According to Gough's analyses, the CPI results are not noticeably affected by this procedure (Gough, 1975, p. 6). E.I. Megargee (1972) stated that the inventory was designed for group administration, but can also "be taken individually or even by mail." Megargee uses the mail-in procedure routinely in his work with families (Megargee, 1972,

p. 149). Since the MMPI was so similar in administration procedures, it seemed that the same would be true of this part of the inventory.

MMPI-CPI profile validation. A check on the validity of the inventories was deemed necessary, especially since they were completed at home and for a small financial reward. Two experts on the CPI and MMPI independently analyzed the "validity" scales and the total profiles, looking for invalid tests. Michael Tiktinsky and Robert Fisher, both held Ph.D.'s with specialization in personality inventories and extensive experience with MMPI and CPI profiles. Those profiles that were judged invalid by one of the judges but valid by the other were analyzed by Edward Pohlman, to make tie-breaking decisions.

A validity rating was given separately for the CPI and the MMPI, although validity judgments about the two tests were made while considering both simultaneously. The CPI items came first in the combined inventory; possibly because of this, more of the MMPI profiles were judged as invalid. Perhaps the longer a test takes, the more likelihood of guessing and random marking of items. Those profiles that were considered invalid were withdrawn from the study.

All valid MMPI profiles were judged and rated by three expert judges; Harrison Gough, William Eichman and W. Grant Dahlstrom. This was done to yield wholistic ratings of the profiles based upon the individual scale scores.

Sterilization Attitude Scale

A sterilization attitude scale was also developed for and utilized in this study. The scale consisted of eight items which were chosen through item analysis from a pool of 50 original items. The original 50 items were given to approximately 100 college men and women. They

were correlated with a short version of the California F scale (authoritarianism). Those items that correlated appreciably with the scale were eliminated. The procedures were patterned after those used by Gough in developing five 8-item scales relevant to birth planning; but his scales did not include attitude toward sterilization. The scale did not appear separately in the study, but was included in the questionnaire.

Life Situations Index

A list of specific life events was developed from scales which were designed from earlier studies (Rahe, et. al.; both 1971). This list of events was given to all subjects as part of the pre-treatment and the post-treatment of the study. A scale of life events was developed with rankings and ratings. The subjects then received total life events scores which were later used as independent variables to test for sterilization effects upon individuals who experienced different degrees of life problems.

Most items in this scale were taken from the scales by Rahe, et. al. and Paykel, et. al., but a few new items were inserted and a few items from the other scales were deleted. This was primarily designed to yield additional questions dealing with sexual and family life. Rahe's and Paykel's scales were developed by asking persons to rate the items by the amont of stress they produced (Holmes & Rahe, 1967; Masuda & Holmes, 1967; Paykel, et. al., 1971; Rahe, 1971). The present scale thus builds on their work (see Appendix C).

Statistical Analysis

Descriptive statistics were employed to show a breakdown of the sample. They were also used to show how different groups responded to

various items of the questionnaire. Tables and graphs were utilized to give a visual representation of the information. The objectives and hypotheses of the study were analyzed statistically. A Pearson Product Moment Correlation Coefficient matrix, Chi-square Tests of Independence, Step-wise Multiple Regression Analyses, as well as one-way and two-way Analyses of Co-variance were utilized.

The Life Situations Index scale was developed in support of the central objectives of this study. Therefore, it was necessary to deal with the supporting objectives (E & F) before completing the main objectives (A, B, C & D) of the study (see Chapter I for objecives). The sections that follow are listed in order of analyses rather than order of importance.

Supporting Objectives

There were several statistical methods used to fulfill the requirements of objectives D, E and F. These objectives were designed to support the major goals of the study to study the effects of contraceptive sterilization upon psychological health (measured by the MMPI and CPI scale scores), expressed marital satisfaction and expressed sexual satisfaction.

Objective E was to rank the relative importance of contraceptive sterilization in a life events scale, as such life events contribute to change in psychological health as measured by judges' ratings of the MMPI profiles. To do this, a Pearson Product Moment Correlation Coefficient Matrix was utilized. The matrix included 1) demographic data, 2) statements of expressed marital and sexual satisfaction, 3) other data about sexual, marital and parental life, 4) the 52 items of the revised life events list, 5) pretest and posttest scores of the MMPI-CPI scales and 6) change scores from pretest and posttest judges' ratings of the MMPI

profiles. While only part of the data from this matrix was used for objective E, the remaining data was later used for other objectives.

Only the correlations between the life events and the change scores between the pretest and the posttest judges' ratings of the MMPI profiles were used for objective E. The correlations were ranked according to the strength of the relationship for the purpose of developing the scale. The correlation coefficient of each life event was then multiplied by one hundred. Since those life events which yielded a negative correlation indicated positive change, and both positive and negative changes were possible, the sign of the coefficient was retained as part of the scores. The positive and negative signs served as visual cues of events which yielded positive and negative mental health change. The scores would then be totalled to predict psychological change from life events. The rankings included sterilization as an important event, a factor not included in earlier scales.

In order to develop the Life Situations Index scale, which was objective F, the sample was split into thirds. Mental health change as measured by the judges' ratings of the MMPI profiles was used as the criterion variable rather than physical health change as in the two prior studies (the Rahe, et. al. scale and the Paykel, et. al. scale). Correlations were run between the new scale, "change" scale and "upset" scale. The results of the three correlations were then analyzed to determine whether the new scale supported the scale by Paykel, et. al. or Rahe, et. al.

Central Objectives and Hypotheses

The central objectives - A, B, C and D - were the major focus of this research. Previous objectives were primarily employed to contribute

to these major goals. Objective A was to determine whether there was a relationship between changes of expressed marital and sexual satisfaction and sterilization. In order to establish whether a relationship existed three hypotheses, (1, 2, and 3) were tested. Additional hypotheses (4, 5, 6, and 7) were designed to determine whether there was a difference between the sterilization and comparison groups on the outcomes of the MMPI and CPI, which was objective B. The groups were also broken into subgroups for further analyses. Objective C, which consisted of hypotheses 8 and 9, was tested to determine whether vasectomy or female sterilization has the most negative effects upon mental health. Significance for all tests of hypotheses, in this study, was determined at the .01 level.

Chi-square Tests of Independence were utilized to test the first hypothesis, as well as the second hypothesis. These hypotheses were to study the relationship between contraceptive sterilization and 1) changes in expressed marital satisfaction; and 2) changes in expressed sexual satisfaction. This required four tests: 1) males for marital satisfaction with treatments, 2) females for marital satisfaction with treatments, 3) males for sexual satisfaction with treatments and 4) females for sexual satisfaction with treatments. The variables were broken down into a 3 x 3 matrix.

The third hypothesis, to determine whether there was a relationship between sterilization and increase in frequency of intercourse, was tested in the same manner as hypotheses one and two. A Chi-square Test of Independence was, therefore, employed. This specific hypothesis required two tests: 1) the groups of men with change in frequency of intercourse, and 2) the groups of women with change in frequency of

intercourse was broken into three levels: 1) less frequent, 2) no change, and 3) more frequent.

The original groups were then subjected to one-way Analyses of Co-variance to study the effects of contraceptive sterilization upon mental health as measured by the MMPI-CPI sclae scores and judges' ratings of the MMPI profiles. All MMPI-CPI scales were used as dependent variables. This was the fourth hypothesis.

The fifth hypothesis was also studied by using two-way Analyses of Co-variance to determine whether there was a difference of change scores on the MMPI-CPI for different groups of people who had contraceptive sterilization. The treatment variables were controlled for by: 1) age (3 x 8), 2) ethnicity (3 x 5), 3) religion (3 x 5), 4) socio-economic status (3 x 7), 5) education (3 x 7), 6) marital status (3 x 3), 7) occupation status (3 x 5), 8) number of children (3 x 6), 9) pre-treatment MMPI-CPI scale scores (3 x 3), 10) times married (3 x 3), and 11) extramarital sexual relations (3 x 2). The dependent variables used in these analyses were the DO, FE and SO scales of the CPI, the A and R factor scales of the MMPI and the judges' ratings of the MMPI, as well as the MMPI P+ and D scales.

The sixth hypothesis -- those individuals who scored higher on the Life Situations Index scale will have decreased "psychological soundness" compared to those with lower scores -- was also studied by using two-way Analyses of Co-variance. The Life Situations Index scale was broken down into three categories; high, medium and low. Therefore, the resultant paradigm was a 3 x 3 for both males and females. Main effects of sterilization, as well as interaction effects were analyzed.

The seventh hypothesis was that the lower the pre-operation sterilization attitude scale score, the lower the "psychological soundness."

Higher scores revealed that the person was more aware of the sterilizing procedure than those with lower scores. The scale was broken down into three levels to test this hypothesis. The hypothesis was tested for both male and female sterilization subjects. To test the hypothesis one-way Analyses of Co-variance were utilized.

Hypothesis number eight required one-way Analyses of Co-variance also. This test was to determine whether female sterilization subjects had higher MMPI scale scores and lower CPI scale scores than vasectomy subjects. Therefore, for each of the scales of the two inventories and the judges' ratings of the MMPI profiles an analysis was required.

The ninth hypothesis -- to determine whether there is a difference between subgroups of vasectomy subjects and female sterilization subjects (as measured by the judges ratings of the MMPI profiles) -- was tested by two-way Analyses of Co-variance. The treatment groups were controlled for by the same variables as in hypothesis five. There were: 1) age (2 x 8), 2) ethnicity (2 x 5), 3) religion (2 x 5), 4) socio-economic status (2 x 7), 5) education (2 x 7), 6) marital status (2 x 3), 7) occupation (2 x 5), 8) number of children (2 x 6), 9) pre-treatment MMPI-CPI scale scores (2 x 3), 10) pre-treatment MMPI profile ratings by judges (2 x 9), 11) times married (2 x 3), and 12) extra-marital sexual relations (2 x 2). These tests were not concerned with the effects of each of these variables on each of the scales but only on the judges' ratings of the MMPI profiles.

For objective D all the data from the original Pearson Product Moment Correlation Coefficient matrix was referred to. This objective was to develop optimal predictors of change on the wholistic judgments of the MMPI profiles. Pretest MMPI-CPI scale scores, as well as demographic data were included as possible predictor variables. For this objective

it was necessary to randomly select the sterilization sample in two groups for males as there were sufficient numbers to cross-validate the results. One-half the vasectomy men were placed into the first sample, while the remainder was placed in the second sample. Pedhazer and Kerlinger's formula for correction of shrinkage was used for the female sterilization sample.

Step-wise Multiple Regression Analyses were run, utilizing the data of the first group to establish optimal predictors of psychological change as measured by the MMPI-CPI. Those pre-treatment variables in the correlation matrix that correlated most highly with the changes in judges' ratings and the MMPI-CPI scale scores from pretest to posttest, yet showed low inter-correlations were selected to serve as predictor variables. The main purpose for using only contraceptive sterilization subjects in all groupings was to determine what other variables, in conjunction with sterilization, have the most effects upon mental health.

CHAPTER IV

RESULTS

This chapter is divided into five subsections: 1) the effects of female sterilization, 2) the effects of vasectomy, 3) comparison of the effects of sterilization on men and women, 4) the sterilization attitude scale, and 5) the Life Situations Index. The statistical results for the hypotheses and objectives of the study are presented.

For most of the hypotheses tested, the dependent variables were adjusted scores based upon posttest scores which were covaried by the pretest scores on the same variables. In the case of the hypotheses using Chi-square Tests of Independence the dependent variables were change scores derived from the difference between pretesting and posttesting of specific items. Change scores of the judges' ratings of the MMPI profiles were utilized as the dependent variable in the Multiple Regression Analyses.

For the two-way Analyses of Covariance the graphs of those interaction effects that were significant were based upon posttest scores rather than upon adjusted mean scores. For those interactions where the judges' ratings were the dependent variable, change scores rather than posttest scores were used.

Findings in this chapter are extremely detailed and there is a real danger of becoming lost in the leaves and missing the forest. In order to place the detail in perspective we present a brief overview. One reader may be more impressed with some features of the findings, while another reader may note other features. This brief overview is of course an editoral judgment of what are the most salient features. The reader can compare the overview with the detail that follows it.

1) Female Sterilization: There were significant differences among the groups of women following the treatment. The women who were sterilized scored significantly "poorer" than the comparison group on many of the CPI and MMPI scales and the judges' ratings of the MMPI profiles. The female sterilization women as a group tended to have "poorer" scale scores than the comparison group at the beginning of the study. This, however, was adjusted for by the use of Analyses of Covariance. There were no differences between groups in terms of change of sexual and marital satisfaction.

There was one independent variable--the length of elapsed time between first considering until finally deciding to have the sterilization--that showed consistent interaction effects with sterilization in the combined effects on dependent variables. Five independent variables were found to predict 48% of the variance of the change scores of the judges' ratings of the MMPI profiles.

2) Vasectomy: While there were significant differences among the women's groups, there were essentially no differences among the men's groups. Although this was true for the main treatment groups, there was one variable that showed a consistent pattern with vasectomy in its effects upon the scale scores. The variable was the man's self rating of his marital satisfaction. Eight variables were able to predict approximately 28% of the variance of the change scores of the judges' ratings.

3) Comparison of Vasectomy with Female Sterilization: The women who were sterilized scored "worse" than the vasectomy men on most scales tested. In no instances did the men do "poorer" than the women. The only variable that interacted with sterilization to affect the scores of

the judges' ratings was the length of elapsed time from first considering to finally deciding to have a sterilization. The pattern was similar to the pattern that was noted among the women's groups.

4) The Sterilization Attitude Scale: The Sterilization Attitude Scale was divided into three levels for analyses with males and females who were sterilized. In 34 analyses for both men and women, not one showed any significant difference among the groups.

5) The Life Situations Index: The Life Situations Index, which was developed as part of the study, was divided into three levels to determine whether there were any differences among the three levels in terms of scale scores of the MMPI and the CPI. The data suggested that there were significant differences between the group that had the "highest change" events scores and the group that had the "lowest change" events scores. The medium group was distinguished from the "highest" group only in the case of the males. There were no distinguishable differences between the low and the medium groups.

Each of the five summary statements above, is based on a major chapter division below. All of these findings must be interpreted with limits and cautions detailed later. We now turn to the detailed findings.

The Effects of Sterilization on Women

Hypotheses one through five were checked to determine whether a significant difference existed among: 1) those women who had been sterilized, 2) those women whose mates had a vasectomy; and 3) those women where neither the husband nor wife had been sterilized. In those cases where one-way Analyses of Covariance were utilized, a fourth group was later added, consisting of those women whose mate decided against having a vasectomy after deciding to have one.

This section is sub-divided into six parts. These sections are: 1) Female sterilization and marital satisfaction, 2) Female sterilization and sexual satisfaction, 3) Female sterilization and the MMPI and the CPI scales, 4) Female sterilization and interaction effects, 5) Consistency of interactions, and 6) Predictors of psychological change.

Female Sterilization and Marital Satisfaction

In order to determine whether there was a relationship between change in expressed marital satisfaction, a 3 x 3 Chi-square test of independence was used. This was the first hypothesis to be tested.

Each woman was asked to rate her marital satisfaction both before and after treatment. Change in expressed marital satisfaction rather than abolute satisfaction, was used as the dependent variable for testing this hypothesis.

Table 4-1 shows the results of the statistical test used for this hypothesis. There were no differences among the three groups, in terms of change of expressed marital satisfaction. In other words, there were no differences among the vasectomy mates, the female sterilization women and the comparison women.

Female Sterilization and Sexual Satisfaction

In order to determine whether there was a relationship between change in expressed sexual satisfaction and sterilization, hypotheses two and three were tested. The first predicted a negative relationship between change in expressed sexual satisfaction and sterilization; the second predicted a relationship between change in frequency of intercourse and sterilization.

Table 4-2 shows that there was no relationship between sterilization and change in expressed sexual satisfaction, whereas Table 4-3 indicates

Table 4-1

Female Sterilization-Change in Marital Satisfaction

	VAS Mates	Female Steri	Comparison	
Decrease	6 / 8	2.5 / 2	2.5 / 1	11
No Change	83.5 / 87	30.5 / 31	32 / 28	146
Increase	22.5 / 17	8 / 8	8.5 / 14	39
	112	41	43	196

p = .1513

Small boxes show expected frequency

Large boxes show observed frequency

Table 4-2

Female Sterilization-Change in Sexual Satisfaction

	VAS Mates	Female Steri	Comparison	
Decrease	41.5 42	17 18	21.5 20	80
No Change	81 86	32.5 30	41.5 39	155
Increase	26.5 21	10.5 12	14 18	51
	149	60	77	286

p = .4676

Small boxes show expected frequencies

Larbe boxes show observed frequencies

Table 4-3

Female Sterilization-Change in Frequency of Intercourse

	VAS Mates	Female Steri	Comparison	
Decrease	55 / 52	22 / 21	27 / 31	104
No Change	57 / 73	23 / 19	29 / 17	109
Increase	37 / 24	15 / 20	18 / 26	70
	149	60	74	283

$p < .01$

Small boxes show expected frequencies

Large boxes show observed frequencies

that there was a relationship between sterilization and change in frequency of intercourse. The wives of the vasectomy men did not report an increase in frequency while the other two groups showed a minor tendency to report increases.

Female Sterilization and the MMPI and CPI Scales

Hypothesis four was tested to determine whether the groups differed in change in "psychological soundness." One-way Analyses of Covariance were utilized to test this hypothesis for four treatment groups: 1) female sterilization women, 2) wives of men who had a vasectomy, 3) non-sterilization comparison women, and 4) women whose husbands decided against vasectomy after planning to have one.

The dependent variables were each of the scales of the MMPI and the CPI, including the validity scales, as well as the judges' wholistic ratings of the MMPI profiles. Therefore, there were 34 one-way analyses tested for this hypothesis. Table 4-4 lists the dependent variables used in the one-way analyses.

Female sterilization and the MMPI and CPI scales. Table 4-5 summarizes the results of the One-way Analyses of Covariance used for the fourth hypothesis. There were six scales where the differences among groups were significant at the .01 level, while there were three scales that had differences which were significant at the .05 level.

In those instances where significant differences were encountered, post hoc multiple comparisons were made utilizing the Scheffe' test. (This test is utilized when significant differences are found to exist among three or more groups. It shows precisely which pairs of groups are different from each other.) The resulting evidence showed that in all cases where differences existed the female sterilization group scored

Table 4-4

Dependent Variables for One-way Analyses

(Vasectomy and Female Sterilization)

CPI	MMPI (K corrected when appropriate.)
Dominance	L
Capacity for Status	F
Sociability	K
Social Presence	Hypochondriasis
Self-acceptance	Depression
Sense of Well-being	Hysteria
Responsibility	Psychopathic Deviancy
Socialization	Masculinity-femininity
Self-control	Paranoia
Tolerance	Psychasthenia
Good Impression	Schizophrenia
Communality	Hypomania
Achievement via Conformance	Social Introversion
Achievement via Independence	
Intellectual Efficiency	MMPI Factors
Psychological-mindedness	"A" Factor
Flexibility	"R" Factor
Femininity	Other Variables
	MMPI Judges' Ratings

Table 4-5

Personality Variables Showing Significant Differences Among Female Groups

Variable	ANOVA: Significance of "F"	FS Lower Than	Significance at .01 Unless Marked .05
CPI			
Dominance	.003	COMP	
Well-being	.025	COMP	(.05)
Socialization	.001	COMP	
		VAS	(.05)
		DAV	(.05)
Communality	.013	COMP	
MMPI (K corrected when relevant)		FS Higher Than	
Hypochondriasis	.002	COMP	
		VAS	
Paranoia	.008	COMP	
		VAS	(.05)
Schizophrenia	.004	COMP	
		VAS	(.05)
"A" Factor (Anxiety)	.016	COMP	(.05)
		FS Worse Than	
Judges' Overall Ratings	.002	COMP	
MMPI Masculinity/Femininity		COMP higher than VAS COMP higher than FS	

The Sheffe' Test of Multiple Comparisons was used in these analyses. It is conservative in the sense of minimizing Type I errors.

Code: FS = Female Sterilization, VAS = Wives of men who had vasectomy, DAV = Wives of men who decided against vasectomy, COMP = Comparison Women.

significantly "poorer" than did the comparison group. On four of the scales the female sterilization group scored "worse" than the vasectomy wives.

There were no differences between the vasectomy mates and the comparison women other than on the Masculinity-Femininity scale of the MMPI. The comparison appeared to score "more feminine" than the vasectomy mates on this scale. This difference was significant at the .01 level.

Table 4-6 shows that mean score differences, though statistically significant and in a consistent direction, are not large. While the female sterilization group appears to have "poorer" outcomes than the comparison group, many individual female sterilization women would move toward "better" scores or show no change.

The above statement is further supported by comparisons of the pretest and posttest scores of each dependent variable for the female sterilization group. T-tests (for correlated samples) suggest that there were essentially no significant differences between the pre-scores and the post-scores of the scales for the group. Nevertheless, Table 4-7 shows that, in all but a few instances, the absolute means tended to be slightly, though, not significantly, "worse" after sterilization. And a major exception was the judges' ratings, which showed that posttest scores were significantly lower at the .01 level. Of course judges' ratings must be given more weight than any individual scale because of their combining, integrating role,

Judges' ratings and female sterilization. Since this is the only wholistic view of "psychological soundness" in this study, the judges' ratings are being treated separately in this section. In the one-way analyses with the judges' ratings as the dependent variable, there was

Table 4-6

Group Means for Variables on Which There Were Differences on One-way Analyses of Covariance for Women

Variables	Group[a] FS	VAS Mates	COMP.	DAV Mates
CPI				
Dominance	24.45	25.32	27.44	23.98
Well-being	33.91	34.70	35.97	34.96
Socialization	34.53	36.32	37.17	38.75
Communality	25.15	25.88	26.43	25.20
MMPI (K corrected where relevant)				
Hypochondriasis	15.17	13.69	12.84	13.48
Paranoia	11.02	9.43	9.41	10.97
Schizophrenia	30.21	27.01	25.77	26.51
Anxiety Factor ("A")	13.00	11.50	9.28	14.04
Masculinity-Femininity	35.07	35.52	38.00	36.65
Judges' Ratings	13.89	15.01	16.34	15.93

Note: All scores are given as mean scores for the posttest adjustment which was covaried by pretest scores.

[a]Groups are abbreviated as follows:

FS: Female sterilization women.
VAS Mates: Wives or mates of men who had vasectomy.
COMP.: Women who were not sterilized, nor were their mates sterilized.
DAV Mates: Mates of men who decided against vasectomy.

Table 4-7

Comparison of Pre-Post Scale Scores

For the Female Sterilization Women

Variables	Raw Scores			
	Pre-Mean	Post-Mean	t-Value	Probability
CPI				
Dominance	23.92	24.05	-0.30	.764
Capacity for Status	00.00	00.00	00.00	.000
Sociability	20.87	20.44	00.88	.382
Social Presence	33.54	33.02	00.91	.369
Self-acceptance	19.18	19.62	-1.27	.209
Well-being	33.48	32.87	01.20	.236
Responsibility	28.10	27.75	00.86	.394
Socialization	34.38	33.87	00.98	.333
Self-control	29.16	28.69	00.73	.466
Tolerance	19.15	19.44	-0.70	.488
Good Impression	14.82	14.67	00.31	.757
Communality	25.36	24.97	01.10	.275
Achievement (conform)	24.64	24.66	-0.03	.972
Achievement (independ)	19.33	19.31	00.03	.972
Intellectual Efficiency	35.54	35.38	00.31	.758
Psychological Minded	11.34	11.26	00.29	.776
Flexibility	10.07	10.27	-0.58	.564
Femininity	24.21	23.92	00.86	.391
MMPI (K corrected where relevant)				
Depression	23.08	23.38	-0.54	.595
Hysteria	22.05	22.74	-1.28	.205
Psychopathic Deviate	23.33	23.67	-0.69	.493
Masculine-Feminine (M)	35.15	35.20	-0.10	.919
Masculine-Fininine (F)	37.89	38.00	-0.23	.815
Paranoia	9.97	11.10	-2.49	.016*
Psychasthenia	29.61	29.82	-0.37	.712
Schizophrenia	28.31	29.93	-1.89	.064
Hypomania	20.00	19.93	00.15	.880
Social Introversion	32.46	31.97	00.68	.499
"A" Factor	13.62	13.11	00.69	.492
Judges' Ratings	14.86	13.60	3.03	.004+

* Significant at the .05 level.

+ Significant at the .01 level.

a difference among the groups at the .01 level. The Scheffe' test indicated that there was only one situation where the difference existed. The female sterilization group scored significantly below the comparison group on this variable; and in this case, lower scores mean "poorer psychological soundness."

As with the mean scores for the individual scales, the absolute difference between the two means was not large, suggesting that some female sterilization women would score better than some comparison subjects. Nevertheless, an analysis of the t-test for differences between pre and post scores of the ratings suggest that the group as a whole scored significantly lower, at the .01 level, on posttesting than on pretesting.

Table 4-8 shows the percentage of persons in each group that showed negative, no-change and positive difference from pre- to posttesting on the judges' ratings of the MMPI profiles. More female sterilization women had negative change than women from the other two groups; and less women in the female sterilization group had positive change. Analyses with the absolute scores are complicated because of the "subtleties" involved in the use of "change scores." Nevertheless, the table supports the results of the One-way Analysis of Covariance which shows the same pattern. The table does not reflect whether persons who had differing socres (low or high) in the beginning showed decreasesor increases at posttesting.

Female Sterilization and Interaction Effects

This section is concerned with the results of the statistical tests for the fifth hypothesis which was to check whether there is a difference among specific groups of subjects who had had sterilization (in terms of age, ethnicity, religion, socio-economic status, education, occupation,

Table 4-8

Absolute Changes on the Judges' Ratings

From Pre to Posttesting Women

	Change				
Group	-5 and above	-2 to -4	-1 to +1	+2 to +4	=5 and above
FS	13.8%	24.1%	48.3%	13.8%	00
VAS Mates	9%	25.8%	35%	24.2%	6%
COMP	4.6%	16.9%	33%	26.2%	18.5%
	Appeared to get "Worse"		No Change	Appeared to get "Better"	

Note: The groups are abbreviated as follows:

FS: Female sterilization women

VAS Mates: Mates of men who had a vasectomy.

COMP.: Women who did not have a sterilization, nor did their mates have a vasectomy.

marital status, number of children, and pre-sterilization MMPI and CPI scale scores) on the MMPI-CPI scale scores and judges' ratings of the MMPI profiles (as measured with posttest scores covaried by pretest scores).

Two-way Analyses of Covariance were utilized to reveal any interactions between sterilization and selected demographic, attitudinal, pretest personality and other variables, in their effects on dependent variables of posttest personality inventory data. This introduces statistical controls for such demographic variables as age, education, income and race as well as other more psychic variables. Post data are covaried and hence adjusted by pretest data, in effect adding another statistical control.

Table 4-9 is a list of the independent variables used in the analyses for statistical controls and interaction effects. There were 42 variables in Table 4-9, too many to warrant using all of the MMPI and CPI scales as dependent variables. If all 34 dependent variables that were used in the one-way analyses were used, there would have been 1428 analyses. This would have then been multiplied by two, as men were also analyzed. Therefore, only eight of the original 34 variables were included as dependent variables, yielding 336 analyses for females and 336 analyses for males.

Table 4-10 is a list of those eight dependent variables used in the two-way analyses of covariance. Factor analyses of the MMPI usually revealed two main factors commonly named "A" and "R"' and for the CPI, and much of the factor loading is represented in the three scales for Dominance, Socialization and Femininity. CPI author Gough often relies

Table 4-9

Variables Used in Two-way Analyses of Covariance

As Statistical Controls and Interaction Effects

(Independent Variables)

Demographic Variables

Age
Marital status
Family income (combined)
Occupation (man's)
Education
Religion
Age of youngest child
Race/national origin
Years married to this partner
Number of times married
Number of children this marriage

Attitude Variables

Importance of religion
How long ago first think of sterilization?
Time since above to final decision?
Did you and your spouse agree on sterilization?
How do you rate your marital happiness?
Do you prefer intercourse more or less often?
What would your friends think of your sterilization if they knew?
How do you think sterilization will change your mental health?
How do you think sterilization will change your sex life?

Miscellaneous Variables

Have you had extramarital sex?

Pretest Psychological Variables

CPI (3 levels)

Dominance
Socialization
Femininity

Pretest Psychological Variables

MMPI (3 levels)

K
Hypochondriasis
Depression
Hysteria
Psychopathic deviancy
Masculinity-Femininity (male)
Masculinity-Femininity (female)
Paranoia
Psychasthenia
Schizophrenia
Hypomania
Social Introversion

MMPI Factors (3 levels)

"A" Factor
"R" Factor
Judges' ratings of MMPI

Life Situations (3 levels)

Pre "change"
Pre "upset"

Variables Used in Men-Women Comparisons

Sterilization Attitude Scale
Life Situations Index

Table 4-10

Dependent Variables for Two-way Analyses

CPI Scales
Dominance
Socialization
Femininity
MMPI Scales
Depression
Psychasthenia
MMPI Factors
"A" Factor
"R" Factor
Additional
MMPI Judges' Wholistic Ratings

heavily on these three: his shortened "mini-CPI," The Personal Values Abstract, has three scales that are in essence these same three. All two-way analyses were done with the above five scales as independent variables, as well as the combined judges' ratings of the MMPI profiles and two scales of the MMPI: Depression and Psychasthenia. The Depression scale and the Psychasthenia scale were selected as it was postulated that these two variables could well be affected by sterilization. The judges' ratings were used in order to get a total picture of "psychological soundness" to supplement the individual scale scores. These eight variables were in each case covaried by the parallel pretest variable.

The CPI Dominance scale and interactions with female sterilization. When the CPI Dominance scale was the dependent variable, sterilization interacted with family income, time from first consideration of sterilization until the final decision, and the MMPI Hysteria scale, each at the .05 level. At the .01 level, sterilization interacted with the level of education, extramarital sexual relations, and the MMPI Hypomania scale in its effects upon the Dominance scale. The above six variables, however, did not interact with sterilization to have effects upon any of the other seven dependent variables, except for the variable considering the length of time to decide on sterilization.

Table 4-11 summarizes the results of the two-way interactions that were significant.

The CPI Socialization scale and interactions with female sterilization. Table 4-12 lists the variables that interacted with sterilization to affect the scores of the CPI Socialization scale. There were four variables which interacted significantly at the .05 level and one variable that was significant at the .01 level. They were: 1) agreement

of mates to have the sterilization, 2) the CPI Femininity scale, 3) the MMPI Masculinity--Femininity scale (male) and 4) the MMPI Masculinity-Femininity scale (female) at the .05 level. The MMPI Depression scale was significant at the .01 level.

Generally, those independent variables that interacted with sterilization to affect the Socialization scale showed no significant interactions on the other dependent variables. Only the MMPI Masculinity-Femininity scale (female) showed any effects on another dependent variable.

Table 4-11

Interactions on the CPI Dominance Scale

Independent Variable	Probability	Level of Significance
1. Combined income	.015	.02
2. Educational level	.008	.01
3. How long ago did you first seriously consider sterilization?	.024	.05
4. Had extramarital sex?	.003	.01
5. Hysteria scale (MMPI)	.040	.05
6. Hypomania scale (MMPI)	.003	.01

Table 4-12

Interactions on the CPI Socialization Scale

Independent Variable	Probability	Level of Significance
1. Husband and wife agree on sterilization?	.05	.05
2. CPI Femininity scale	.027	.05
3. MMPI Depression scale	.01	.01
4. MMPI M-F (male)	.045	.05
5. MMPI M-F (female)	.028	.05

The CPI Femininity scale and interactions with female sterilization. Table 4-13 shows the variables that interacted with female sterilization to affect the scores of the CPI Femininity scale. There were four variables that were significant at the .05 level and one at the .01 level. The MMPI Hypochondriasis scale was significant at the .01 level for the Femininity scale, but did not interact with sterilization to affect any of the other dependent variables used in the two-way analyses.

The length of time from first considering sterilization to the actual decision to have it; what friends would think if they knew of the sterilization; the MMPI Hysteria scale; and the MMPI Masculinity--Femininity scale (female), each intereacted with sterilization at the .05 level to affect the scores of the CPI Feminity scale. Each of these variables had significant interactions on at least one of the other dependent variables used in the two-way analyses.

The MMPI Depression scale and interactions with female sterilization. Table 4-14 summarizes the results of the two-way analyses of covariance with the MMPI Depression scale as the dependent variable.

Of the 42 independent variables used, there were only two that interacted with sterilization at the .05 level on the Depression scale. The Paranoia scale (MMPI) and the elapsed time from first considering sterilization until the final decision to have one were the independent variables involved in these interactions.

The Paranoia scale did not interact with sterilization to significantly affect any of the other dependent variables: but the other variable, elapsed time from considering sterilization to the decision to have one, was the most common variable that interacted with sterilization to affect other scales. It interacted with sterilization to affect the scores of five of the eight dependent variables used in the analyses.

Table 4-13

Interactions on the CPI Femininity Scale

	Independent Variable	Probability	Level of Significance
1.	Elapsed time from first considering sterilization to final decision.	.018	.02
2.	If friends knew of sterilization, what would they think?	.033	.05
3.	Hypochondriasis scale-MMPI	.000	.01
4.	Hysteria scale-MMPI	.016	.02
5.	Masculinity-Femininity scale-MMPI	.019	.02

Table 4-14

Interactions on the MMPI Depression Scale

Independent Variable	Probability	Level of Significance
1. Parancia scale-MMPI	.015	.02
2. Elapsed time from first considering sterilization to the final decision?	.015	.02

The MMPI Psychasthenia scale and interactions with female sterilization. Table 4-15 shows that two variables interacted with sterilization to significantly affect the scores of the MMPI Psychasthenia scale. They were: 1) length of time that elapsed from first considering sterilization to the final decision to have one; and 2) the response to the item "What would your friends think if they knew of your sterilization?" Both variables were significant at the .05 level.

Table 4-15

Interactions on the MMPI Psychasthenia Scale

Independent Variables	Probability	Level of Significance
1. Length of time from first considering sterilization to the final decision to have.	.042	.05
2. What your friends think if they knew of sterilization?	.048	.05

The "A" factor and interactions with female sterilization. Table 4-16 summarizes the results of the two-way analyses with the "A" factor

of the MMPI as the dependent variable. There were two variables that showed a significant interaction with sterilization in their effects upon the "A" factor. The number of times married was significant at the .05 level, while the person's ratings of marital satisfaction was significant at the .01 level. Neither variable showed any additional significant interactions with sterilization to affect other dependent variables used in the study.

Table 4-16

Interactions on the MMPI "A" Factor

Independent Variables	Probability	Level of Significance
1. Number of times married.	.037	.05
2. Rating of marital satisfaction.	.009	.01

The "R" Factor of the MMPI and interactions with female sterilization. Table 4-17 shows that two variables interacted significantly with sterilization at the .01 level and two at the .05 level to affect scores on the "R" Factor. The number of years married, and the length of elapsed time after first considering sterilization until the decision to have one, were both significant at the .01 level. Two MMPI scales, the Hysteria scale and the Social Introversion scale, interacted with sterilization to affect the scores of the "R" Factor at the .05 level.

Judges' ratings and interactions with female sterilization. Table 4-18 summarizes the results of the two-way analyses with the combined ratings of the MMPI profiles as the dependent variable. Two variables, 1) the length of time from first considering sterilization to the actual

decision, and 2) the MMPI "A" factor, showed significant interactions at the .01 level, while the MMPI K scale was significant at the .05 level. Neither of the two MMPI scales interacted with sterilization to affect any of the other seven dependent variables.

Table 4-17

Interactions on the MMPI "R" Factor

	Independent Variables	Probability	Level of Significance
1.	Years married	.01	.01
2.	Elapsed from first considering sterilization to the final decision.	.01	.01
3.	Hysteria scale-MMPI	.047	.05
4.	Social-Introversion scale-MMPI	.013	.02

Table 4-18

Interactions on the Combined Judges' Ratings

	Independent Variables	Probability	Level of Significance
1.	Time since first considering sterilization to the final decision to have one.	.01	.01
2.	"R" Factor-MMPI	.01	.01
3.	"K" Scale-MMPI	.05	.05

Consistency of Interactions

Since there were 336 analyses and since the actual number (nine at the .01 and 17 at the .05 level) of significant interactions was close to the number to be expected from chance factors, one would suggest that in most cases there were really no interactions but that apparent relations were due to chance alone. Since most of the independent variables involved, appeared only once and thus showed no patterns, they need not be further discussed. However, one variable showed consistent patterns on the dependent variables and was significant in analyses of five of the eight dependent variables. This variable was the length of time from first considering sterilization to the final decision to have one.

Significant interactions for the above variable were noted on the following dependent variables: 1) the CPI Femininity scale, 2) the MMPI Depression scale, 3) the MMPI Psychasthenia scale, 4) the MMPI "K" Factor, and 5) the combined judges' ratings of the MMPI profiles. Table 4-19 summarizes the results of the two way analyses with the length of time as the independent variable with sterilization.

Generally, those who had less than four months and those who had more than a year elapsed time scored "poorer"than the middle group of four months to a year. This pattern was also followed when comparing the vasectomy men with the female sterilization women. The female sterilization women who were in the four month to one year category scored "better" than did the men in the same category. In all other cases the women did "poorer" than the men. Figures 4-1 through 4-5 show the patterns of this independent variable on the five dependent variables that showed significant interactions with this independent variable. Only the female sterilization women and the mates of the

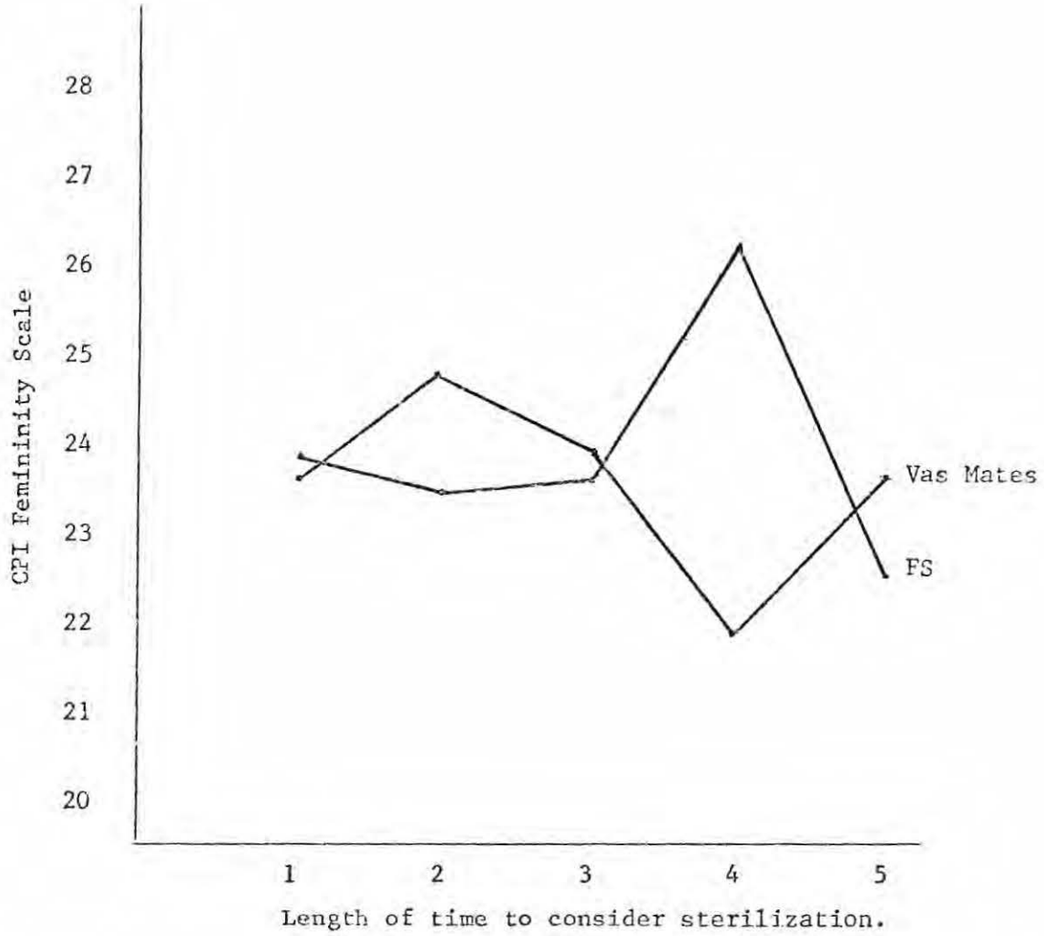

Figure 4-1. Interaction of sterilization and time to consider sterilization, as they affect the CPI Femininity scale (women). (Code-Time: 1 = One day to three weeks, 2 = One month to three months, 3 = Four months to one year, 4 = One year to two years, 5 = Over two years. FS = Female Sterilization, Vas Mates = Mates of vasectomy men.)

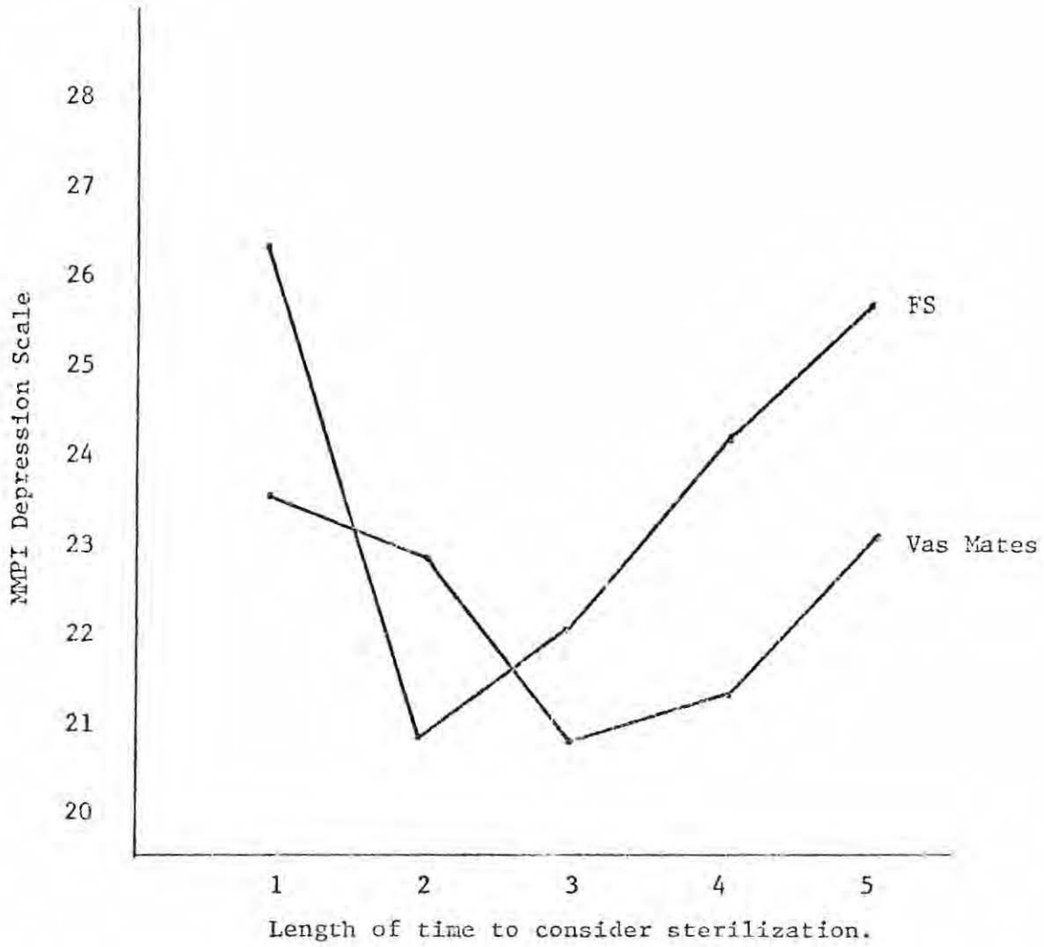

Figure 4-2. Interaction of sterilization and time to consider sterilization, as they effect the MMPI Depression scale (women). (Code-Time: 1 = One day to three weeks, 2 = One month to three months, 3 = Four months to one year, 4 = One year to two years, 5 = Over two years. FS = Female Sterilization, Vas Mates = Mates of men who had a vasectomy.)

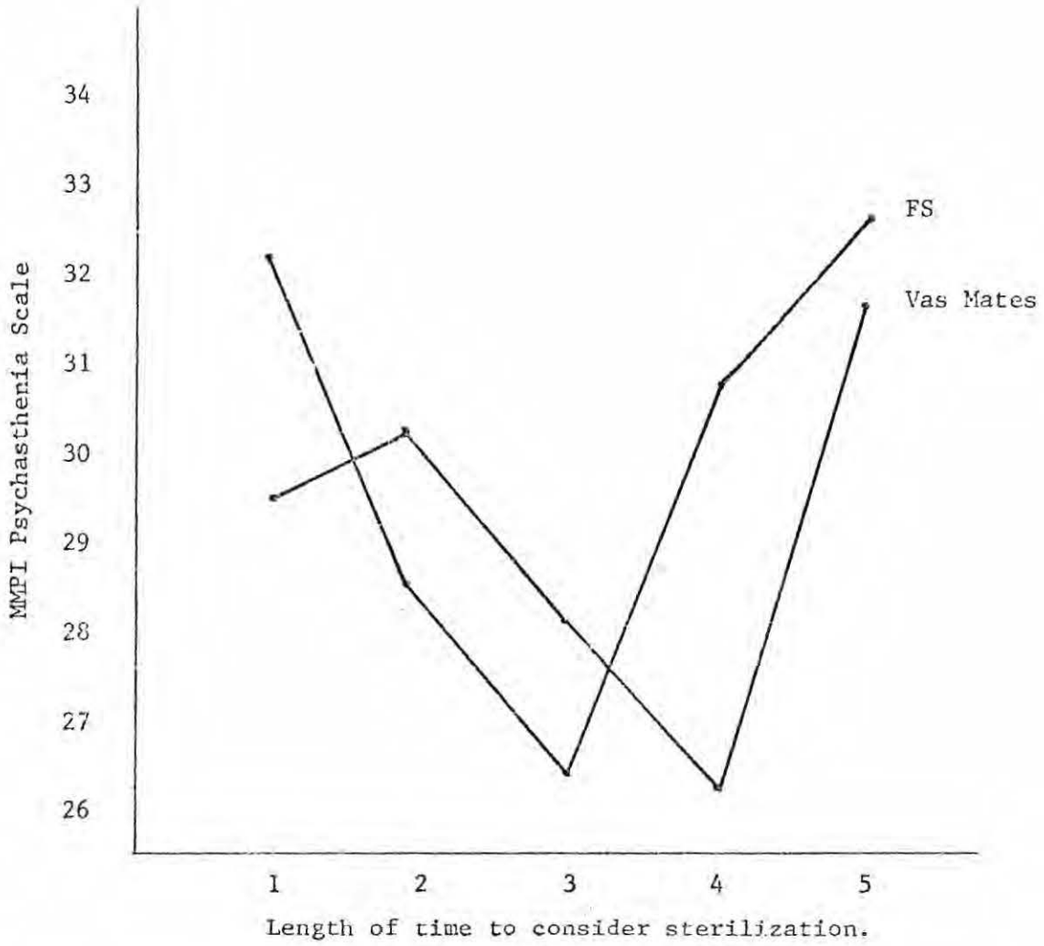

Figure 4-3. Interaction of sterilization and time to consider sterilization as they affect the MMPI Psychasthenia scale (women). (Code-Time: 1 = One day to three weeks, 2 = One month to three months, 3 = Four months to one year, 4 = One year to two years 5 = Over two years. FS = Female Sterilization, Vas Mates = Mates of vasectomy men.)

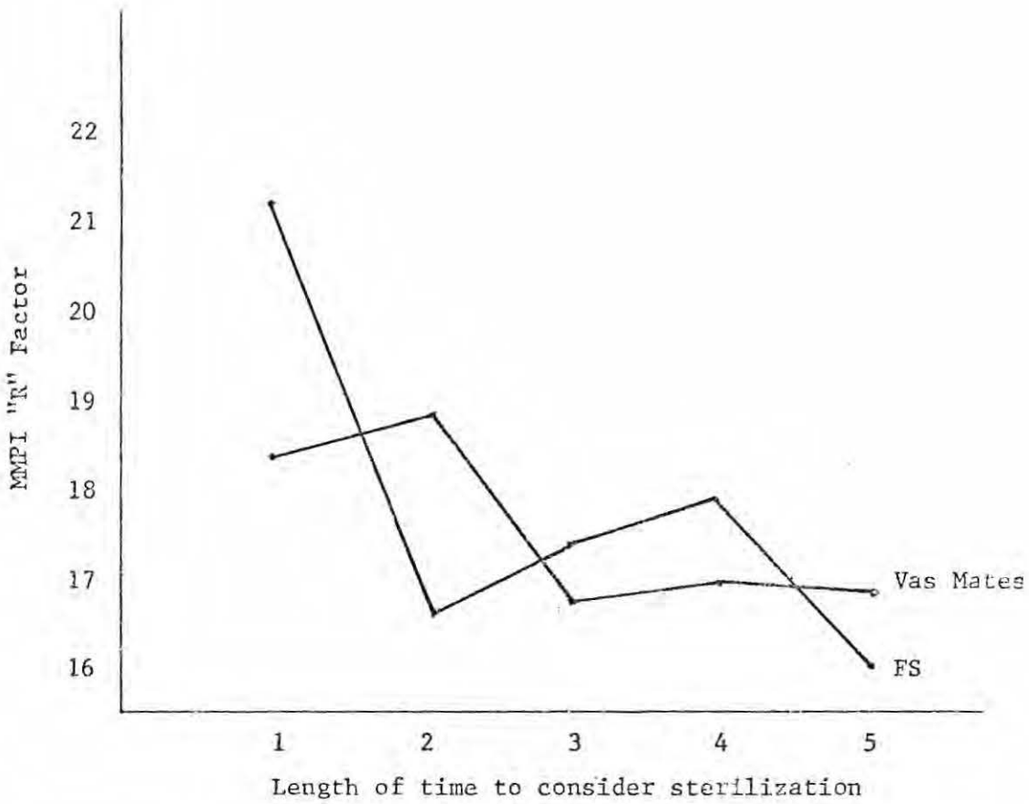

Figure 4-4. Interaction of sterilization and time to consider sterilization as they affect the MMPI "R" factor (women). (Code-Time: 1 = One day to three weeks, 2 = One month to three months, 3 = Four months to one year, 4 = One year to two years, 5 = Over two years. FS = Female sterilization, Vas Mates = Mates of vasectomy men.)

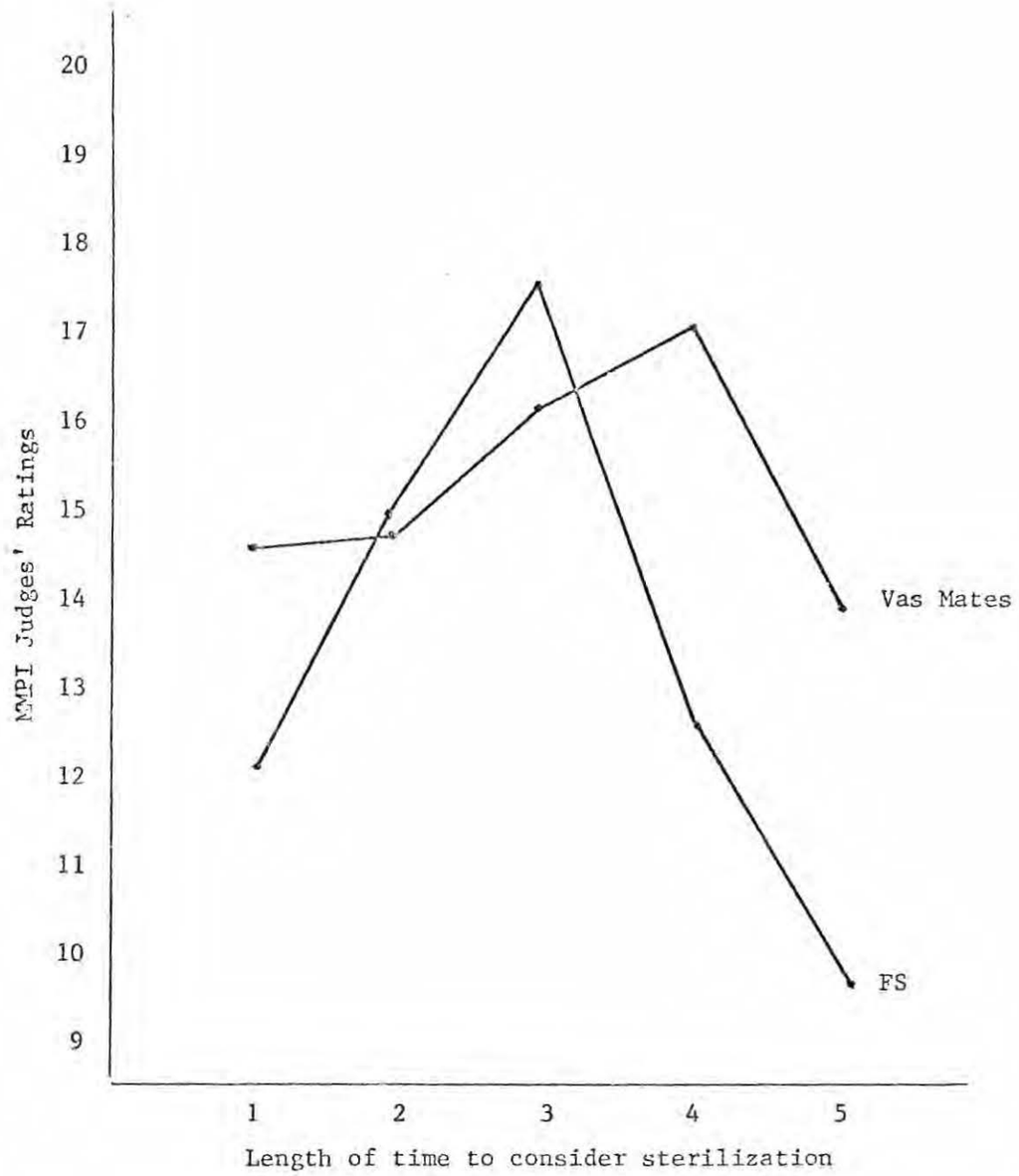

Figure 4-5. Interaction of sterilization and time to consider sterilization as they affect the judges' ratings of the MMPI profiles (women). (Code-Time: 1 = One day to three weeks, 2 = One month to three months, 3 = Four months to one year, 4 = One year to two years, 5 = Over two years. FS = Female Sterilization, Vas Mates = Mates of vasectomy men.)

vasectomy men were analyzed with this independent variable. Figure 4-6 is also displayed to show that this same pattern appeared when comparing vasectomy men with the female sterilization women on the judges' ratings of the MMPI profiles.

Table 4-19

Time to Consider Sterilization: As An

Independent Variable for Interaction Effects

	Dependent Variable	Probability	Level of Significance
1.	Dominance scale-CPI	.54	ns
2.	Socialization scale-CPI	.71	ns
3.	Femininity scale-CPI	.018	.02
4.	Depression scale-MMPI	.015	.02
5.	Psychasthenia scale-MMPI	.042	.05
6.	"A" Factor-MMPI	.20	ns
7.	"R" Factor-MMPI	.01	.01
8.	Judges' ratings-MMPI	.01	.01

Predictors of Psychological Change Following Female Sterilization

Those variables which correlated most highly with the judges' ratings (pre to post change scores) and had low intercorrelations were placed into a step-wise Multiple Regression Analysis to establish optimal predictors of change in "psychological soundness." The data were analyzed only for the female sterilization group, as it was desired that the predictors be in conjunction with sterilization. All the pretest data collected as part of the study were analyzed in a correlation matrix to

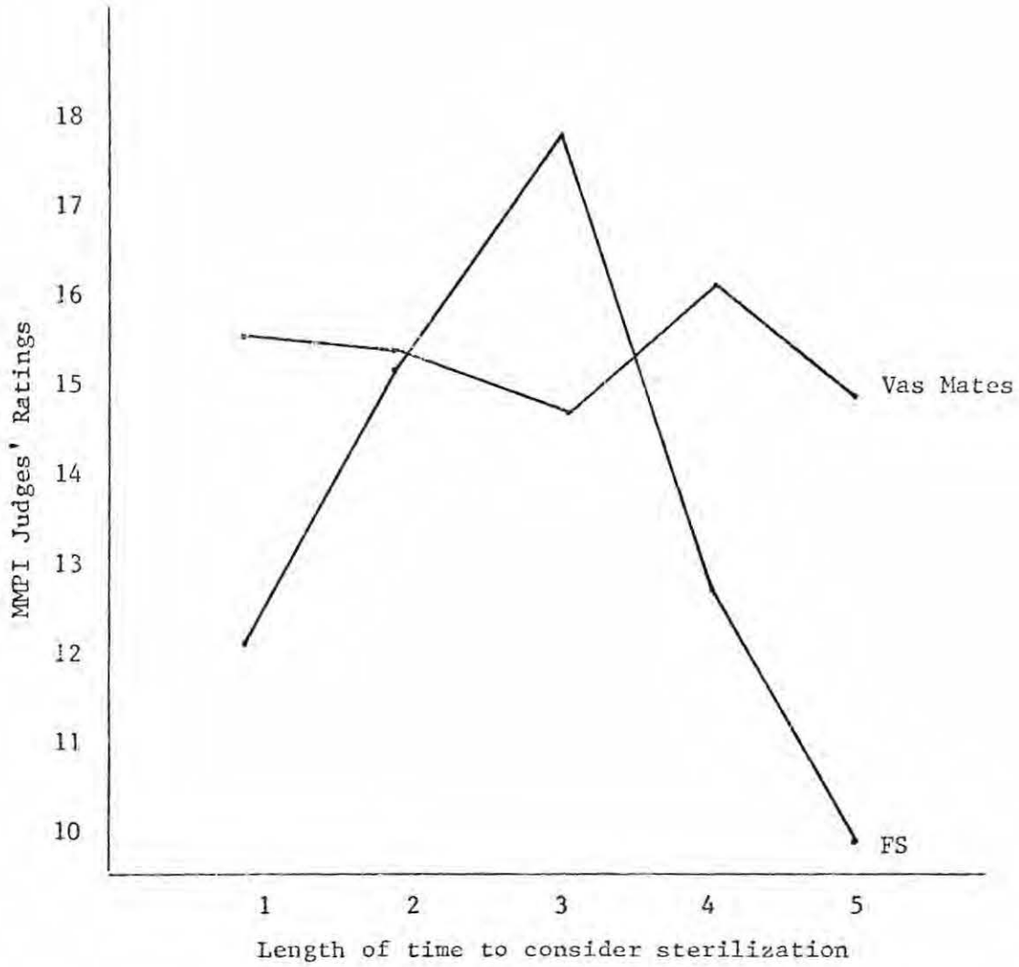

Figure 4-6. Interaction of sterilization and time to consider sterilization as they affect the Judges' ratings of the MMPI profiles; vasectomy men compared to female sterilization women. (Code-Time: 1 = One day to three weeks, 2 = One month to three months, 3 = Four months to one year, 4 = One year to two years, 5 = Over two years.)

develop the best possible regression equation.

The final five variables chosen accounted for 49% of the variance in the judges' change scores. Since the number of women in the sterilization group was too small to cross-validate the results, the 49% was calculated by Equation 4-1 (Kerlinger & Pedhazur, 1973, p. 283). This equation is used in instances when the number of subjects is too small to cross-validate the results of the regression equation. While it is not as accurate as cross-validation, the equation can make adjustments for shrinkage.

Equation 4-1: $$R^2 = 1 - R^2 \left(\frac{n-1}{n-k-1}\right)$$

Table 4-20 shows the results of the Multiple Regression Analyses including the variables, simple correlations, mutliple correlations, the multiple coefficients of determination (R^2), the beta weights of each of the five variables and the constant value. The R^2 that is shown in the talbe was the calculated figure prior to the adjustment by the Kerlinger and Pedhazur formula. The adjusted percentage reflects a 2.8% shrinkage from 51.8% to 48%.

Table 4-21 shows the possible responses to each of the variables in the regression equation, with the exception of the CPI Femininity scale where the actual scores are utilized. The five variables utilized in the regression equation were worded on the questionnaires as shown in Table 4-21.

Table 4-20

Multiple Regression Equation for Women

(Female Sterilization Group)

	Variable	Simple Correlation	Multiple Correlation	Coefficient of Determination	Beta Weight
1.	Satisfied with number of childern.	.50361	.50361	.25401	2.90729
2.	House, boat, etc. damaged, burned, etc.	-.44222	.61708	.38059	-3.04487
3.	Husband more upset lately?	-.36208	.67084	.45024	-2.08539
4.	Is sterilization unfeminine?	-.31664	.69852	.48860	-1.80179
5.	CPI Femininity scale score?	-.31570	.71892	.51796	-0.25172
	Constant				45.81599

Table 4-21

Variables in the Regression Equation

1.	Are you satisfied with the number of children you have?	yes no
2.	Was your house, boat, car, etc. burned, flooded or damaged during the past year?	yes no
3.	Do you feel that your husband/mate has been more upset than normal?	yes no
4.	When done for birth control purposes, sterilization is unfeminine.	yes no

The Effects of Vasectomy on Men

The objectives and five hypotheses that were used to study the psychological, sexual and marital effects of sterilization on women were also used to study the parallel effects of vasectomy on men. The groups were broken down in the same manner as were the female groups, but the vasectomy sample was more representative of vasectomy men than was the female sterilization sample representative of female sterilization women in general. Each hypothesis was studied in exactly the same manner for the men as it was for women.

This section is broken down into the following sub-sections: vasectomy and marital satisfaction, vasectomy and sexual satisfaction, vasectomy and the MMPI and CPI scales, vasectomy and interaction effects, consistency of interactions and predictors of phychological change following vasectomy.

Vasectomy and Marital Satisfaction

The first hypothesis was to determine whether there is a negative relationship between vasectomy and expressed marital satisfaction. As with the women, the men were asked at pretest to rate their marital satisfaction, and made a similar rating again approximately one year later. The responses were then compared to determine whether there were any changes in marital satisfaction over the course of the year. A Chi-square Test of Independence was run and there was no relationship between change in marital satisfaction and vasectomy. Table 4-22 shows the expected frequencies of events, the observed frequencies and the results of the statistical tests.

Only ten men reported a decrease in marital satisfaction, while there were 48 that reported an increase. Relatively, each group had

Table 4-22

Vasectomy-Change in Marital Satisfaction

	Vasectomy	FS Mates	Comparison	
Decrease	7.5 9	1.5 0	1 1	10
No Change	121 120	24.5 26	14.5 14	160
Increase	36.5 36	7 7	4.5 5	48
	165	33	20	218

p = .7252

Small boxes show expected frequency

Large boxes show observed frequency

approximately the same percentage showing an increase and decrease. Since the question was transparent, the results could possibly reflect only the person's attitude on the day tested or a socially desirable response, rather than a consistent long-term attitude. This is especially true, considering that marital satisfaction decreases so often in our society as evidenced by the increase in divorce rates, and studies of marital happiness ratings.

Vasectomy and Sexual Satisfaction

The second and third hypotheses were tested to determine whether there were differences among vasectomy men and other groups of men in terms of changes of expressed sexual satisfaction. The second hypothesis: there is a negative relationship between sterilization (vasectomy) and change in sexual satisfaction, was not supported by the data. Table 4-23 shows the results of the Chi-square Tests of Independence done with the data of the men for the second hypothesis.

The third hypothesis--there is an increase in frequency of intercourse among vasectomy men in comparison to other men--was likewise not supported by the data at the .01 level of significance. Nevertheless, there was a significant relationship at the .05 level between vasectomy and change in frequency of intercourse. Table 4-24 shows the results of the 3 x 3 Chi-square Test of Independence. The table shows that the non-sterilization comparison men reported a greater increase in intercourse in relationship to the other two groups. This tends to show some support for findings among the women: the female sterilization group and the non-sterilization comparison group also reported a relatively larger increase in frequency of intercourse than the vasectomy mates.

Table 4-23

Vasectomy-Change in Sexual Satisfaction

Decrease	65 60	13.5 15	10.5 14	89
No Change	111 113	22.5 25	17.5 13	151
Increase	38 41	8 4	6 7	52
	214	44	34	292

p = .2317

Small boxes show expected frequency

Large boxes show observed frequency

An interesting picture results when comparing the absolute changes between the expressed marital and expressed sexual satisfaction tables. First, one fifth as many men reported a decrease as reported an increase in marital satisfaction. And there were only about 35% who showed any change at all. The picture is different when considering change in sexual satisfaction where more showed a decrease than showed an increase. Fifty percent of the total group reported a change in sexual satisfaction from pre to posttesting.

Table 4-24

Vasectomy and Change in Frequency of Intercourse

	Vasectomy	FS Mates	Comparison	
Decrease	75 79	15 13	12 10	102
No Change	88 87	18 22	14 10	120
Increase	52 49	11 8	8 14	71
	215	44	34	293

$p = .04$

Small boxes show expected frequency
Large boxes show observed frequency

Vasectomy and the MMPI and the CPI scales

Hypothesis four was tested to determine whether differences in "psychological soundness" existed among the groups of men. Thirty-four One-way Analyses of Covariance were utilized to test this hypothesis with the CPI scales, the MMPI scales and the judges' wholistic ratings of the MMPI profiles as the dependent variables. Table 4-4 lists the dependent variables used in these one-way analyses. There were four groups which were compared on the above 34 variables. The groups were: 1) vasectomy men, 2) female sterilization mates, 3) non-sterilization comparison men, and 4) men who decided against vasectomy.

Vasectomy and the MMPI and CPI scales. There were no scales which discriminated among the four groups at the .01 level and there was only one, the MMPI "F" scale, which showed a significant difference at the .05 level. This difference can possibly be dismissed as a statistical accident (i.e. chance error) as 34 analyses were computed and chance would generally account for one or two significant tests at the .05 level.

Vasectomy and the judges' ratings of the MMPI profiles. The data show that there were no differences among the four groups at either the .01 or .05 levels of significance. Therefore, from this sample it can be stated that the scores of the judges' ratings of the MMPI profiles are not affected more for one group than for another. Vasectomy does not appear to affect the overall "psychological soundness" of men.

Table 4-25 shows the absolute change for the men that occurred from pre to posttesting. The female sterilization mates scored slightly worse than the other two groups. They therefore had fewer persons whose scores increased relative to the other two groups. This table does not consider

Table 4-25

Absolute Change on the Judges' Ratings

From Pre to Posttesting Men

	Change				
	-5 and above	-2 to -4	-1 to +1	+2 to +4	=5 and above
Vasectomy	14%	22.7%	29.7%	21.5%	12.1%
COMP	7.8%	31.4%	19.6%	25.5%	15.5%
FS Mates	22.6%	24.1%	48.3%	13.8%	16.1%
	Tended to get "Worse"		No Change	Tended to get "Better"	

whether those that showed a tendency to get "worse" were those who had initially lower scores, higher scores or whether such decreases in "psychological soundness" occurred equally across levels.

Vasectomy and Interaction Effects

The same demographic, attitudinal, pretest personality and life events variables which were used in the analyses of the women were also utilized for the men (see Table 4-8). The same methods were followed, including the use of the same eight dependent variables for the two-way analyses. Pretest scores served as covariates for the posttest scores of the parallel variables. As with the women, there were 336 two-way analyses run to determine whether various subgroups were affected by sterilization.

The CPI Dominance scale and interactions with vasectomy. Table 4-26 summarizes the results of the two-way analyses using the CPI Dominance scale as the dependent variable. There were two independent variables that interacted with sterilization to affect the scores on the Dominance scale at the .05 level. The number of years married to the present wife and the man's rating of his marital satisfaction were the two significant variables. Each showed at least one other significant interaction in affecting another dependent variable. There were no interactions that were significant at the .01 level for the Dominance scale.

The CPI Socialization scale and interactions with vasectomy. There was only one variable that interacted significantly (.016) with sterilization to affect the scores of the Socialization scale of the CPI. That variable was the "R" factor of the MMPI. This variable did not interact with sterilization to affect the change of scores on any of the other seven dependent variables.

Table 4-26

Interaction on the CPI Dominance Scale

	Independent Variable	Probability	Level of Significance
1.	Years married	.014	.02
2.	Rating of marital satisfaction	.043	.05

The CPI Femininity scale and interactions with vasectomy. There were no independent variables that interacted with vasectomy to affect the scores of the CPI Femininity scale. In essence, there were no subgroups that could be differentiated by their scores on the CPI Femininity scale.

The MMPI Depression scale and interaction with vasectomy. Table 4-27 shows that there were two variables that intereacted with vasectomy to affect the MMPI Depression scale scores. The variable that was significant at the .05 level was whether there was agreement between the mates on the advisability of having the vasectomy, while the man's rating of his marital satisfaction was significant at the .01 level.

Table 4-27

Interaction on the MMPI Depression Scale

	Independent Variable	Probability	Level of Significance
1.	Agreement with mate.	.043	.05
2.	Man's rating of marital satisfaction.	.000	.01

The MMPI Psychasthenia scale and interactions with vasectomy. The time from first considering vasectomy until the final decision, interacted with vasectomy to affect the scores of the MMPI Psychasthenia scale at the .014 level. No other independent variable showed any significant interactions on this variable.

The MMPI "A" factor and interactions with vasectomy. More independent variables interacted with vasectomy to affect the scores of the "A" factor than any of the other seven dependent variables. Table 4-28 summarizes the results of the interactions on the "A" factor and gives the level of significance for the interaction affects. The length of time married to present spouse, the attitude of friends toward sterilization, and the man's own rating of his marital satisfaction were significant at the .01 level; while the Hypomania scale, the Rahe-type "change" scale, and the Paykel-type "upset" scale were significant at the .05 level. The interactions for the "change" scale and the "upset" scale were almost identical (see Figures 4-7 and 4-8), probably because of extensive item overlap in the two scales.

The MMPI "R" factor and interactions with vasectomy. Table 4-29 shows that four variables interacted with vasectomy to affect the scores of the "R" factor at the .05 level. Race, the MMPI Hysteria scale, the Rahe-type "change" scale, and the Paykel-type "upset" scale were the four independent variables that showed the significant interactions with vasectomy. As with the "A" factor interactions, the "change" and "upset" scales' interactions were extremely similar, suggesting that the two scales, when broken down into three levels, are not different (see Figures 4-9 and 4-10).

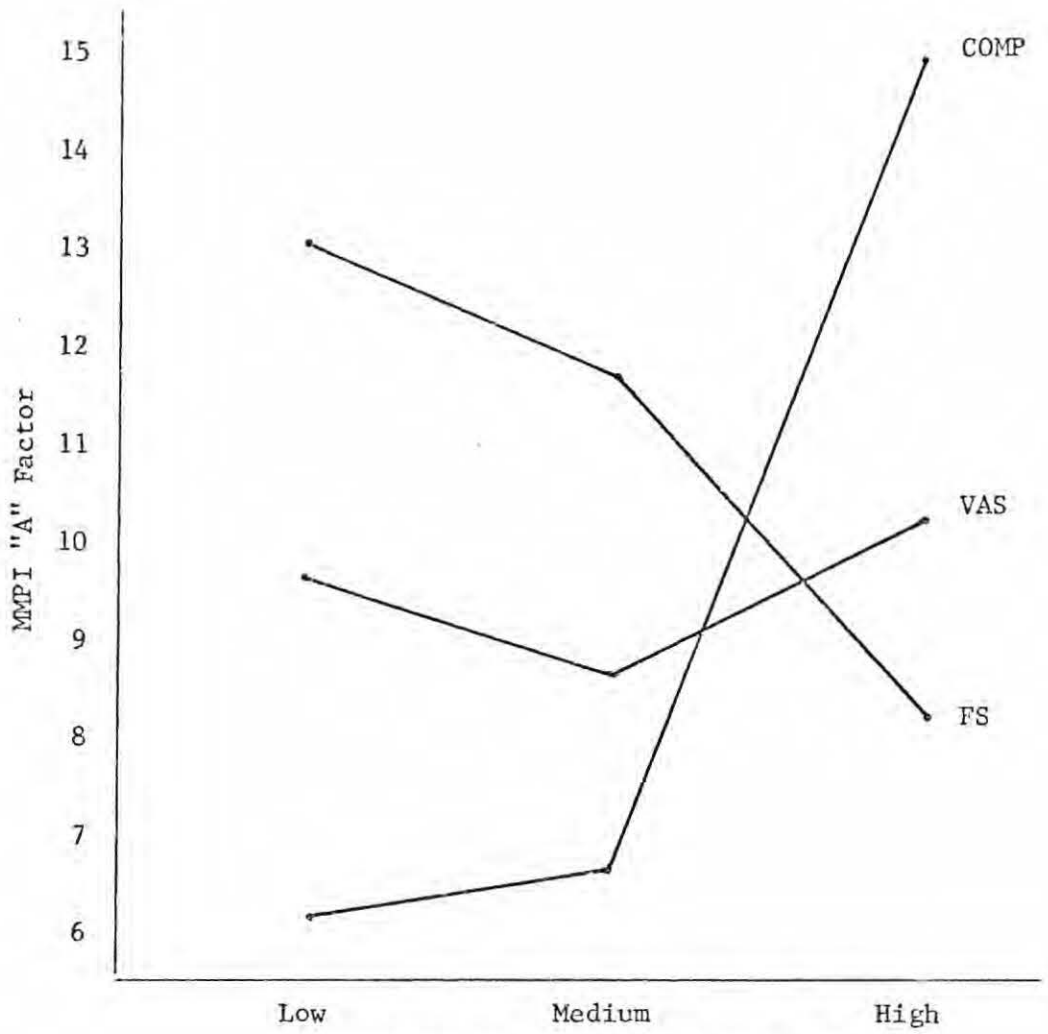

Figure 4-7. Interaction of sterilization and the "change" scale as they affect the MMPI "A" Factor (men). (Code: FS = Female sterilization mates, VAS = Vasectomy men, COMP = Non-sterilization comparison men.)

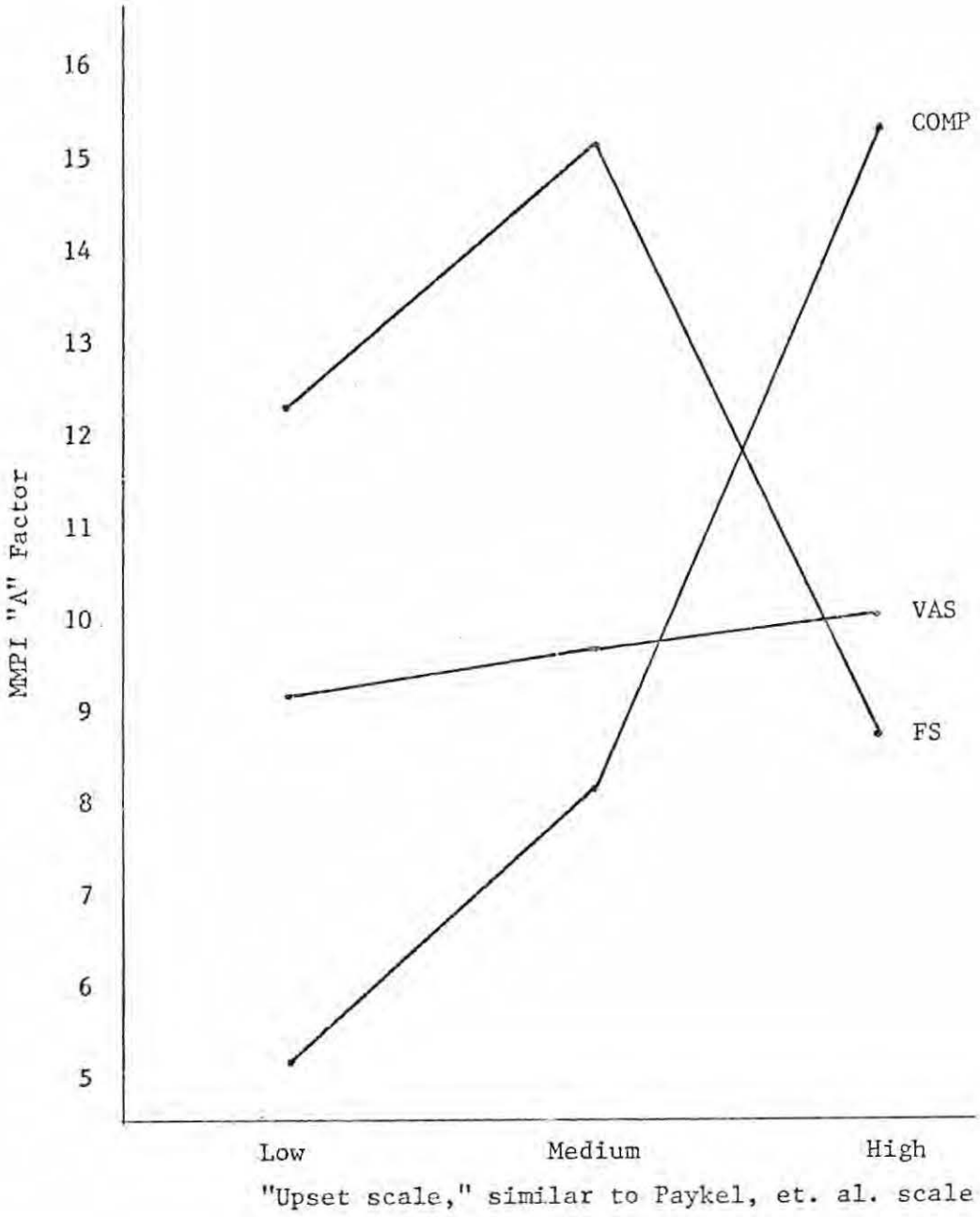

Figure 4-8. Interaction of sterilization and the "upset" scale as they affect the MMPI "A" Factor (men). (Code: FS = Female sterilization mates, VAS = Vasectomy men, COMP = Non-sterilization men.)

Table 4-28

Interactions on the MMPI "A" Factor

	Independent Variables	Probability	Level of Significance
1.	Time married.	.001	.01
2.	Friends attitude toward your sterilization.	.003	.01
3.	Rating of marital satisfaction.	.005	.01
4.	Hypomania scale.	.014	.02
5.	"Upset" scale.	.011	.02
6.	"Change" scale.	.023	.05

Table 4-29

Interactions on the MMPI "R" Factor

	Independent Variables	Probability	Level of Significance
1.	Race/National origin.	.022	.05
2.	Hysteria scale-MMPI.	.045	.05
3.	"Change" scale	.025	.05
4.	"Upset" scale.	.046	.05

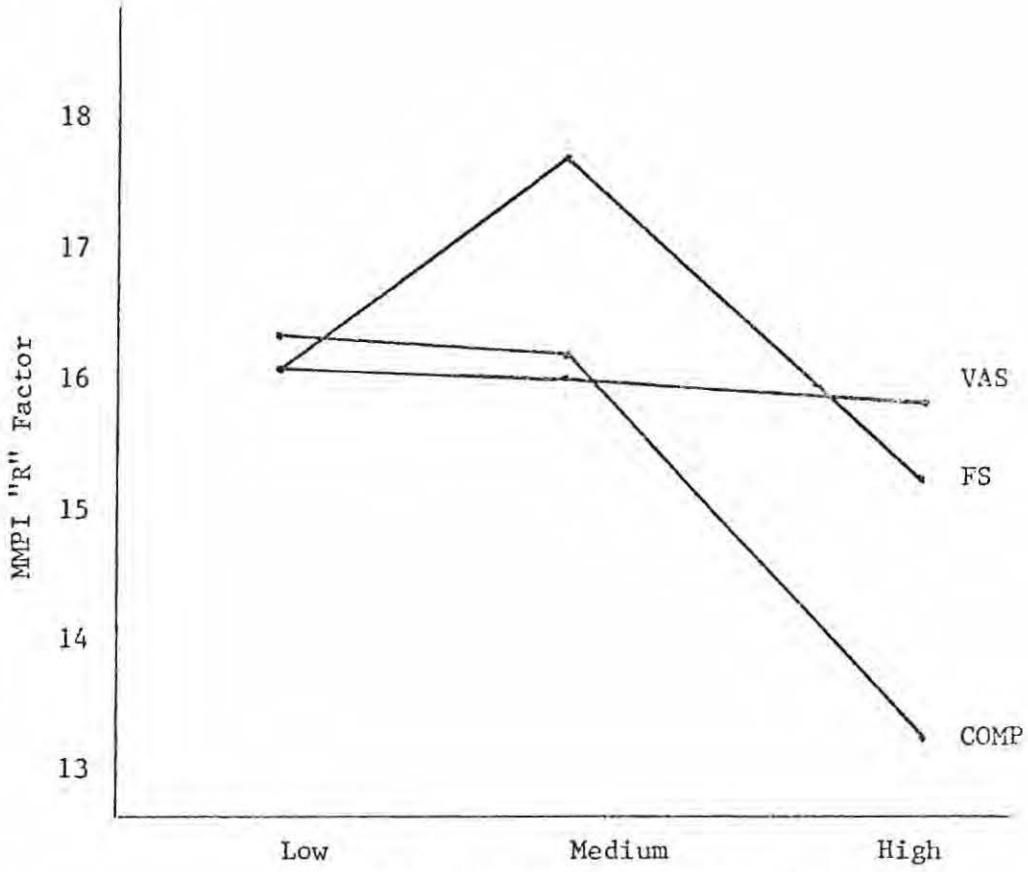

Figure 4-9. Interaction of sterilization and "change scale" as they affect the MMPI "R" Factor (men). (Code: FS = Female Sterilization, VAS = Vasectomy men, COMP = Non-sterilization comparison men.)

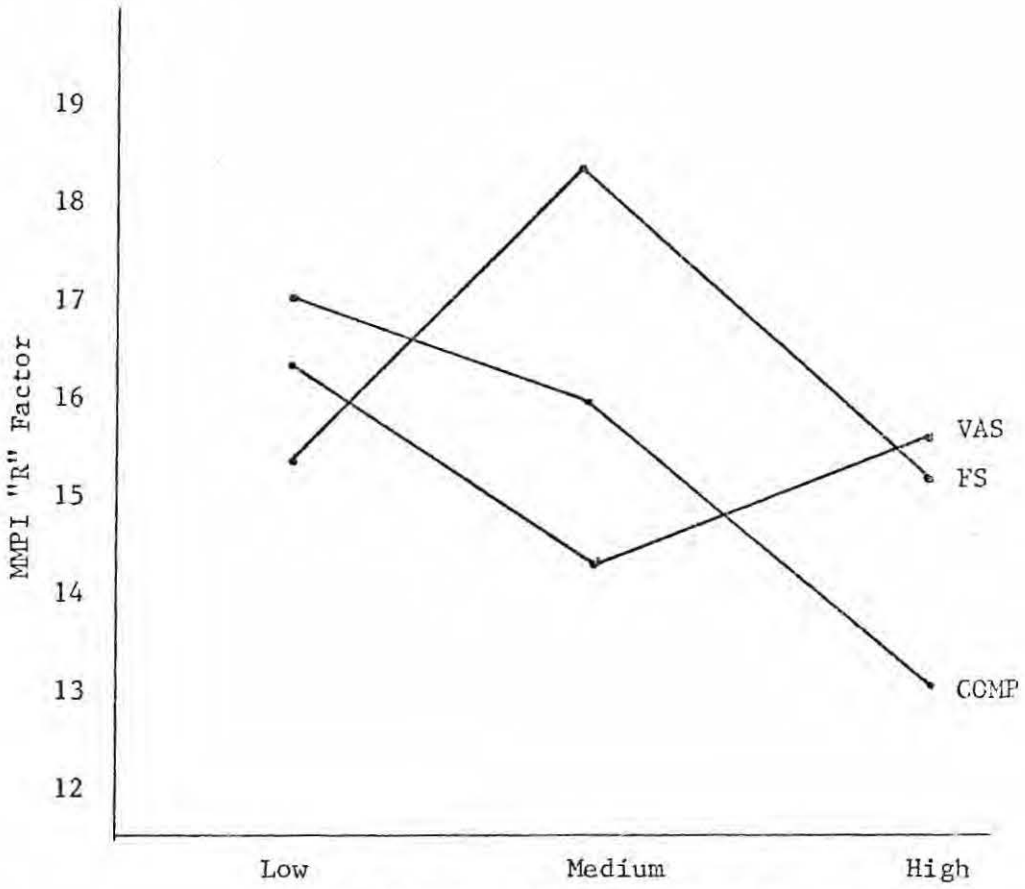

Figure 4-10. Interaction of sterilization and the "upset" scale as they affect the MMPI "R" Factor (men). (Code: FS = Female sterilization, VAS = Vasectomy men, COMP = Non-sterilization men.)

Judges' ratings and interactions with vasectomy. There was only one variable--religious preference--that interacted significantly with sterilization to affect the scores of the MMPI judges' ratings. This variable did not interact with vasectomy on any of the other seven dependent variables used in the two-way analyses. The relative positions of the sterilization groups changed at each level of "religious preference." Figure 4-11 summarizes the results of the two-way analyses done with the judges' ratings as the dependent variable.

Consistency of Interactions with Vasectomy

One would anticipate that in 336 analyses, 17 null hypotheses would be rejected at the .05 level because of chance factors when in fact no differences actually exist. This is exactly the same number that actually were rejected (17). Of the 42 variables studied through the two-way analyses only 12 interacted with vasectomy. While the possibility exists that all the interactions are chance errors, it is improbable that this was the case for the variable concerning the man's rating of his marital satisfaction.

Table 4-30 shows that the ratings of one's marital satisfaction resulted in two interactions at the .01 level and one at the .02 and the .05 levels. The dependent variables involved in the above four interactions were: 1) the CPI Dominance scale, 2) the MMPI Depression scale, 3) the MMPI Psychasthenia scale, and 4) the MMPI "A" factor.

Figures 4-12 through 4-15 are graphs of the interaction effects of marital satisfaction ratings and vasectomy on the above four variables. The graphs are very similar and would suggest that either the interactions are, in fact, real as the analyses show or that the dependent variables are measuring the same thing. The graphs show that: 1) the

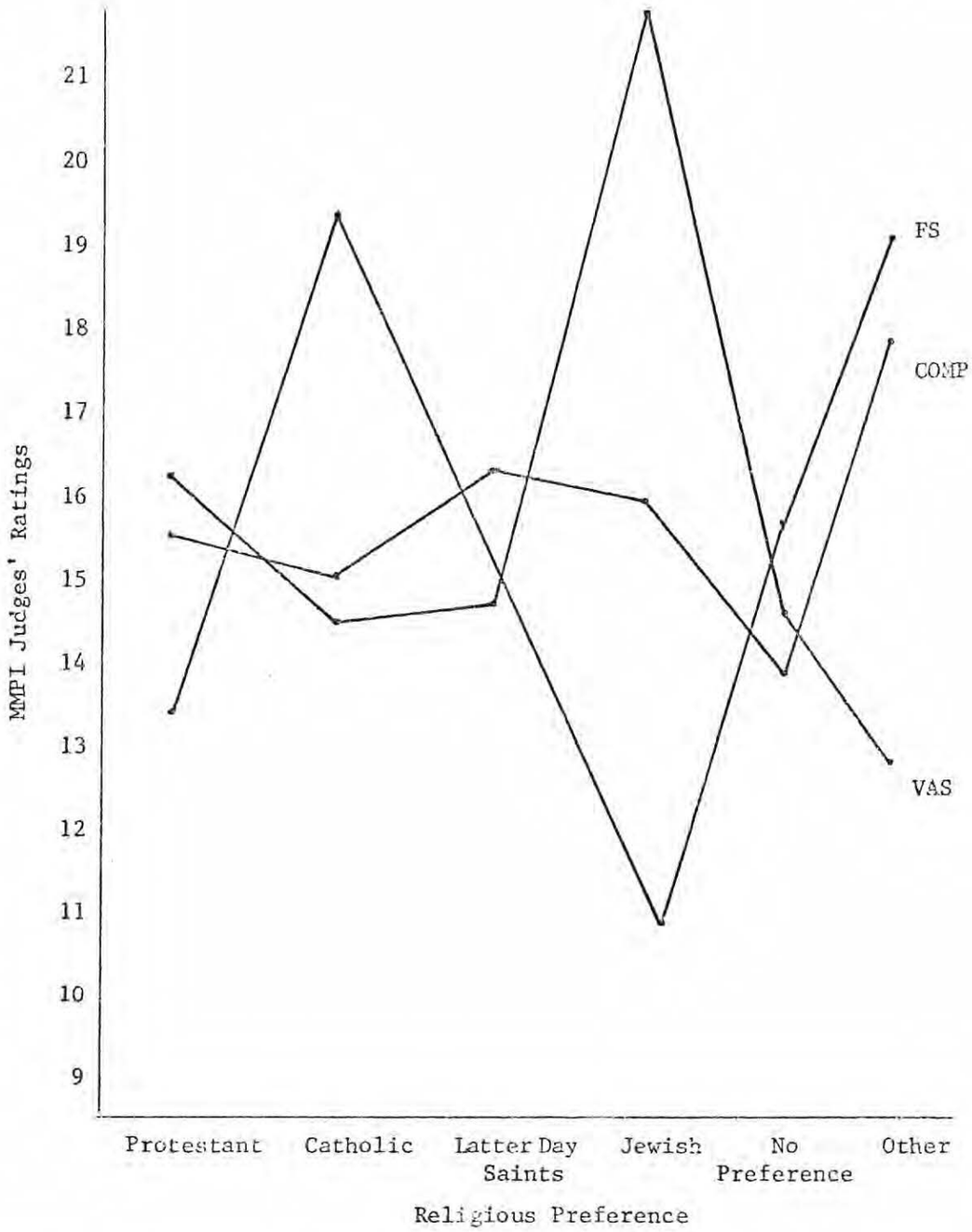

Figure 4-11. Interaction of sterilization and religious preference as they affect the Judges' ratings of the MMPI profiles (men).

vasectomy men scored "poorest" when the rating of the marital satisfaction was "poor," 2) the female sterilization mates scored "poorest" on all four dependent variables when the rating was "fair," and 3) the nonsterilization comparison men scored "poorest" when the marital satisfaction rating was "excellent." There was no consistent pattern when the rating was "good" making it difficult to interpret.

Table 4-30

Marital Satisfaction as an Independent Variable for Interaction Effects

	Dependent Variables	Probability	Level of Significance
1.	Dominance scale-CPI	.043	.05
2.	Socialization scale-CPI	.83	ns
3.	Femininity scale-CPI	.45	ns
4.	Depression scale-MMPI	.000	.01
5.	Psychasthenia scale-MMPI	.014	.02
6.	"A" factor-MMPI	.005	.01
7.	"R" factor-MMPI	.20	ns
8.	Judges' ratings-MMPI	.53	ns

Predictors of Psychological Change for Vasectomy Men

There were no variables that were in both the regression equations to predict psychological change for men and women. Five independent variables accounted for 49% of the variance of the change scores of the judges' ratings of the MMPI profiles for the women while eight accounted for 28% of the variance of change for the vasectomy men. This percentage

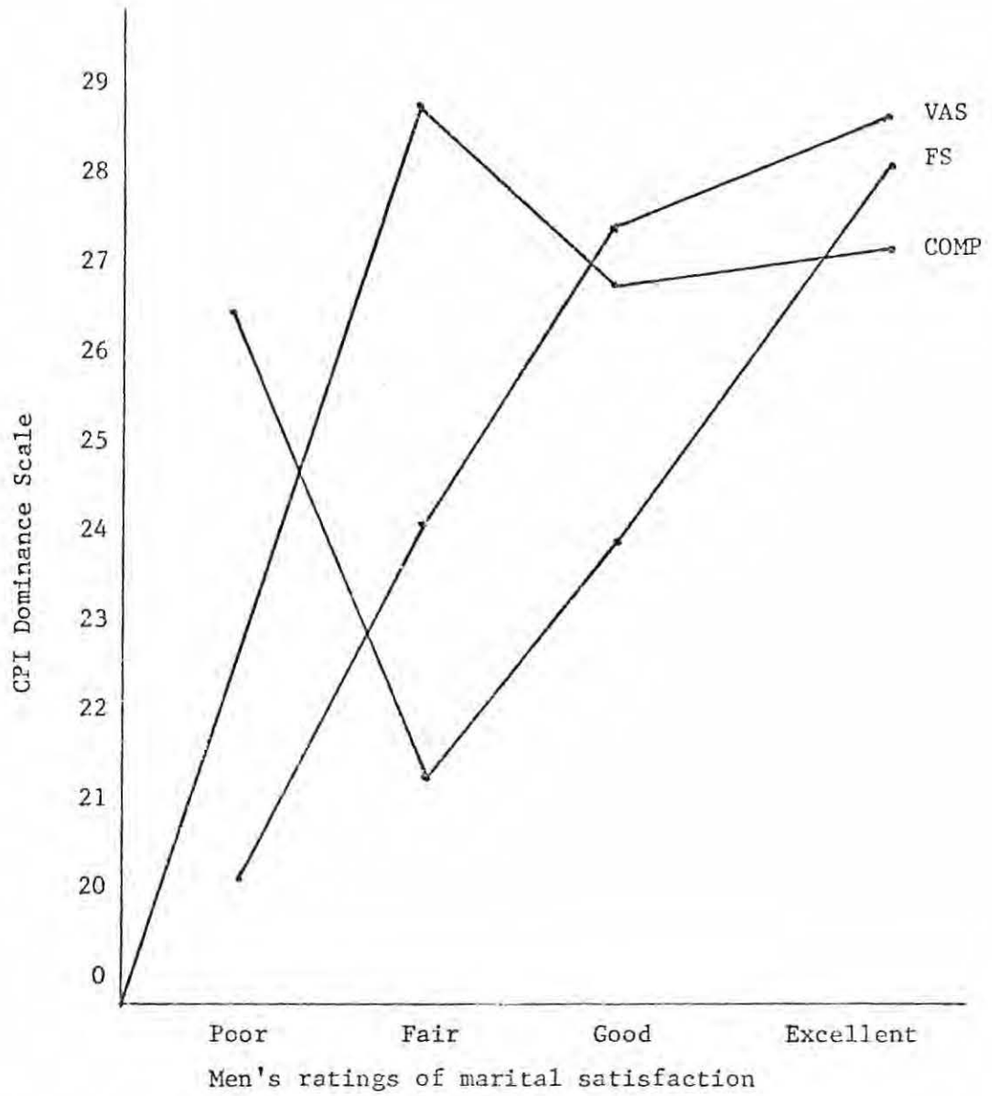

Figure 4-12. Interaction of men's ratings of marital satisfaction and sterilization as they affect the CPI Dominance scale (men). (Code: FS = Female sterilization mates, VAS = Vasectomy men, COMP = Non-sterilization comparison men.)

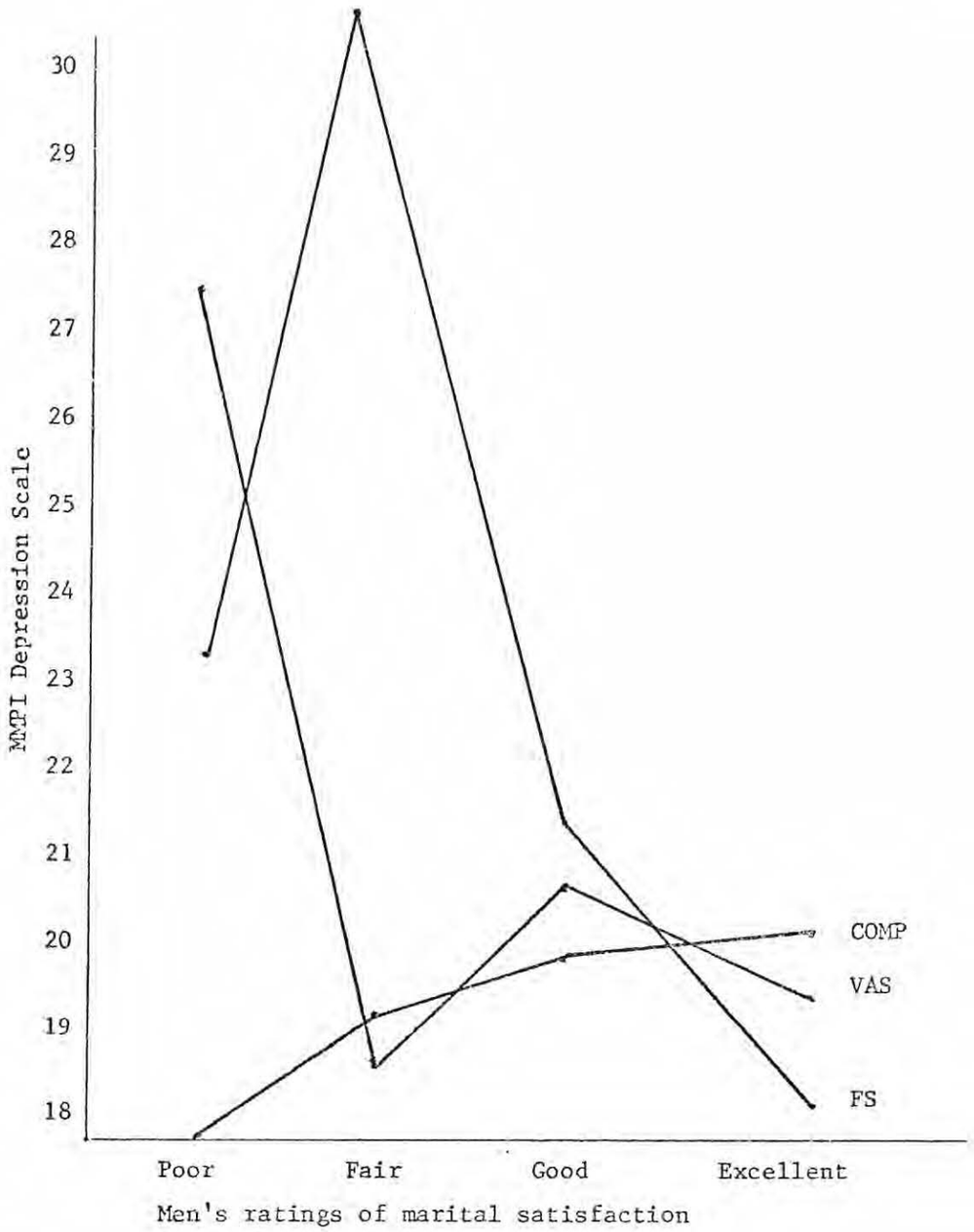

Figure 4-13. Interaction of men's rating of marital satisfaction and sterilization as they affect the MMPI Depression scale (men). (Code: FS = Female sterilization, VAS = Vasectomy men, COMP = Non-sterilization comparison men.)

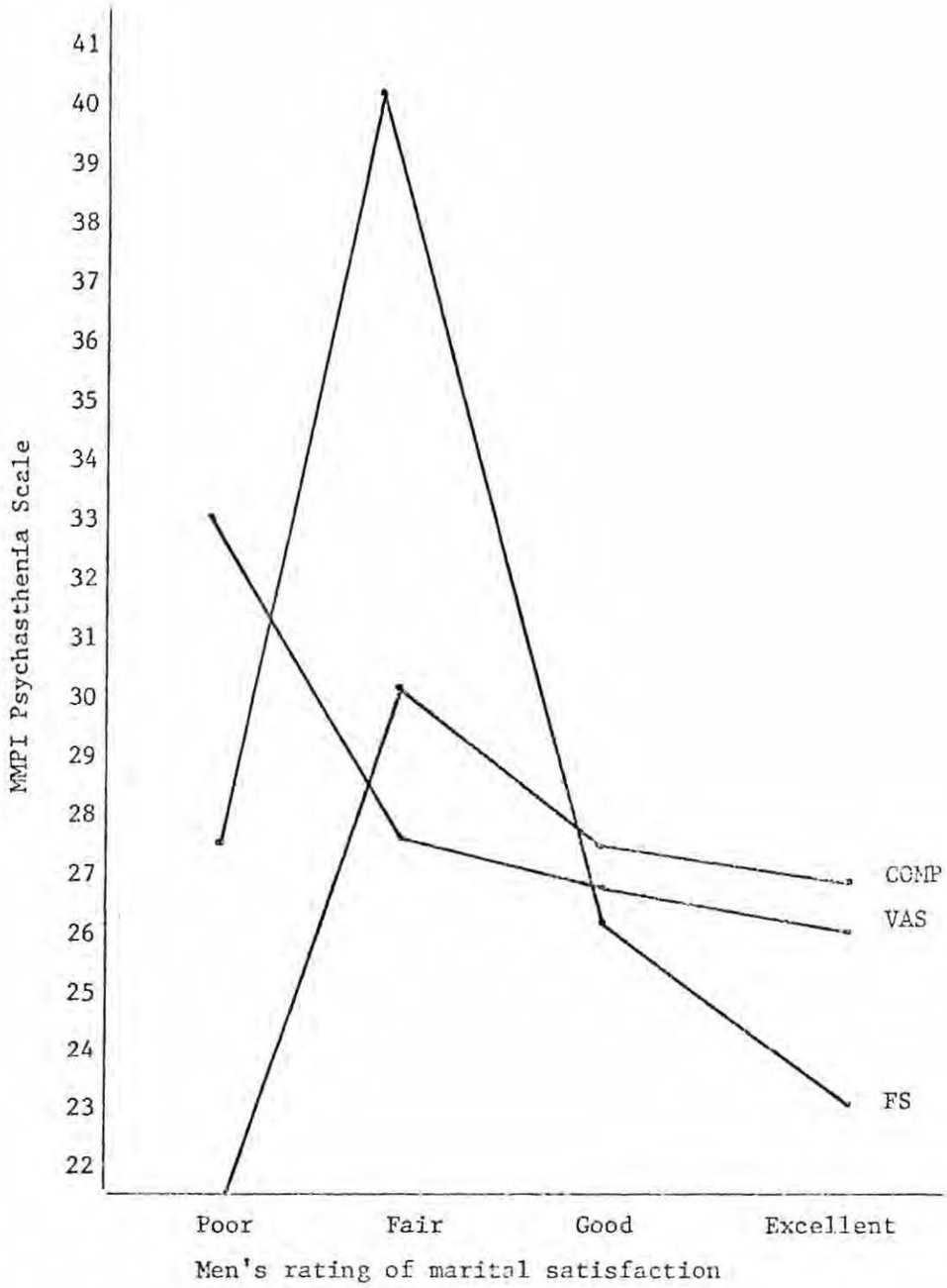

Figure 4-14. Interaction of men's rating of marital satisfaction and sterilization as they affect the MMPI Psychasthenia scale (men). (Code: FS = Female sterilization, VAS = Vasectomy men, COMP = Non-sterilization comparison men.)

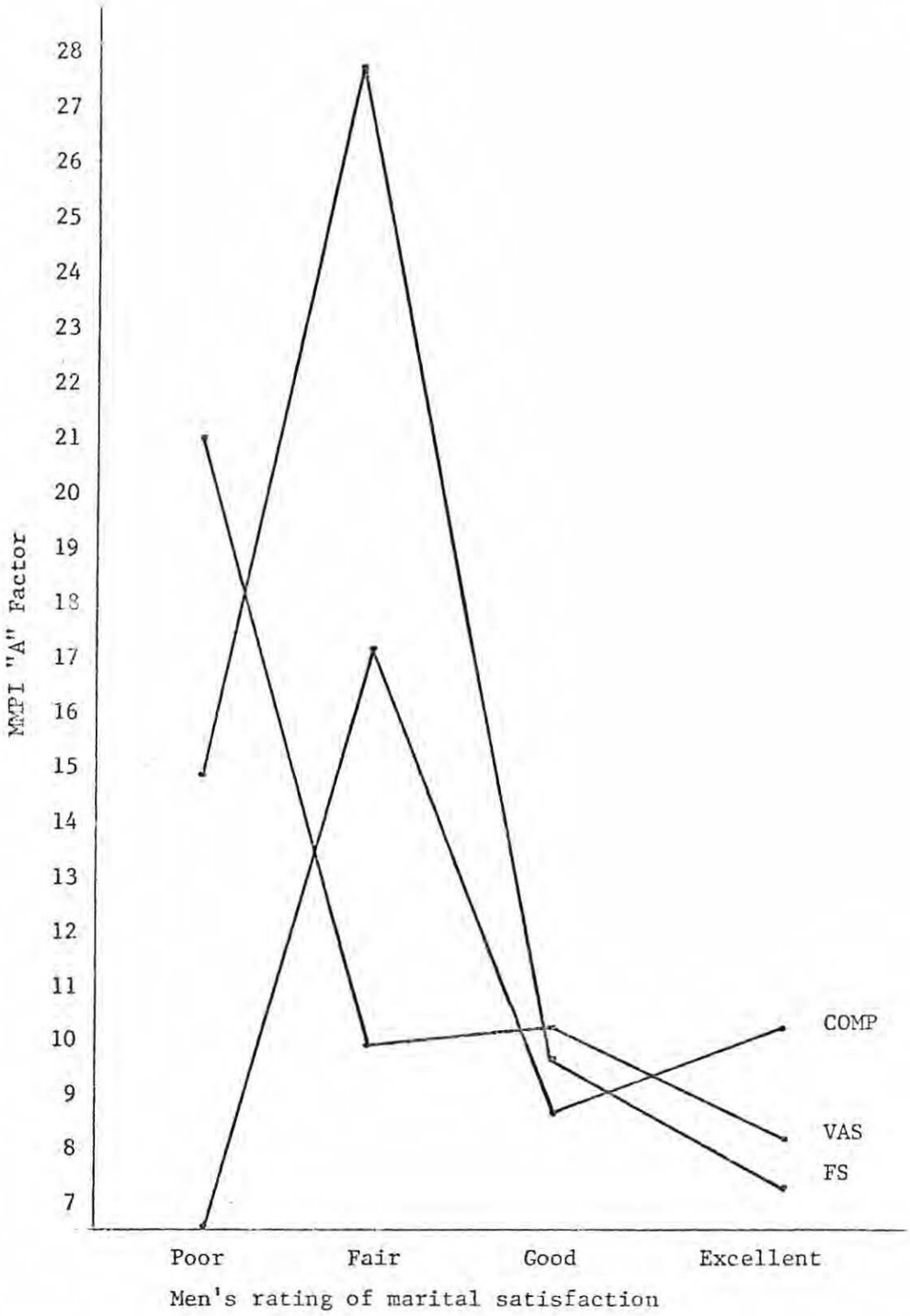

Figure 4-15. Interaction of men's rating of marital satisfaction and sterilization as they affect the MMPI "A" Factor (men). (Code: FS = Female Sterilization, VAS = Vasectomy men, COMP = Non-sterilization comparison men.)

reflects an adjustment for shrinkage and in the case of the men, it is the figure from the cross-validation of the variables with a second group of vasectomy men. There were not enough women to permit cross-validation.

Table 4-31 summarizes the results of the step-wise Multiple Regression Analyses with the men. This reflects the results of the first analysis. The table shows the variables, the simple correlation, the multiple correlation, the coefficients of determination, the beta weights, and the constant figure.

Table 4-31

Multiple Regression Equation for Men

	Independent	Simple Correlation	Multiple Correlation	Coefficient of Determination	Beta Weight
1.	MMPI Schizophrenia scale	-.28	.28	.08	-1.00
2.	MMPI Psychasthenia scale	-.37	.37	.14	-1.83
3.	Occupation	.28	.47	.23	.24
4.	Vasectomy is pleasurable	-.22	.51	.25	-.07
5.	What physical effects do you expect from vasectomy?	.15	.51	.26	.12
6.	Vasectomy is permanent	.34	.55	.30	-5.93
7.	Member of Kaiser plan?	.15	.57	.32	1.43
8.	Became engaged last year.	.18	.59	.34	-3.84
	Constant				58.08

Vasectomy Men Compared to Sterilized Women

There were 178 vasectomy men and 60 sterilized women being compared for the overall effects between tubal ligation and vasectomy. While there are limitations in such comparisons, such a study may be of value if the limitations are kept strictly in mind. The groups in this study were not well matched on pretest demographic and personality variables. By utilizing pretest data as covariates of the posttest data, this lack of comparability is statistically ameliorated, thereby making such a comparison valuable.

One-way Analyses of Covariance were run for each of the CPI and MMPI scales as dependent variables. There were 34 analyses run to determine whether change, subsequent to sterilization, was different for men and women--which was the eighth hypothesis. (For the list of dependent variables refer to Table 4-4.)

To determine whether there were any interaction effects (Hypothesis 9) and to control for extraneous variables, the judges' ratings of the MMPI profiles were utilized as the dependent variable in two-way analyses. The control (independent) variables were the same 42 (see Table 4-9) plus two more used in all other two-way analyses used in this study. The two new independent variables were: 1) the scores of the Life Situations Index, and 2) the scores of the Sterilization Attitude Scale.

One-way Analyses of Covariance

Table 4-32 shows the results of the one-way analyses of covariance designed to compare the vasectomy men with the female sterilization women. Only those differences that were significant at the .01 and .05 levels were included in the table.

Table 4-32

Vasectomy Men Compared to Sterilized Women on MMPI/CPI Variables

Variables[a]	Adjusted Posttest Mean Score[b]		Level of Probability
CPI	Men	Women	
Sociability	23.3	21.9	.01*
Social Presence	36.3	35.0	.033
Well-being	36.0	34.7	.024
Intellectual efficiency	38.2	36.0	.003*
Psychological mindedness	12.7	11.8	.005*
Femininity	16.8	22.5	.001*
MMPI (K corrected, where relevant)			
Hypochondriasis	12.9	14.2	.022
Depression	20.4	22.9	.002*
Masculinity-Femininity	26.9	32.7	.001*
Paranoia	9.8	10.9	.036
Psychasthenia	26.8	29.0	.004*
Schizophrenia	26.0	29.1	.006*
Social Introversion	27.2	29.6	.017
"R" Factor	16.2	17.7	.007*
Judges' ratings	15.9	14.5	.015

[a]Only those scales that show significant differences were included in this table.

[b]Scores were based on posttest data which was adjusted by covarying the posttest scores with the parallel pretest scores.

Note: Higher means: "better" psychological soundness on the judges' ratings; in general "better" on the CPI and "worse" on the MMPI. But the CPI Femininity scale is an exception and some scales have curvilinear patterns on the CPI. Extremely low Flexibility (rigidity) and extremely high are "bad," for example.

The results support the previous sections dealing with the men and women separately. The female sterilization group appears to have some mild negative changes in "psychological soundness" in relationship to the vasectomy men. A study of the mean scores shows that the differences, while significant statistically and in a consistent direction, are not large. There would be many women who would show a positive growth or at the least no change at all, while the reverse would be true for the men.

Two-way Analyses of Covariance

There was only one interaction that was significant at the .01 level with the judges' ratings as the dependent variable. The length of time that had elapsed between first considering sterilization and the final decision to have one, was the independent variable that interacted with sterilization to affect the scores of the judges' ratings.

Figure 4-6 shows the interactions of sterilization by the length of time to make the decision to be sterilized. It shows that the female group who had four months to one year to make the decision scored "better" than the men who had the same amount of time. In all other instances the men scored "better" than the women. This corresponds to the results when the women were compared to other groups of women. Analyses of the mean scores suggest that, while statistically significant, the absolute differences were small.

The Sterilization Attitude Scale

It was hypothesized in Hypothesis Seven that those persons who were sterilized and had higher scores on the Sterilization Attitude Scale prior to surgery would have better outcomes than those who had lower scale scores. In order to determine whether there were differences among the groups, frequencies of individuals with various scores on the scale were found and

the sample was divided into thirds. Only those who were sterilized participated in this part of the study. The men and the women were studied separately, thereby yielding two separate studies. The development of the scale was explained in the third chapter under the title "instrumentation." Higher scores indicate better understanding of the operation and a more positive attitude toward sterilization, while lower scores suggest a negative attitude and less understanding.

One-way Analyses of Covariance were utilized to determine whether there were differences among the groups as measured by the MMPI and CPI scales and judges' ratings of the MMPI profiles. Posttest scores were covaried by the corresponding pretest scale scores. Table 4-33 shows the breakdown of scores and the number of subjects in each of the three groups.

Table 4-33

Groups for the Sterilization Attitude Scale

	Women-Female Sterilization		
Group:	Low	Medium	High
Score (Range)	1-42	43-45	46-above
Number (Subjects)	20	17	22
	Men-Vasectomy		
Group:	Low	Medium	High
Score (Range)	1-40	41-45	46-above
Number (Subjects)	47	59	63

Women and the Sterilization Attitude Scale

There were no differences among the groups of sterilized women on any of the dependent variables in the analyses. The hypothesis that the different groups would have different change scores on the scales and the judges' ratings was not supported by the data. The evidence suggests that the Sterilization Attitude Scale does not differentiate between those who will have a positive or negative psychological outcome.

Vasectomy Men and the Sterilization Attitude Scale.

There were no differences among the groups of vasectomy men who had differing levels of the Sterilization Attitude Scale at the .01 level and there were only two at the .05 level. The two variables were the MMPI Hypomania scale and the MMPO Hyponchondriasis scale. In one instance (the Hypochondriasis scale) the high groups appeared "worse" than the medium group; and in the other case (the Hypomania scale) the low group appeared "worse" than the medium group.

At the .05 level of significance one can expect to find differences one time in twenty when, in fact, such differences do not exist. It is probable that since there were 34 analyses run, the two significant scores occurred by accident rather than reflecting real differences. This is strengthened by the lack of a pattern between which groups showed "better" or "worse" scores at posttesting. Therefore, it is suggested that the Sterilization Attitude Scale, broken down at the above levels, does not discriminate between who will have negative or positive psychological outcomes subsequent to sterilization.

Life Situations Index

The Life Situations Index included 52 items dealing with family, social and sexual life and an additional variable, sterilization, making

it into a 53 item index. The scale was developed by correlating each item with the change score of the judges' rating of the MMPI Profiles. Scores were then given to the items according to the strength of the relationships yielded by the correlation coefficients. After each item was scored and totals were given to each person in the study, three sets of correlations were run between the Life Situations Index and those scales using scoring systems similar to the "change" scores of Rahe, et. al. and the "upset" scores of Raykel, et. al.

The men and women were then separated for further analyses which required that the scale be broken down into three levels: high, medium and low. One-way analyses were used to determine whether there were differences on the individual MMPI and CPI sclaes as well as the judges' ratings of the MMPI profiles.

Correlations of Items with the Judges' Change Scores

The correlations ranged from a high negative coefficient of .129 for those who started seeing a counselor to a high positive coefficient of .088 for those who had an increase in workload (more hours and overtime) during the previous year. Since it was desired to have all scores given positively, each score was added to -.09 and then all were converted to positive scores by dropping the negative sign. Each score was then multiplied by 100 to eliminate decimals. Below is an example of the procedures used.

Example: You were separated from wife/husband because of an argument/conflict during the past year?

Coefficient:	-.073
Add:	-.09
	-.163
Drop minus sign:	.163
Multiply by 100:	x 100
	16.3

There were six iems for which correlations were not possible to calculate due to inadequate numbers and, in such cases, the Paykel, et. al. and the Rahe, et. al. scales were consulted. The items were weighted by averaging the rankings from the previous scales for the relative positioning of each one. Scores were then given to each item by comparing them to scores of other items and estimating the spread (Appendix C is a list of the items and the scores assigned to them).

Correlations with scoring systems similar with previous scales. Three correlation matrices were run between the Life Situations Index scores and scores based upon "change events" and "upset events." Each correlation matrix consisted of one third of the sample randomly selected by the computer.

In all instances the correlations were very high, ranging from a low of .629 to a high of .925 and all were significant at the .01 level. The "change" and "upset" scores were the highest while the life situations correlated most highly with the "upset" scale. However, all correlations were so high that a firm judgment could not be accurately made. Table 4-34 summarizes the relationships between the three scoring systems.

The Life Situations Index and the MMPI and CPI Scales

The sample was broken down into three groups for further analyses. This was done for males and females separately. Once the groups were established they were used in One-way Analyses of Covariance to determine whether there were differences among groups which was the sixth hypothesis. Table 4-35 shows how the groups were broken down and the number of subjects in each of the groups.

Women and the Life Situations Index. Table 4-36 summarizes the results of the One-way Analyses of Covariance using the three levels

Table 4-34

Correlations Between the Life Situations

Index and "Change" and "Upset" Scales

Group	"Change"	"Upset"	LSI
	Correlations With the First Sample		
"Change"	- - -	.9601	.6290
"Upset"	- - -	- - -	.7971
LSI	- - -	- - -	- - -
	Correlations With the Second Sample		
"Change"	- - -	.9595	.9174
"Upset"	- - -	- - -	.9220
LSI	- - -	- - -	- - -
	Correlations With the Third Sample		
"Change"	- - -	.9661	.9245
"Upset"	- - -	- - -	.0253
LSI	- - -	- - -	- - -

Table 4-35

Groups Broken Down by Life

Situations Index Scores

	Women		
	Low	Medium	High
Scores (Range)	0-236	237-481	482-Above
Number (Subjects)	90	84	64

	Men		
	Low	Medium	High
Scores (Range)	0-228	229-471	472-Above
Numbers (Subjects)	90	86	80

of the Life Situations Index as the independent variable and the MMPI and CPI scales and the judges' ratings as the dependent variables. Pre-test scores of the same scales were used as co-variates to serve as statistical controls.

In all, there were 34 analyses utilized in studying the effects of life events upon women. There were 18 for the CPI and 15 for the MMPI and one for the judges' ratings of the MMPI profiles.

Five analyses showed significant differences at the .01 level while five additional analyses resulted in significant differences at the .05 level. In all but one of those instances the group that had lower Life Situations Index scores fared "better" than the group that had higher scores. The middle group scored "worse" than the lower group in one case, the CPI Responsibility scale, and "better" than the high group in two cases, the MMPI Hypomania and the Depression scales.

The data clearly indicate that, at posttesting, differences exist between those who had fewer events occur to them than those with more. The statistics do not, however, differentiate between the medium group and the high group as well as between the low and the medium group. This may be clouded by the typically conservative estimates yielded by Scheffe' tests of Multiple Comparisons.

Men and the Life Situations Index. The same procedures were utilized with the men as were used with the women. The evidence suggested that the groups were more strongly differentiated for males than for females. Table 4-37 summarizes the results of the tests with the men. Of the 34 analyses run for men, eighteen resulted in differences at the .01 and .05 levels, ten of which were significant at the .01 level and eight at the .05 level.

Table 4-36

Personality Variables Showing Significant Differences Among Groups-Women

Independent Variable: Life Situation Index			
Dependent Variable	Significance of "F" For All Groups	"A" Higher Than	Scheffe' Test For Pairs
CPI			
Responsibility	.006	B	.01
Socialization	.01	C	.01
Academic Conformity	.002	B	.05
Introversion-Extraversion	.025	C	.05
Flexibility	.044	C	.05
		"A" Lower Than	
MMPI			
Hypochondriasis	.016	C	.05
Depression	.001	C	.01
Schizophrenia (K corrected)	.002	C	.01
Hypomania (K corrected)	.001	C	.01
MMPI Judges' Ratings	.013	A "Better" than C	.05
		"C" Higher Than	
Other Patterns			
Depression	.001	B	.01
Hypomania	.001	B	.01

The Scheffe' Test is "conservative" in the sense of minimizing Type I errors.

Note: As an oversimplification, usually higher MMPI scores and lower CPI scores are "worse." Lower scores on the judges' ratings are "worse."

Code: A = Lowest, B = Medium, C = Highest

Table 4-37

Personality Variables Showing Significant Differences Among Groups-Men

Independent Variable: Life Situation Index			
Dependent Variable	Significance of "F" For All Groups	"A" Higher Than	Scheffe' Test For Pairs
CPI			
Well-being	.009	C	.01
Responsibility	.014	C	.05
Self-control	.001	C	.01
Tolerance	.004	C	.01
Achievement via (conform)	.01	C	.01
Achievement via (indepen)	.019	C	.05
Psychological-mindedness	.017	C	.05
MMPI		"A" Lower Than	
Hypomania (K corrected)	.001	C	.01
Hypochondriasis	.008	C	.01
Psychopathic (K corrected)	.003	C	.01
Femininity (female)	.011	C	.05
Psychasthenia	.040	C	.05
Schizophrenia (K)	.001	C	.01
"A" Factor	.015	C	.05
Judges' ratings	.001	C	.01
CPI		"B" Higher Than	
Well-being	.009	C	.01
Socialization	.030	C	.05
Tolerance	.004	C	.01
Achievement via (indepen)	.019	C	.05
Introversion-Extraversion	.047	C	.05
MMPI		"B" Lower Than	
Psychasthenia	.040	C	.05
Hypochondriasis	.008	C	.01
Schizophrenia (K corrected)	.001	C	.01
"A" Factor	.015	C	.05
Judges' ratings	.001	C	.01
Other Patterns			
MMPI		"C" Lower Than	
"R" Factor	.007	A	.01
K	.004	A	.01

The Scheffe' Test is "conservative" in the sense of minimizing Type I errors.

Note: As an oversimplification, usually higher MMPI scores and lower CPI scores are "worse."

Code: A = Lowest, B = Medium, C = Highest

Post-hoc multiple comparisons, using the Scheffe' formula, indicated that in 15 of the cases those who had high Life Situations Index scores received "poorer" ratings than those with lower scores. In ten cases the high group also did "poorer" than the medium group. The only scale where the above pattern did not hold true was the MMPI "R" Factor. In this instance, the high group appeared to be "healthier" relative to the lower group.

The evidence yielded by these one-way analyses suggest that the more life events that occur to a man, the more likely he is to have increased MMPI scale scores, lowered CPI scale scores and a decrease in "psychological soundness" on the judges' ratings. The data did not, however, differentiate between the low and medium groups.

Summary of the Life Situations Index analyses. It is likely that there are no differences in mental health change until a significant number of events occur. This appears to be plausible as there were no cases where the low and medium groups differed, while the high group had "poorer" ratings in almost all comparisons with the other two groups.

This speculation is supported by the Rahe-Holmes scales which indicate that physical illness is more predictable as the "change" scores increase. On that scale the authors suggested that a score of 150 would result in 33% of the persons getting physically ill; while at 450 points illness was predicted in 90% of the cases.

CHAPTER V

DISCUSSION

A study of this magnitude generates an enormous amount of data which requires close scrutiny and interpretation. Because of the complexity of the statistical procedures and the interrelationships of the objectives and hypotheses, it would be easy to have as many interpretations as there were people interpreting the data. From the particular viewpoint of one writer, this chapter brings together the bits and pieces of chapter four into a unified whole for each of the major sections, giving meaning to the individual hypotheses. Other observers might view the same objective data differently.

Female Sterilization

The data strongly suggest that female sterilization resulted, on the average, in somewhat negative psychological outcomes as measured by the MMPI-CPI scales and the judges' ratings of the MMPI profiles. In the comparisons with the other three groups (vasectomy mates, non-sterilization comparison women, and mates of men who decided against having a vasectomy), the female sterilization group scored significantly "poorer." And in pre-post comparison of the judges' ratings they were significantly "poorer" at the .01 level.

There are many possible reasons for the decrease in "psychological soundness" of the female sterilization women. For example, it is possible that effects noted concerning sterilized women may result from the idiosyncracies of the sample used. The discussion below proceeds as if this were not the case; but ideas suggested here need to be treated as hypotheses, and need to be checked with one or more other samples.

There is a possibility that a woman may feel less than a "whole woman" when she is no longer able to reproduce. Since the role of women in society is manifold and the stereotypes are rapidly changing, it is possible that this negative impact may be ameliorated as society changes the roles and stereotypes of women.

Interaction effects and female sterilization. There was one variable which, interacting with female sterilization, showed consistent patterns in its effects upon five of the eight dependent variables analyzed. The length of time from first considering sterilization until the final decision was the only variable of the 42 studied that interacted with sterilization. It was expected that race, socio-economic status, religion and education would interact with sterilization to affect the scores of the MMPI and the CPI scales. However, those hypotheses were not supported by the data, suggesting the demographic variables that were tested do not interact with sterilization.

Women who spent less than four months and more than one year considering sterilization scored significantly (at the .01 level) "poorer" than those who decided within four to twelve months. It is possible that many of those subjects who spend too little time considering sterilization are acting out of impulse and have not considered the finality of the decision. Sometimes the decision is made to enhance the marital and sexual relationship. While not overtly dissatisfied with the operation, such women may in fact have "poor" psychic outcomes.

On the other hand, those women who wait longer than a year may fear the procedure and its possible outcomes, while simultaneously fearing additional pregnancies. Therefore, when they make the decision, they may be so doing because of a feeling of no other choice. Such an attitude

toward sterilization in itself could result in a negative outcome. These are post hoc speculations about an empirical finding not predicted in advanced.

Female sterilization and sexual and marital satisfaction. Repeatedly in this chapter we use such expressions as "women reported an increase/decrease in frequency of intercourse" or "men and women differed in their reports of how intercourse had changed in frequency." These expressions are a shorthand and will be explained here. At pretest, men and women reported frequency of intercourse and rated sexual and marital satisfaction. They did the same at posttest. As researchers we then compared an individual's pretest with her or his posttest rating. When we speak of a reported increase in variable X, therefore, this was not based on a procedure when the individual was asked to subjectively estimate whether variable X had increased; rather their posttest and pretest ratings made approximately a year apart were compared.

There were essentially no effects upon the sexual and marital satisfaction of the female sterilizees as compared with other females. The number of subjects who reported decreased or increased marital or sexual satisfaction was no different for the female sterilization group than for the other two groups tested. While more women in the female sterilization group reported increased sexual intercourse than was anticipated, this was also true among the comparison (non-sterilization) group. Since the method of analysis relied upon superficial reports of the individuals, the reports are subject to error. There is also the possibility that on superficial questions, the female sterilizees reported at posttest a level of sexual activity higher than what they had reported at pretest, in order to rationalize the operation, when in fact no such

increase occurred. This speculation is weakened by the reality that among non-sterilization groups similar increases in reported frequency of intercourse were seen.

The interpretations just suggested are similar to those of Rodgers and Ziegler (1973) in studies dealing with vasectomy. They explained the disparities between questionnaire information and test data by saying that it was an example of "dissonance reduction."

The same explanation is highly possible for the female sterilizees in this study. While the results of the standardized tests showed deterioation in "psychological soundness," the overt superficial questionnaires were generally positive. At the completion of our study the vast majority (over 90%) stated that they were satisfied with the operation. As in the Rodgers and Ziegler studies where the vasectomy men's test results contrasted with the questionnaires, it appears likely that the women wanted to feel that they made the right decision when having the sterilization, and that therefore the questionnaires were generally answered positively with a very few negative responses. The investment they made was too great to have any self-doubts.

Generally, the female sterilizees reported that they were satisfied with the operation, would recommend it to others, would do it again if they had to, and felt that the outcomes would be positive. However, in those instances where pre and post comparisons were made, this was not always the case. For example, the responses made at posttesting may not have been negative, but when compared to the pretest response, the change often occurred in a negative direction.

Similarities in all groups of women. Even if groups of women do not differ from each other, they may all change in similar ways from pre

to posttesting. Among all women in this study: a) 25% reported a change in marital satisfaction, b) 46% reported change in sexual satisfaction, and c) 62% reported a change in frequency of intercourse. For every woman who reported a decrease in marital satisfaction there were four who reported an increase. This pattern was the same for the total sample as well as the three groups being studied: the female sterilization women, the mates of the men who had a vasectomy, and the non-sterilization comparison women.

Among the 46% who reported a change in sexual satisfaction, approximately twice as many showed a change in the negative direction as in a positive direction. This pattern was consistent among the three groups being tested. In contrast, the three groups showed somewhat different trends in frequency of intercourse. Overall 62% reported a change, and of these more reported a decrease than an increase. But more mates of vasectomy men showed a decrease (or no change) than did the other two groups. And, there were more women in the sterilization and comparison groups who reported an increase in frequency of intercourse.

It is possible that as time passes, less emphasis is placed upon sex and more emphasis is placed upon the marital relationship. There is also the possibility that those who were experiencing less satisfaction in the marital relationship were lost to the study from pre to posttesting.

It is difficult to interpret this data, and the method of obtaining the above information was very superficial and the instruments were easy to answer incorrectly. These facts severely weaken the generalizability and interpretations of the study.

Predictors of change in psychological soundness of female sterilization women. We were able to predict a substantial amount (49%) of the

variance of the change scores of the judges' ratings for the female sterilization women. Five variables were used in the final regression equation. The data are easily obtainable and rely totally on pretreatment information. However, the sample of female sterilization women was too small to cross-validate the results and the equation only reflects an adjustment score.

Vasectomy

According to the statistical results of this study, vasectomy has little, if any, effects upon the psychological soundness of men or on their marital and sexual satisfaction. Contrary to the expectation that some sociological, demographic and pretreatment psychological factors would interact with vasectomy to affect the psychological soundness of men, the data suggest that there were no differences among the various subgroups. There was one exception to this overall pattern: the man's rating of his marital satisfaction was the only variable that interacted with vasectomy to show consistent effects upon the dependent variables. Those who anticipated having a vasectomy and rated their marital satisfaction as "poor" had less satisfactory posttest psychological outcomes than others.

The possibility exists that some of the men in this study who rated their marital satisfaction as "poor" may have decided to have the vasectomy to improve their marital relationship. If vasectomy is undertaken to improve sexual or marital relations and no improvement occurs, the results may be disappointment and some associated deterioration in marital relations and personal functioning. In support of the above statement are previous data suggesting that when vasectomy is undertaken to ameliorate sexual or marital problems, the results of vasectomy are not always

positive (Rodgers & Ziegler, 1965).

The Rodgers and Ziegler studies of the early sixties suggested that vasectomy had a negative impact upon the "psychological soundness" of the men being studied. They also found that the men had increased "Masculinity" scale scores on the MMPI (lower scores on the Mf scale: scale 5), suggesting that men were exaggerating their masculinity as a defense mechanism. They also intimated that vasectomy subjects had an increase in sexual activity subsequent to the operation, possibly attempting to prove that they had not lost their sexual prowess and their masculinity. Men in our sample did not show any of these patterns.

Rodgers and Ziegler further found that the majority of subjects stated that they were satisfied with the operation and would recommend it to others; yet, these same men showed increased MMPI scale scores and were generally less "psychologically sound" after the procedure. The explanation was that Festinger's cognitive dissonance pattern was in effect for these men.

The data from the present study do not support the results of the Rodgers and Ziegler series of studies. Overall the vasectomy men did not show increased MMPI scale scores, decreased CPI scale scores or any increases in sexual intercourse after the operation. There was no evidence of cognitive dissonance, as the superficial responses of the questionnaires were supported by the more "psychic" measures of the MMPI-CPI scale scores which suggested that no negative changes occurred. These are summaries of overall group trends; some individuals and some identifiable subgroups may have experienced consistent patterns of change after vasectomy.

The Rodgers and Ziegler studies were done around 1960 when vasectomy was less common and less acceptable than it was some fifteen years later

when this study was done. It is probable that men making such a major decision when vasectomy is less common may (a) be a less typical sample to begin with; and (b) may be treated differently by peers and hence react differently, than when the procedure is more common and acceptable. Since vasectomy is very common today, it is likely that the men undergoing the procedures (a) are more nearly "average men" to begin with, and (b) are not viewed as unusual, and therefore are less likely to feel the pressure of being "different."

Similarities in all groups of men. As noted above for women, even though groups of men do not differ among each other, all may show similar trends, which themselves may be important. Concerning the change in marital and sexual satisfaction and frequency of intercourse, the pattern for the men was almost exactly the same as the pattern for the women. Twenty-five percent reported a change in marital satisfaction, 49% reported a change in sexual satisfaction, and 59% showed a change in frequency of intercourse.

Approximately five times as many men reported a positive change in marital satisfaction as reported a negative change. And, for every man who reported an increase in sexual satisfaction, there were two who reported a decrease. There were slightly more men who reported a decrease in frequency of intercourse than who reported an increase.

When analyzing the individual groups on: (a) marital satisfaction, (b) sexual satisfaction, and (c) frequency of intercourse, it became evident that group trends were similar to the trends of the total sample. One exception was for the variable dealing with the frequency of intercourse where vasectomy men reported "no change" and a decrease, while the men in the other two groups reported a greater increase in frequency.

This data somewhat contradicts the expectation initially hypothesized, where it was expected that the vasectomy men would experience increased marital satisfaction, increased sexual satisfaction and an increase in frequency of intercourse. Apparently, in this study the men who finished the study were more concerned with the marital relationship than with sexual matters. However, the results of the above data are severely limited because of the superficiality of the method of measurement for these data.

Predictors of change in "psychological soundness" for vasectomy men. In attempting to predict the psychological outcomes following vasectomy, we found eight variables that accounted for 28% of the variance in the judges' change scores. Two MMPI scales and six individual items were found to be the best predictors of change for the regression equation. This reflects cross-validation which also adjusted for shrinkage.

While 28% of the variance is not large, it is more than previous studies which have attempted to predict the psychological outcomes following vasectomy. Although no differences from pre- to posttesting were noted, one would suspect that some factors linking the men with various outcomes may emerge if additional factors are analyzed.

Vasectomy Men Compared to Female Sterilization Women

Any comparison made between female sterilization women and vasectomy men has severe limitations. Notably, the samples were not directly comparable. Nevertheless, the evidence strongly suggest that the females in this study who underwent sterilization scored significantly "poorer" than the men who had a vasectomy. In other words vasectomy men in comparison with other men, did not score "poorer" and the female sterilization women, in comparison with other women did score significantly "poorer."

The analyses comparing the vasectomy men directly with the female sterilization women showed similar results, with the women scoring significantly "poorer" on 16 of the 34 dependent variables, including the judges' ratings. There were no differences between the groups on the remaining 18 variables.

The subgroup analyses suggest that the elapsed time from first considering sterilization until the final decision to have one interacted with sterilization to affect the judges' ratings among both men and women. Those women who had four months to one year elapsed time scored significantly "better" than the men in the same category. In all other time periods, the vasectomy men scored significantly "better" than the female sterilization women.

There were no significant differences between the men and women in terms of the dependent variables of change in expressed marital and sexual satisfaction, as well as frequency of intercourse. Nevertheless, there was an absolute difference between the groups in change in frequency of intercourse. There were more men than women who reported a decrease in frequency. This might be explained post hoc by the possibility that the men felt less need to rationalize the sterilization than the women.

Limits and Cautions in Interpreting Findings

In the analyses comparing the various groups, one group as a whole may score "worse" or "better;" but, within each group, individuals may score the reverse. For example, the female sterilization group generally scored "poorer;" however, some individual women in the group scored "better" than some women in the other groups. Some of them also showed an improvement over their pretest scores. Similarly, some vasectomy men in fact may have a negative outcome, when as a group there was no change

from pre to posttesting.

It is also possible that subgroups of men, identifiable from pre-sterilization data, may have patterns different from the overall pattern for all vasectomy men. We have sought, in vain, to identify such subgroups from analyses of pretest data. But the possibility exists that some unanalyzed variables might identify such a subgroup.

Attrition was a serious problem in this study with approximately 50% of the entire sample that began the study not completing it. The percentage lost was the same for both women and men (Table 3-2 shows the high rates of attrition.) Perhaps those men lost to the study were adversly affected by the vasectomy. This receives some support from an analysis (done earlier with the data) showing that at pretest the vasectomy males, who later dropped out of the study, had significantly lower judges' ratings than those who stayed in the study.

According to Schwyhart and Kutner (1973), the higher the attrition rate the less effects are indicated by the statistical tests. They suggested that the effects are more negative than the results of various studies have shown, because as attrition decreases the results also show more negative outcomes. This line of reasoning is further bolstered by the finding that female sterilization women were the weakest "psychically" at pretesting of any of the groups of women, and got still weaker after sterilization.

But (a) this pattern of "the weak getting weaker" did not hold among the low-rating men who completed all testing; and some of these were very low ratings and poor profiles indeed; (b) attrition was as high among women as among men, yet group differences in women emerged, and no differences resulted among men; (c) Rodgers and Ziegler (1973) also had

substantial proportions who declined to participate, yet despite this attrition the authors found the vasectomy men to have deteriorated significantly as a group.

Since attrition was a major problem in this study and other major studies of sterilization a strong attempt should be made to eliminate this as a problem in future studies. Follow-up should be done on a percentage of those who did not complete the study. This could help determine whether those who withdrew from the study were different upon completing the study from those who in fact completed the study. This might explain why no differences existed among the male groups.

Additionally, longer-range follow-up of the groups would also be beneficial, as in the Rodgers and Ziegler studies, the results after four years differed from the follow-up done after one year. Possibly the female sterilization women will look no "worse" than the other groups of women at the longer follow-up.

Comparisons of the female sterilization group in this study show that; (a) the female sterilization group was different from the comparison groups in the beginning of the study, and (b) the female sterilization group was not necessarily representative of all women who have voluntary contraceptive sterilization. Therefore, the results showing "poorer" outcomes may be due to lower soundness in the beginning, lower education and lower socio-economic backgrounds. It, therefore, seems evident that greater efforts should be taken to select a more representative sterilization sample. Such samples should be of sufficient size to allow for cross-validation.

The Sterilization Attitude Scale

The Sterilization Attitude Scale did not adequately discriminate

between those who would have a positive or negative outcome on the CPI and MMPI scales, or on the judges' ratings of the MMPI profiles. Only two scales showed differences (.05 level) among the three groups of men (high, medium and low scoring groups on the scale). Such differences could have occurred by chance alone, considering that one would expect two analyses to be statistically significant at the .05 level even if in fact no differences exist. The data suggest that the Sterilization Attitude Scale does not adequately discriminate on the dependent variables of the MMPI, the CPI and the judges' ratings of the MMPI profiles.

Nevertheless, further research needs to be done with the scale. There is the possibility that, with a more representative sample and a new breakdown of the scale, differences among the various attitude levels might emerge.

The Life Situations Index

The Life Situations Index (LSI) was broken down into three levels (high, medium and low) to determine whether there were differences among the groups on the dependent variables. The higher the LSI score, the more the upset or change an individual is experiencing in life circumstances.

For women, the group that had the "lowest" scores on the LSI did dignificantly "better" than those who had the highest LSI scores on ten CPI-MMPI scales. There was unquestionably a difference between the lowest and the highest groups, suggesting that the more life changes a woman undergoes, the greater the likelihood of increased problems in "psychological soundness."

The results for the men were even more surprising than for the women. The lowest group did significantly "better" than the highest

group on 15 of the 34 dependent variables used in these analyses, showing that the LSI can potentially be used as a tool in predicting increased psychological problems before they display themselves as a physical problem. On ten of the 34 dependent variables, there were significant differences between the medium and the highest groups. In all instances, the highest group scored "poorer" than the medium group.

The above data did not show any other patterns of differences between groups. In other words, the highest group did not score better than the low and medium groups on any of the scales, nor were there any differences noted between the low and medium groups. Stress appears to increase as one goes through more "changes" and "upsets." This stress, in turn, manifests itself in decreased "psychological soundness."

However, our data do not permit a definitive unravelling of cause-effect relations. It is possible that certain problems of personality (whether measured before or after or concurrently with life change) may tend to get the individual into more environmental problems and life situation changes and upsets. Thus personality may affect life changes or vice-versa, or both.

It is suggested that this study be replicated with a more diverse sample than the one used in this study. It would also be beneficial to determine what percentage of the subjects in each group experienced a decrease in "psychological soundness." Such a study would possibly result in further refining the scale to better predict the onset of possible psychological problems. The scale may later be redeveloped to predict problems for various subgroups, as was done by Rahe, et. al. (1971) for physical health.

To our knowledge, ours if the first study to use the LSI to

predict psychological change as versus biomedical variables. The predictions seem initially very promising and deserving of vigorous pursuit.

CHAPTER VI

SUMMARY AND RECOMMENDATIONS

This study essentially considered the effects of vasectomy and female sterilization on "psychological soundness," as well as marital and sexual relations. The relative effects of vasectomy and female sterilization were also studied. Two scales, the Life Situations Index and the Sterilization Attitude Scale, were developed and studied in relation to the Minnesota Multi-phasic Personality Inventory and the California Psychological Inventory.

There were 1047 subjects who began the study, of which 516 completed both the pretesting and the posttesting. There were 252 women and 264 men who had valid tests to be included in the analyses. Where possible, couples were studied, including wives of men having vasectomy and husbands of women choosing to be sterilized. For the majority of these analyses with sterilization there were three groups for both the men and the women: (a) the female sterilization group, (b) the vasectomy group, and (c) the non-sterilization comparison group. In cases where one-way analyses were computed, a fourth group was used, consisting of those men (or their mates) who decided against having a vasectomy. The entire sample came from two hospitals, a medical health clinic, and a private medical practice. These were located in the three northern California cities of Oakland, Sacramento and Stockton.

Each subject completed a lengthy questionnaire dealing with demographic data, attitudes toward family, sex and sterilization, as well as a checklist of events that could potentially have occurred to them during the previous year. They were also required to complete the MMPI

and the CPI as well as do projective drawings. The data was collected both at pretesting and posttesting.

The research also included development of the Sterilization Attitude Scale and the Life Situations Index. The sterilization groups were broken down into subgroups of high, medium and low based upon their Sterilization Attitude Scale scores. Analyses were done for both women and men to determine whether there were differences at posttesting between those subjects at different levels on the scale. The dependent variables were the same 34 variables that were used for earlier analyses of the effects of sterilization on "psychological soundness."

The Life Situations Index was also developed, based upon research done by others. Scores were given to each of 53 life events as it contributed to change in the judges' ratings of the MMPI profiles. This scale was then broken down into three levels: high, medium and low. Low scores indicated that an individual had few life changes occur to them during the previous one year period; medium meant more events; and high meant the largest number of events on the scale (Most events were negative and presumably upsetting.) Analyses were then run between the three levels to determine whether there were differences among the groups on the CPI, MMPI and judges' ratings of the MMPI profiles. All dependent variables were based on posttest scores which were covaried by the parallel pretest variable.

In the two-way analyses for the sterilization studies, the independent variables were sterilization and selected demographic and attitudinal variables as well as pretest MMPI and CPI scales. Table 4-9 (in Chapter 4) is a list of these independent variables.

The dependent variables for the study were:

1. Posttest adjusted MMPI and CPI scale scores.
2. Posttest adjusted judges' ratings of the MMPI profiles.
3. Change in expressed marital satisfaction.
4. Change in expressed sexual satisfaction.
5. Change in frequency of intercourse as reported by the subjects.

Findings

Generally, it was found that female sterilization had slightly negative effects upon "psychological soundness." However, this may be a matter of population and samples.

1. Female sterilization women scored "poorer" at posttesting than other groups of women. While statistical differences existed, the absolute differences were not large.
2. The elapsed time from first considering sterilization until making the final decision interacted with sterilization to affect the MMPI-CPI scale scores and judges' ratings. Those who reported having taken four months to one year to consider sterilization scored "better" than other groups. This was not predicted in advanced.
3. Generally, female sterilization showed no effects upon the reported marital and sexual satisfaction of women.
4. There was a slight increase in frequency of intercourse as reported by the female sterilization and the non-sterilization comparison subjects.
5. Forty-nine percent of the variance in the change scores based on "blind" judges' ratings was accounted for by five independent variables in a step-wise Multiple Regression Equation.

The results for the vasectomy men suggest:

1. Vasectomy had no effects upon the "psychological soundness," sexual and marital satisfaction as well as frequency of intercourse of men.
2. Only one variable--the man's rating of his marital satisfaction--interacted significantly with vasectomy to affect "psychological soundness" of men. Those vasectomy men who rated their marriage as "poor" scored significantly "worse" than others at posttesting.
3. Eight variables--six individual items and two MMPI scales--accounted for 28% of the variance in the judges' ratings of the MMPI profiles.

The Sterilization Attitude Scale was developed earlier and in this study was found:

1. not to affect the scores of the vasectomy men on the MMPI-CPI scales.
2. to be ineffective in discriminating among female sterilization subjects who placed lowest, medium and highest.

The Life Situations Index was found to be effective in discriminating between those who will have different posttest psychological outcomes. Life events were shown to affect the "psychological soundness" of both men and women at posttesting. The scale is presented in Appendix C. Previous research with checklists of this type had used the scores, summarizing reported environmental stress to predict physical health changes. The present study strongly suggests that such an instrument can be used in predicting psychological stress.

1. There were differences on the MMPI-CPI scales between the highest and lowest groups of men. There were also differences

between the highest and medium groups of men. No additional differences were noted among the men.

2. For women the Life Situations Index was effective in discriminating between the highest and the lowest groups.

Recommendations

1. The study dealing with vasectomy and female sterilization should be replicated and extended.
   a. Attempts should be made to eliminate attrition.
   b. Follow-up should be done with a percentage of the subjects who do not complete the study to determine whether there were differences between the drop-outs and those who completed the study.
   c. A larger and more diverse sample should be studied in order to cross-validate all results.
   d. Follow-up should be done not only at a one-year interval but also after three to five years to determine whether the immediate results are permanent. Perhaps differences may diminish; or if no differences exist at one year, some differences might appear after three or five years.
   e. Analyses should be done on the data that we have studied, to determine whether the couple as a unit has any change after sterilization, and to determine whether vasectomy or female sterilization has more impact upon the relationship.
   f. In analyses to determine which variables interact with sterilization, the remaining MMPI and CPI scales should be used as dependent variables. The remaining independent variables (only 42 of 317 were used) should be analyzed

in two-way analyses.

2. The Sterilization Attitude Scale should be broken down into new levels with a new sterilization sample. Therefore, differences might be noted where previously undetected. For example, a scale broken down at 50, 100 and 150 may result differently from the same scale broken down at 150, 300 and 450.
3. The Life Situations Index should be further studied.
   a. A larger and more diverse sample should be used.
   b. Several different groups should be used to scale the checklist. There would, therefore, be scales for differing groups based on age, ethnicity and other variables.
   c. The scale should be broken down into different levels than those presently used in this study. Therefore, differences might be noted where they were presently undetected.

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APPENDIX A

THE SOCIAL READJUSTMENT RATING SCALE

(LIFE CHANGE SCALE)

	LIFE EVENT	MEAN VALUE
1.	Death of spouse	100
2.	Divorce	73
3.	Marital separation	65
4.	Jail term	63
5.	Death of close family member	63
6.	Personal injury or illness	53
7.	Marriage	50
8.	Fired at work	47
9.	Marital reconciliation	45
10.	Retirement	45
11.	Change in health of family member	44
12.	Pregnancy	40
13.	Sex difficulties	39
14.	New family member (a birth, adoption, oldster moving in)	39
15.	Business readjustment (merger, reorganization, bankruptcy)	39
16.	Change in financial state	38
17.	Death of close friend	37
18.	Change to a different line of work	36
19.	Change in number of arguments with spouse (a lot more or a lot less)	35
20.	Mortgage over $10,000 (purchasing home, or business)	31
21.	Foreclosures of mortgage or loan	30
22.	Change in responsibilities at work (promotion, demotion, lateral transfer)	29
23.	Son or daughter leaving home (marriage etc.)	29
24.	Trouble with in-laws	29
25.	Outstanding personal achievement	28
26.	Wife begin or stop work	26
27.	Begin or stop work	26
28.	Change in living conditions (new house etc.)	25
29.	Revision of personal habits	24
30.	Trouble with boss	23
31.	Change in work hours or conditions	20
32.	Change in residence	20
33.	Change in schools	20
34.	Change in recreation	19
35.	Change in church activities	19
36.	Change in social activities	18
37.	Mortgage or loan less than $10,000	17
38.	Change in sleeping habits	16
39.	Change in family get-togethers	15
40.	Change in eating habits	15
41.	Vacation	13
42.	Christmas	12
43.	Minor violations of the law	11

450 points in two years = 90% chance of illness

300 points in two years = 66% chance of illness

APPENDIX B

LIFE EVENTS SCALE

RANK	EVENT	MEAN
1.	Death of child	19.33
2.	Death of spouse	18.76
3.	Jail Sentence	17.60
4.	Death of close family member (parent, sib)	17.21
5.	Spouse unfaithful	16.78
6.	Major financial difficulties	16.57
7.	Business failure	16.46
8.	Fired	16.45
9.	Miscarriage or stillbirth	16.34
10.	Divorce	16.18
11.	Marital separation (due to argument)	15.93
12.	Court appearance for serious violation	15.79
13.	Unwanted pregnancy	15.57
14.	Hospitalization of family member (serious)	15.30
15.	Unemployed for one month	15.26
16.	Death of close friend	15.18
17.	Demotion	15.05
18.	Major personal physical illness	14.61
19.	Begin extramarital affair	14.09
20.	Loss of personally valuable object	14.07
21.	Law suit	13.78
22.	Academic failure	13.52
23.	Child marriage against your wishes	13.24
24.	Break engagement	13.23
25.	Increased arguments with spouse	13.02
26.	Increased arguments with finance or date	12.66
27.	Take a large loan (½ years income)	12.64
28.	Increased arguments with family member	12.83
29.	Son drafted	12.32
30.	Arguments with boss or co-worker	12.21
31.	Argument with non-resident family member	12.11
32.	Move to another country	11.37
33.	Menopause	11.02
34.	Moderate financial difficulties	10.96
35.	Separation from significant person	10.68
36.	Take important exam	10.44
37.	Marital separation not due to divorce	10.33
38.	Change in work hours (more or less)	9.96
39.	New person in household	9.71
40.	REtirement	9.33
41.	Change in work conditions (new post, etc.)	9.23
42.	Change in line of work	8.84
43.	Cease steady dating	8.80
44.	Move to another city	8.52
45.	Change in schools	8.15
46.	Cease full-time education	7.65
47.	Child leaves home (college etc.)	7.20
48.	Marital reconciliation (after one left)	6.95
49.	Minor legal violation	6.05
50.	Birth of live child (for mothers)	5.91

RANK	EVENTS	MEAN
51.	Wife becomes pregnant	5.67
52.	Marriage	5.61
53.	Promotion	5.39
54.	Minor personal physical illness	5.20
55.	Move in same city	5.14
56.	Birth of a child (father) or adoption	5.13
57.	Begin education (full or parttime)	5.09
58.	Child becomes engaged	4.53
59.	Become engaged	3.70
60.	Wanted pregnancy	3.56
61.	Child married with respondents approval	2.94

APPENDIX C

THE LIFE SITUATION INDEX

		Score
1.	Your child died	28.9
2.	Your wife/husband died.	27.3
3.	You were sent to jail.	25.8
4.	You found out your wife/husband had been unfaithful, or seeing someone else.	24.4
5.	A close member of your family died (parent, brother, sister, financee, etc.)	23.6
6.	You were fired from your work/job.	22.8
7.	You started seeing a counselor about personal problem (psychiatrist, psychotherapist).	21.9
8.	A close friend of your's died.	20.9
9.	You were demoted at work.	18.7
10.	Your wife/you had an induced abortion.	17.2
11.	You separated from wife/husband because of arguments/conflicts.	16.3
12.	You were in very serious financial difficulties (very heavy debts, bankruptcy etc.)	15.2
13.	You son/daughter was drafted or enlisted in the Armed Forces.	14.8
14.	You had a major illness or injury (hospitalized or lost a month of work).	14.5
15.	Your wife/husband started, or stopped working.	14.2
16.	You became reconciled to wife/husband after a separation.	14.1
17.	You got married.	13.8
18.	You finished with fulltime education - graduated or dropped out.	13.8
19.	You started seeing "someone else."	13.4
20.	Your son/daughter married against your wishes.	13.4
21.	Your wife/you started menopause (change of life).	12.8
22.	Your wife/you had a miscarriage (spontaneous) or stillbirth (child born dead).	12.3
23.	You had to appear in court for a serious violation of the law.	12.2
24.	You got divorced.	11.8
25.	Your wife/you had an induced abortion.	10.9
26.	You were robbed, mugged, raped, assaulted, etc.	10.8
27.	You started having a lot more arguments with your spouse.	10.6
28.	Your house, car, boat burned, was flooded, damaged by earthquake, hail, etc.	10.5
29.	A member of your close family had a major illness or injury.	9.7
30.	You were sterilized.	9.5
31.	You and your mate had a pregnancy or birth that you did not want before conception.	9.1
32.	You became separated from someone you liked very much (a close friend left etc.).	8.9
33.	You started having new sexual difficulties.	8.9
34.	You and your mate had a pregnancy or birth that you wanted; or you adopted a baby.	8.6
35.	You changed to a different line of work, or started working for the first time.	7.8
36.	You had serious arguments and conflicts with others (boss, co-workers, son or daughter etc.).	7.7
37.	You were unemployed for a month or more against your wishes (laid off, or couldn't find a job).	7.4
38.	Your mate started school again, or finished with schooling.	7.3
39.	You started/stopped attending church very regularly or changed churches.	7.0

40.	You broke an engagement or stopped dating a long-time friend.	6.8
41.	You were separated from mate for a month or more due to business, Armed Forces etc.	6.8
42.	You were in an accident where the damage amounted to over $100.	6.6
43.	You moved to a different house or apartment or to a different city or town.	6.5
44.	You had an outstanding personal achievement (prize, award, recognition, personal goal or victory).	5.3
45.	You started/stopped being active in a cause.	4.5
46.	A new person moved into the home to live with your family (oldster, relative, lodger).	3.8
47.	You failed an important course or exam in school.	3.6
48.	You became involved in a lawsuit (sued, or were sued).	
49.	You began going to school again (full or parttime).	3.2
50.	You took a large loan (more than ½ year's salary) for home or business, etc.	3.0
51.	You were promoted at work (more responsibilities).	1.4
52.	You had a big change in physical activities, recreation, exercise etc.; stopped or started emphasizing them.	.7
53.	Increase in workload (more overtime, longer hours, more work, more worries).	.2

APPENDIX D

YOUR IDEAS ABOUT VASECTOMY

(One of six questionnaires used at pretesting)

Please do not write your name on this questionnaire. Please fill in every question. You may write in any extra comments you have wherever you wish. Please record the number of the correct answer on the blank line to the right of each question.

0. EXAMPLE: Your home is in (1) Europe (2) U.S.A. (3) Africa 0._____

1. Your AGE (1) 19 or younger (2) 20-24 (3) 25-29 (4) 30-34 (5) 35-39 1._____
(6) 40-44 (7) 45-49 (8) 50 or older

2. Your HEIGHT (1) 5' or under (2) 5'1" - 5'3" (3) 5'4" - 5'6" 2._____
(4) 5'7" - 5'9" (5) 5'10" - 6'0" (6) 6'1" - 6'3" (7) 6'4" and over

3. Your WEIGHT (1) 130 & under (2) 131-145 (3) 145-170 (4) 171-195 3._____
(5) 196-220 (6) 221-245 (7) 246 and over

4. What is your CURRENT MARRIAGE STATUS? (1) Married (2) Engaged 4._____
(3) Divorced (4) Steady friend (5) Separated (6) Single

5. What is your combined FAMILY INCOME each year? (Include wife's income 5._____
if any) (1) under $4,000 (2) $4,000-$7,000 (3) $8,000-$11,000
(4) $12,000-$15,000 (5) $16,000-$19,000 (6) $20,000-$24,000
(7) $25,000 or over

6. What is your OCCUPATION? 6._____

7. What is your WIFE'S OCCUPATION? 7._____

8. What is/was your FATHER's major occupation? 8._____

9. Highest SCHOOL level your FATHER COMPLETED (1) Grade School (2) High 9._____
School (3) Some College (4) 4-year college (5) Graduate degree
(6) Business or Trade School

10. Highest SCHOOL level your MOTHER COMPLETED (1) Grade School (2) High 10._____
School (3) Some College (4) 4-year college (5) Graduate degree
(6) Business or Trade School

11. Highest SCHOOL level YOU COMPLETED (1) Grade School (2) High School 11._____
(3) Some College (4) 4-year College (5) Graduate degree
(6) Business or Trade School (7) Currently in college or advanced
education

12. Highest SCHOOL level your WIFE/FRIEND* completed (1) Grade School 12._____
(2) High School (3) Some College (4) 4-year college (5) Graduate
degree (6) Business or Trade school (7) Currently in college or
advanced education (9) Not applicable

*If not now married, answer about financee/steady friend. If no such friend write in #9 for this question and wherever the words wife/friend appear.

13. What is your present RELIGIOUS PREFERENCE, if any? (1) Protestant 13._____
(2) Catholic (3) Latter Day Saints (4) Jewish (5) No religious
preference (6) Other

14. WIFE'S/FRIEND'S religious preference, if any? (1) Protestant (2) Catholic (3) Latter Day Saints (4) Jewish (5) No religious preference (6) Other (9) Not applicable 14._____

15. How important is RELIGION to you now? (1) Extremely important (2) Not really important (3) Somewhat important (4) Opposed to organized religion 15._____

16. How OLD is your YOUNGEST child? (1) Less than 1 yr. (2) 1-2 yrs. (3) 3-4 yrs. (4) 5-8 yrs. (5) 9-11 yrs. (6) 12-15 yrs. (7) 16 or older 16._____

17. Are you a member of KAISER PERMANENTE MEDICAL care system? (1) Yes (2) No If yes, what City?_____ 17._____

18. Some colleges give all entering students a standard PERSONALITY TEST (such as MMPI). Some employers and hospital programs do the same. Do you ever remember taking a personality test? (1) Yes (2) No If yes, where was it?_____ 18._____

19. What is your COLOR or NATIONAL background? (1) Black (2) Oriental (3) White (4) Mexican-American (5) Other - indicate_____ 19._____

20. Are you a HANDICAPPED person (1) Yes (2) No If yes, what handicap(s)?_____ 20._____

21. Age of HUSBAND/FRIEND (1) 15 or younger (2) 16-19 (3) 20-24 (4) 25-29 (5) 30-34 (6) 35-39 (7) 40-44 (8) 45 or older 21._____

22. Number of YEARS MARRIED to your present husband (1) Not married (2) 1 yr. or less (3) 2 yrs. (4) 3-5 yrs. (5) 6-9 yrs. (6) 10-14 yrs. (7) 15 or more 22._____

23. How many times have you been MARRIED? (INCLUDE PRESENT MARRIAGE) (1) Oen (2) Two (3) Three or more (4) Never married 23._____

24. How many times has your HUSBAND/FRIEND been MARRIED? (INCLUDE PRESENT MARRIAGE) (1) One (2) Two (3) Three or more (4) Never married 24._____

25. How many SONS have you had by all marriages? (1) One (2) Two (3) Three (4) Four (5) Five (6) Six or more (7) None 25._____

26. How many DAUGHTERS have you had by all marriages? (1) One (2) Two (3) Three (4) Four (5) Five (6) Six or more (7) None 26._____

27. By your PRESENT marriage, how many CHILDREN (sons plus daughters) have you had? (1) One (2) Two (3) Three (4) Four (5) Five (6) Six or more (7) None 27._____

28. How many TOTAL CHILDREN are now living at home with you, including all children by all marriages of yours and your husband's (1) One (2) Tow (3) Three (4) Four (5) Five (6) Six or more (7) None 28._____

29. Do you feel that the number of children in your present family is (1) Just right (2) Too few (3) Too many 29._____

30. In your home major decisions are made by (1) Husband (2) Wife (3) Both equally 30._____

31. How LONG AGO did your HUSBAND/FRIEND FIRST THINK SERIOUSLY of getting a vasectomy: (1) Less than one month (2) 1 month (3) 2-6 months (4) 6 months to 1 yr. (5) 1-2 yrs. (6) 3-5 yrs. (7) 6 years or more 31._____

32. How long was it between when he FIRST THOUGHT SERIOUSLY of vasectomy and when he made the FINAL decision? (1) 1 day (2) 1 week (3) 1 month (4) 6 months (5) 1 year (6) 2 years (7) 3 years or more 32._____

33. Do you and your husband/friend agree on the advisability of vasectomy? (1) Yes (2) No (3) Not sure 33._____

34. Which one of you FELT MORE STRONGLY that the vasectomy should be done at this time? (1) Husband/Friend (2) Wife/you (3) Both the same (4) Not sure 34._____

35. How would you rate your SATISFACTION with your husband's present OCCUPATION & INCOME and EXPECTED INCOME over the next few years? (1) Very satisfied (2) Fairly well satisfied (3) Somewhat dissatisfied (4) Very dissatisfied 35._____

36. Did a DOCTOR advise your husband/friend to have a vasectomy for reasons of his physical health? (1) Yes (2) No 36._____

37. Did you TALK WITH OTHERS as he was making his DECISION to have a vasectomy (doctor, priest, friends, etc.)? (1) Yes (2) No 37._____
If yes, with whom did you talk?_____

38. Have you sometimes thought that you might want to have more children later, after your husband/friend/s vasectomy? (1) Yes (2) No (3) Not sure 38._____

39. Suppose a man had a vasectomy operation in 1973 and then five years later, in 1978, suppose he wanted to get it "reversed"--so he could again produce children. If that happened, then in 1978, what chance would you guess he would have of successfully producing children? (1) 100% (2) 75% (3) 30% (4) 25% (5) 0% 39._____

40. Can you imagine any circumstances under which YOU would want HIS Vasectomy "reversed"? (1) Yes (2) No 40._____
If yes, under what circumstances?_____

41. How would you rate YOUR general HEALTH? (1) Excellent (2) Good (3) Fair (4) Poor 41._____

42. How would you rate YOUR MARRIAGE HAPPINESS in your present marriage? (1) Excellent (2) Good (3) Fair (4) Poor (5) Not now married 42._____

43. How would you rate your overall SEX LIFE AND SEXUAL SATISFACTION at present? (1) Excellent (2) Good (3) Fair (4) Poor 43._____

44. In an average MONTH, HOW OFTER do you and your husband/friend have intercourse? (1) 2 or less (2) 3-6 (3) 7-10 (4) 11-14 (5) 15-19 (6) 20-25 (7) 26-31 (8) 32 or more 44._____

45. Would you PREFER to have intercourse (1) Less often than you do (2) About as often as you do (3) More often than you do 45._____

46. If all your friends knew that your husband/friend had a vasectomy, how do you think most of them would feel about it? (1) They'd think it was a good idea (2) Bad idea (3) They wouldn't have any special reactions (4) I don't know how they'd feel
Comments, if any_____ 46._____

47. How do you think vasectomy will change your husband's/friend's BIOLOGICAL SEX FRIVE? (1) Make it higher (2) Not change it (3) Make it lower (4) Not sure 47._____

48. Is there anyone that you would NOT want to have know that your husband/friend had a vasectomy? (1) Yes (2) No
If yes, who?_____ 48._____

49. How painful do you think the vasectomy procedure will be? (1) Not painful at all (2) Slightly painful (3) Quite painful (4) Not sure 49._____

50. As you look ahead, how do you think vasectomy will change your husband's/friend/s PHYSICAL HEALTH? (1) Make it better (2) Not change it (3) Make it worse (4) Not sure 50._____

51. How do you think vasectomy will change your husband's/friend's MENTAL AND EMOTIONAL HEALTH? (1) Make it better (2) Not change it (3) Make it worse (4) Not sure 51._____

52. How do you think vasectomy will change your HAPPINESS IN MARRIAGE? (1) Make it better (2) Not change it (3) Make it worse (4) Not sure 52._____

53. How do you think vasectomy will change your sex life and sexual satisfaction? (1) Make it better (2) Not change it (3) Make it worse (4) Not sure 53._____

54. Are there some things about vasectomy that have worried you? (1) Yes (2) No If yes, what are they?_____ 54._____

55. Do you think vasectomy may help to save your marriage in some ways? (1) Yes (2) No If yes, in what ways?_____ 55._____

56. Have you read anything in newspapers or heard rumors that made you think there might be PHYSICAL HEALTH effects from having a vasectomy? (1) Good effects (2) Bad effects (3) No effects (4) I haven't heard any such things 56._____

57. Many men have difficulties in having an erection. Has your husband/friend wanted to have an erection but been unable to do so? (1) Never (2) A few times (3) Many times (4) This is the kind of question I feel should not be asked 57._____

58. Has your husband/friend ever had problems with premature ejaculation? (1) Never (2) A few times (3) Many times (4) Should not be asked 58._____

59. Extra-marital sex relations are more common in America than many people believe. While married, have you had sex relations with another man? (1) Never (2) With one other man (3) With more than one (4) Should not be asked 59._____

60. How many children have you yourself born altogether? (1) One (2) Tow (3) Three (4) Four (5) Five (6) Six or more (7) None 60._____

61. How would you rate your HUSBAND'S /FRIEND'S HEALTH? (1) Excellent (2) Good (3) Fair (4) Poor 61._____

62. How would you rate your HUSBAND'S MARRIAGE HAPPINESS in your present marriage? (1) Excellent (2) Good (3) Fair (4) Poor (5) Not married 62._____

63. How would you rate your HUSBAND'S/FRIEND'S overall sex life and sexual satisfaction at present? (1) Excellent (2) Good (3) Fair (4) Poor 63._____

64. Would your HUSBAND/FRIEND PREFER to have intercourse (1) Less often than you do (2) About as often as you do (3) More often than you do 64._____

65. How do you think vasectomy will affect your HUSBAND'S/FRIEND'S sex life and sexual satisfaction? (1) Make it better (2) Not change it (3) Make it worse (4) Not sure 65._____

66. Has worry about possible PREGNANCY kept sex relations from being as satisfying as they would otherwise be for you and your husband/friend? (1) Yes (2) No (3) Not sure 66._____

67. Are there some things about VASECTOMY that have worried your husband/friend? (1) Yes (2) No If yes, what?_____ _____ 67._____

68. Before you became pregnant with your youngest child, had you really wanted to have another bably? (1) Yes (2) No (3) Not sure 68._____

69. Before that pregnancy, had your husband/friend really wanted to have another baby? (1) Yes (2) No (3) Not sure 69._____

70. Many married women have difficulty achieving orgasm. During the last three years have you had difficulty in achieving orgasm (climax, (come)) in intercourse? (1) Never (2) A few times (3) Many times (4) Should not be asked 70._____

71. While married to you, has your husband ever had sex relations with another woman? (1) Never (2) A few times (3) Many times (4) Should not be asked 71._____

72. If you could start your married life over again and have just the number of children you wanted, how many would that be? (1) One (2) Two (3) Three (4) Four (5) Five or more (6) None 72._____

73. In your city or town or community, is vasectomy (1) Very common (2) Not too common (3) Very rare 73._____

74. How many friends of your have had vasectomies, that you know about? (1) One (2) Two (3) Three to Five (4) Half dozen or more (5) None 74._____

75. What types of contraceptives have you used in marriage? (Please check every appropriate one.

___Rhythm ___Pills ___Condoms ___Diaphragm ___Foam

___Douche ___Withdrawal ___Jelly or Cream Others_____

76. How do you feel about the major ideas in the WOMEN'S LIBERATION (Feminist) movements? (1) Strongly agree (2) Agree somewhat (3) Not sure, neutral (4) Disagree somewhat (5) Disagree strongly 76._____

77. A number of words are printed below. Please check the ones that most average Americans probably would think apply to vasectomy.

___Expensive	___Drastic	___Cowardly	___Unbalanced	___Reversible
___Weak	___Sexy	___Painful	___Impotent	___Permanent
___De-sexing	___Immoral	___Castrating	___Pleasureable	___Simple
___Wise	___Manly	___Crazy	___Potent	___Invigorating

78. Have you ever had an INDUCED ABORTION? (1) Yes (2) No 78._____
(3) Should not be asked IF YES, how long ago?_____

79. Did you consider FEMALE sterilization instead of vasectomy? 79._____
(1) Not at all (2) Given some thought (3) Seriously considered

80. How would FEMALE sterilization have changed your PHYSICAL HEALTH as compared with what it is now? (1) Made it better (2) Not changed it 80._____
(3) Made it worse (4) Not sure

81. How would it have changed your HUSBAND'S/FRIEND'S sexual satisfaction as compared with now? (1) Made it better (2) Not changed it 81._____
(3) Made it worse (4) Not sure

82. How would it have changed YOUR sex life and sexual satisfaction as compated with now? (1) Made it better (2) Not changed it 82._____
(3) Made it worse (4) Not sure

83. Why would you NOT PREFER FEMALE sterilization? (Check all appropriate items)

___Too expensive	___Didn't know much about it	___Husband very opposed
___Too major operation	___Didn't know where to get it	___I was very opposed

___Other (Please indicate what)_____

84. Please check words most average Americans probably would think apply to FEMALE sterilization when done for birth control reasons only.

___Expensive	___Drastic	___Cowardly	___Unbalanced	___Reversible
___Weak	___Sexy	___Painful	___Un-feminine	___Simple
___De-sexing	___Immoral	___Un-natural	___Pleasurable	___Invigorating
___Wise	___Feminine	___Crazy	___Menopausal	___Aging

85. Please check every itme below that has been true of your HUSBAND in the past 3 MONTHS:

___More upset than usual
___Changes in smoking habits
___Changes in eating habits
___Changes in alcohol or drug use
___Changes in sleeping habits
___Trouble concentrating, reading, or making decisions
___Periods of feeling depressed, low or blue
___Periods of little or no energy or interest

Please indicate your agreement or disagreemtn by using the following scale:

+2 = Agree strongly; +1 = Agree somewhat; 0 = Neutral or unsure

-1 = DISagree somewhat; -2 = DISagree strongly

86. Men who have vasectomies are to be admired because they regard women as equals. 86._____

87. Vasectomy interferes with potency. 87._____

88. A man who has had a vasectomy is every bit as masculine as he was before. 88._____

89. Vasectomy is one of the better solutions for world population growth. 89._____

90. The average woman would prefer to be married to a man who has not had a vasectomy. 90._____

91. Having a vasectomy is a thoughtful and considerate act toward the female partner. 91._____

92. When a woman doesn't have to worry about pregnancy she can let go and this is what makes men with vasectomies more sexy in bed. 92._____

93. A father with all the children he wants is taking a wise step to have a vasectomy. 93._____