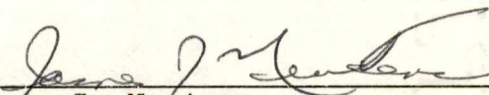
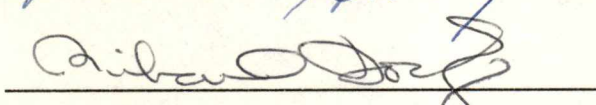
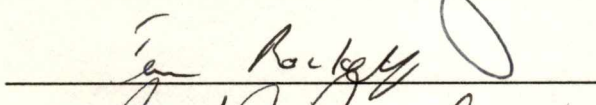
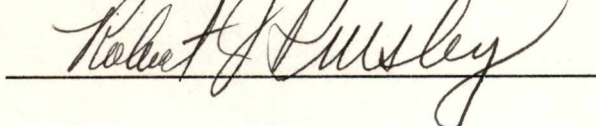


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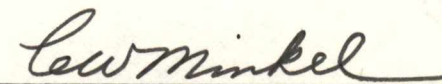
I am submitting herewith a dissertation written by Johnny Theron Long entitled "Psychological and Behavioral Parameters Related to the Early Withdrawal from Infertility Treatment." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.


James J. Neutens
Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:


Vice Provost and
Dean of The Graduate School

PSYCHOLOGICAL AND BEHAVIORAL PARAMETERS RELATED TO
THE EARLY WITHDRAWAL FROM INFERTILITY TREATMENT

A Dissertation
Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Johnny Theron Long

December 1990

DEDICATION

This dissertation is dedicated
to the patients of Michael Doody M.D.
at the Fertility Center
University of Tennessee Medical Center.

ACKNOWLEDGMENTS

I wish to thank Jim Neutens, my chairperson, for his patience and guidance in helping me complete this dissertation; Michael Doody for providing the opportunity to examine this important health issue, and my committee members, Jack Pursley, Ian Rockett, and Richard Sardargus, for their contributions to this investigation.

I would also like to thank my wife, Terrie, for her love and support during my graduate studies at Tennessee.

And finally, I wish to express my appreciation and love to my mother and father, whose love, support, and direction gave me a solid foundation from which I could pursue my goals and dreams.

ABSTRACT

Selected psychological and behavioral parameters were examined in this investigation in order to ascertain their contribution in the early withdrawal of couples from infertility treatment. Specifically, the investigation was designed to assess personality traits, health locus of control, relationship variables, sexual functioning, and coping methods of couples undergoing treatment as compared to those who have discontinued treatment prematurely.

Data were collected from 75 subjects from the Fertility Center at the University of Tennessee Medical Center, Knoxville, Tennessee. Two sets of questionnaires were administered to the subjects. The first was returned by mail within one week of the initial consultation at the Fertility Center. The second set of questionnaires was mailed to the subjects four months after the initial consultation. Subjects that had discontinued treatment were mailed a follow-up questionnaire. Instruments utilized consisted of the Taylor Johnson Temperament Analysis, the Health Locus of Control, the Adjective Generation Technique, and the Medical Coping Modes Questionnaire.

The data were analyzed using the Mann-Whitney U Tests and the Wilcoxon Signed-Ranked Tests. The following

conclusions were formulated based upon the findings of this investigation.

1. The identification of decreasing levels of the sympathetic personality trait and increasing tendencies toward an emotionally inhibited trait pattern over time will aid in predicting which couples will withdraw from treatment early.
2. The identification of increased levels of a powerful others locus of control at the initial consultation will aid in predicting which couples will withdraw from treatment early.
3. The identification of increased levels of female anxiety toward the physician and of male favorability toward self at the initial consultation will aid in predicting which couples will withdraw from treatment early.
4. The identification of increased levels of anxiety in infertile wives toward themselves, their bodies, and their infertility at the initial consultation will aid in predicting which couples will remain active in treatment programs.

With the information obtained from this investigation, as well as psychological and behavioral parameters from future research, the health care professional may be better able to assist the infertile couple in continuing a

comprehensive treatment program and thus reduce the time
for a pregnancy and live birth.

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CHAPTER 1

INTRODUCTION

The standard medical definition for infertility is the inability of a couple to conceive after 12 months of intercourse without contraception (Congress, 1988). Most large scale investigations and physicians utilized this standard definition. However, according to the Centers for Disease Control, this definition is a poor predictor of who will remain infertile throughout their lives. Only 16 to 21 percent will not be able to achieve a future conception (Marchbanks, 1986).

Infertility is a term that includes those couples who have never conceived (primary infertility), those who have conceived but have never carried a fetus to full term, and those who desire more children but are not able to conceive again (secondary infertility) (Salzer, 1986). Primary infertility has doubled from 500,000 in 1965 to 1 million in 1982 (Mosher, 1987, Congress, 1988). This increase can be partly explained by the increase in the number of couples attempting to have children. Secondary infertility has declined from 2.5 million to 1.4 million during the same period (Mosher, 1987, U.S. Congress, 1988). The decrease in secondary infertility can be explained by the increase in voluntary surgical sterilization for

contraception. The overall percentage of infertility has risen slightly from 13.1 percent to 13.9 percent (Mosher, 1987).

In recent years there has been an increased concern for the problem of infertility in the United States. At least four factors have contributed to this concern:

(1) more infertile couples in the population due to the baby boom cohort reaching reproductive age; (2) an increased proportion of couples seeking infertility services, due in part to increased public awareness, more couples in higher income brackets, and a decrease in the number of babies for adoption; (3) the number of physicians providing infertility services has increased due to a greater sophistication of diagnosis and treatment; and (4) a more conducive social environment exists to promote infertility services (Aral, 1983).

There has been a considerable amount of research in the physiological and psychological etiology of infertility. Until recently, however, little attention has been given to the psychological and behavioral reactions of the couple who are unable to reproduce. Much of this research has been based on informal case studies by medical or mental health practitioners (Valentine, 1986). Of the remaining studies only a few have been well-designed investigations. (Daniluk, 1988, Edelmann, 1986) Many

recent studies suggest that infertility is a major health problem and may negatively affect life satisfaction, well-being, and psychological adjustment (Greil, 1988, Snarey, 1987). Ironically, the evaluation and treatment to correct the problem may in themselves be difficult for the couple to endure. The evaluation and treatment can be embarrassing, time consuming, expensive, and often invasive. If the accumulation of the aforementioned causes the couple to discontinue treatment, one may expect a poorer prognosis for a pregnancy and live birth.

Problem of the Study

The problem of this study was to ascertain the role of selected psychological and behavioral parameters which contribute to the early withdrawal of couples from the Fertility Center at the University of Tennessee Medical Center. Specifically, the study was designed to assess personality traits, health locus of control, relationship variables, sexual functioning, and coping methods of couples undergoing treatment for infertility compared to those who have discontinued treatment.

Research Questions

1. What are the similarities and differences in personality traits of infertile couples receiving

treatment and those couples who have discontinued treatment?

2. What coping methods are most frequently used by active and inactive couples?
3. Does the health locus of control differ between active and inactive couples?
4. What self-reported differences exist in perceptions of self concept, body image, partner, sex drive, intercourse, infertility and the physician between the active and inactive couples?
5. What self-reported differences exist between active and inactive couples in the respondent's perceptions of how the partner feels about self, body image, sex drive, and infertility?
6. Do self-reported psychological and behavioral responses differ over time in the active and inactive treatment groups?

Assumptions

The basic assumptions of this investigation were as follows:

1. The sample had no history of previous psychological or behavioral disturbances.
2. The sample responded honestly to the questionnaires with no assistance or coercion.

Delimitations

The delimitations specific to this investigation were as follows:

1. The sample was delimited to those couples who met with the researcher prior to the initial consultation with a reproductive endocrinologist.
2. The sample was delimited to those couples desiring a pregnancy.

Limitations

The limitations of this investigation were as follows:

1. The sample was limited to those couples seeking infertility services from a single reproductive endocrinologist at the University of Tennessee Medical Center at Knoxville, Tennessee.
2. The sample was limited to those couples who volunteered to participate in the study.
3. Due to the nature of the multiplicity of infertility etiologies within the sample, identical treatments did not exist. The treatments were similar in many respects, but different according to the individual needs of the couple.

Rationale for the Study

A relatively large number of couples of reproductive age in the United States are infertile. It has been suggested that infertility affects one of every six couples, approximately 15 percent, of the childbearing population (Bernstein, 1982, Davis, 1987, Speroff, 1987). It is a widely held belief that many of these couples perceive infertility as a life crisis and that the psychological well-being of the infertile couple may be severely threatened (Bell, 1981, Bresnick, 1979, Davis, 1987, McEwan, 1983). In today's society, parenthood is often planned with the same consideration as personal lifestyle, education, or career. The psychological and behavioral responses to infertility may commence as soon as the couple realizes that conception has not occurred according to plan. Many couples seek infertility services and follow a treatment regime. This process often leads to an "emotional roller coaster ride" of hope for a pregnancy one week and a sense of loss or grief the next. This cycle frequently results in loss of self-esteem, stress in marital and social relationships, mixed locus of control, a variety of sexual difficulties, as well as other problems (Davis, 1987). The extent to which these factors influence withdrawal from infertility treatment may depend upon the couple's coping techniques, personality traits,

perceptions, locus of control, support from health care professionals, and support from significant others. This study was necessary to ascertain the roles of these variables in the couples's continuation of infertility treatment. If the variables leading to an early withdrawal can be identified, then the health care professional may be better able to assist the infertile couple in continuing a comprehensive treatment program and thus reduce the time for a pregnancy and live birth.

Definition of Terms

Infertile Couple. A married couple that has been unable to conceive for a minimum of one year.

Fertility Center. An obstetrical-gynecological practice that specializes in treating infertility.

Psychological Traits. Distinctive tendencies or patterns of individual thought, behavior, and experience which characterize the individual's unique adjustment to different stimuli or life situations. The personality traits of interest in this investigation were: nervous vs. composed, depressive vs. lighthearted, active-social vs. quiet, expressive-responsive vs. inhibited, sympathetic vs. indifferent, subjective vs. objective, dominant vs. submissive, hostile vs. tolerant, and self-disciplined vs. impulsive.

Coping Methods. A combination of conscious or unconscious strategies (such as confrontation, avoidance, and/or acceptance-resignation) used to contend with infertility.

Personality Patterns. Combinations of personality traits that appear to have special meaning beyond that of individual traits, for example: anxiety, withdrawal, hostile-dominant, and emotionally inhibited patterns.

Inactive Participant. An individual who has discontinued treatment for infertility for a minimum of six months.

Summary

In order to better serve the health care needs of the infertile couple, the health care professional must focus not only on medical issues, but psychological and behavioral concerns as well. The psychological and behavioral responses may commence before treatment, and in many cases, worsen with intervention. Acknowledgement of these responses and encouragement by the health care professional may help the couple to continue in a comprehensive treatment program. This study examined the influence of psychological and behavioral responses of infertile couples and their effect on the withdrawal from infertility treatment.

Chapter 2 reviews the observational and research literature related to the psychological and behavioral reactions to infertility. Chapter 3 reports the methodology, instrumentation, and data analysis. Chapter 4 presents the analysis and interpretation of data. Chapter 5 reports the summary, findings, conclusions, and recommendations of this investigation.

CHAPTER 2

REVIEW OF RELATED LITERATURE

The majority of studies concerning infertility have focused upon the psychological causes. Little attention has been given to the psychological reactions of married couples to their infertility. (Cook, 1987; Olshansky, 1987) Data does not exist concerning the psychological and behavioral differences of infertile couples who continue treatment as compared to those who do not. Therefore, this chapter will review and critique the available data concerning the psychological and behavioral responses to infertility and its treatment. These responses would certainly be a major influence on a decision to continue or terminate treatment. The two types of literature concerning the psychological and behavioral responses to infertility are based on clinical observations and research studies. Thus, this chapter is comprised of two major sections: literature from clinical observations and literature from research studies. The research studies will be emphasized in this review.

Literature From Clinical Observations

Over the past fifteen years, much of the information concerning the psychological and behavioral functioning of

those affected by infertility has been anecdotal in nature. Many physicians, nurses, as well as other health care professionals have labeled infertility as a life crisis. Bresnick (1979) reasoned that lives are often centered around reproduction, parenthood, and raising a family. When infertility occurs, an emotional crisis may develop once an individual or couple becomes aware that reproduction is delayed or unobtainable. Shapiro (1982) stated that "Infertility is an unanticipated crisis. It is neither expected, nor have most couples developed coping mechanisms to respond to the narcissistic hurt that accompanies the fruitless effort to conceive and to bear a child." Menning (1980) reported that at some point during the attempted medical treatment the infertile person will experience a state of crisis. In her view the crisis arises because infertility poses a threat to important life goals that is beyond the couples traditional problem solving skills. Infertility has also been described as a developmental crisis (Draye, 1988; Snarey, 1987). Draye (1988) reported that the seventh phase of the life cycle according to Erikson emphasizes parenting and responsibility for the next generation. A failure to experience parenting may inhibit progress into the next stage of life.

Anecdotal observations have also reported psychological and behavioral reactions to infertility. The infertile

couple may feel lonely, angry, and isolated. (Pepperell, 1987; Sawatzky, 1981) They may experience a loss of control over both body and destiny. Their identity, including sexual identity, may be threatened. Hirsch (1989) stated that sexual problems may develop because the focus of the sex act changes from one of pleasure to one of procreation. According to Hirsch, coitus may become purely mechanical, with sex being scheduled with a predetermined frequency, done in a specific way, at specific times. Elstein (1975) reported that infertility may increase the likelihood of sexual problems such as loss of libido, failure to achieve orgasm, and impotence. Mazor (1979) wrote that an infertile individual may feel damaged and have a feeling of defectiveness which will in turn affect the self-worth and body image as well as the "productivity and performance in almost every area of life."

Menning (1979) suggested that too often the physician and staff are unaware of the emotional needs during this crisis and are unable to offer the time and energy to deal with crisis successfully. Sherrod (1988), reporting from personal experience, perceived infertility as a loss of a dream and stated that it is a "health care crisis". The experience brought an emotional burden of grief, denial, and frustration. Sherrod found health professionals to be

caring, compassionate, and attentive, but lacking the necessary insight to help her emotional needs.

Many reports have suggested that the emotional responses to infertility may be understood both as a crisis and as a mourning process (Burns, 1987; Carp, 1984; Clapp, 1985; Frias, 1985; Mahlstedt, 1985; Salzer, 1986; Unruh, 1985; Wiehe, 1976; Williams, 1977). Since society regards fertility as normal, surprise or shock is usually the first stage. Many are healthy throughout their lives, then suddenly something is wrong. This may be the first crisis the couple has had to face together. It may also be the first time life has not progressed as planned. Denial may follow. Denial is a defence mechanism that helps to screen the couple from the hurt and allows time to assimilate what is happening in regard to their fertility. This stage may become problematic if it lasts too long and does not conform to reality. The couple may go from doctor to doctor looking for information that will relieve the problem. Shapiro (1982) contends that denial, which may be perceived on many levels, could be directed at the loss of life dreams, self esteem, or image of one's self as a sexual being. Isolation appears to be another common response to infertility. Even though there is more openness regarding sexuality, infertility remains to many a very private issue. It may be embarrassing to discuss.

Withdrawal and avoidance of social situations may occur. Withdrawal from relationships with friends who have children and avoidance of contact with a fertile world. The loss of support and communication from family and friends can be enormous. Anger may be a response to the feelings of vulnerability and helplessness to control the body, emotions, and future. A secondary problem occurs when couples direct this anger to inappropriate targets, such as the spouse or health care professionals. Guilt may arise in the individual responsible for the couple's infertility. Most would like to think of the world as a sensible and orderly place, that is, things happen for a reason or a cause and effect relationship exists. Some individual focus on past events or behaviors that they feel guilty about, such as premarital sex, extramarital sex, and sexually transmitted diseases. When this self blame occurs, infertility becomes a type of punishment, a way to atone for past sins. Depression and grief may develop due to the loss of children not being born, the loss of a potential role of being a parent, or of losing future events with an unborn child. A couple is forced to face their own mortality. Responses such as these may occur at different intervals of evaluation and treatment and in varying intensities until a resolution is found. According to Salzer (1986) the extent to which the grief affects the

infertile individual depends upon many factors. The most important appears to be related to the quality of the marital relationship, degree of support from significant others, effectiveness of personal coping skills, sensitivity of physician, level of self-esteem, and the extent of areas of strength in life (competence at work or satisfying or pleasing interests). Having low self-esteem, few or no other strengths, or support from significant others could certainly make the loss more difficult to accept. With new technologies and treatments available, it may be difficult for the couple to know when to begin the grieving process. A crucial factor, according to Greil (1989) is that infertility is an open-ended health problem. New treatments are always being developed. Acceptance of infertility is the final stage in the resolution of the mourning process. It may be characterized as a returning to a more normal existence and a renewed energy for life. The couple is prepared to move ahead with their lives. Phrases such as "enough is enough" and "it is time to move on" are often heard. Reaching this stage does not mean that the pain from being infertile is gone, only that reality has been faced and life must proceed.

Literature From Related Research Studies

Following are research studies that report findings on psychological and behavioral responses related to infertility treatment.

Berg (1990) investigated the distinction between psychological strain reactions and psychiatric morbidity in infertile couples. A cross-sectional study design and a single instrument, the SCL-90-R, was chosen to measure psychologic and behavioral dysfunction. The SCL-90-R measures nine symptom dimensions (somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoia, and psychoticism) and a global severity index. One hundred and four subjects were recruited from three sources: (1) RESOLVE, Inc., (2) the University of North Carolina School of Medicine, and (3) the University of South Carolina School of Medicine. An advertisement was listed in the nationally distributed RESOLVE newsletter. Potential participants from the remaining two sources were identified from medical charts. The return rates of the SCL-90-R ranged from 77 percent for RESOLVE, Inc., 64 percent for the University of North Carolina School of Medicine, and 26 percent for the University of South Carolina School of Medicine. The potential participants from the University of South Carolina School of Medicine were contacted by mail only.

This response rate was reported to be comparable to rates obtained by others with similar methods. To control for selection bias, Berg analyzed the three sources for differences by a series of chi-square tests. No differences were found with age, race, education, or occupation. Respondents ranged from 21 to 43 years with the average age of 31. The majority of respondents were white (89%), college educated (88%), Protestant (60%), white collar workers (85%), and had a combined annual income of \$40,000 or greater (53%). The couples had been in treatment for an average of 28 months with a range from one month to 10 years, thus presenting a possible maturation bias. Respondents from the RESOLVE group reported higher annual income levels. An examination of psychological functions revealed the RESOLVE participants reported high levels of distress. A partial explanation of this result may be due to a longer period of time in treatment. Further analysis by Berg refers to the entire sample. Population norms of the SCL-90-R and the global severity index were used as a comparison group. The paired t-test was used to analyze the differences between group means. This may have been a misuse of the statistical procedure. The data from the questionnaires appeared to be an order ranked measurement. The paired t-test assumes at least an interval level of measurement. The findings from

the analysis indicated the only significant difference between males and females on either the global severity index or the nine dimensions of the SCL-90-R was the somatization subscale. However, both scores were within normal limits. Berg found from the global severity index scores that 44 percent of the males and 52 percent of the females met the criteria for psychiatric classification as defined by Derogatis. According to Berg, the criterion for psychiatric cases by Derogatis appears very liberal when compared to measures such as the Minnesota Multiphasic Personality Inventory (Berg, 1990). Analysis of the subscale dimensions revealed that female participants scored above the 84 percentile on interpersonal sensitivity, depression, and psychoticism. Males scored above the 84 percentile only on the interpersonal sensitivity subscale. Berg reported that an item analysis of the SCL-90-R may suggest spurious elevations of the measure of psychopathology due to the participants being drawn from a medical population. Many items, when viewed in the context of infertility, may not necessarily suggest psychopathology. For example, one item included was "The idea that something serious is wrong with your body." A positive response to this statement may not be indicative of a cognitive dysfunction, but may reflect on the reality of the infertility diagnosis. Other items may also have

produced spurious results due to the result of medication and possible side effects of these medications. Berg concluded that this sample did not constitute a psychiatric population, however, the participants did experience levels of distress with interpersonal strain and depression greater than 89 percent of the general population. An alertness to the symptoms of psychological strains and psychiatric morbidity by health care professionals, the development of a more sensitive measure of psychological strain and psychiatric morbidity for infertile couples, and further study was recommended.

Mood disorders, psychiatric symptoms, and distress in women seeking evaluations for infertility have been studied by Downey (1989). This investigation was the initial assessment of a prospective, longitudinal study. Downey hypothesized that women seeking infertility evaluation may already be experiencing considerable demoralization because of identifying themselves as persons with an infertility problem. To test this hypothesis, each patient between the ages of 18 and 44 years presenting for the first time to three private gynecological offices were screened for inclusion in the study. Infertility patients were included in the study if they (1) were seeking infertility evaluation, (2) were trying to become pregnant, (3) had not been using any contraception, and (4) had a steady

partner. The control group consisted of routine care gynecology patients who (1) were sexually active, (2) were using contraception, (3) were not trying to become pregnant, and (4) had a steady partner. Of the 740 patients screened, 126 met the eligibility criteria. Of the 126 invited to participate, 17 percent of the infertility and 21 percent of the routine care patients declined. The two samples were similar in terms of ethnic group, educational level, religion, and history of irregular menstrual periods. There was a significant difference in age and marital status, with infertile subjects being older (32.9% versus 29.7%) and more infertility subjects currently being married (94.9% versus 68.6%). The subjects of both groups were assessed by the Baseline Questionnaire which included five areas: reproductive history and psychological response to it; partner relationship; sexual functioning; self-esteem; and psychopathology. Downey found that the women undergoing infertility treatment appeared to be as healthy as the routine care control group. The infertility women were similar with respect to partner relationship satisfaction, sexual functioning within the last year, sexual interest, sexual pleasure, self-esteem, psychiatric symptomatology, or major depressive episodes. However, when compared to population norms, both the infertile group and the routine

care group scored significantly higher in psychiatric symptomatology. Although infertile women were no more likely to experience a major depression of clinical severity, many deleterious changes were reported in themselves and their partners. The infertile women reported high levels of subjective distress for themselves and their partners. Changes in mood (74.6%), sexual functioning (49.2%), how close they felt to their partner (28.8%), and self-esteem (44.1%) were reported. When asked about how the infertility problem had affected their spouse, 33.9 percent reported a change in their partner's mood, 32.2 percent noticed a change in their partner's sexual functioning, 20.3 percent believed there was a change in their partner's feelings of closeness in the relationship, and 16.9 percent felt that their partner's self-esteem had been affected. An intragroup analysis from the infertility group compared women who had received some treatment to those who had received no treatment. There were only two significant differences: the untreated women were more likely to have a living child and the treated women scored higher on the anxiety scale. The high rate of psychiatric symptoms in both groups raises the issue of whether or not the routine care group was a true control group. Downey stated that the high rates in both groups may be due to the metropolitan location in which the study

was conducted. According to Downey, some studies have reported more depressive symptoms in subjects from metropolitan areas than from smaller cities or rural areas. The failure to demonstrate differences in the infertile group who had received some treatment and those who had received no treatment may be due to several factors. One possibility is that differences may become more severe and cumulate as treatment progresses. Elevated symptom levels may not present themselves when beginning treatment due to negative and positive emotional factors canceling each other out. For example, the positive emotions of hope for a solution may help cancel the negative emotions of apprehension and distress of the infertility problem. Another possibility is that high functioning patients may have already experienced a deterioration of psychological health since learning of their fertility problem. Downey stated that because infertility treatment is elective, patients may initiate treatment when they are not experiencing other life stresses such as marital discord, family illness, or financial difficulties. Also, personality differences such as optimism, locus of control, or faith in the medical profession may help determine which infertile patient seeks treatment and which do not. Downey concluded that there was no psychological symptom or affective illness differences when comparing infertile

patients to a routine gynecological care group. These results were to be used as a baseline in order to explore whether infertility patients become a higher psychological risk over time. Further study was recommended on infertile couples who do not seek treatment.

The impact of infertility on marriage and self-concept was assessed by Hirsch (1989). The study design consisted of a single measurement obtained prior to treatment. Couples seeking treatment for a perceived infertility problem were asked if they would volunteer to participate. An attempt was also made to obtain volunteers not seeking a pregnancy for a control group. Questionnaires were then mailed to the both the experimental (N=58) and the control (N=17) groups. A return rate was reported to be 59 percent for the experimental group and 42 percent for the control group. Selection bias was an issue due to the sample selection being voluntary. Also, the control group tended to be younger, married for a shorter period of time, and largely college students. The two groups were asked to complete three questionnaires. The first questionnaire, which was designed by the experimenter, was utilized to obtain specific information from the subjects related to their infertility problem, that is, the length of time the subjects had been involved in fertility work, the extent of any medical intervention, extent of support networks, and

sense of time urgency. The second questionnaire, called the Bem Sex-Role Inventory, evaluates the subjects' perceptions of how much they are like or unlike 60 adjectives. This questionnaire measures the extent that the subject reports feminine, masculine, and feminine/masculine (neutral) personality characteristics. The third questionnaire, the Hudson Clinical Measurement Scales, were designed to monitor and evaluate progress in a therapeutic setting. It consists of four scales that measure the severity or magnitude of depression, self-esteem, marital discord, and sexual dissatisfaction. Reliability and validity was not established for the nine item questionnaire. The data were analyzed from both groups with a multifactor analysis of variance (MANOVA), a statistical procedure for continuous data, even though the level of measurement appeared categorical or order ranked. Sex was factored out and considered an independent variable. Even though the interpretation of the data by Hirsch appeared to be conservative, selection bias and small sample size may have influenced the results of this investigation. Hirsch found that infertile subjects of both sexes perceived themselves as more masculine and were less sexually satisfied than the control subjects. As the amount of time and energy (investment) expended on the infertility problem increased, general discontent

increased. Those individuals who reported lower levels of investment and more emotional, social, and cultural pressures to obtain a pregnancy had lower mean scores on self-esteem, contentment, sexual satisfaction, and marital satisfaction. The infertile women appeared to experience greater discontent than infertile men. Hirsch also reported that a subgroup of couples, who had little or no communication with one another, were found to be at greater risk for marital dissatisfaction and general discontent. The use of longitudinal studies on the same variables was recommend for future research. The lack of reliability and validity on the developed questionnaire, the use of volunteers for participants, a lack of a compatible control group, and low return rates may have increased the possibility of error with these results.

In vitro fertilization (IVF) is one of the newest techniques for infertility treatment and it offers increasing numbers of infertile couples a chance to achieve a pregnancy. Milne (1988) attempted to identify the personal experiences of couples who had undergone IVF procedures to ascertain the needs of these couples. A single measurement was utilized in this descriptive study. Patients from a large IVF program in Canada who had completed at least one attempt of IVF where asked to participate. The data were collected by interview at the

couples' home three weeks or more after embryo transfer. Twenty-eight couples who had been trying to conceive for 6 years were interviewed. Two couples experienced a pregnancy with the IVF cycle. The interview consisted of six close-ended questions designed to collect demographic data and twelve open-ended questions about the IVF experience. The interview method was designed to examine both positive and negative perceptions about the procedure, sources of social support, lifestyle, and marital relationship impact, and ideas for procedure improvement. The interview guide was tested for content validity, but not for reliability. The words used most frequently to describe their overall experience were "heartbreaking", "devastating", and "physically and emotionally draining". Words frequently used for the positive aspects of the procedure dealt with the three categories: interactions with health personnel (words such as supportive, informative, trusting, and organized were used), hope, and camaraderie with other patients. Paradoxically, one of the four categories most commonly cited concerning the negative aspects was interactions with health personnel. Words and phrases like "depersonalization", "in need of support", and "difficulty obtaining a satisfactory amount of information about procedures, laboratory test results and drug side effects" were reported. The other three negative

categories were: characteristics of the procedure (multiple injections, drug side effects, time-consuming, and embarrassment), outside influences (finances to pay for the procedures), and husband's attitude. Many husbands expressed fear for their wives' safety, guilt over the wife bearing most of the discomfort and pain, and feelings of being left out and uninvolved. The most difficult part of the IVF experience was reported to be the two weeks waiting period after the embryo transfer. A few couples identified the arrival of another menstrual period as being the most difficult part. When asked if the IVF experience reminded them of anything, examples such as "the death of a close friend", "loss of a job", and "bankruptcy" were reported. Interestingly, Milne found that a majority of couples reported the experience had made a positive impact upon their marriage relationship. These couples stated that the joint effort involved and spousal support brought them closer together. These results indicated at least two primary needs of couples undergoing IVF: adequate and timely information as well as health care personnel and spousal support. It was recommended that comprehensive information and counseling about the procedure be given to the couples. According to Milne, one of the most powerful factors in determining the couple's perceptions concerning

the experience was the "quality of human interaction throughout the program".

Gender differences in coping strategies have been investigated by Draye (1988). This study consisted of a single measurement design. Over a month period, all new patients at a large teaching hospital in the northwestern area of the United States were asked to participate. Both primary and secondary infertile patients were included. The number of nonrespondents was not reported and no control group was used. Selection bias may have been an issue in this study due to the voluntary nature of the study sample. Twenty-six paired couples participated in the study by responding to seven questionnaires. The Infertility Problem Inventory (designed to identify problems experienced by the infertile couple), the Personal Resources Questionnaire (measured social resources), the Rosenberg Self-Esteem Scale, the Confidant Scale, the Ways of Coping Checklist, and the Center for Epidemiology Studies-Depression Scale were administered. Draye found no difference between men and women in problems with marital relationships, family and friends, or occupation. There were significant differences in personal problems and relationships with the health care system. Women experienced more personal problems (felt as if they were being punished, felt down on themselves, etc.) and more

problems with the health care system. Women reported feeling more "rushed" when visiting their physician and felt that their treatment was more impersonal. Other significant differences among the sexes were with self-esteem, coping methods, and depression. Women had a lower level of self-esteem and employed more avoidance-withdrawal coping strategies than men. These findings suggest that although men and women have similar experiences in responding to infertility, they were affected differently in other aspects. Draye (1988) suggested that gender differences may dictate varying approaches in counseling for men and women. Sharing the belief that men and women experience infertility differently may help to alleviate a significant source of stress between the couple. Draye (1988) reported that while disruptions in the lives of men and women did exist, they were not overwhelmed. The subjects's ability to cope, the fact that they had been referred to a large teaching hospital for infertility treatment (and therefore felt more hopeful and positive) may have been partly responsible for this result. Future research to address the change in problems and coping strategies over the treatment period was recommended.

McEwan (1987) investigated the emotional and social consequences of infertility. A single measurement on 62

female and 45 male patients volunteers at a large university hospital in Canada. No information was collected on those patients who declined to participate. McEwan attempted to control for selection bias by comparing participants with a random sample of 100 clinic attenders. Participants were similar with respect to age, length of time attempting pregnancy, cause of infertility, and whether their infertility was primary or secondary. The samples did differ in the amount of time attending the clinic. The study participant had attended an average of 9.9 months and the comparison group only 6 months. The research design tested sociodemographic variables, relevant medical data, and cognitive appraisals of one's infertility and its effects on the degree of maladjustment. The sociodemographic variables were sex, age, religion, and socioeconomic status. The medical aspects of interest were length of time the patient had been infertile, whether a firm diagnosis was known, the cause of the infertility, and whether the infertility was primary or secondary. The cognitive variables were the subjective appraisals of the individual's infertility. Self-blame, subjective expectations relating to a possible pregnancy, and the acceptability of alternatives to being a biological parent were three areas in this study which may affect emotional reactions. Social support and recent life events were also

recorded. The Pearson Product Moment Correlation (PPMC) was used to relate a series of predictor variables to criterion measure of adjustment. The PPMC statistical procedure assumes randomness and interval level data. The level of measurement for the psychological variables appeared to be numeric or ordinal. McEwan found that there was more evidence of distress among women than men. Approximately 37 percent of the women patients of infertile marriages showed psychological disturbance. One percent of the men had similar disturbances. Adjustments for men were not examined by regression analyses due to small numbers. Younger women were more likely to be disturbed than older women. Women with no firm diagnosis of infertility were found to be more distressed. The length of time a women had been trying to conceive and the cause of infertility were not related to the degree of distress. Poorer adjustment was found for women who felt responsible for their infertility. When infertility was the result of male factors, it was found that 30 percent of the women still blamed themselves. It is interesting to note that women of the Protestant religion had better psychological adjustments than women of other faiths. This study suggested that infertile couples may face considerable psychological distress, with women having more distress than men, and that predictors of distress can be

identified. McEwan suggested the use of longitudinal, rather than cross-sectional studies, larger sample sizes, and more thorough methods of psychiatric assessments for future research.

Hearn (1987) examined psychological characteristics of patients entering an IVF clinic in a university teaching hospital in Canada. The investigation was designed to be used in the IVF program to complement the patients' emotional needs as well as being a research base for further studies. The characteristics studied were personality, family environment, life quality, coping and emotional status. A single measurement of psychological characteristics was taken approximately 3 months before the first visit to the IVF clinic. The nonprobability sample was obtained for consecutive admissions to the clinic. A total of 300 couples were studied. Due to consecutive admissions, selection bias may have been a threat to the internal validity of this study. The number of couples who declined to participate was not reported. The data from the IVF group were compared to the normative group by the t-test. The level of measurement from the psychological questionnaires appeared to be nominal or ordinal, therefore, the t-test may not have been the appropriate statistical technique to measure the difference between group means. The sample criteria for participation was:

(1) a stable marital relationship, (2) age of 40 years of younger, (3) evidence of tubal disease with less than 10 percent chance of pregnancy, (4) normal sperm count in husband, and (5) exhaustion of other alternatives to IVF. Normative groups within each psychological measure were used as a comparative group. The following psychological self-report measures were used: The Family Environment Scale (social-environmental characteristics), Personality Research Form-E (personality characteristics), Life Appraisal Inventory (degree of affect on a positive-negative continuum), Inventory of Socially Supportive Behaviors (frequency of socially supportive contacts), Ways of Coping Checklist, State-Trait Anxiety Inventory (measures how a person feels at a particular moment in time and how a person feels in general), and the Beck Depression Inventory. Results indicated that the IVF group had significantly greater cohesion, expressiveness, moral-religious emphasis, organization, intellectual-cultural orientation, and control. They reported a significantly higher need for order, cognitive structure, harm avoidance, and nurturance. Significantly lower needs were reported for understanding, change, play, and autonomy. There were no differences in overall life satisfaction, overall well-being, and depression. Women did not differ from norms with respect to anxiety. The men were significantly less

trait and state anxious than norms. These results may be biased due to the respondents' concerns that they be psychological acceptable for the IVF clinic. The lack of a relevant control was also an issue. Hearn noted that since the sample was related only to organic infertility, that the results could not be generalized to all IVF candidates and that generalizations should only be made for this specific sample. Further study to evaluate coping strategies and emotional levels was recommended.

Freeman (1985) investigated the psychological evaluation and perceptions of patients in a university based in vitro fertilization and embryo transfer program. The research design was comprised of a single measurement. The sample consisted of 200 couples consecutively enrolled for in vitro fertilization treatment during a 14 month period. The threat of selection bias existed because of the consecutive sampling. Each couple was evaluated by a clinical social worker. This evaluation included discussions with the couple about their experience and feelings with infertility, expectations of their treatment, plans for the future (whether pregnancy occurred or not), and their personal approaches to stress. The Minnesota Multiphasic Personality Inventory was completed at home by each participant and returned before the couple's initial treatment. Results from the Minnesota Multiphasic

Personality Inventory indicated that 16 percent of the women and 18 percent of the men may have psychological dysfunctions. Half of these individuals appeared to have clinical syndromes of emotional disorders, primary depression, and somatization difficulties. Ego Strength scale scores were within the normal range. Results from the psychological evaluations indicated that 48 percent of the women and 15 percent of the men considered infertility to be the most stressful experience in their lives. Forty-six percent of the women and 32 percent of the men indicated that their sexual relationships had changed because of their infertility. Freeman suggested further longitudinal studies were needed to define the emotional impact of procedures and reactions to the treatment of infertility.

Wallace (1985) examined the psychological adjustment and recovery from laparoscopic sterilization and infertility investigations. A prospective study over eight time periods before and after surgery was designed. A consecutive sample of 131 patients admitted for a laparoscopy procedure in Great Britain over a seven month period was chosen for the study population. The possibility of selection bias existed due to the consecutive sampling strategy. Fifty patients were admitted for sterilization, 50 for primary infertility, and

25 for secondary infertility. The sample was similar in education, smoking habits, and transportation arrangements to and from the hospital. Differences within the sample were found in age, previous surgical experience, and geographic area. Primary infertility patients tended to be younger and have less surgical experience. Sterilization patients tended to live closer to the fertility center than the other patients. The patients were interviewed and tested six to eight weeks prior to admission to the hospital, one day before the operation, the morning before the surgery, at the return from surgery to the ward, two hours after the return to the ward, and one night after surgery. Eleven patients were lost due to attrition. In addition, psychological follow-up questionnaires at one week and six weeks were mailed to the sample. The return rate was reported at 66 percent and 75 percent respectively. No comparison group was used. Chi-square tests, t-tests and one-way analyses of variances (ANOVA) were used to analyze the data. The t-test and ANOVA appeared to be used inappropriately with the nominal or ordinal data. A structured interview was used to acquire demographic, social household, and medical information. Questionnaires were used to assess the patients' understanding of infertility treatments and to measure worry, anxiety, mood, physical symptoms, vital signs, and

the patients' speed in returning to normal life. Wallace reported that laparoscopy did not influence: (1) the amount of fear before and after the operation, (2) postoperative physical symptoms, or (3) most of the mood states at follow up. Significant differences were found between infertile and sterilized patients concerning anxiety on the morning of surgery, vital signs, postoperative analgesia, and the speed of returning to normal activities. The sterilized patients had less pain but received more analgesia, and returned to their normal activities more rapidly than did infertile patients. Patients' attitudes to the operation suggested that the major concerns were of costs and benefits of the operation. These benefits included concerns about fertility, menstruation, and sexual activity. Further results reported that patients misunderstood information given to them about the operation, and that the majority would welcome additional psychological preparation. Bias in the study population was an issue due to the use of consecutive patient selection, the differing amounts of pain medications during the medical procedures, and the use of interval level statistical procedures on categorical or order ranked data.

Freeman (1983) studied behavioral and emotional factors in anovulatory infertile women and compared them to

other fertile and infertile women. The data used in this investigation were from part of a larger study in which participation was voluntary. Thus, selection bias was an issue. The subjects included 49 anovulatory infertile women requesting treatment to achieve pregnancy, 104 infertile women with diagnoses other than anovulation, and 141 fertile women from several private gynecologic practices. The research questions addressed were: (1) Did the study group of anovulatory infertile women have greater anxiety, depression, emotional disturbance, neuroticism, sexual inhibition, or less ego strength at the onset of medical treatment?, and (2) Did anovulatory infertile women differ on these measures from women with other causes of infertility? Numerous self-assessment measures were completed by each group. These measures included: the Hopkins Symptom Checklist (nine emotional symptom factors), Langner Screening Scale (psychopathologic screening), Eysenck Personality Inventory (neuroticism and extraversion), a Mood Analog Scale, a Semantic Differential (to rate relationships and evaluate ego strengths), and the Derogatis Sexual Function Inventory. The Minnesota Multiphasic Personality Inventory was completed by the anovulatory infertile women only. The categorical data were analyzed with cross-tabulations using chi-square test. Analysis of variance was used with continuous data. The

threat of selection bias existed because the groups were not randomly assigned. Results from the Hopkins Symptom Checklist, Eysenck Personality Inventory, Langener Screening Scale, Mood Analog Scale, and Minnesota Multiphasic Personality Inventory were within normal ranges, and no significant differences were found between groups. The anovulatory infertile group rated themselves by means of the Semantic Differential assessment, significantly less potent than their partners, mothers, or fathers. This group was also reported to be more inhibited with regard to sexual attitudes than the other infertile (nonanovulatory) or fertile groups. The author speculated that many couples altered a satisfactory sexual relationship because of the infertility experience. It was concluded that the anovulatory infertile women did not have a significantly higher level of neurotic personality structure or psychopathology when compared to the other two groups.

Brand (1982) tested the hypothesis that a group of functionally infertile women would show higher basal levels of functioning and greater reactivity to stimulation in certain autonomic pathways than groups of normal fertile women or women with organic pathology. A single measurement of the three groups was obtained. The sample was selected from an infertility clinic in the Republic of

South Africa. Twenty-two functionally infertile, 32 organic infertile, and 5 fertile women were studied. Specific selection procedures were not reported; therefore, the possibility of selection bias existed. All subjects were Caucasian and had been married from one to seven years. Heart rate, pulse volume, muscle tension, and skin resistance were the basal levels recorded. Each subject was presented with nine stimuli. There were five successive sound stimuli (the sound of an electric doorbell for a duration of five seconds every sixty seconds), a cognitive task (such as $13 \times 7 = ?$), two words of emotional significance (family and baby), and one neutral word (landscape). All women were tested between three and eight days after menstruation to avoid any interaction with ovarian hormone activity and autonomic activity. Data were analyzed with interval statistics such as the one-way analysis of variance and the t-test. The functional group was not significantly different from the organic group with regard to heart rate, pulse volume, muscle tension, and skin resistance. The heart rate and pulse volume were not significantly different for the functional group, as compared to the organic group, with regard to greater reactivity to stimuli. These results indicated that a functionally infertile group did not show increased tension in the smooth and skeletal musculature. Thus, the

hypothesis that functionally infertile women would have higher basal functioning and greater reactivity to stimulation when compared to organic infertile and fertile women, was rejected. When examining the results of this study, it should be noted that potential selection bias due to the unknown selection technique and the small number of fertile women included in the study may influenced the results.

In a follow-up study, Brand (1982) tested the hypothesis that functionally infertile women would show significantly more personality maladjustments than a group of organic infertile and fertile women. The study population and research design procedures were the same as studied in Brand (1982). The personality questionnaires selected for the investigation were the Tennessee Self-Concept Scale (self-esteem), IPAT Anxiety Scale (anxiety), Eysenck Personality Inventory (extraversion/introversion and neuroticism/stability), and the Personal, Home, Social and Formal Relations Questionnaire (level of personal and social adjustment). The one-way analysis of variance, Scheffe, and pair-wise tests were used for statistical comparisons, even though the data were nominal or ordinal levels of measurement. Brand found no significant difference between the functional, organic, or fertile groups regarding self-esteem or anxiety.

Therefore, the functional and organic group did not show any ego weakness, guilt proneness, frustration, or covert/overt anxiety as measured by the IPAT Anxiety Scale. Except for one measure (the fertile group had a lower self-control) the groups showed no difference in personal and social adjustment. The fertile group was significantly more extroverted than either the functional or organic group. There was no difference within the three groups regarding neuroticism. Brand suggested that with the given findings and the relatively small sample of fertile subjects, more research into this area is needed. The same considerations of selection bias and sample size in the initial study may have influenced the results in this follow-up as well.

Bell (1981) studied psychological problems among patients attending an infertility clinic in Scotland. Twenty consecutive couples were examined in a single measurement. Since a consecutive sampling technique was used, the possibility of selection bias existed. Information on nonrespondents was not reported. Ten of the couples were first attenders with no previous evaluation or treatment. The remaining 10 couples were undergoing a variety of treatments. No comparison group was included. Baseline data showed that the mean age for men was 30.6 years, the mean age for women was 27.9, the mean marriage

duration was seven years, and the mean length of infertility was 4.2 years. The research methods included a joint explanation of the study and data collection via an individual interview and questionnaire. The interview covered demographic information, feelings concerning infertility, and information likely to influence emotional response. Also included was an assessment of current social, sexual, and marital adjustment, along with a clinical observer rating of anxiety and depression. Since the interview was not tested for reliability or validity the possibility of subjectivity and bias exist.

Questionnaires were: (1) Sexual Experience Scales (sexual motivation and attitude to marriage), (2) the Work, Leisure and Family Life Questionnaire (social adjustment scale), and (3) the Delusions-Symptoms-States Inventory State of Anxiety and Depression (anxiety and depression). The questionnaire was administered at the clinic. According to Bell, interview data suggested that couples with previously satisfactory sexual relationships may develop secondary dysfunctions as a result of the emotional pressures from their infertility. Emotional disturbances were reported by nine subjects. Nine subjects showed impaired social adjustment. Five subjects reported sexual dysfunction secondary to their infertility. Deterioration in the marital relationship was reported by seven couples. Bell

concluded that the findings suggest that there is a need for psychological problems to be considered in infertility management and that longitudinal studies are needed.

Slade (1981) studied sexual attitudes and opinions concerning appropriate female social roles in 19 fertile and 19 infertile women. A single measurement was used to study these parameters. The infertile women in this study were attending an infertility clinic and were free from known pathology. Specific sampling techniques were not discussed. They had experienced involuntary infertility for two or more years. A control group, who were free from known fertility problems, was made up of women attending a family planning clinic. It was unclear how close this control group represents the general fertile population. The two groups were matched for age, race, living in a stable environment with a male, and educational levels. The Role Questionnaire and Sexual Attitude Questionnaire were administered to both groups. Scores were compared using the Mann-Whitney U-test due to the order ranked level of measurement. The results indicated there was no overall difference in role orientation between the two groups. The results of the Sexual Attitudes Questionnaire indicated that infertile women had generally more restricted attitudes and higher levels of guilt. Slade stated it is important to recognize that the infertile women in this

study may not be representative of other infertile women. High guilt levels or particular role orientations may have been factors in their self selection. Slade concluded that interpretations from this study are difficult because of the problem of cause and effect. A more detailed examination of the area of sexual attitudes was recommended.

Berger (1980) subjectively examined the conflicts and behavior patterns with couples in which the male partner had been diagnosed with azoospermia or severe oligospermia. Couples' reactions to donor insemination were also examined. The investigation consisted of a single interview among couples in a reproductive biology clinic at a large urban general hospital. The construction of the interview, i.e., the definition of objectives, general and item format, and pretesting was not discussed. The sample consisted of 16 married couples, ages 21 to 38 years of age, who had known about the infertility for 8 months to 4 years. Actual subject selection procedures were not discussed, therefore the possibility of selection bias was an issue. Berger did make an attempt to narrow the sample population by excluding couples who were: (1) aware of the husband's infertility before marriage, (2) where the wife had been found to have physical pathology that could possibly have contributed to the infertility, and (3) in

couples where one or both partners had severe psychopathologies such as schizophrenia or manic depressive illness. Each couple was asked the following questions: (1) What was each partner's reaction to the diagnosis of the husband's infertility?, (2) Could changes in feeling, thinking, or behavior be detected in the individual partners or in the relationship?, (3) What conflicts could be inferred from these changes?, (4) Was there any pattern to the couple's choosing donor insemination?, and (5) How did they feel about keeping it secret?. Berger noted that probing questions were asked during the interview to "fit the subject at hand." The results indicated that 10 of the 16 men reported a period of impotence that lasted one to three months after the diagnosis of infertility. Depression was reported in three of these men. Only two of the 16 men reported no change in sexual pattern or mood. It was suggested that some of the men appeared more withdrawn than in the past. None of the 16 females reported a decrease in their frequency of sexual activity. Six had significant anger toward their husbands after the diagnosis of male infertility. Two women reported that this attitude led to an affair in which no contraceptives were used. Ten of the sixteen women reported dreams that incorporated: (1) the woman felt bad about the husband's infertility, (2) she wished to be rid of her husband, and

(3) she felt guilty about her wish to get rid of him. Ten couples had decided to pursue donor insemination. The six couples that delayed the decision from one and three-fourths to four years, appeared better adjusted than three of the four couples who decided in much less time. Berger concluded that a delay in the pursuit of donor insemination was associated with better psychological adjustment and that the decision to pursue donor insemination involves two stages. The first stage consisted of the husband coming to terms with his infertility. The second was the confronting of the donor insemination procedure. Berger reported that the implication for clinical management was that the discussion of donor insemination may best be postponed for 3 to 4 months after the infertility work-up. Since the subjects in this study were most likely a convenience sample and the interview technique was not pilot tested or evaluated, the recommendations should be limited to the study sample and not to the overall target population.

Platt (1973) investigated the psychologic aspects of infertility of males and females. The investigation included 25 infertile couples and 15 control couples. All subjects were at least high school graduates with the majority being professionals and college graduates. The infertile couples had been seeking treatment at a hospital infertility clinic where the fee was \$500 per couple.

There was no explanation of how the control couples were selected. Selection bias was an issue in this investigation due to the nonrandomization of subjects. Three hypotheses concerning personality and self-concept were tested: (1) Infertile individuals believe that significant events in their lives are under the control of external capricious forces rather than under the control of their own efforts, (2) Infertile persons have significant discrepancies between their perceptions of their present selves and their perceptions of their ideal selves, average males or females, and mothers or fathers, and (3) Infertile persons differ from fertile persons along a number of personality dimensions and show more evidence of emotional disturbance, as well. The possibility of the misuse of statistics existed in the analysis due to the use of t-tests on nominal and ordinal data. There were no significant differences between groups except that eleven of the 15 control couples had children and the remaining four couples were practicing birth control. Internal-External(I-E) Control, Semantic Differential Procedure, and the Group Personality Projective Test were used as measures to test the hypotheses. The results indicated both infertile males and females perceived the locus of control to be externally oriented. There were significant discrepancies between their present selves and (1) their

ideal selves, and (2) their conceptions of mother or father. Infertile females, but not infertile males, showed higher levels of neuroticism, anxiety, and emotional disturbances than controls. Thus, all hypotheses were accepted with exception to discrepancies between their present selves and their conceptions of mother or father. Infertile couples did not perceive discrepancies between themselves and the average male or female. Platt concluded from the results that the infertile couples do differ from fertile couples and future research should study the causal nature of these difference.

Mai (1972) compared infertile and fertile couples from South Australia on a large number of demographic and behavioral variables. A single measurement of a consecutive sample at a public hospital was used in the research design. The investigation included 50 infertile women and 35 of their husbands. One woman and 15 men declined to be interviewed. Some patients were rejected because they were not conversant in English. A control group of 50 fertile couples was selected by approaching married women in nonpsychiatric units of the same hospital. Only 15 husbands of the 50 fertile wives agreed to participate. The two groups were compared on age, social status, religion, country of origin, years married, and relationships between spouse. The difference between the

two groups was reported as small and insignificant. The interview was semistructured, thus allowing for open-ended and probing questioning. The results indicated that the infertile and fertile couples reported little differences in regard to psychiatric pathology. Mai noted, however, that particular infertile individuals may elicit severe psychopathology as demonstrated by two infertile wives in this investigation. The infertile women did exhibit significantly more aggressive and hysterical personality disorders, ambivalence toward procreation, and differences concerning sexual relationships. The results gave little support to the association between infertility and the lack of orgasm. Also, premarital, heterosexual relationships were not associated with the etiology of infertility. Because of the results, Mia: (1) rejected Hypothesis 1 that infertile couples were more likely to experience psychiatric pathology, (2) accepted Hypothesis 2 which stated that infertile wives were more likely to experience disturbances of psychosexual orientations and personality disorders. The results of this study should be examined in light of the following factors. First, the sampling procedure used was a convenience sample, therefore selection bias was an issue. Second, the interview used in this investigation was not tested for reliability. Disadvantages to using the interview method for data

collection were its potential for subjectivity and bias. Mai did not present information regarding the pretesting of interview questions or the interrater agreement. Thus, it was possible that the lack of reliability and validity of the interview method influenced the results of the investigation.

Summary

Considerable research efforts have been devoted to the cause of infertility. Until recently, little attention has been given to the psychological and behavioral responses to this problem. Much of the information that exists has been anecdotal in nature, i.e., physicians, nurses, or other health care professionals' reports of personal observations. These observational reports suggest that infertility will produce a life crisis in the couple that is often unanticipated and has the potential to affect almost every area of life. Much of the research literature tends to suggest that even though infertile patients do not constitute a psychiatric population, many do experience greater amounts of psychological distress. Unfortunately, many of these studies have used single observation, case study methodologies for data collection. Little, if any, information exists on the psychological and behavior changes that occur over time. Also, many of the existing

studies contain numerous threats to internal and external validity, such as: selection bias due to differences between subjects in groups, violation of assumptions or misuse of statistical tests, and multiple-treatment interference. Mortality, partly due to relatively low return rates via mail, was also an issue in many cases. Typical return rates were 45 to 55 percent. This research suggests that coping strategies, perceptions, support from the health care personnel, and support from significant others will, to a large extent, determine how the couple will respond to the infertility problem and its treatment. This response could certainly influence the couple's decision to continue or terminate medical treatment. Treatment that is discontinued prematurely may be detrimental to the couple's goal of achieving a pregnancy and live birth. Therefore, longitudinal research is needed to ascertain the role of psychological and behavioral parameters on continuation of a comprehensive infertility treatment program.

CHAPTER 3

METHODOLOGY

This chapter reviews the identification of the sample, methodological steps of the data collection, instrumentation, and data analysis of this study.

Sample

The sample consisted of infertile individuals and couples undergoing treatment for primary or secondary infertility at the Fertility Center at the University of Tennessee Medical Center, Knoxville, Tennessee. Only those individuals volunteering to participate and desiring a pregnancy were included in the study. Convenience sampling was used as the sampling technique.

Collection of Data

Prior to collection of the data, approval from the Institutional Review Board at the University of Tennessee Medical Center—Knoxville (UTMC-K) was obtained. Similar approval was obtained from the University of Tennessee—Knoxville main campus Human Subjects Committee after approval was obtained from UTMC-K. Each subject in the sample was presented information about the investigation immediately prior to their initial visit to the physician

at the infertility clinic. The purpose of the study was explained, that is, the couple was informed that the study was designed to assess the variations in psychological traits, coping methods, locus of control, and perceptions of the subject in the treatment of infertility. The selected instruments and instructions on how to complete the instruments was then explained. The couple was informed that the data collected for the study would be included in their medical records and that participation in answering the instruments was completely voluntary. Each subject was asked to read and sign an informed consent stating that they understood the explanation and that consent was given until completion of treatment or until a decision was made to terminate participation from the study. The subjects were instructed to independently complete the test instruments at home and return via mail within one week. A metered envelope with the return address was given to the couple along with the test instruments. The same test instruments were mailed to the subjects approximately once every four months for the duration of the treatment period. Enclosed in the mail-out was a letter from the physician asking the subject to complete and return the questionnaires. Test instruments were not mailed to subjects who either terminated treatment, changed physicians, became pregnant, or decided

to no withdraw from the study. Those subjects failing to return the test instruments after the initial meeting via the mail were contacted by telephone and asked to reconsider the completion of the test instruments. The subjects failing to return the four month interval mail-outs were mailed a letter from the physician's office concerning the importance of returning the completed questionnaires. Participants that became inactive for a minimum of six months were telephoned and asked to complete a final follow-up measurement.

Instrumentation

Four instruments were used to address the research questions. The Taylor-Johnson Temperament Analysis (Psychological Publications, 1984), the Medical Coping Modes Questionnaire (Feifel, 1986), the Health Locus of Control (Wallston, 1978), and an Adjective Generation Questionnaire (Allen, 1983) were selected to measure the psychological and behavioral responses of the infertile couples.

The Taylor-Johnson Temperament Analysis (TJTA) was selected because of its measurement of a wide range of personality traits and its high degree of validity and reliability. The validity was first determined by using professional clinical ratings of psychologists. The test

has also been highly correlated with other scales such as the Sixteen Personality Factor Questionnaire and the Minnesota Multiphasic Personality Inventory (correlation 0.72). The TJTA has high levels of reliability (correlation 0.83) with regard to stability, consistency, and standard error of measurement. The TJTA measures a number of personality variables which influence personal, social, marital, parental, family, scholastic, and vocational adjustment. Those variables are: nervous vs. composed, active-social vs. quiet, depressive vs. lighthearted, expressive-responsive vs. inhibited, sympathetic vs. indifferent, subjective vs. objective, dominant vs. submissive, hostile vs. tolerant, and self-disciplined vs. impulsive. It was designed to ascertain and evaluate the significance and role of these variables in the overall problems or circumstance. Psychological trait patterns (in degrees of intensities) can be predicted via the combination of certain personality traits. The patterns include the anxiety pattern, withdrawal pattern, dominant-hostile pattern, dependent-hostile pattern, emotionally inhibited-blocked pattern, and emotionally repressed pattern. The TJTA also makes possible the early detection of emotionally troubled individuals, so that the patient may be referred to more extensive psychological testing before the problem allows a breakdown of

relationships. The analysis requires the subject to answer 180 question in the agree-disagree-undecided format.

The Medical Coping Modes Questionnaire (MCMQ) was selected because of its ability to measure individual coping strategies used in medical situations. The three coping strategies measured are confrontation, avoidance, and acceptance-resignation. The MCMQ, which can be used with life-threatening and non-life-threatening conditions, indicates whether or not the individual adhered to population norms. The MCMQ has been shown to produce a high degree of validity and reliability in medical patients under 65 years of age with life-threatening and non-life-threatening illnesses. The construct validity was obtained from three sources: a personality measure, self-report from patients, and reports from physicians and significant others (Feifel, 1986). The coefficient alpha for reliability, according to Feifel (1986) for confrontation, avoidance, and acceptance-resignation strategies were 0.70, 0.66, and 0.67, respectively. The MCMQ consists of 19 questions about thoughts, feelings, and behaviors related to their infertility.

The Health Locus of Control (HLC) was selected because of its ability to measure the extent that individuals perceive themselves to be in control of their own personal health. It has been used to predict the potential of

adopting healthy habits, such as seeking help or following a medical regime. The HLC consists of three dimensions: internality--one's capacity to influence his/her own health; powerful others--the extent to which doctors, nurses, and others affect health; and chance--health is merely an effect of luck or fate. According to the theoretical perspective, persons with an external locus of control believe that they are at the mercy of their environment and are less likely to use available resources to avoid health problems. "Externals" attribute the status of their health to powerful others or chance. Persons with an internal locus of control believe they can alter their environment and assume active roles in avoiding health problems. "Internals" are more likely to demonstrate behaviors which promote health since they are more likely to feel responsible for what happens to them. The concurrent and discriminant validities of the HLC were established by correlating them to Levenson's I, P, and C scales and reliability alphas ranged from 0.508 to 0.733 (Levenson, 1974). The HLC consists of 18 multidimensional Likert-type questions.

The Adjective Generation Technique (AGT) was selected in order to measure the perceptions of the infertile couple. It assesses the perceptions of an individual toward a psychological object and categorizes them

according to favorability--unfavorability, anxiety--calm, and femininity--masculinity. Perceptions of physician, self, body, current medical condition, partner, partner's body, sexual intercourse, and sexual desire of self and partner are included. Allen (1983) reported validity coefficients, when compared to the Personal Orientation Inventory measure, of 0.40 ($p < .05$) and reliability coefficients ranging from 0.41 ($p < .05$) to 0.74 ($p < .001$). The AGT requires the subjects to respond to 11 statements by recording five adjectives describing how they feel about the psychological object.

Analytic Techniques

The purpose of this study was to ascertain the role of personality traits, health locus of control, relationship variables, sexual functioning, and coping methods of couples undergoing treatment for infertility and those who have discontinued treatment.

The two groups included in this investigation were: (1) an active group receiving treatment for infertility, and (2) an inactive group that had previously received treatment for infertility, but had discontinued treatment for a minimum of six months. Comparisons of similarities and differences between active and inactive groups among: (1) active group and inactive group with the initial

administration measurements by gender (that is, male to male and female to female), (2) active group at the time of initial administration and four month measurement by gender, (3) inactive group at the time of initial administration and final follow-up measurement by gender, and (4) active group at the time of the four month measurement and inactive group at the follow-up measurement by gender.

Nonparametric statistical procedures were selected to test differences in the active group as compared to the inactive group. The nonparametric statistical procedures were selected for three reasons: (1) the normality of distribution or homogeneity of variances for the sample population was uncertain, (2) the levels of measurement of the data were nominal or ordinal scale data, and (3) the smallness of sample size (which does not lend itself to parametric tests). The Mann-Whitney U Test was used to measure the significance of difference between two independent samples. This statistical test is approximately 95 percent as powerful as its parametric counterpart, the t-test of independent samples. (Champion, 1981) The significance of difference between correlated samples were tested by the Wilcoxon Signed Ranked Test. It is approximately 95 percent as powerful as its parametric counterpart, the t-test of correlated samples. (Champion,

1981) The $p = 0.05$ level of significance was used to test differences for all analyses.

Summary

This chapter included information on how and where the sample was chosen, the methodological steps for the collection of data, and a brief discussion of the instrumentation used. The Taylor-Johnson Temperament Analysis, the Medical Coping Modes Questionnaire, the Health Locus of Control, and the Adjective Generation Questionnaire were selected to measure the psychological and behavioral responses of the infertile couples. Validity and reliability issues were examined. Finally, the nonparametrical statistics used in this investigation were presented.

CHAPTER 4

ANALYSIS AND INTERPRETATION OF DATA

The purpose of this chapter was to present the analysis and interpretation of the collected data. The chapter was divided into four sections: the demographic data, research questions, and results from the collected data, and the interpretation of data.

Demographics

Data were collected from 75 subjects from the Fertility Center at the University of Tennessee Medical Center, Knoxville, Tennessee. These data are presented in Table 4.1. There were 46 female and 29 male subjects. The active group was comprised of 22 females and 14 males. The mean age for the active female and male was 31 and 32 years respectively. The age range for the active female was 21 to 37 years and for the active male was 24 to 40 years. The inactive groups was comprised of 14 females and 9 males. The mean age for the inactive female and male was 30 and 30 years respectively. The age range for the inactive female was 26 to 36 years and for the inactive male was 23 to 35 years. With regard to race, 70 of the

Table 4.1

Subject Demographics

Variable	Quantitative Component
GENDER	
Male	N = 29 (39%)
Female	N = 46 (61%)
Total	N = 75 (100%)
Active Male	N = 14
Active Female	N = 22
Inactive Male	N = 9
Inactive Female	N = 14
MEAN AGE	
Active Male	32 YEARS, Range 24 - 40 YEARS
Active Female	31 YEARS, Range 21 - 37 YEARS
Inactive Male	30 YEARS, Range 23 - 35 YEARS
Inactive Female	30 YEARS, Range 26 - 36 YEARS
RACE	
White	N = 70 (93%)
Black	N = 5 (7%)
TYPE INFERTILITY	
Active Female:	
Primary	N = 16 (73%)
Secondary	N = 6 (27%)
Inactive Female:	
Primary	N = 10 (71%)
Secondary	N = 4 (29%)
TIME INFERTILE	
Active	Mean = 34 MONTHS
Inactive	Mean = 44 MONTHS
YEARS MARRIED	
Active	6.4 YRS
Inactive	6.3 YRS

subjects were white and 5 were nonwhite. According to the medical records at the initial diagnosis, infertility was primarily due to female etiology. Seventy-three percent of the active and 71 percent of the inactive females had primary infertility. Twenty-seven percent of the active and 29 percent of the inactive females had secondary infertility. The major diagnosis from the initial evaluation for the active group was endometriosis (54%), pelvic adhesions (17%), and anovulation (9%). The major diagnosis for the inactive group was pelvic adhesions (24%), anovulation (18%), polyovarian cysts (12%), and endometriosis (12%). The mean length of time of infertility was 34 months for the active group and 44 months for the inactive group. The active and inactive subjects had been married an average of 6.4 and 6.3 years respectively.

The questionnaire return rate for the initial measurement was 51 percent. The four month questionnaire return rate for the active female was 46 percent and for the active male was 43 percent. The follow-up questionnaire return rate for the inactive female was 57 percent and for the inactive male was 44 percent.

Research Questions

The research questions addressed were:

1. What are the similarities and differences in personality traits of infertile couples receiving treatment and those couples who have discontinued treatment?
2. What coping methods are most frequently used by active and inactive couples?
3. Does the health locus of control differ between active and inactive couples?
4. What self-reported differences exist in perceptions of self concept, body image, partner, sex drive, intercourse, infertility, and the physician between the active and inactive couples?
5. What self-reported differences exist between active and inactive couples in the respondent's perceptions of how the partner feels about self, body image, sex drive, and infertility?
6. Do self-reported psychological and behavioral responses differ over time in the active and inactive treatment groups?

Results

The results were presented following the order of the psychological and behavioral parameters in the research questions with the following format: (1) comparison of active group and inactive group with initial measurement by

gender, (2) comparison of active group at initial measurement and four month measurement by gender, (3) comparison of inactive group at initial administration and final follow-up measurement by gender, and (4) comparison of active group at four month measurement and inactive group at follow-up measurement by gender. The $p = 0.05$ level of significance was used to test differences for all analyses.

Comparison of Active Group and Inactive Group With Initial Measurement by Gender

Taylor-Johnson Temperament Analysis. The relationship of active and inactive females at the initial measurement and the Taylor-Johnson Temperament Analysis (TJTA) was measured by the Mann-Whitney U Test. There were no significant differences among any of the nine personality traits.

The relationship of active and inactive males at the initial measurement and the TJTA was measured by the Mann-Whitney U Test. There were no significant differences among any of the nine personality traits measured.

Medical Coping Modes Questionnaire. The relationship between the active and inactive females at the initial measurement and the Medical Coping Modes Questionnaire (MCMQ) was tested by the Mann-Whitney U Test. There were

no significant differences in either the confrontation, avoidance, or acceptance-resignation domains. Both groups were in the normal range of coping styles.

The relationship between the active and inactive males at the initial measurement and the MCMQ was tested by the Mann-Whitney U Test. There were no significant differences between groups in either the confrontation, avoidance, or acceptance-resignation domains. Both groups were in the normal range of coping styles.

Health Locus of Control. The relationship between the initial active and inactive female and the Health Locus of Control (HLOC) was tested by the Mann-Whitney U Test. These data are presented in Table 4.2. The only significant difference existed within the powerful others domain ($p = .03$). Inactive females reported higher levels of the powerful others locus of control than did the active group. There was also a tendency for the inactive females to report higher levels of the acceptance-resignation locus of control. The dominant domain manifested most by both groups, initial active and inactive females, was the internal locus of control.

The relationship between the active and inactive males at the initial measurement and the HLOC was tested by the Mann-Whitney U Test. These data are presented in Table 4.2. The only significant difference was within the

Table 4.2
Significant Differences Between Active and Inactive
Subjects at Initial Administration Measurement

Scale	Subjects					
	Active		Inactive		Difference	
	Mean	S.D.	Mean	S.D.	M.W.	P
<u>Female</u>						
Powerful Others (HLOC)	14.2	4.3	17.7	4.1	2.1	.04
Body Anxiety (AGT)	321.3	69.7	262.8	51.7	52.5	.01
Anxiety Toward Physician (AGT)	262.8	17.7	286.8	35.0	41.5	.04
<u>Male</u>						
Self-Favorability (AGT)	358.2	91.4	444.6	70.2	23.0	.04

powerful others domain ($p = .02$). Inactive males reported higher levels of the powerful others locus of control than did the active group. The dominant domain manifested most by both initial active and inactive males was the internal locus of control.

Adjective Generation Technique. The relationship between active and inactive females initial measurement and the Adjective Generation Technique (AGT) was analyzed by the Mann-Whitney U Test. These data are presented in Table 4.2. The Mann-Whitney compared the active and inactive group with each variable of interest in the AGT. Two significant differences were identified. Active females reported significantly greater levels of anxiety toward their own bodies ($p = .01$) than did the inactive female group. Inactive females reported greater levels of anxiety toward the physician ($p = .04$) than did active females.

The relationship between active and inactive males at the initial measurement and the AGT was analyzed by the Mann-Whitney U Test. These data are presented in Table 4.2. One significant difference existed among the 27 variables measured. This difference was on the perception of self favorability ($p = .04$). Inactive males reported greater levels of self favorability than did the active males.

Comparison of Active Group at Initial Measurement and Four Month Measurement by Gender

Taylor-Johnson Temperament Analysis. The relationship between the initial and the four month measurement of the active female/male groups and the TJTA was tested by the Wilcoxon Signed-Ranks Tests. There were no significant differences between each of the nine personality traits for either group.

Medical Coping Modes Questionnaire. The relationship between the initial and the four month measurement of the active female group and the MCMQ was tested by the Wilcoxon Signed-Ranks Tests. There were no significant differences in either the confrontation, avoidance, or acceptance-resignation domains. The four month measurement was within the normal range of coping styles.

The relationship between the initial and the four month measurement of the active male group and the MCMQ was tested by Wilcoxon Signed-Ranks Tests. There were no significant differences in either the confrontation, avoidance, or acceptance-resignation domains. The four month measurement was within the normal range of coping styles.

Health Locus of Control. The relationship between the initial and the four month measurement of the active female

group and the HLOC was tested by the Wilcoxon Signed-Ranks Tests. There were no significant differences in either the internal, powerful others, or chance domains. The dominant domain of internal locus of control did not change in the four month measurement.

The relationship between the initial and the four month measurement of the active male group and the HLOC was tested by the Wilcoxon Signed-Ranks Tests. There were no significant differences in either the internal, powerful others, or chance domains. The dominant domain of internal locus of control did not change in the four month measurement.

Adjective Generation Technique. The relationship between the initial and the four month measurement of the active female group and the AGT was tested by the Wilcoxon Signed-Ranks Tests. These data are presented in Table 4.3. The significant difference found was how the female group perceived that their partners felt about them. Active females perceived that their partners felt significantly more favorable toward them ($p = .03$) at the four month measurement as compared to the initial measurement.

The relationship between the initial and four month measurement of the active male group and the AGT was tested by the Wilcoxon Signed-Ranks Tests. These data are shown in Table 4.3. One significant difference was found. The

Table 4.3
Significant Differences Between Subjects Comparing
Initial and Four Month Measurements

	Initial	Four Month	SD	I	P-Val
<u>Female</u>					
Perception of Partner Favorable Towards You	408.3	443.7	32.3	2.9	.03
<u>Male</u>					
Favorable Towards Self	352.7	416.0	35.3	2.7	.04

active males reported a significantly greater level of favorability toward themselves ($p = .01$) at the four month measurement.

Comparison of Inactive Group at Initial
Administration and Final Follow-Up
Measurement by Gender

Taylor-Johnson Temperament Analysis. The relationship between the initial and the follow-up measurement of the inactive female group and the TJTA was tested by the Wilcoxon Signed-Ranks Tests. There were no significant differences among each of the nine personality traits.

Medical Coping Modes Questionnaire. The relationship between the initial and the follow-up measurement of the inactive female group and the MCMQ was tested by the Wilcoxon Signed-Ranks Tests. There were no significant differences in either the confrontation, avoidance, or acceptance-resignation domains between the initial administration and final follow-up measurement for the inactive female group. The follow-up measurement was within the normal range of coping styles.

Health Locus of Control. The relationship between the initial and the follow-up measurement of the inactive female group and the HLOC was tested by the Wilcoxon Signed-Ranks Tests. There were no significant differences

in either the internal, powerful others, or chance domains. The dominant domain of internal locus of control did not change in the four month measurement.

Adjective Generation Technique. The relationship between the initial and the follow-up measurement of the inactive female group and the AGT was tested by the Wilcoxon Signed-Ranks Tests. There were no significant differences among any of the 27 variables.

Due to an inadequate number of inactive males participating in the final measurement, the relationship between the inactive male initial measurement and the inactive male follow-up measurement was not tested.

Comparison of Active Group at Four Month Measurement and Inactive Group at Follow-Up Measurement by Gender

Taylor-Johnson Temperament Analysis. The relationship between the active female group at the four month measurement and the inactive female group at the follow-up measurement with the TJTA was tested by the Mann-Whitney U Test. These data are presented in Table 4.4. The personality trait of sympathetic versus indifferent was significantly different ($p = 0.01$) between the two groups. Inactive females reported significantly lower levels of the sympathetic personality trait. There was also a tendency

Table 4.4
Significant Differences Between Active Female Four Month
and the Inactive Female Follow-Up

Scale	Active		Inactive		MW	P
	Mean	SD	Mean	SD		
Sympathetic (TJTA)	68.2	26.6	18.0	25.9	10.5	.01
Anxiety Toward Self (AGT)	311.8	65.7	152.8	131.0	9.0	.01
Anxiety Toward Body	303.8	61.1	145.0	129.6	9.0	.01
Partner Anxiety Toward Infertility	347.7	61.9	193.0	139.2	7.5	.01

for marginally low expressive-responsive scores as well as marginally higher scores for hostility.

Medical Coping Modes Questionnaire. The relationship between the active female group at the four month measurement and the inactive female group at the follow-up measurement with the MCMQ was tested by the Mann-Whitney U Test. There were no significant differences in either the confrontation, avoidance, or acceptance-resignation domains. All coping styles were within normal ranges.

Health Locus of Control. The relationship between the active female group at the four month measurement and the inactive female group at the follow-up measurement with the HLOC was tested by the Mann-Whitney U Test. There were no significant differences in either the internal, powerful others, or chance domains. The dominant domain manifested most by both groups did not change from the initial measurements.

Adjective Generation Technique. The relationship between the active female group at the four month measurement and the inactive female group at the follow-up measurement with the AGT was tested by Mann-Whitney U Tests. These data are presented in Table 4.4. Three of the 27 variables were significantly different. Active females reported significantly greater levels of anxiety

toward self ($p = .01$). Active females reported significantly greater levels of anxiety toward their bodies ($p = .01$). Inactive females reported significantly lower levels of partner anxiety than did the active female ($p = .01$). Though not significant, there was a tendency for active females to have greater levels of favorability toward their infertility.

Due to an inadequate number of inactive males participating in the final measurement, the relationship among the active male at the four month measurement and the inactive male at the final measurement was not tested.

Interpretation of Data

The interpretation of data based on the statistical results of this investigation were presented in the order of psychological and behavioral parameters in the research questions using the following format: (1) comparison of active group and inactive group with initial measurement by gender, (2) comparison of active group at initial measurement and four month measurement by gender, (3) comparison of inactive group at initial administration and final follow-up measurement by gender, and (4) comparison of active group at four month measurement and inactive group at follow-up measurement by gender.

Comparison of Active Group and Inactive Group With Initial Measurement by Gender

Taylor-Johnson Temperament Analysis. The Taylor-Johnson Temperament Analysis was used to measure personality traits in research question 1. The research question was: What are the similarities and differences in personality traits of infertile couples receiving treatment and those couples who have discontinued treatment?

The active and inactive groups did not report statistically significant differences by gender in the TJTA personality traits. Therefore, at the initial measurement prior to treatment, both the active and inactive groups were similar with respect to personality traits as measured by the TJTA.

Medical Coping Modes Questionnaire. The Medical Coping Modes Questionnaire was used to measure coping methods in research question 2. The research question was: What coping methods are most frequently used by active and inactive couples?

The active and inactive groups did not report statistically significant differences by gender in the MCMQ coping methods. Therefore, at the initial measurement prior to treatment, both the active and inactive groups utilized coping strategies within normal ranges as measured by the MCMQ.

Health Locus of Control. The health locus of control was used in research question 3. The research question was: Does the health locus of control differ between active and inactive couples?

Significant differences existed between the active and inactive groups at the initial measurement. The inactive females and males reported greater levels of the powerful others locus of control. These results suggested that the infertile couple who eventually withdrew from treatment tended to believe that they were more externally controlled than did the infertile couples who remained in treatment. According to the theoretical perspective of the HLOC, persons with an external locus of control believe that they are more at the mercy of their environment and are less likely to use available resources to avoid health problems. Platt (1973) reported similar findings of increased levels of external locus of control in infertile couples.

Adjective Generation Technique. The Adjective Generation Technique was used to measure perceptions in research questions 4 and 5. Research question 4 was: What self-reported differences exist in perceptions of self concept, body image, partner, sex drive, intercourse, infertility, and the physician between the active and inactive couples? Research question 5 was: What self-reported differences exist between active and inactive

couples in the respondent's perceptions of how the partner feels about self, body image, sex drive, and infertility?

With regard to the perceptual differences as measured by the AGT, three significant differences existed. The three differences were: (1) active females reported greater levels of anxiety toward their own body, (2) inactive females reported greater levels of anxiety toward the physician, and (3) inactive males reported greater levels of self favorability. Increased levels of body anxiety in the active female may have been an indication that these females perceive their infertility as more than just a medical problem or condition. Sandelowski (1990) reports that when infertility is viewed phenomenologically, it engulfs the whole person. Women may image themselves as abnormal and defective with the entire self being damaged. Infertility is characterized as a "part of who I am." Viewing infertility as a state of being may explain the increased anxiety levels. Inactive females may have reported greater levels of anxiety toward the physician due to having higher levels of a powerful others locus of control. Anxiety may have increased due to the physician (the powerful other) not being able to produce a pregnancy. The inactive males reported feeling better about themselves at the initial measurement than did the active males. The inactive males, who had higher levels of self favorability

as a member of a childless couple, may have been satisfied with their current life roles and thus been less likely to encourage and support their wives to continue the costly and emotional laden treatment program.

Comparison of Active Group at Initial Measurement and Four Month Measurement by Gender

The following results apply to research question 6. This research question was: Do self-reported psychological and behavioral responses differ over time in the active and inactive treatment groups?

Taylor-Johnson Temperament Analysis. There were no significant differences by gender within the active group from the initial measurement and the four month measurement with regard to the TJTA. Therefore, personality traits of the active female and male do not change significantly over time.

Medical Coping Modes Questionnaire. There were no significant differences by gender within the active group from the initial measurement and the four month measurement with regard to the MCMQ. Therefore, coping methods of the active female and male remain stable over time.

Health Locus of Control. There were no significant differences by gender within the active group from the

initial measurement and the four month measurement with regard to the HLOC. Therefore, the health locus of control in the active female and male do not change significantly over time.

Adjective Generation Technique. There were significant perceptual differences over time in both the active female and male. The active males reported feeling better about themselves at the four month measurement. This may have been due to the couple's participation in the infertility treatment program. These males may have felt they were doing something positive for their families and themselves. The active females reported the perception that their partners felt more favorable toward them over time. This result may be directly related to the male feeling better about himself, and therefore feeling better about his spouse.

Comparison of Inactive Group at Initial
Administration and Final Follow-Up
Measurement by Gender

The following results also apply to research question 6. This research question was: Do self-reported psychological and behavioral responses differ over time in the active and inactive treatment groups?

There were no significant differences reported within the inactive females at the initial measurement and the

follow-up measurement. Thus, the psychological and behavioral variables related to personality traits, coping methods, health locus of control, and perceptions remain stable over time.

Comparison of Active Group at Four Month
Measurement and Inactive Group at
Follow-Up Measurement by Gender

Again, the following results apply to research question 6. This research question was: Do self-reported psychological and behavioral responses differ over time in the active and inactive treatment groups?

Taylor-Johnson Temperament Analysis. The inactive female reported lower levels of the TJTA sympathetic personality trait as compared to the active female. Sympathetic was defined by the TJTA as being compassionate, understanding, and kind. Particular items in the TJTA that measured the sympathetic trait included empathy, forgiveness, compassion, as well as a concern for children, animals, and the elderly (Psychological Publications, 1984). The TJTA reports that individuals who score low on the sympathetic trait may indicate self-protective withdrawal from emotional involvement (Psychological Publications, 1984) Thus, the inactive female may not have allowed herself to experience the emotional burden of

infertility due to a form of self protection or denial. A combination of marginally low sympathetic and expressive-responsive scores in conjunction with marginally high hostility scores may have indicated an emotionally inhibited trait pattern. An individual exhibiting this pattern may be less likely to seek or continue treatment for fear of being hurt emotionally by the experience. The relationship among these personality traits are also important in marital discord or sexual dysfunction because it is an indicator of affectional compatibility. Couples experiencing marital disharmony or difficulty in sexual matters may be too embarrassed to continue the invasive treatment that accompanies infertility evaluation. These females may have withdrawn from treatment in order to avoid dealing with the emotions that accompany infertility treatment.

Medical Coping Modes Questionnaire. There were no significant differences in coping methods between the active and inactive female groups. Therefore, the coping strategies of the active and inactive female groups do not change significantly over time.

Health Locus of Control. There were no significant differences in health locus of control between the active and inactive female groups. Therefore, the dominant domain

did not change significantly over time. There was a tendency for the inactive group to report lower levels of an internal locus of control. Again, this finding supports Platt's (1973) conclusions of increased levels of an external locus of control in infertile couples.

Adjective Generation Technique. The AGT revealed that the active females had greater levels of anxiety toward self and of perceived partner anxiety. These results may indicate that over time the female who remained in an unsuccessful treatment program had become increasing anxious. Their spouse may have perceived this increase in anxiety and thus may become more anxious himself. This may explain the active female's perception of increased anxiety in the male. This level of anxiety may have been a motivating factor to remain in the treatment program. It was possible that the inactive female reported less anxiety due to the increased belief in the powerful others locus of control, having searched for treatment elsewhere, or had perhaps faced the reality of infertility and had decided to go on with life. This may be a result of trying to "put it all behind her." The facing of reality, sometimes called acceptance and resolution, usually brings about behavioral changes such as resumption of social contacts and happier moods. These types of behavioral changes could certainly help alleviate anxiety. Therefore, decreasing levels of

anxiety could be an indication that the patient was moving into the acceptance or resolution phase of the grieving process.

Summary

This chapter presented the demographic data, research questions, results, and interpretation of data derived from the study. Differences and similarities among the Taylor-Johnson Temperament Analysis, Medical Coping Modes Questionnaire, Health Locus of Control, and the Adjective Generation Technique were examined. Based on the analysis, significant differences existed between the active and inactive groups. Initially, inactive females and males scored higher on the powerful others locus of control. The inactive females reported lower levels of anxiety toward body and higher levels of anxiety toward the physician. Inactive males reported higher levels of self favorability. Over time, the active male felt better about self and the active female believed these same males felt more favorable toward them. The inactive females exhibited no significant differences over time. The final measurements of the active and inactive groups highlighted differences in personality traits and the possible trait patterns. The inactive female group tendency toward the emotionally inhibited pattern was examined. Active females reported higher levels of perceptual anxiety. Possible

interpretations of the differences between the active and inactive groups as to why these differences occurred and why they may have been important for the discontinuation of treatment were examined.

CHAPTER 5

SUMMARY, FINDINGS, CONCLUSIONS,
AND RECOMMENDATIONS

Summary

The problem of this study was to ascertain the role of psychological and behavioral parameters which contribute to the early withdrawal of couples from the Fertility Center at the University of Tennessee Medical Center.

Specifically, the study sought to answer the following research questions:

1. What are the similarities and differences in personality traits of infertile couples receiving treatment and those who have discontinued treatment?
2. What coping methods are most frequently used by active and inactive couples?
3. Does the health locus of control differ between active and inactive couples?
4. What self-reported differences exist in perceptions of self concept, body image, partner, sex drive, intercourse, infertility and the physician between the active and inactive couples?
5. What self-reported differences exist between active and inactive couples in the respondent's

perceptions of how the partner feels about self, body image, sex drive, and infertility?

6. Do self-reported psychological and behavioral responses differ over time in the active and inactive treatment groups?

The sample in this investigation was comprised of 75 subjects from the Fertility Center at the University of Tennessee Medical Center, Knoxville, Tennessee. The overall sample may be described as: thirty years of age with a range of 21 to 40 years, predominantly white (93%), infertile for 34 months (active) to 44 months (inactive), married for 6 years, with the majority being diagnosed with primary infertility (active--73%, inactive--71%). The active group consisted of 22 females and 14 males. The inactive groups consisted of 14 females and 9 males. Four instruments were used to test the research questions: (1) Taylor-Johnson Temperament Analysis (TJTA), (2) Medical Coping Modes Questionnaire (MCMQ), (3) Health Locus of Control (HLOC), and (4) Adjective Generation Technique (AGT). The active group completed the set of instruments at the initial administration and four months later. The inactive group completed the set of instruments at the initial administration and at six months subsequent to discontinuing treatment.

The data obtained from the instruments were compiled and analyzed. The similarities and differences between the active and inactive groups were identified by the Mann-Whitney U Test for independent samples and the Wilcoxon Signed-Ranked Test for correlated samples. The $p = 0.05$ level of significance was used to test the significant difference for all analyses.

The possibility of bias exists in any investigation, thus, this chapter would be incomplete without such acknowledgements. Potential bias existed due to the use of nonrandomized, voluntary subjects. This investigation was limited to couples seeking services from a single reproductive endocrinologist, hence, the collection of large sample numbers and randomization was not feasible under the conditions set forth as limiting factors. Multiple treatment interference existed within the sample due to the nature of the multiplicity of infertility etiologies. The treatments were similar in many respects, but different according to the individual needs of the couple.

Low response rates on the initial measurement via return mail and high mortality rates on following mailouts may have influenced the quality of the data. The questionnaire response rates were similar to those found throughout the published literature relating to the

psychological aspects of infertility. Typical questionnaire response rates via mail in the published literature ranged from 26 to 75 percent. Robinson (1987) noted that some researchers report that a 90 percent response rate is necessary, while others report that 50 to 60 percent is permissible, and still others claim that lower rates are acceptable depending on the population being studied.

The evaluation and treatment of infertility is both a biological and emotional process that can be intrusive into one's personal and private life. The physical and psychological forces accompanying treatment may create a variety of stressful demands on time, finances, and emotional balance. As Kaufman (1969) noted, "Infertility cannot be treated like any other 'illness,' since it deals with the essence of maleness and femaleness." This makes the infertile couple difficult to investigate as a target population. And lastly, the question of how much of a statistical tendency or significant difference was required in this investigation to be meaningful?

Only in unusual circumstances does a nonsignificant finding provide evidence of no relationship. Selection bias, sample size, treatment interference, and so forth, may be the cause of nonsignificance. This may be especially true in small sample sizes, where nonsignifi-

cance could be interpreted to mean that more research is necessary, not that there was no relationship (McMillan, 1984).

Findings

The analysis of data produced the following findings:

1. There were no significant differences among any of the nine TJTA personality traits from acceptable norms between active and inactive groups by gender at the initial measurement.
2. The MCMQ coping method most frequently used by active and inactive groups by gender at the initial measurement was the confrontation style. Both groups were within normal range of coping styles.
3. The dominant domain manifested most by the active and inactive groups at the initial measurement of the HLOC was the internal locus of control. Both inactive female and inactive male groups had significantly higher levels of powerful others locus of control than did the active groups.
4. At the initial measurement of the AGT, the inactive female group reported significantly lower levels of anxiety toward their bodies and greater levels of anxiety toward the physician than did the active females. The inactive male group reported signifi-

cantly higher levels of body favorability than did the active male.

5. There were no significant differences at the initial measurement of the AGT between the active and inactive groups in the subject's perceptions of how the partner feels about self, body image, sex drive, and infertility.
6. There were no significant differences between the active group in TJTA personality traits, MCMQ coping methods, or health locus of control over time. With regard to the AGT, the male's perception of self favorability improved and the females's perception of partner anxiety was reduced over time.

There were no significant differences between the inactive female group in TJTA personality traits, MCMQ coping methods, health locus of control, or AGT perceptual differences over time.

There were no significant differences between the active and inactive female group in the four month and follow-up measurement in MCMQ coping methods and the health locus of control. The inactive female reported significantly lower levels of the sympathetic TJTA personality trait than did the active female. The active female reported greater levels of anxiety

toward self and of perceived partner anxiety on the AGT.

Conclusions

The following conclusions were formulated based upon the findings of this investigation.

1. The identification of decreasing levels of the sympathetic personality trait and increasing tendencies toward an emotionally inhibited trait pattern over time will aid in predicting which couples will withdraw from treatment early.
2. The identification of increased levels of a powerful others locus of control at the initial consultation will aid in predicting which couples will withdraw from treatment early.
3. The identification of increased levels of female anxiety toward the physician and of male favorability toward self at the initial consultation will aid in predicting which couples will withdraw from treatment early.
4. The identification of increased levels of anxiety in infertile wives toward themselves, their bodies, and their infertility at the initial consultation will aid in predicting which couples will remain active in treatment programs.

With the information obtained from this investigation, as well as psychological and behavioral parameters from future research, the health care professional may be better able to assist the infertile couple in continuing a comprehensive treatment program and thus reduce the time for a pregnancy and live birth.

Recommendations

Based on the conclusions derived from this study, the following recommendations were made:

1. Based upon the findings and conclusions of this investigation, the development of an instrument is recommended as an experimental screening measure to ascertain its value in determining which patients will remain in, and withdraw from, infertility treatment.
2. Replications of this investigation should be performed in other geographical locations with larger sample sizes.
3. Longitudinal investigations should be performed in order to more closely examine the magnitude of any effect of psychological and behavioral functioning beyond the four month treatment time frame.
4. Further research focusing on minority populations is needed.

5. Research is needed to examine varying psychological and behavioral effects according to: primary and secondary infertility, etiology of infertility, age of patient, length of marriage, evaluation and treatment procedures.

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APPENDIXES

APPENDIX A

INFORMED CONSENT

Infertility:INFORMED CONSENTPSYCHOLOGICAL AND BEHAVIORAL PARAMETERS OF INFERTILITY TREATMENTExplanation

The purpose of this study is to examine the psychological and behavioral aspects of infertility treatment. That is, the study is designed to assess the roles of Health Locus of Control, Relationship variables, Coping Modes, Self-Esteem, and Sexual Functioning in the treatment of infertility.

We would like to get this information from you and our other patients to help them with problems that may arise surrounding infertility. The information that you provide will help patients in the future, too.

Since we are just asking questions about how you feel, there is not likely to be any discomfort. However, due to the sensitive nature of some of the questions, mild stress may occur.

We can begin getting this information today and will continue throughout your treatment for infertility. There are four instruments or questionnaires that you are asked to complete today. Hereafter, you will be mailed the questionnaires approximately every four months up to one year depending upon the nature of your treatment program. The first time will take about forty-five minutes and approximately 30 minutes on subsequent occasions.

This information will be part of your medical record and kept secret. Your name will not appear on the survey form, but you will be identified by a secret code. When we put all the information together to find out how we can help you and others, your code will be omitted so that you cannot be identified.

We would like you to participate in this study, however, your participation in answer to any question is completely voluntary. Also, you may withdraw from the study at any time and this decision will have no effect on your ability to receive medical treatment.

If you have any questions now or in the future, you may contact me or Dr. Michael Doody at 544-9305.

Consent

In understand this explanation and will receive a copy of this document. This consent is valid until completion of my treatment or until I decide to terminate my participation from the study.

(Signature)

(Witness)

(Date)

(Date)

APPENDIX B

TAYLOR-JOHNSON TEMPERAMENT ANALYSIS

Taylor-Johnson Temperament Analysis

Devised by Roswell H. Johnson, 1941 Revised by Robert M. Taylor, 1967

INSTRUCTIONS

Do not open this booklet until you have read all of these instructions.

1. Fill in carefully the personal information asked for in the upper right-hand corner of the answer sheet.

2. Please do not write or mark on this booklet.

Indicate your answers on the answer sheet as explained below.

3. Please answer every question, even if you feel uncertain about the answer. Do not think too long about any one question.

4. The blank space . . . in each question applies to yourself, unless you are describing another person. As you read each question, insert mentally the appropriate name in the space . . . indicated.

5. On the answer sheet you are given three columns in which to mark your answer.

+ Mid -

1. ☐ ☐ ☐ Plus (+) means "decidedly yes" or "mostly so."

2. ☐ ☐ ☐ Mid means "undecided."

3. ☐ ☐ ☐ Minus (-) means "decidedly no" or "mostly not so."

6. Decide how each question applies to you or to the person you are describing. Record your decision by making a heavy pencil mark between the pair of dotted lines in the column which best indicates your answer. If you change an answer, please erase your first mark completely.

7. Try to give a definite plus (+) or minus (-) response.
Avoid MID responses when possible.

Published Exclusively by

Psychological Publications, Inc.

5300 Hollywood Boulevard, Los Angeles, California 90027

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Taylor-Johnson Temperament Analysis

QUESTIONS

Mark your answers on the answer sheet. Do not mark on this booklet.

Please answer every question.

1. Is . . . by nature a forgiving person?
2. Does . . . take an active part in community affairs or group activities?
3. Is . . . relatively calm when others are upset or emotionally disturbed?
4. Can . . . put himself or herself sympathetically in another person's place?
5. Does . . . have a marked influence on the thinking of family or associates?
6. Does . . . prefer a restful, inactive vacation to an energetic one?
7. Does . . . have difficulty concentrating while reading or studying?
8. Does . . . prefer to be a follower rather than a leader in group activities?
9. Does . . . lead a quiet life, without becoming involved in many relationships outside of home and work?
10. Does . . . take the initiative in making arrangements for family outings and vacations?
11. Does . . . make many unrealistic plans for the future, which later have to be abandoned?
12. Does . . . feel compassion for people who are weak and insecure?
13. Does . . . enjoy belonging to clubs or social groups?
14. Does . . . seek to keep peace at any price?
15. Is . . . easily bothered by noise and confusion?
16. Does . . . avoid physical exertion and strenuous activity?
17. Does . . . usually appear composed and serene?
18. Is . . . seriously concerned about social problems, such as poverty and unemployment, even when not directly affected by them?
19. Does . . . like to keep on the move in order not to waste time?
20. Is . . . a well-organized person who likes to do everything according to schedule?
21. Is . . . sensitive to the feelings and needs of any member of the family who is ill?
22. Does . . . act deliberately rather than impulsively?
23. Is . . . highly competitive in games, business, or personal relations?
24. Does . . . prefer to be alone rather than with people?
25. Does . . . feel uneasy when riding or driving in traffic?
26. Does . . . exercise regularly in order to keep in condition?
27. Is . . . more excitable than most people?
28. Does . . . like to entertain guests at home?
29. Does . . . like to be in charge of and supervise others?
30. Is . . . extremely neat and orderly?
31. Is . . . so self-assured that at times it is annoying even to friends?

32. Does . . . quickly recover composure after an accident or other disturbing incident?
33. Does . . . move briskly and with energy?
34. Would . . . prefer to accept an unfair situation rather than complain?
35. Do noisy, active children get on . . . 's nerves?
36. Is . . . quick to know when someone needs encouragement or a kind word?
37. Is . . . the kind of person one might call a "self-starter" or a "go-getter"?
38. Does . . . often allow tension to build up to the point of feeling "ready to explode"?
39. Does . . . need encouragement and approval in order to work effectively?
40. Does . . . frequently use medication to aid in relaxation?
41. Does . . . stand up for his or her rights?
42. Does . . . have a wide range of interests?
43. Does . . . like to let people know where he or she stands on issues?
44. Is . . . relatively free from worry and anxiety?
45. Does . . . like to have plenty to do?
46. Is . . . deeply concerned about the welfare of others?
47. Does . . . worry a great deal about health?
48. Is . . . self-confident in most undertakings?
49. Is . . . too soft-hearted to be a strict disciplinarian?
50. Does . . . tend to rely on others when there are decisions to be made?
51. Do many people consider . . . to be incapable of deep feeling?
52. Does . . . find it easy to give way to wishes of others?
53. Is . . . a sympathetic listener when someone needs to talk about himself or herself?
54. Is . . . always trying to convert someone to a particular point of view?
55. Is . . . considered an industrious and tireless worker?
56. Does . . . have any nervous mannerisms such as nail-biting, foot-tapping, etc.?
57. Is . . . the kind of person to whom others turn in time of distress or trouble?
58. Does . . . find it difficult to follow a definite plan?
59. Does . . . insist on prompt obedience?
60. Does . . . believe that everyone is entitled to a second chance?
61. Does . . . get into difficulty occasionally because of some impulsive act?
62. Does . . . suffer from indigestion or loss of appetite when worried or under tension?
63. Is . . . easily taken advantage of by others?
64. Does . . . limit himself or herself to one or two friends?
65. Does . . . find it difficult to relax because of a restless need constantly to be busy?
66. Is . . . easily tempted by a bargain?
67. Does . . . like to speak in public and enjoy the challenge of a debate?
68. Does . . . seek release from tension by excessive smoking, eating, or drinking?
69. Is . . . easily moved to pity?

70. Does . . . sleep well, and find it easy to relax when sitting or lying down?
71. Would . . . take a special interest in helping young people who are frequently in trouble?
72. Is . . . regarded as a "high-strung" person?
73. Is . . . quick to sense another person's feelings and moods?
74. Is . . . very emphatic and forceful in voice and manner?
75. Does . . . often have "the jitters" for no particular reason?
76. Does . . . prefer to read or watch television after a day's work, rather than go out or engage in social activities?
77. Does . . . make plans well in advance of the event and carry them out?
78. Does . . . prefer to listen and observe rather than take part in discussions?
79. Does . . . enjoy taking chances?
80. Does . . . get tense and anxious when there is much work to be done in a short time?
81. Does . . . think our nation concerns itself too much with the needs and suffering of people in other countries?
82. Does . . . enjoy activity and excitement?
83. Does . . . prepare a budget and make every effort to stay within it?
84. Would . . . do everything possible to protect an animal from neglect or cruelty?
85. Does . . . find it difficult to say "no" to a persuasive salesperson?
86. Does . . . have little interest in other people's emotional problems?
87. Is . . . interested in people and in making new friends?
88. Is . . . considerate and understanding when dealing with an elderly person?
89. Would people refer to . . . as a person who is "always on the go"?
90. Does . . . think it unnecessary to apologize after hurting someone's feelings?
91. Is . . . able to express affection without embarrassment?
92. Is . . . apt to make thoughtless, unfeeling remarks?
93. Is . . . thought of as a warm-hearted, outgoing person?
94. Does . . . often feel left out or unwanted?
95. Does . . . have a place for everything and everything in its place?
96. Is . . . free from racial and religious prejudice?
97. Does . . . feel disillusioned about life?
98. Is . . . openly affectionate with members of the immediate family?
99. Does . . . sometimes become so emotional as to be unable to think or act logically?
100. Does . . . find it difficult to express tender feelings in words?
101. Is . . . hopeful and optimistic about the future?
102. Does . . . tend to analyze and dwell on inner thoughts and feelings?
103. Is . . . understanding when someone is late for an appointment?
104. Does . . . have phobias or a deeply disturbing fear of any object, place, or situation?
105. Does . . . tend to be reserved in manner?
106. Does anyone ever complain that . . . is "bossy" or unreasonable?

107. Do people sometimes accuse . . . of being illogical?
108. When . . . offers a suggestion, is it apt to be more helpful than critical?
109. Does . . . reach conclusions only after looking at all sides of a question?
110. Does . . . find any discussion of sexual matters difficult or embarrassing?
111. Does . . . have a quick temper?
112. Does . . . express appreciation and pleasure when looking at beautiful things?
113. Is . . . inclined to be argumentative?
114. Does . . . sometimes get the uncomfortable feeling of being stared at or talked about?
115. Does . . . like to stick to one job until it is finished?
116. Are there times when . . . feels discouraged or despondent over lack of progress or accomplishment?
117. Is . . . inclined to "tell people off"?
118. Does . . . feel that life is very much worth living?
119. Does . . . tend to be suspicious of people's motives and actions?
120. Is . . . apt to be too hasty in making decisions?
121. Does . . . find it difficult to be friendly and responsive in contacts with people?
122. Does . . . have a deep respect for all human beings?
123. Is . . . easily embarrassed?
124. Is . . . inclined to stop and think before acting?
125. Does . . . tend to be impatient with someone who is frequently ill?
126. Is . . . always working toward some future goal?
127. Is . . . bothered at times by feeling unappreciated or by the idea that "nobody cares"?
128. Does . . . readily show tenderness to children?
129. Is . . . apt to be sarcastic when annoyed with someone?
130. Does . . . often dwell on past misfortunes?
131. Is . . . apt to keep feelings "bottled up inside"?
132. Does . . . feel contempt for men who seem unable to make a living?
133. Is . . . very methodical about keeping records of personal and business affairs?
134. Is . . . likely to be jealous?
135. Is . . . often so low in spirit as to be close to tears?
136. Does . . . find it hard to accept criticism or blame?
137. Is . . . frequently depressed because of personal problems?
138. Does . . . speak with animation, enthusiasm, or frequent gestures?
139. When deeply disturbed about something, has . . . ever contemplated suicide?
140. Is . . . inclined to carry a grudge?
141. Does . . . have many friends and acquaintances?
142. Is . . . often troubled by a lack of self-confidence?
143. Does . . . find it difficult to express sympathy to someone in sorrow?
144. Is . . . logical in thinking and speaking?

145. Is . . . considered lenient and easy-going?
146. Is . . . easily disheartened by criticism?
147. Does . . . frequently tend to dominate people around him or her?
148. Does . . . feel a bit uncomfortable when expected to express enthusiasm over a gift?
149. Is . . . quick to forgive a mistake and overlook a discourtesy?
150. Is . . . a fair-minded, reasonable person?
151. Is . . . a talkative person?
152. Does . . . often have "the blues" or feel downhearted for no apparent reason?
153. Does . . . work methodically and deliberately?
154. Does . . . frequently misinterpret what others do and say?
155. Does . . . at times suffer extreme physical exhaustion resulting from emotional conflicts?
156. Is . . . overly critical of some member of the family?
157. Does . . . feel self-conscious with most people?
158. Does . . . often make such blunt, cutting comments that someone's feelings are hurt?
159. Does . . . smile or laugh a good deal?
160. In voting, does . . . study personalities and issues, sometimes supporting a candidate of another party?
161. Is . . . superior or overbearing in attitude toward others?
162. Is . . . thought of as being overly sensitive?
163. Does . . . feel free to discuss personal problems as well as joys with close friends?
164. Is . . . slow to complain when inconvenienced or imposed upon?
165. Is . . . inclined to daydream about things that can't come true?
166. Does . . . often do things on the spur of the moment?
167. Does . . . find it difficult to get over an embarrassing situation?
168. Does . . . find it hard to break a habit such as smoking or overeating?
169. Does . . . often feel discouraged because of a sense of inferiority?
170. Is . . . inclined to be shy and withdrawn?
171. Does . . . have periods of idleness when it is difficult to find any reason for either physical or mental effort?
172. Does . . . maintain that most people are "out for all they can get"?
173. Does . . . avoid letting emotion influence sound judgment?
174. Does . . . find it difficult to be complimentary to members of his or her family?
175. Is . . . especially self-conscious and concerned about what others might think?
176. Does . . . often feel depressed by memories of childhood or other past experiences?
177. Does . . . 's interest often shift from one thing to another?
178. Does . . . feel restrained and inhibited in a love relationship?
179. If called upon, would . . . be fair and impartial in helping others to settle their differences?
180. Does . . . have periods of depression without apparent reason which last for several days or more?

APPENDIX C

MEDICAL COPING MODES QUESTIONNAIRE

Medical Coping Modes Questionnaire (MCMQ)

DIRECTIONS: Listed below are several questions asking about your typical thoughts, feelings, and behaviors as they relate to your current infertility. Please indicate your answer by circling the number which corresponds to your response choice.

1. How much do you want to be involved in decisions regarding your treatment?
 1 = Very much 2 = Sometimes 3 = Somewhat 4 = Very little
2. How often do you try to talk about your infertility with friends or relatives?
 1 = Never 2 = Sometimes 3 = Frequently 4 = All the time
3. In conversations about your infertility, how often do you find yourself thinking about other things?
 1 = Never 2 = Sometimes 3 = Frequently 4 = All the time
4. How often do you feel there is really no hope for your full recovery?
 1 = All the time 2 = Frequently 3 = Sometimes 4 = Never
5. In the past few months, how much have you learned about your infertility from talking with others who know something about it, such as a doctor, nurses, etc.?
 1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
6. How often do you feel that you don't care what happens to you?
 1 = Never 2 = Sometimes 3 = Frequently 4 = All the time
7. To what extent do you like talking to your friends and family because you won't have to think about your infertility?
 1 = Very little 2 = Somewhat 3 = Quite a bit 4 = Very much
8. How much has your illness caused you to think about certain things in your life in a more positive way?
 1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
9. When you think about your illness, how often do you try to distract yourself by doing something else?
 1 = All the time 2 = Frequently 3 = Sometimes 4 = Never
10. How often do you ask your doctor for advice about what to do concerning your illness?
 1 = All the time 2 = Frequently 3 = Sometimes 4 = Never
11. When friends or relatives try to talk to you about your illness, how frequently do you try to change the subject?
 1 = Never 2 = Sometimes 3 = Frequently 4 = All the Time

MCMQ

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12. In the past few months, how much have you learned about your infertility, how frequently do you try to change the subject?
- 1 = Very much 2 = Quite a bit 3 = Some 4 = Very little
13. How often do you just feel like giving in to your infertility?
- 1 = All the time 2 = Frequently 3 = Sometimes 4 = Never
14. To what extent do you try to forget about your infertility?
- 1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
15. How many questions have you asked your doctor about your infertility?
- 1 = None 2 = Some 3 = Many 4 = A lot
16. When you meet someone with your kind of infertility, how much do you talk about the details of the infertility?
- 1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
17. How often do you go to the movies or watch TV in order not to think about your infertility?
- 1 = Never 2 = Sometimes 3 = Frequently 4 = All the time
18. To what extent do you feel there is nothing you can do about your infertility?
- 1 = Very much 2 = Quite a bit 3 = A little 4 = Not at all
19. When close relatives or friends ask you about your infertility, how often do you talk to them about it?
- 1 = All the time 2 = Frequently 3 = Sometimes 4 = Never

APPENDIX D

HEALTH LOCUS OF CONTROL

Health Locus of Control

DIRECTIONS: Each item in this questionnaire is a statement of belief about health and illness. Beside each statement is a scale that ranges from Strongly Agree (6) to Strongly Disagree (1). For each item, circle the number that represents the extent to which you agree or disagree with the statement as it relates to your present state of health and illness. Circle only one number for each item. There are no right or wrong answers.

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1. If I get sick, it is my own behavior which determines how soon I get well again.	1	2	3	4	5	6
2. No matter what I do, if I am going to get sick, I will get sick.	1	2	3	4	5	6
3. Having regular contact with my physician is the best way for me to avoid illness.	1	2	3	4	5	6
4. Most things that affect my health happen to me by accident.	1	2	3	4	5	6
5. Whenever I don't feel well, I should consult a medically trained professional.	1	2	3	4	5	6
6. I am in control of my health.	1	2	3	4	5	6
7. My family has a lot to do with my becoming sick or staying healthy.	1	2	3	4	5	6
8. When I get sick, I am to blame.	1	2	3	4	5	6
9. Luck plays a big part in determining how soon I will recover from an illness.	1	2	3	4	5	6
10. Health professionals control my health.	1	2	3	4	5	6

Health Locus of Control
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	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
11. My good health is largely a matter of good fortune.	1	2	3	4	5	6
12. The main thing which affects my health is what I myself do.	1	2	3	4	5	6
13. If I take care of myself, I can avoid illness.	1	2	3	4	5	6
14. When I recover from an illness, it's usually because other people (for example, doctors, nurses, family, friends) have been taking good care of me.	1	2	3	4	5	6
15. No matter what I do, I'm likely to get sick.	1	2	3	4	5	6
16. If it's meant to be, I'm likely to get sick.	1	2	3	4	5	6
17. If I take the right actions, I can stay healthy.	1	2	3	4	5	6
18. Regarding my health, I can only do what my doctor tells me to do.	1	2	3	4	5	6

APPENDIX E

ADJECTIVE GENERATION

ADJECTIVE GENERATION

1. Please write five adjectives (words) that describe how you feel about yourself today.
"Adjectives are words that describe persons. You are a person.
A word that best describes you for today is....."

2. Please write five adjectives (words) describing how you feel about your body today.

3. Please write five adjectives (words) describing how you feel about your infertility problem.

4. Please write five adjectives describing how you feel about your partner today.

Adjective Generation
Page 2

5. Please write five adjectives that best describe how your sexual partner feels about you.

6. Please write five adjectives that best describe how your sexual partner feels about your body.

7. Please write five adjectives that best describe how your sexual partner feels about your infertility problem.

8. Please write five adjectives that best describe how you feel about your sex drive.

Adjective Generation
Page 3

9. Please write five adjectives that best describe sexual intercourse.

10. Please write five adjectives that best describe your physician.

11. Please write five adjectives that best describe how you feel about your partner's sex drive.

APPENDIX F

FOUR MONTH LETTER

THE UNIVERSITY OF TENNESSEE
MEDICAL CENTER AT KNOXVILLE



Department of Obstetrics
and Gynecology
1924 Alcoa Highway
Knoxville 37920-6999
(615) 544-9306

Dear

Enclosed is a follow-up packet of questionnaires concerning the emotional aspects of infertility. As with the questionnaires given you at our first meeting, I would like to ask you to complete these, print your name on each, and return them in the metered envelope included in this packet. Remember that the information should be completed independently of family members, spouse, etc. Also, as before, this information will be confidential.

Thank you so very much for taking the time to complete this information. We trust that one day soon this information will be able to help others who are undergoing similar treatments. If you have any questions you may contact me during office hours at 544-9305.

Sincerely,

Michael C. Doody, M.D., Ph.D.
Assistant Professor
Director, Reproductive Endocrinology
and Infertility Services

MCD/mea

Enclosure

Knoxville Unit of The University of Tennessee College of Medicine



APPENDIX G

FOLLOW-UP LETTER

THE UNIVERSITY OF TENNESSEE
MEDICAL CENTER AT KNOXVILLE



Department of Obstetrics
and Gynecology
1924 Alcoa Highway
Knoxville 37920-6999
(615) 544-9306

Dear

I am writing you this letter in response to our recent telephone conversation. First of all, I would like to thank you for completing the psychological and behavioral questionnaires at your initial consultation at the Infertility Center. We are now in the process of ending this investigation and would like to request that you complete a final set of measurements. A metered and labeled envelope is enclosed. Your completion of these questionnaires is vital and would certainly help us learn more about this important medical issue. Please remember that the information should be completed independently of family members, spouse, etc. Also, as before, this information will be confidential.

Thank you so very much for taking the time to complete this information. We trust that one day soon this information will be able to help others who are undergoing similar treatments. If you have any questions, you may contact me at 544-9305.

Sincerely,

Johnny T. Long, M.S.

MCD/mea

Enclosure

Knoxville Unit of The University of Tennessee College of Medicine



VITA

Johnny T. Long was born on April 3, 1957, in Belton, South Carolina, to the parents of Theron Claude and Maggie Doris Long. His undergraduate degree was in health and physical education at Western Carolina University (1980) in Cullowhee, N.C. He completed his Master of Science degree in exercise physiology at the University of South Carolina (1983) in Columbia, S.C. After his Master's, his employment experience included work in the Health Promotion Office at Blue Cross/Blue Shield of South Carolina in Columbia and at a hospital base wellness center at Bruce Hospital, Florence, S.C. He served as the South Carolina Association of Health Educators' representative to the Governor's South Carolina Primary Prevention Council from 1982 to 1985. He completed one year of post-Master's work at the University of South Carolina before beginning his Ph.D. study at the University of Tennessee. Currently he is employed as an Assistant Professor at Lynchburg College, Lynchburg, Virginia, in the Department of Health, Movement Science, and Recreation.