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**Assessing grief, depression, and coping behaviors of women  
participating in *in vitro* fertilization embryo transfer**

Lukse, Michelle Prince, Ph.D.

The University of North Carolina at Greensboro, 1991

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ASSESSING GRIEF, DEPRESSION, AND COPING BEHAVIORS  
OF WOMEN PARTICIPATING IN IN VITRO  
FERTILIZATION EMBRYO TRANSFER

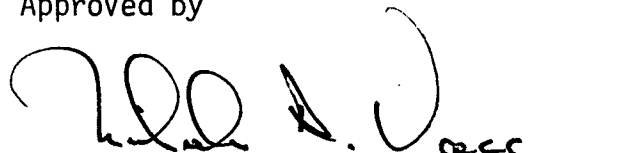
by

Michelle Prince Lukse

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Approved by

  
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APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of the Graduate School at The University of North Carolina at Greensboro.

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The infertile couple invests significant amounts of time, physical and emotional energy, and hope in attempting to conceive. Presently, the rapid development in reproductive technology provides a variety of treatments for infertility. In vitro fertilization (IVF) has been found to be an acceptable alternative for some infertile women, but the cost of IVF ranges from \$6,000 to \$8,000 for each treatment cycle, the probability of a successful live birth using IVF is low, and each treatment cycle is accompanied with physical and emotional side effects. Also, infertility can have deleterious effects on the emotional status of women who are unsuccessful at achieving pregnancy. This study investigated differences in the levels of grief and depression between infertile women who participated in IVF or non-IVF treatment programs and were unsuccessful in achieving pregnancy. Also, the coping strategies utilized by the participants were identified. Fifty infertile women in an IVF program and 50 infertile women in a non-IVF program completed five pretest and posttest questionnaires that measured grief and depression and identified the coping strategies utilized by the subjects to reduce emotional stress. Results of t tests comparing pretest and posttest means indicated that the level of grief associated with an unsuccessful pregnancy attempt was significantly different within the IVF treatment group and the non-IVF treatment group of women. The difference in the means on the depression scores was significant only for the non-IVF program group. There was no significant difference in

the means of grief and depression between the two infertile groups. A stepwise multiple regression analysis determined that age, diagnosis of a male or female reproductive problem, years of infertility, impact of their financial investment in the IVF program, and the number of past IVF treatments did not significantly contribute to the level of grief or depression. IVF participants and infertile women participating in a non-IVF program relied on emotional-focused coping styles more frequently than problem-focused coping styles.



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## CHAPTER I

### INTRODUCTION

Women basically believe they are fertile and that the central task is to restrict pregnancy until the desired time of having a child (Moore, 1983). For many women, the ability to reproduce at a desired time is accomplished effortlessly. For other women, however, the ease of reproduction is a myth, and the ultimate situation changes from "when I get pregnant" to "if I get pregnant." One out of every six American couples of childbearing age, representing approximately 15% of the childbearing-age population, experience fertility problems during their attempt to establish a family (Menning, 1975). The incidence of fertility problems is expected to increase as many women postpone marriage to pursue a career or some other life goal. If childbearing is postponed until the mid-thirties, women are past the time when they are normally most fertile (Taymor, 1978).

When the decision is made to have a child, a couple often expects conception to occur within a few months. However, when conception has not occurred within six months to one year, confusion and anxiety motivate them to search for medical assistance (Mazor, 1980). If the physician determines the potentiality of an infertility problem, fertility testing is usually recommended as a course of action. Menning (1975) defined infertility as "the inability to achieve a pregnancy after one year of sexual relations without

contraception or the inability to carry pregnancy to live birth" (p. 454). Secondary infertility is a condition that couples experience when they have achieved a live birth in the past but are presently unable to achieve pregnancy or a live birth (Mickey, 1989).

The causes of infertility are numerous. Approximately 30% of the reported cases of infertility are the result of factors associated with the woman, 30% are the result of factors associated with the man, 30% are a combination of factors associated with both men and women, and unknown problems are accountable for 10% of the cases (Bresnick, 1978; Menning, 1975; Menning 1980; Moghissi, 1979). Presently, approximately 90% of fertility problems can be identified. However, only 50% of the women diagnosed with a fertility problem will achieve pregnancy (Mazor, 1978; Woollett, 1985).

An infertility evaluation may take from four months to one year. Once a problem has been identified, the woman may require surgical intervention, hormone supplementation, or some other fertility-enhancing procedure such as artificial insemination. Each choice of therapy is accompanied with side effects, questions, uncertainty, and no guarantee of a pregnancy.

Two medications frequently prescribed to stimulate ovarian functioning are clomiphene citrate and pergonal. Clomiphene citrate regulates the hormonal secretion of the pituitary gland, thereby stimulating the ovary to produce an egg. Approximately 50% to 90% of the women who are candidates for clomiphene citrate therapy achieve ovulation, and 50% of these women achieve pregnancy within the first

six menstrual cycles of medication (Menning, 1977). Pergonal is a fertility medication given to stimulate the ovaries to produce many follicles which contain eggs. Pergonal is a pure preparation of two hormones, Follicle Stimulating hormone (FSH) and Luteinizing hormone (LH), and is administered by intramuscular injection for six to ten days (Mazor & Simons, 1984). Pergonal is monitored daily during the ovulatory phase of the menstrual cycle by blood tests to determine specific hormone levels and ovarian ultrasound to determine ovarian response (Hammond & Talbert, 1981; Wallis, 1984). Women who use fertility drug therapy report side effects such as feelings of moodiness, fatigue, an inability to make decisions, hot flashes, weight gain, sleeplessness, pelvic pressure, and headaches (Menning, 1977; Taymor, 1978). Often the patient is on fertility hormone therapy for four to six months. If pregnancy is not achieved, the woman's fertility status is reevaluated and a change of therapy initiated. Generally, couples participate in infertility therapy and evaluations for three to five years or longer. During the time when a woman is trying to achieve pregnancy, she is on what Mahlstedt, MacDuff, and Bernstein (1987) have described as "an emotional roller-coaster" (p. 234). This involves having scheduled sexual relations, specifically timed laboratory tests, and numerous x rays, physical examinations, and surgery.

Some women decide to end their fertility treatment and pursue other alternatives such as childless living or adoption. However, abortion and the social acceptance of single parenthood have



significantly decreased the number of infants available for adoption (Wallis, 1984), causing some couples to consider other alternatives to achieve parenthood. Other women decide to proceed with one of the newer reproductive technologies available to them, such as in vitro fertilization (IVF).

IVF is the process by which an ova is surgically removed from a woman, fertilized in a petri dish with a man's sperm, and the resultant embryo is implanted in the woman's uterus (Wallis, 1984). IVF has been available since 1978 to assist couples with achieving conception. Presently, more than 100 IVF centers exist in the world (Gold, 1985). The first IVF clinic in the United States was established at the Norfolk Medical School in Virginia, and in April 1981, the first IVF baby was born at the Norfolk clinic. At this time, the IVF clinics in the United States are responsible for approximately 1,000 of the world's estimated 3,000 babies conceived by in vitro fertilization (Lodge, 1988).

The process of IVF requires participation in a specific protocol of treatment over a 30-day period of time. During the first phase, ovarian stimulation is attempted through injections of fertility drugs and monitored by daily laboratory tests and ovarian ultrasound (Greenfeld, Mazure, Haseltine, & DeCherney, 1985). The second phase begins when the blood tests and ultrasound monitoring indicate that the ova, the reproductive cells produced monthly in the ovary, are mature. After the ova are removed from their follicle and withdrawn from the follicular fluid, they are washed in a special

solution, placed in a petri dish containing nutrients, and incubated for four to eight hours. The sperm are also exposed to a specific washing procedure and then placed into the petri dish with the ova. The ova are examined within 24 to 36 hours to determine whether fertilization has occurred (Gold, 1985; Greenfeld et al., 1985; Wallis, 1984). When the embryo is two to eight cells in size, phase three, embryo transfer begins. Embryo transfer (IVF-ET) is achieved by artificially inseminating the embryos into the uterus. Many IVF centers transfer a specific number of embryos into the woman's uterus to reduce the risk of multiple births and a potentially complicated pregnancy. Healthy embryos may be frozen and stored for use by the couple in the future.

Although a very scientifically specific medical process is followed for IVF-ET, the chance of a live birth is reported no more than 28% of the time (Leiblum, Kemman, Colburn, Pasquale, & DeLisi, 1987). When a woman does not become pregnant, IVF therapy can be repeated (Greenfeld & Haseltine, 1986; Seibel & Levine, 1987). Each IVF-ET treatment cycle costs approximately \$6,000 to \$8,000. Because the chance of successfully achieving a live birth with IVF-ET is not greater than 28%, many women will go through the program and ultimately remain childless.

The stress and personal loss which often accompany impaired fertility and fertility treatments may negatively influence self-esteem, psychological stability, successful achievement of the developmental tasks of adulthood, and the marital relationship

(Flemming & Berry, 1988; Shapiro, 1982). Infertile patients report feeling damaged and defective, while many question their core gender identity and experience feelings of grief and hopelessness (Mazor, 1980).

Although attention currently is being given to the psychological component of IVF-ET, little data exist in this area. The literature contains few articles related to women's psychological experiences during the IVF process. This study, therefore, provides new information relative to the attitudes of women diagnosed with an infertility problem who participate in IVF therapy and do not achieve pregnancy.

A comparison group used in the study consisted of women who were also diagnosed with a fertility problem and were being treated with clomiphene citrate or pergonal but did not achieve pregnancy. They were referred to as non-IVF infertile women. More specifically, this study examined the differences in the levels of grief and depression between infertile women who participated in IVF or non-IVF treatment programs and were unsuccessful at achieving pregnancy. The coping mechanisms utilized most frequently by IVF participants and non-IVF participants were also identified.

#### Objectives of the Study

This study was developed to contribute to the understanding of how IVF treatment influenced the psychosocial attitudes of women participants. As physicians, nurses, and counselors search for

different methods to improve patient care, it is important to be conscious of the psychosocial requirements of the IVF patient. Little is known about the emotional reactions and coping strategies used by IVF patients. This study sought to examine the emotional reactions and the spectrum of coping behaviors that existed within this group of women undergoing IVF treatment.

Two of the goals of some IVF programs are to identify the stresses frequently experienced by IVF candidates and to offer supportive counseling, patient education, and other programs that could enhance the patient's ability to cope with the procedures which accompany IVF (Leiblum et al., 1987; Mahlstedt et al., 1987; Seibel & Levine, 1987). The results of this study are intended to be helpful to physicians, nurses, counselors, and other professionals who are interested in offering support or planning interventions for IVF participants.

#### Definition of Terms

This study includes several terms whose definitions are relevant to assist in the clarity of this research. A coping behavior is a response to external life strains that serve to prevent, avoid, or control emotional distress. Depression is a self-reported state of lowered mood. The ability of man and woman to reproduce is referred to as fertility, and infertility is the inability of a couple to achieve pregnancy after one year of regular unprotected sexual relations or the inability of the woman to carry a pregnancy to a live

birth. The emotional state of grief consists of feelings of anger, despair, isolation and resolution which are experienced by individuals effected by the loss of someone or something of value. In-vitro fertilization (IVF) is the process by which an egg is surgically removed from a woman, fertilized in a petri dish with a man's sperm, and the resultant embryo implanted in the woman's uterus. In this study, unsuccessful IVF participants were women who engaged in IVF treatment and did not achieve pregnancy. The unsuccessful non-IVF participants were women who were diagnosed as infertile, were receiving fertility hormonal supplementation with clomiphene citrate or pergonal, were not participating in IVF, and did not achieve pregnancy.

#### Research Questions

The three research questions addressed through this research are as follows:

1. Are the levels of grief and depression of the IVF participants who are unsuccessful at achieving pregnancy greater than the grief and depression of non-IVF infertile women who are attempting to become pregnant but do not achieve pregnancy after one menstrual cycle of treatment?
2. What impact do age, length of time of infertility, reproductive diagnosis, financial investment in the IVF program, and past number of IVF treatments have on the grief and depression level of the IVF participants who are unsuccessful at achieving pregnancy?

3. What are the specific coping strategies that are utilized most frequently by IVF participants and by non-IVF infertile women attempting to achieve pregnancy?

## CHAPTER II

### REVIEW OF LITERATURE

This chapter includes a review of the literature concerning women of childbearing age, the psychological status of infertile women, the psychological status of IVF participants, strategies of coping used by people in crisis, and a conclusion section.

Concern about the emotional impact of IVF treatment is beginning to appear in the literature. However, missing in the literature is research that examines the effect of an unsuccessful IVF treatment on the participants. The professional literature is void of studies that examined the coping strategies used most frequently by women during IVF treatment.

#### Women of Childbearing Age

Fertility is defined by Taymor (1978) as "the ability of a man and woman to reproduce" (p. 10). In reproductively normal couples attempting to achieve pregnancy, the monthly conception rate is 20% to 25% (Hammond & Talbert, 1985). The Diagram Group (1978) reported that a woman of normal fertility experiencing regular intercourse with a male of normal fertility has a 60% chance of becoming pregnant in any one month. Cramer, Walker, and Schiff (1979) estimated that 95% of fertile couples should conceive within 13 months of attempting pregnancy.

### Fertility Statistics

The United States birth rate rose from 15.5% in 1986 to 15.7% in 1987 (State Center for Health Statistics, 1988). The United States Bureau of Statistics (1989) reported that the age spread of all women in the United States who gave birth in 1987 was as follows: 34.6% were under 25 years of age; 33.6% were between the ages 25 to 29; 21.2% were between 30 to 34 years of age; 9.2% were 35 to 39 years old; and 1.4% were between 40 to 44 years of age. Of the total group of women who gave birth in 1987, 60.4% were married. It also was reported that 42.6% of the women who gave birth in 1987 completed high school, 23.1% attended college one to three years, 12.8% completed college, and 6.4% continued their education five years or more. Only 15.1% did not complete high school.

The North Carolina birth rate rose from 14.3% in 1986 to 14.6% in 1987. The fertility rate increased from 57.7% in 1983 to 60.5% in 1987 across all age groups (State Center for Health Statistics, 1988). The State Center for Health Statistics (1987) reported that the age spread of all married women in North Carolina who gave birth in 1987 was as follows: 38.5% were under 25 years of age; 34.1% were between the ages 25 to 29; 20.7% were between 30 to 34 years of age; 6.0% were 35 to 39 years old; and .7% were between 40 to 44 years of age. The greatest percentage of women in the United States and North Carolina who gave birth were between the ages of 25 to 34.

Although the birth rate in the United States has continued to rise, it has been estimated that there are at least 2.8 million



couples with fertility problems who desire children. In addition, the incidence of infertility is reported to have increased during the past 10 years (Mosher, 1987). Normally, a female's fertility declines with the aging process (Moore, 1983). Mosher (1982) reported that the frequency of infertility of married women in the United States was 65.4% within the specific age group of 30 to 44. Mosher's study identified that women in the 30 to 34 age group are at greater risk for infertility than younger women. Therefore, women participating in IVF are exposed to both the natural decline of their fertility, which influences their reproductive situation, and the complexity of their personal infertility diagnosis.

#### Motivations for Childbearing

The current literature is sparse concerning a description of fertile individuals who wish to have a child. However, an abundance of information exists in the literature related to the motives underlying the wish not to have a child. These studies report the attitudes of women participating in abortion or voluntary sterilization, contracepting women, and those who are voluntarily childless.

An individual's desire for children is influenced by cultural norms, religion, psychosocial factors, economics, and sexuality (Veevers, 1973). The motivations for pregnancy are numerous and often unapparent to the woman (Hoffman & Manis, 1979). Lalos, Jacobsson, Lalos, and von Schoultz (1985) surveyed 30 infertile individuals, 101 pregnant couples, and 450 abortion applicants.

Interpersonal and intrapsychic motives for having a child predominated among both men and women from all groups. The results indicated that 60% of the respondents believed having a child is an expression of love, 23% also felt that it meant having someone to care for, and 27% believed that it was the greatest event a woman can experience.

In a related research study, Hoffman and Manis (1979) reported that children potentially fulfill certain needs of their parents. The results revealed that 64% believed children provided love, companionship, and prevented loneliness. Children were viewed by 65% of the respondents as being stimulating and fun and as encouraging positive change in the parents' lives. Forty-five percent reported that children provide a purpose to life and an achievement of immortality. Hoffman and Manis (1979) cited that "Having a child is a way of reproducing oneself and having one's characteristics and beliefs reflected in another who will live on after one is dead. A child is a tie to the past and future, and provides the present life with meaning and purpose" (p. 590). Parenthood was described by 27% of the respondents as the normal culmination of the socialization process and the achievement of adult status.

In a similar study, Fawcett (1978) reported that children meet parents' needs for love and companionship, and life is more interesting for the individual with children. In addition to enhancing their sexuality, and achieving social identity and adult status, Deutsh (1973) reported that men and women achieve a sense of immortality through their child. Williams (1987) proposed that the birth of a

child generates the formation of a new identity for the woman when she adopts the role of mother. Mothering implies a new set of responsibilities, commitments and values, and is seen as evidence of integrity and other cherished values.

In addition to the motivations for childbearing that have been described, Moore (1983) included children as a source of joy and a manifestation of love between a man and woman. The motivation for children also may represent an attempt to satisfy a psychological need in the woman that is not necessarily healthy for the child. Moore (1983) reported that some women consider childbearing to be a religious duty, an opportunity to save the marital relationship, a substitute for other relationships, or an affirmation of femininity.

### Socialization Process

In the American culture, parenthood is considered one of the responsibilities of adult life (Mazor & Simons, 1984). After the industrial revolution, motherhood and the nurturance of the family became the central role for women; self-image and identity often were enmeshed with successful achievement of that role (Kitzinger, 1978). Presently, women are encouraged to pursue a career, and, as a result, marriage and childbearing may be postponed until career goals are satisfied (Cox, 1981; Giele, 1980). Some women plan to work only until the time they have children, while others plan careers and develop ways in which they can continue to work and have a family. Many women continue to perceive their dominant goal in life as marriage and motherhood in spite of the opportunities that are

available in the professional world (Corea, 1985). The socialization process in the United States provides years of social messages that link identity and normality to parenthood (Parsons, 1958).

### Psychological Status of Infertile Women

A threat to a woman's potential for motherhood may arouse feelings of confusion and uncertainty. Matthews and Matthews (1986) reported that persons who are enmeshed into the "scripts" of parenthood will experience greater identity shock with infertility. Motherhood continues to be valued in our society. Its meaning is assumed to represent normality, adulthood, expressions of love, sexual adequacy, and success (Kitzinger, 1978; Lalos et al, 1985). Most people grow up without ever considering that their fertility may be inadequate to produce children. Therefore, women are not prepared for the diagnosis of infertility.

Menning (1980), who is the founder of Resolve, a national organization which provides emotional support and patient education materials for infertile individuals, explained that when fertility becomes an uncertainty, feelings of anxiety, insecurity, guilt, fear, and threats to self-esteem and identity become apparent. The woman realizes that she may never be able to have her own biological child and experiences feelings of loss and grief (Menning, 1980).

### Developmental Crisis

Erickson identified the psychosocial development tasks of adulthood to include intimacy versus isolation and generativity versus stagnation (Hoffman & Manis, 1979; Newman & Mewman, 1987). Intimacy is the capacity of the individual to love, whereas generativity includes pride, pleasure, and the guidance of something that will outlive self (Feldman & Lopez, 1982). Children provide love and a sense of immortality (Hoffman & Manis, 1979). Since infertility threatens the opportunity to experience childbearing and to care about other people and the things one has produced, an infertile woman is at risk for a developmental crisis.

Adult development involves an interaction between internal and external experiences which are influenced by age and social expectations and changed by external events or individual needs (Neugarten, 1964). Neugarten, Wood, Kraines, and Loomis (1963) stated that social groups are in consensus about the appropriate age for significant life events such as marriage and childbearing. This consensus acts as a social pressure which defines the boundaries of normal behaviors and the particular roles which individuals are to assume at a particular age. Infertility threatens the accomplishment of particular life events and the course of normal identity formation (Mazor, 1978).

Infertility requires a reorganization of identity in relation to self and the social environment. It is a crisis that threatens self-esteem and identity as well as relationships with spouse,

relatives, friends, and others (Mazor, 1978). Successful resolution of infertility results in the formation of a new role definition for the person. Women who fail to resolve this crisis may search for a new role identity without success or may deny the impact of infertility to their life script (Matthews & Matthews, 1986; Mazor, 1978). The crisis of infertility is accompanied with feelings of loss of health, psychological and emotional turmoil, stresses in the marital relationship, social isolation, and loss of control (Bresnick, 1981). The infertile woman may mourn the loss of her unfilled plans and dreams of parenting, resulting in guilt, depression, anger, and grief.

#### Crisis of Infertility

Frustration in accomplishing the goal of pregnancy requires a reorganization of the woman's identity to herself, others, and to society. Neuman and Meuman (1987) reported that a woman's life is frequently defined by events relating to her reproductive functioning. She also reported that a female enters womanhood at the onset of menstruation and moves toward the peak of femininity during pregnancy and her childbearing years. A woman's awareness and acceptance of her own mortality, aging process, and assessment of herself in relationship to the social environment are influenced by her experiences of childbirth, parenting, and menopause (Mazor, 1980; Neuman & Neuman, 1987).

Infertility interferes with the woman's "generational identity" and parental identity (Mazor, 1980). Generational identity refers to

her status as a child, parent, or grandparent. Infertility poses a threat to generational identity if the woman never feels that she has reached adult status because of involuntary childlessness (Mazor, 1980). If the personal issues of pregnancy, a biological child, genetic continuity, sexuality, self-worth, fear of abandonment, and guilt are not resolved, the woman will experience emotional disequilibrium, with the potential for activating a state of crisis (Mazor, 1978).

#### Grief Experience and Infertility

Loss may be described as "a state of being deprived of or of being without" (Peretz, 1970, p. 5). The loss of anything that is of real value to a person can produce grief. Grief results from the loss of an aspect of the self-concept, how we view our self-esteem, an inability to identify with our social roles, or feelings of being powerless. Peretz (1970) describes object loss as the "loss of an object of special value and emotional meaning. Object loss includes the loss of a relationship with other people or with self" (p. 9).

Kubler-Ross (1969) described the grieving process as consisting of five stages: denial, anger, guilt, depression, and acceptance. Although her research and other authors' writings relate these stages to death and dying, they are possible emotional responses resulting from the loss of anything significant. Worden (1982) identified four tasks of mourning which are essential for grieving persons to accomplish in order to reach acceptance of their loss. The four tasks of

mourning are to accept the reality of the loss, experience the pain of grief, adjust to an environment in which the deceased is missing, and withdraw emotional energy and reinvest it in another relationship. Worden (1982) stated that "mourning is finished when the tasks of mourning are accomplished" (p. 16). Accomplishment of the tasks of mourning are also necessary to reach resolution of infertility (Menning, 1980).

The loss of fertility may follow a grieving process similar to the stages described by Kubler-Ross (1969) and Worden (1982). Feelings of loss are precipitated by any number of disappointments that are valued by a person. When fertility and the goal of parenthood becomes uncertain, the woman's reality system is altered, realization of the many losses associated with parenthood becomes evident, and the woman may experience feelings of grief (Shapiro, 1982; Wiehe, 1976). Grief results from a loss of self-esteem, an inability to identify with social roles, an inability to pass on the family name, loss of health, and other valued beliefs (Bresnick, 1981; Mazor & Simons, 1984).

The woman's grieving response and the availability of coping mechanisms are influenced by the individual's past experience with loss, the ability to solve problems, and the significant support system (Menning, 1979). It is necessary to identify what was lost, and to realize the significant role and meaning of the loss. Alexy's (1980) principle theme postulate states that "when a person selectively attends to the principle theme of the meaning of the loss to



the exclusion of the secondary themes, acceptance of the loss is expedited. When a person selectively attends to the secondary themes, acceptance of the loss is delayed." (p. 69).

Menning (1980) reported that resolving grief over infertility may fail if the individual is not encouraged to express feelings of sadness, if there is no diagnosed fertility problem, or if there is no social support system to assist in expressing grief. Many women choose to keep their infertility a secret due to the intimate nature of the problem. Some infertile women restrict social activities that involve children or pregnant women. Friendships dissolve because the woman is unhappy, angry, and jealous towards women who have children (Clapp, 1985). Guilt may result from a thought that infertility is a punishment for past actions.

When the hope of pregnancy fades, feelings of sadness and depression are experienced. Depression is a sense of hopelessness resulting from the multitude of losses experienced from infertility (Menning, 1975; Wiehe, 1976). Mahlstedt (1985) reports that the losses associated with infertility include loss of relationships, loss of status, loss of self-esteem, loss of self-confidence and control, loss of security, loss of hope, and loss of someone of great value. The woman experiences overwhelming feelings of despair and being out of control and is uncertain how to express her grief.

The feelings of grief most frequently reported by infertile women include guilt, anger, frustration, hopelessness, and depression (Bresnick & Taymor, 1979; Lukse, 1985). In Bresnick and Taymor's

(1979) research, 111 infertile individuals attending an infertility clinic completed a questionnaire to evaluate the presence of emotional symptoms before and after counseling. The results showed that women experience more intense symptoms of anger, guilt, isolation, and frustration than do men prior to infertility counseling, although both men and women reported frustration. The symptoms of anger, guilt, frustration, and isolation decreased 78% to 100% after six or more counseling sessions.

#### Psychological Stress and Infertility

McEwan, Costello, and Taylor (1987) reported that of 45 men and 62 women attending an infertility clinic, 40% of the women experienced significant emotional disturbance. Women with a diagnosed fertility problem were more disturbed than couples who were diagnosed with the male being infertile. Women blamed themselves more for their infertility than did men, and when no infertility problem could be identified, 44% of the women reported they felt responsible for the infertility. Bresnick and Taymor (1979) reported guilt, anger, and isolation to be the symptoms most frequently reported by infertile women as interfering with significant relationships. Platt, Fincher, and Silver (1973), who examined male and female responses to infertility, concluded that men and women perceived the locus of control to be external, and significant differences existed between the perception of their present self when compared to their ideal self. Also, infertile women showed more anxiety and emotional disturbance than infertile men in the control group.

Edelmann and Connolly (1986) suggested that the longer a person is involved with infertility, the more likely psychological stress will increase. In related research, McEwan et al. (1987), however, found no relationship between the length of time a woman was trying to conceive and the level of distress. Mahlstedt et al. (1987) examined the impact of the stresses of infertility as compared to other life crises, such as divorce and death. A questionnaire developed for this study was completed by 94 infertile individuals. Infertility was reported as extremely stressful by 80% of the subjects. Of those respondents who had experienced infertility and divorce, 63% reported infertility to be as stressful or more stressful than divorce, and 58% of those who had experienced infertility and the death of a significant other reported infertility to be as stressful or more stressful than death. Paulson, Haarmann, Salerno, and Asmar (1988) investigated the relationship of psychological distress and infertility. The results of that research indicated that emotional distress was no more frequently reported in women with infertility than for the general population of women of childbearing age. Rosenfeld and Mitchell (1979) reported that the leading cause of failure in adoption placements was nonresolution of the losses that accompany infertility.

In related research, Garner (1985) concluded that it is necessary for the grief associated with infertility to be resolved so that anxiety, poor self-esteem, and relationship problems do not negatively influence the marital relationship or the potential

relationship with a child. Daniluk (1988) found that couples with unexplained infertility were more likely to report dissatisfaction in their sexual relationship.

Other psychological effects of infertility found by Bernstein, Potts, and Mattox (1985), Bresnick and Taymor (1979), and Paulson et al. (1988) were that women reported significantly more depression, lowered self-esteem, and more feelings of guilt, blame and hopelessness than did men. The subjects in Bernstein's study (1985) were 39 women and 31 men between 23 and 39 years of age who were experiencing infertility. The subjects completed the Infertility Questionnaire, an instrument developed to measure the effects of infertility on self-esteem, sexuality, blame, and guilt. The results indicated that women scored significantly higher for depression and hostility, and had lower self-esteem than did men. The men and women reported similar distress for guilt, blame, and sexuality.

Many women spend years attempting to achieve pregnancy. They seek numerous medical evaluations and attempt a variety of treatments without conceiving. They describe feeling hopeless, disappointed, depressed, frustrated, and angry (Mahlstedt et al., 1987; Seibel & Levin, 1987). In spite of all their past unsuccessful infertility treatments, many women continue to hope for some treatment that will work to help them to become pregnant.

### Psychological Status of IVF Participants

IVF offers women a chance for conception and is becoming an increasingly popular infertility treatment. The treatment protocol is vigorous and stressful. Garner, Arnold, and Gray (1984) reported 38% of the women initiating IVF treatment began their IVF procedure with a measurable level of distress. These participants experienced a significant increase in the level of psychological disturbance if pregnancy was not achieved. Hearn, Yuzpe, Brown, and Casper (1987) studied 300 IVF couples who completed a questionnaire three months prior to initiating treatment. They found that the participants reported minimal anxiety and depression entering IVF treatment. It is possible, however, that the responses were influenced by the knowledge that the couple was applying for candidacy into the IVF program.

In a study by Mahlstedt et al. (1987) of 60 female IVF patients, 93% reported experiencing frustration, 86% hopelessness, 67% anger, and 93% depression during treatment for infertility. In a similar study, Fagan, Schmidt, Rock, Damewood, Halle, and Wise (1986) reported that 15% of the women in their study experienced either sexual dysfunction or psychological distress before beginning IVF. These women also reported that they experienced extreme feelings of stress, worry, frustration, and sadness during treatment for infertility.

In an ex post facto study, Leiblum et al. (1987) investigated how women unsuccessful in an IVF treatment program viewed their

experience. The results indicated that 56% discontinued their pursuit of a biological child, and 48% of the respondents reported that they had not resolved their feelings about infertility. Some women described their feelings at the time of a negative pregnancy test as similar to those experienced with miscarriage (Garner et al., 1984). These women viewed embryo transfer as conception, and grieved the loss of their child. Callan, Kloske, Kashima, and Hennessey (1988) reported that the decision to attempt a repeat IVF treatment cycle was significantly influenced by the woman's perception of social pressure by spouse, relatives, friends, and her doctor to try again rather than by a personal desire. In a study by Freeman, Boxer, Rickels, Tureck, and Mastroianni (1985), 152 IVF couple candidates were given the Minnesota Multiphasic Personality Inventory (MMPI) and then interviewed regarding stressful situations related to infertility and IVF. The results indicated that 49% of the women reported infertility to be the most stressful experience of their life. Although the MMPI scores were in the normal range, 8% of the women reported scores associated with depression.

The psychological distress of IVF participants prior to initiating IVF treatment and during IVF treatment has received limited attention, and the degree of grief and depression resulting from an unsuccessful IVF attempt is unknown. Involuntary childlessness poses a threat to a woman's identity, self-esteem, and feeling of self-worth in relationship to society (Mazor, 1980). If the personal issues related to being infertile are not resolved, the woman will experience emotional distress (Mazor, 1980).

### Strategies of Coping by People in Crisis

People place different values on events that threaten life goals, values, or security. Therefore, the responses used to cope with a problem may include a wide range of reactions (Folkman & Lazarus, 1980).

#### Coping Patterns of Individuals

The ability to successfully cope with a stressful situation requires the manipulation of the environment to decrease the stress (Cobb, 1976; Pearlin, 1981). Lazarus (1974) stated that coping behaviors represent an interaction between the individual and the environment and that the demands from each during a problem situation will determine when a coping mechanism is initiated and which coping mechanism will be used. Pearlin and Schooler (1978) defined coping as "any response to external life strains that serves to prevent, avoid, or control emotional distress" (p. 3). Individuals respond with numerous behaviors as a means of reducing stress. The three general behavioral categories as described by Pearlin (1981) to cope with stress include responses that change the situation from which the stress occurred, responses that control the meaning of the stressful experience after it occurs but before the stress affects the individual, and responses that control the stress. Effective coping behavior prevents the prolonged sense of threat and reduces emotional stress.

An individual's social support network has the potential to facilitate coping with the crisis experience and the person's adaptation to change (Caplan, 1974; Cobb, 1976). The social network consists of the spouse, relatives, friends, neighbors, and co-workers who interact with the individual. Social network support assists in the ability to cope with situational crises such as the premature birth of a child, physical illness and abuse, the maturational crises of marriage, aging or death, and natural disasters (Hirsh, 1980).

In a study by Rosenblatt and Mayer (1972), 5600 women throughout the United States were asked to list the resources they utilized in the past for support during a period of crisis. The responses identified that relatives, friends, and neighbors were more likely to be looked towards for help than professionals. Other researchers have agreed that people in need of support prefer the informal network (Burke & Weir, 1977; Croog, Lipson, & Levine, 1972). Unger and Powell (1980) stated that one intervention to cope with stress is to strengthen the family's use of their social network by involving their network in the problem and implementation of the solutions. However, the problem of infertility is often kept a secret and not disclosed to members of the social network because of the personal and sexual issues associated with the inability to conceive a child.

#### Coping with Childlessness

"Childlessness has been described as an invisible handicap" (Lalos, Jacobsson, Lalos, & von Schoultz, 1985, p. 476). Menning



(1982), Seibel and Levine (1987), and Mahlstedt et al. (1987) agreed that the stresses associated with infertility may leave the woman feeling out of control, insecure about the future, and having a minimal social support network. Matthews and Matthews (1986) explained that the psychological responses to infertility depend on the length of time the woman has been infertile and the outcome, the constructive coping mechanisms, and her support systems. Flemming and Burry (1988) surveyed volunteers who responded to a questionnaire advertised in the Resolve newsletter. Of the 83 subjects who responded, 70 were women and 13 were men, and they ranged in age from 25 to 41 years. Results showed that avoidance of situations and distraction from infertility were the coping mechanisms most frequently described as ways of controlling the feelings related to infertility. Isolation from their relatives and friends reduced the availability of a supportive network which would assist them to cope with this crisis.

Ambiguity related to the consequences of a reproductive problem, an uncertain reproductive future, and the personal meaning of childlessness are issues of concern to the IVF participant (Daniluk, 1988). Coping with the uncertainties associated with infertility and IVF may be an essential task for the management of stress and ultimate resolution of the outcome of IVF. Mishel (1988) defined uncertainty as the inability to determine the meaning of illness-related events because the individual cannot construct the meaning of event. Uncertainty also occurs when the person is unable to accurately predict the outcome, which is the situation for women

participating in IVF. The state of uncertainty has been associated with a pessimistic attitude, negativism, elevated anxiety, and depression (Mishel, 1984; Viney & Westbrook, 1984). Coping strategies are implemented to reduce the uncertainty and to become more effective in controlling one's emotional reactions (Pearlin & Schooler, 1978).

### Summary

Desires for having a child involve interpersonal and intrapsychic motives. Successful achievement of pregnancy and the distinction of motherhood act as a "rite of passage" towards the completion of a segment of what is perceived by society as adult life. When the role of motherhood becomes an uncertainty, the woman experiences feelings of confusion, loss, and grief.

As was presented in Chapter II, a number of studies described the feelings associated with infertility to resemble those experienced in other grief situations such as guilt, anger, frustration, hopelessness, and depression (Bresnick, 1981; Mazor, 1984; Shapiro, 1982; Wiehe, 1976). The literature related to the psychosocial attitudes of IVF participants is limited, but suggests similar emotional responses (Garner et al., 1984; Mahlstedt et al., 1987).

The further emotional impact of engaging in some of the new technologic developments, such as IVF, has yet to be completely explored. While much research on the medical aspects of infertility has been conducted, a limited amount of research has been reported

relating to the psychological effects of infertility. The degree of grief and depression associated with the failure in the highly technological field of IVF remains unexplored. While the literature supports the presence of grief as a result of infertility and unsuccessful infertility treatments, no research has reported whether the experience of grief is even more intense after an unsuccessful IVF treatment. It is evident that researchers need to identify the extreme feelings associated with IVF treatment programs so that early intervention or prevention of emotional problems is possible.

The limited research involving IVF participants justifies the necessity of this study. The professional literature is void of studies that examined the coping strategies used most frequently by women during an IVF treatment program.

The literature related to infertility identified age, reproductive diagnosis, and length of time of attempting to achieve pregnancy as important variables in a woman's ability to cope with infertility (Menning, 1982). Yet, the influence these variables have on women participating specifically in the IVF treatment program is unknown. Therefore, factors affecting the attitudes of IVF program participants were also investigated.

### CHAPTER III

#### METHODS AND PROCEDURES

The purpose of this chapter is to describe the procedures that were used to (a) examine whether a difference existed in the levels of depression and grief of infertile women who were IVF participants who had a negative pregnancy test following IVF, and non-IVF participants who did not achieve pregnancy, (b) analyze the relationship of age, reproductive diagnosis, length of time of infertility, IVF expense, and number of past IVF treatments to the level of grief and depression of unsuccessful IVF participants, and (c) identify the coping strategies utilized by IVF and non-IVF participants.

This chapter reports the research hypotheses, a description of the population, the research instruments, the data collection procedures, the statistical procedures used to analyze the data, and limitations of the study. This study used a nonrandomized control group pretest-posttest design (Isaac & Michael, 1987) to answer the research questions and test hypotheses.

#### Hypotheses

This study examined three hypotheses related to grief and depression between women participating in an IVF program and a comparison group of infertile women who were non-IVF participants. The

hypotheses tested and questions examined are as follows:

Hypothesis 1. The posttest scores will be significantly higher than the pretest scores on the revised Grief Experience Inventory Non-Death Version (DEI-BR) and the Depression Adjective Checklist-B (DACL-B) for women 25 to 45 years old who have a negative pregnancy test following IVF.

Hypothesis 2. The posttest scores will be significantly higher than the pretest scores on the revised Grief Experience Inventory Non-Death Version (GEI-BR) and the Depression Adjective Checklist-B (DACL-B) for non-IVF infertile women 25 to 45 years old who do not achieve pregnancy after one menstrual cycle of fertility hormone supplementation.

Hypothesis 3. The posttest scores on the revised Grief Experience Inventory Non-Death Version (GEI-BR) and the Depression Adjective Checklist-B (DACL-B) for 25 to 45 year old women who have a negative pregnancy test following IVF treatment will be significantly higher than the posttest scores on the revised Grief Experience Inventory Non-Death Version (GEI-BR) and the Depression Adjective Checklist-B (DACL-B) of non-IVF women 25 to 45 years old who do not achieve pregnancy after one menstrual cycle of fertility hormone supplementation.

### Questions Examined

Question 1. Which demographic variables for the IVF group have the most influence on grief and depression exhibited by a higher correlation with the revised Grief Experience Inventory Non-Death Version (GEI-BR) and the Depression Adjective Checklist-B (DACL-B)?

Question 2. Which demographic variables identified above account for grief or depression after controlling individually for age, years of infertility, gender reproductive diagnosis, impact of financial investment, and number of past IVF cycles?

Question 3. Which coping strategies are utilized most frequently by IVF participants and non-IVF infertile women attempting to achieve pregnancy?

### Subjects

The relationship between the levels of grief and depression experienced by infertile women who were unsuccessful at achieving pregnancy after IVF, and non-IVF infertile women who were unsuccessful at achieving pregnancy following fertility hormone supplementation was examined. There were 100 subjects in this study, 50 IVF patients and 50 non-IVF subjects. A majority (64%) of the women participating in the study were between 25 and 43 years of age. The mean age was 35 years for women enrolled in the IVF treatment program and 32.7

years for the non-IVF program infertile women. These ages are comparable to the age range reported in the literature for women who participate in fertility treatment programs. Each group is described separately.

#### IVF Subjects

Sixty-two IVF subjects responded to the first and second mailings of the pretest questionnaires. Four subjects were dropped from the sample due to pregnancy following the IVF treatment. Eight subjects had to be dropped from the sample because the posttest questionnaires were not returned after two follow-up mailings. This reduced the total number of participants to 50. Forty-six of the women in the IVF treatment group were Caucasians. Two Afro-Americans and two Asians also participated. Twenty-two percent of the IVF treatment group were high school graduates, 46% completed college, and 26% completed graduate school. The remaining 6% finished post-graduate school. The mean years of marriage were 7.4 years. The majority (56%) reported an income range between \$20,000 to \$80,000 per year. The mean income range was \$60,000 to \$70,000 per year. The bi-modal distribution was \$30,000 to \$40,000 and \$90,000 to \$100,000 per year.

#### Non-IVF Infertile Subjects

Women who are unsuccessful at achieving pregnancy after one year of unprotected intercourse are diagnosed as infertile. The comparison group consisted of married, infertile women volunteers who

were receiving clomiphene citrate or pergonal treatment at the Women's Specialty Center in Charlotte, North Carolina, a private reproductive endocrinology clinic. These women were between 25 to 43 years of age, had completed a minimum of a high school education, and had been attempting pregnancy for more than one year.

Seventy-one women receiving fertility treatment responded to the first and second mailings of the pretest questionnaires. Nine participants were dropped from the sample because the posttest questionnaires were not returned within six weeks from the date of mailing of the first set of posttest questionnaires. Two women were dropped from this study due to achievement of pregnancy during the treatment cycle, and four women reported that their treatment cycle was canceled due to insufficient ovarian response to the fertility medications. Six subjects were not included in the sample because of missing demographic data or incomplete responses.

The non-IVF sample consisted of 49 Caucasians and one Afro-American. Fourteen percent of this group of women were high school graduates, 54% graduated from college, and 26% completed graduate school. The remaining 6% completed postgraduate school and one person attended a technical school. The mean years of marriage were 7.8 years. The majority (66%) of non-IVF respondents reported an income ranging from \$10,000 to \$60,000 per year. The mean income range was \$40,000 to \$50,000 and the mode was \$50,000 to \$60,000 per year. A description of the characteristics of the non-IVF and IVF infertile women is summarized in Table 1.



Table 1

Characteristics of the Subjects of IVF ( $N = 50$ ) and Non-IVF ( $N = 50$ )

Participants

Category	IVF		Non-IVF	
	Frequency	%	Frequency	%
Age in years				
30-35	19	38	29	58
36-40	22	44	10	20
41-43	3	6	1	2
Race				
Caucasian	46	92	49	98
Afro-American	2	4	1	2
Asian	2	4	0	0
Education				
High school	11	22	7	14
College	22	44	28	56
Graduate school	13	26	12	24
Postgraduate	3	6	3	6
Other	1	2	0	0
Income in dollars				
30,000-40,000	8	16	7	14
40,000-50,000	5	14	11	22
50,000-60,000	5	10	12	24
60,000-70,000	1	2	5	10
70,000-80,000	3	6	4	8
80,000-90,000	7	14	2	4
90,000-100,000	8	16	2	4
above 100,000	7	14	4	8
Children				
Previous marriage	8	16	2	4
Present marriage	9	18	6	12
IVFs attempted				
One	31	62	--	--
Two	17	34	--	--
Three	1	2	--	--
Four	1	2	--	--
Schedule of Recent Experience scores Over 300	32		29	

The Schedule of Recent Experience (SRE) (Amundson, Hart, & Holmes, 1981) was used to obtain information relating to the subjects' recent life experiences (see Appendix A). SRE scores over 300 reflect an 80% chance of illness in the individual's future. Twenty-nine of the non-IVF treatment participants and 32 IVF treatment women scored over 300 on the SRE. These scores indicated that both groups were similar in composition and that life events had a significant impact on the subjects.

### Instruments

This study used five instruments to collect data from the IVF and non-IVF comparison group. To determine whether women were reporting changes in grief and depression after completing the IVF treatment, the Grief Experience Inventory Non-Death Version (GEI-B) (Sanders, Mauger, & Strong, 1978), which was revised for this research, and the Depression Adjective Checklist (DACL) (Lubin, 1981) were used in this study (see Appendices B and C).

The Ways of Coping Checklist (WCC) (Brenner, Cohen, Folkman, Kanner, Lazarus, Schaefer, & Wrubel, 1977) was completed by participants to gather information on ways women cope while trying to achieve pregnancy (see Appendix D). The schedule of Recent Experience (SRE) (Amundson et al, 1981) was used as a screening instrument (see Appendix A). A demographic form was completed by the subjects to obtain background information identifying age, length of time attempting pregnancy, reproductive diagnosis, income, and formal education (see Appendices E and F).

### Demographic Form

Based on the review of the literature, the independent variables age, years of infertility, reproductive diagnosis, impact of financial investment, and number of past IVF treatment cycles were investigated. Information about these background characteristics were collected using demographic forms specifically designed for this study (see Appendices E and F).

### The Grief Experience Inventory Non-Death

#### Version (DEI-B)

A revised version of the GEI-B (Saunders, Mauger, & Strong, 1978), the shortened version of the Grief Experience Inventory (GEI), was used in this study. The GEI consists of 135 statements found to be associated with grief and bereavement. The GEI-B has been used in research to measure the grief response for people who experienced separation and divorce, the grief experienced by parents of a handicapped child, and by people who have experienced other situations of chronic loss. The GEI-B consists of 104 true or false statement, requires approximately 20 minutes to complete, and consists of three validity scales, six clinical scales, and six research scales. The validity scales, which include denial, atypical responses, and social desirability, assess test-taking attitudes. The clinical scales include anger, despair, low self-esteem, social isolation, loss of control, and somatization. The research scales, which are exploratory and informative statements and, therefore, not recommended for

clinical use, include sleep disturbances, appetite, loss of vigor, physical symptoms, and optimism/despair. The subscales used in this study are anger, denial, social desirability, despair, isolation, loss of control, and dependency.

Saunders, Mauger, and Strong (1978) report the GEI to be a reliable and valid instrument. The reliability and validity of the GEI-B are not discussed, but are referred to as being both valid and reliable since it is a shortened version of the original GEI. The reliability of the GEI is reported by a coefficient alpha value for each scale. Sanders, Mauger, and Strong (1978) reported that the alpha varies with scale length. The reliability for each of the scales measuring grief are as follows: despair .84; anger .69; social isolation .54; loss of control .68; and somatization .81. To test the validity of the instrument, a principal axis factor analysis was carried out on the responses to the GEI and scales on the Minnesota Personality Inventory (MMPI) of 92 persons from an Early Bereavement Group. The authors reported that the GEI scales measured behaviors similar to those described on the MMPI scales, and that the GEI scales, Despair and Somatization, were sensitive to aspects of grief not sampled by the MMPI.

In addition, the validity of the GEI was explored to determine its ability to distinguish bereaved from nonbereaved individuals. One hundred seven people who had not experienced a death within five years were administered the GEI-B. A t test between the groups resulted in significant differences at the .001 level on all scales.

The GEI and GEI-B were able to distinguish bereaved from nonbereaved subjects.

The GEI was revised to measure a non-death loss situation. Items in the GEI which referred to specific death situations were removed. The GEI-B has been used to measure a comparative or control sample in non-death bereavement studies (Saunders, Mauger, and Strong, 1978). The non-death GEI-B group of subjects consisted of 127 individuals experiencing some type of situational loss. The  $\bar{t}$  scores act as a standard to measure grief in non-death situations.

The reliability and validity for each subscale of the GEI as well as the total instrument is referred to in the manual, but no coefficients are stated for the GEI-B. Additional research on non-death loss situations using the GEI-B is necessary.

The questionnaire used in this study was a shortened version of the GEI-B and consists of 50 true or false statements from the six clinical scales and three validity scales. Statements from the six research scales were eliminated to further reduce the length of the test. The instrument was pilot tested before this study began. A panel of judges consisting of three physicians, three counseling therapists, and two faculty advisors reviewed the instrument and agreed on its construct validity for this study.

The revised version of the GEI-B (GEI-BR) required 10 minutes to complete. The GEI-BR is scored by hand using a response sheet and a scoring stencil. The total raw score is the number of items appropriately checked true or false. Once the raw scores are recorded, the  $\bar{t}$  score for that scale was obtained.

### The Depression Adjective Checklist (DACL)

The DACL (Lubin, 1981) was developed to provide a brief, reliable, and valid measure of depressive mood. The DACL is a self-report instrument which requires the respondent to check the words which describe the feelings experienced during a specific period of time. There are seven Depression Adjective Checklists with each list containing 32 to 34 adjectives. Form B was used in this study.

Reliability, reported as intercorrelations of the seven lists, ranges from .83 to .92 for males and from .80 to .93 for females. The validity of the DACL-B was investigated by correlating the instrument with other known measures of depression. A correlation of .87 is reported between the DACL-B and the Multiple Affect Adjective Checklist - Depression Scale (MAACL-D) which is significant beyond the .01 level (Zuckerman & Lubin, 1965). Lubin (1965) correlated the DACL-B with the Beck Depression Inventory (BDI) and the Zung Depression Scale (SDS). The correlations between the DACL-B and the BDI and SDS are .47 and .38, respectively. Both correlations are significant at the .05 level.

Scoring for the DACL is performed with the use of a key. The number of plus and minus adjectives are the same on each adjective list. One point is given for each plus response, and one point is given for each minus adjective not checked. The total score is the number of plus adjectives checked and minus adjectives not checked.

### The Ways of Coping Checklist (WCC)

The WCC (Brenner, Cohen, Folkman, Kanner, Lazarus, Schaefer, & Wru-el, 1977) is designed as a process measure to obtain information about the strategies a person uses to cope with a stressful event. The 30 questions that were used in this study were taken from the 68-item WCC. The WCC revised (WCC-R) consists of 10 questions from the problem-focused coping scale and 20 items from the emotional-focused coping scale. The stressful event is described by the subject, and then the checklist is completed by responding "Yes" or "No." The scoring on the WCC-R is the total number of "Yes" responses for each scale.

The WCC problem-focused coping scale (P scale) is measured with 21 items with a reported internal consistency reliability of .80 ( $N = 100$  men and women, age 45-64). The emotional-focused coping (E scale) is measured with 40 items with a reported internal consistency reliability of .81 (Folkman & Lazarus, 1980). The correlation between the two scales is .45. A reliability of .63 was obtained for the WCC-R. Women who use a problem-focused coping style to deal with stress will respond "Yes" to more of the identified problem-focused coping statements than will women who respond to stress with emotion-focused coping styles. Problem-focused coping suggests that the person will respond to the stress by changing the environment, one's own behavior, or both. Emotion-focused coping refers to cognitive and behavioral responses that reduce the stress to a tolerable level. Three open-ended questions were added to the IVF

participant's response form to elicit specific information related to coping with IVF.

The Schedule of Recent Experience (SRE)

(One-Year Version)

The SRE (Amundson, Hart, & Holmes, 1981) was designed for collecting information about people's life-style and these sociologic processes in their relation to health and disease. The life events of the SRE were selected for their observed occurrence prior to the onset of clinical symptoms or illness (Amundson, Hart, & Holmes, 1981). The SRE is a 42-item self-report inventory which describes a life event that is either indicative of or requires a significant change in the life of the individual. Respondents record the number of times each event has occurred within the last 12 months. Each life event statement is assigned a specific numerical value and scoring is the sum total of points. The life change score (LCU) is calculated as a weighted item frequency. Amundson, Hart, and Holmes, (1981) reported that life changes are accompanied by stress which may bring on illness. Therefore, the greater number of life changes, the greater the probability of illness. When scores are over 300 LCU, there is an 80% chance of illness in the individual's future. Scores between 150 LCU to 299 LCU reflect a 50% chance of illness in the future, and scores less than 150 LCU a 30% chance of illness. The SRE was used in this study as a screening instrument to obtain information relating to the woman's recent life experiences that may



influence her emotional responses during IVF. A reliability coefficient of .74 to .83 ( $N = 219$  men and women, age 25-55) was reported for the SRE (Casey, Masuda, & Holmes, 1967).

### Procedures

Every participant in this study was receiving medical treatment at a reproductive endocrinology treatment center. It was necessary to obtain permission from the Human Subjects Committee of the University of North Carolina School of Medicine for access to the IVF patients (see Appendix G) and permission from Dr. Richard Wing, Director of the Women's Specialty Center, for access to non-IVF patients.

### IVF Subjects

The procedures used to obtain IVF subjects took place in the following way. A letter of introduction, dated November 23, 1989, was sent to Dr. Luther Talbert, the Director of the University of North Carolina School of Medicine's IVF program, to schedule an appointment to discuss the pilot study for this research (see Appendix H). Once approvals were obtained, the IVF Nurse Coordinator at the North Carolina Memorial Hospital was contacted to schedule an appointment to explain this study (see Appendix I).

Women interested in participating in the IVF program at the University of North Carolina School of Medicine are required to attend an IVF orientation meeting. At this meeting, the researcher briefly

described the study and invited the women to consider participation. A letter describing the study, a postcard requesting the participant's mailing address, and a self-addressed stamped envelope were distributed to each woman at the meeting (see Appendix J). The women who agreed to participate were instructed to complete the mailing information and return the postcard to the researchers.

The pretest research packet consisting of a consent form, demographic information form, the SRE, GEI-B revised, and DACL-B (see Appendices K, E, A, B, and C) was mailed to the IVF participant four to six weeks before IVF ovarian stimulation was initiated. A Research Consent form, approved by the Human Research Review Committee, was signed by each participant (see Appendix K). Each woman completed an information sheet which included the following demographic information: age, race, formal education level, income level, and reproductive history (see Appendix E). The IVF participants were administered the instruments as a pretest during the month prior to their scheduled IVF cycle and instructed to return the answer sheets within ten days in the self-addressed stamped envelope which was provided. Each woman who was discontinued from the IVF program before embryo transfer was administered the GEI-B revised, DACL-B, and WCC-R (see Appendix D) as posttests within four weeks from the date when her IVF cycle was canceled. All the women who completed embryo transfer were administered the GEI-B revised, DACL-B, and WCC-R as posttests within four weeks from the date of their pregnancy test and instructed to return the answer sheets in the self-addressed stamped envelope which was provided.

### Non-IVF Infertile Subjects

A letter was sent to Richard Wing, M.D. introducing the researcher, the general purpose of the study, and encouraging the clinic physicians assistance in obtaining a sample of non-IVF infertile women attempting to achieve pregnancy (see Appendix L). The researcher met with each physician in the clinic to briefly provide a description of the study and the eligibility criteria necessary for participation (see Appendix M).

Each woman interested in volunteering was instructed to record their mailing address on a postcard (see Appendix N) and mail it to the researcher. Those non-IVF infertile women who volunteered were mailed the consent form (see Appendix O), demographic form (see Appendix F), GEI-B revised, DACL-B, and the SRE pretest instruments and a self-addressed stamped envelope with instructions for the answer sheets to be completed at the beginning of the treatment cycle and returned within ten days. The GEI-B revised, DACL-B, and the WCC-R (see Appendix P) posttest instruments were administered within four weeks from the date of onset of their next menstrual cycle with instructions to return the answer sheets within ten days in the self-addressed stamped envelope which was provided.

A follow-up letter was sent to each research participant whose pretest or posttest questionnaires were not returned within two weeks (see Appendices Q and R).

### Analyses of Data

The pretest and posttest scores on the DACL-B and GEI-BR were compared for the IVF treatment group of women who received a negative pregnancy test and the non-IVF group who did not achieve pregnancy. The pretest and posttest scores within each group of women who received a negative pregnancy test were also compared. Scoring on the GEI-BR was the total raw scores reported for each scale. The GEI-BR was scored by hand using a stencil and the results computed to yield a t score for each scale. Scoring on the DACL-B was the total number of positive adjectives checked and negative adjectives not checked. Scoring on the WCC-R questionnaire was the total number of "Yes" responses for each scale. The SRE was scored using a stencil which identified the assigned numerical value and summing the total number of points.

To answer the first two research questions, a dependent t test was used to compare the levels of grief and depression of unsuccessful IVF participants and unsuccessful non-IVF infertile participants. The third research question was tested via an independent t test to compare the levels of grief and depression between the unsuccessful IVF treatment group and the unsuccessful non-IVF group. For the questions concerning which demographic variables had the most effect on grief and depression, a stepwise multiple regression analysis was used to determine the relative contribution of each of the following variables: age, length of time of infertility, male or female

infertility diagnosis, number of past IVF treatments, and financial impact.

#### Limitation of the Study

This study had several limitations due to the following restrictions.

#### Selection of the Sample

In order to be assured that the fertility treatment protocol would be the same for each woman, all the IVF subjects were volunteers from the University of North Carolina School of Medicine IVF Program in Chapel Hill, North Carolina. The non-IVF subjects were being treated for infertility at a private reproductive specialty center in Charlotte, North Carolina and volunteered to participate in this study. A person's motivation to volunteer to participate in this study may make them different in some way than the participants who did not agree to participate in this study and, therefore, may not be representative of the feelings of IVF participants and infertility patients in general. Also, using only one IVF center and one private infertility clinic for the sample of participants effects the generalizability of the results.

The results of this study are based primarily on the responses of college educated Caucasian women. Research needs to be done which includes a wider range of cultural and socioeconomic levels.

### Instrument

The GEI-BR is a revised instrument and additional research needs to be done on its predictive validity. Additional samples need to be tested using the GEI-BR which includes a wider range of cultural and social levels. The instruments used in the study relied on self-reported information which may affect reliability.

## CHAPTER IV

## RESULTS

This chapter presents the results of the data analyses. Because of its ability to handle small sample sizes, the t test was used to test the relationship between means. In order to determine if the IVF and non-IVF groups differed on some unknown measure, an analysis of variance (ANOVA) was used to compare the pretest means on the DACL-B and GEI-BR. This statistical test concluded that no significant difference existed between the two groups on either instrument.

Measures of Depression and Grief

Table 2 summarizes the pretest and posttest means and standard deviations of the IVF and non-IVF treatment groups for the two dependent measures, depression (DACL-B) and grief (GEI-BR). As reported in Table 2, the two groups did not differ significantly on the pretest DACL-B or GEI-BR.

Lubin (1981), who reported a raw score of seven as the therapeutic mean on the DACL-B, indicated that scores of 13 are rare for adults. Fifty-six percent of the IVF treatment participants reported scores above seven prior to initiating the IVF cycle, and 62% reported feelings of depression four weeks after the pregnancy test. Eighteen women reported scores above 13 on the pretest, 20 scored

Table 2

Means and Standard Deviations for Within-Group Change on the DACL-B and GEI-BR

Group and Measure	Pretest		Posttest		<u>t</u>	<u>p</u>
	Mean	<u>SD</u>	Mean	<u>SD</u>		
IVF						
DACL-B	10.16	7.83	11.54	7.34	1.29	.20 <sup>a</sup>
GEI-BR	18.08	7.92	21.16	7.84	3.14	.003 <sup>a</sup>
Non-IVF						
DACL-B	10.04	6.07	14.34	12.05	2.56	.014 <sup>b</sup>
GEI-BR	18.02	6.99	20.38	7.35	3.80	.001 <sup>c</sup>

<sup>a</sup>p < .01

<sup>b</sup>p < .05

<sup>c</sup>p < .001

above 13 on the posttest, and 28 reported some level of depression above the mean for the normal population of adult women.

Fifty-eight percent of the non-IVF infertile group reported scores above seven on the DACL-B pretest and 68% reported feelings of depression four weeks after the pregnancy test. Seventeen of the non-IVF women reported scores above 13 on the pretest, 24 scored above 13 on the posttest, and 33 reported some level of depression above the mean for the normal population of adult women.

The subcategories of grief on the CEI-BR are denial, anger, despair, social isolation, social desirability, loss of control and dependency. The subscale reliabilities were deemed too low to



adequately investigate such differences because of the small number of items comprising each subscale. The means for the IVF treatment group and the non-IVF group on the GEI-BR subscales are reported in Table 3.

### Hypothesis 1

The first hypothesis stated that the posttest scores on the GEI-BR and DACL-B would be significantly higher than the pretest scores for women who have a negative pregnancy test following IVF treatment. This was investigated with a dependent  $t$  test. An examination of the data indicated that the pretest and posttest means and standard deviations on the DACL-B were not statistically significant [ $t$  (49) = 1.29, NS]. The pretest and posttest means for the GEI-BR was statistically significant at the 0.01 level [ $t$  (49) = 3.14,  $p < .01$ ] (see Table 2).

### Hypothesis 2

The second hypothesis stated that there would be a significant difference in the pretest and posttest scores on the GEI-BR and DACL-B for non-IVF infertile women who do not achieve pregnancy. Using the dependent  $t$  test, a significant difference was found on pretest and posttest scores for the DACL-B [ $t$  (49) = 2.56,  $p < .05$ ] and the GEI-BR [ $t$  (49) = 3.80,  $p < .001$ ] (see Table 2).

### Hypothesis 3

The third hypothesis examined the difference in the means of the DACL-B and GEI-BR posttest scores of the IVF treatment group and

Table 3

Means and Standard Deviations for the Pretest and Posttest Comparisons of the GEI-BR Subscales

Group and Subscales	Pretest		Posttest		<u>t</u>	<u>p</u>
	Mean	<u>SD</u>	Mean	<u>SD</u>		
Anger						
IVF	3.74	2.21	4.36	2.22	2.43	.01 <sup>a</sup>
Non-IVF	3.68	2.15	4.36	2.07	2.90	.006 <sup>b</sup>
Denial						
IVF	.84	1.09	.78	.99	.43	.59
Non-IVF	.70	1.02	.84	1.15	1.12	.27
Social Desirability						
IVF	2.52	1.71	2.32	1.29	.99	.33
Non-IVF	2.44	1.05	2.10	.84	2.84	.007 <sup>a</sup>
Despair						
IVF	3.70	2.62	5.52	3.15	4.89	.001 <sup>b</sup>
Non-IVF	3.94	2.26	6.06	4.78	3.40	.001 <sup>b</sup>
Isolation						
IVF	1.90	1.74	2.30	1.74	1.79	.08
Non-IVF	1.84	1.35	2.10	1.49	1.39	.17
Loss of Control						
IVF	2.98	1.61	3.66	1.55	3.53	.001 <sup>b</sup>
Non-IVF	3.10	1.58	3.34	1.55	1.27	.21
Dependency						
IVF	1.98	1.35	1.82	1.14	.87	.39
Non-IVF	2.04	1.03	1.98	1.09	.42	.68

<sup>a</sup>  $p < .05$

<sup>b</sup>  $p < .01$

<sup>c</sup>  $p < .001$

non-IVF infertile group. It was suspected that the failure to become pregnant following IVF treatment, one of the most expensive fertility treatments and final fertility treatment alternatives available to infertile women, would result in more depression and grief than that exhibited by the non-IVF treatment group of women who were involved in less expensive treatment plans and who had several treatment alternatives available to them in the future. However, the independent  $t$  test revealed that the difference in posttest scores was not statistically significant on the DACL-B [ $t$  (98) = 1.40, NS] and GEI-BR [ $t$  (98) = .51, NS]. The statistical results did not support the hypotheses that the posttest scores on the GEI-BR and DACL-B of women who have a negative pregnancy test following IVF treatment would measure higher than the posttest scores of non-IVF infertile women who do not achieve pregnancy (see Table 4).

### Demographic Variables

#### Questions 1 and 2

The first two questions examined whether the demographic variables of age, diagnosis of reproductive fertility problem, years infertile, impact of financial investment in the IVF program, and number of past IVF treatments were significantly related to the posttest scores on the GEI-BR and DACL-B.

A stepwise multiple regression analysis was performed to determine the amount of variance in the scores on the DACL-B and GEI-BR which could be accounted for by each of the six independent

Table 4

Means and Standard Deviations for the Pretest and Posttest Between Group Comparisons for DACL-B and GEI-BR

Test	IVF		Non-IVF		<u>t</u>	<u>p</u>
	Mean	<u>SD</u>	Mean	<u>SD</u>		
Pre-DACL-B	10.16	7.83	10.04	6.07	.09	.932
Post-DACL-B	11.54	7.34	14.34	12.05	1.40	.164
Post-GEI-BR	21.16	7.84	20.38	7.33	.51	.609

variables. Because the number of variables was fairly large given the modest sample size, a stringent significance level of .01 was used to protect against the increased probability of a Type I error. Of these six variables none, by themselves, can account for more than 2.5% of the variance in the DACL-B, or 5.9% of the variance in the GEI-BR. It should be noted that when the relationships of the independent variables to the dependent variables, grief and depression, was investigated individually; the financial impact of the IVF treatment program was not significantly related to the posttreatment scores at the .01 level, but did reach significance at the .05 level on the GEI-BR. In particular, women who reported the expense of the IVF program to be significant or a very significant burden, yielded higher scores on the GEI-BR ( $R^2 = .0588$ ,  $p < .05$ ) (see Table 5).

Table 5

Amount of Variance Accounted for by the Individual Variables to  
DACL-B and GEI-BR Posttest Scores

Variable	DACL-B		GEI-BR	
	R <sup>2</sup>	p	R <sup>2</sup>	p
Age	.0198	.17	.0045	.32
Years infertile	.0033	.35	.0065	.29
Male infertility	.0005	.44	.0162	.19
Female infertility	.0252	.14	.0025	.37
Financial impact	.0005	.42	.0588	.04 <sup>a</sup>
Number of IVF	.0053	.31	.0002	.46

<sup>a</sup>p < .05

### Question 3

The coping strategies utilized most frequently by the IVF and non-IVF treatment groups was examined by determining the frequency distribution of the responses from the Ways of Coping Checklist revised (WCC-R) and three open-ended questions. The scores on the WCC-R revealed that this sample of women utilized emotional-focused coping strategies more frequently than problem-focused coping strategies. Of the 30 emotional or problem-focused coping strategies identified in the WCC-R, the coping strategies reported most frequently by IVF treatment and non-IVF participants are identified in Table 6.

Table 6

## WCC-R Questionnaire Items and Response Frequencies

Coping Strategy	IVF		Non-IVF	
	<u>n</u>	%	<u>n</u>	%
Emotional Scale				
Criticized or lectures self	3	6	6	12
Kept feelings to self	7	14	6	12
Slept more than usual	12	24	12	24
Accept sympathy	6	12	10	20
Positive self-talk	11	22	8	16
Professional counseling	1	2	0	0
Problem Scale				
Concentrated on next step	7	14	2	4
Turned to substitute activity	8	16	7	14
Time would make a difference	10	20	13	26
Talked to someone	16	32	16	32
Concentrated on something good	6	12	6	12

The responses to the first two open-ended questions reflected similar thoughts from a majority of the IVF treatment participants. The women reported that talking to their spouse about their feelings was the most helpful coping strategy used during the IVF treatment. The participants agreed that the information and encouragement they received from members of the IVF program's team had a positive influence on their attitude during IVF treatment. Many reported that they would have liked some communication from an IVF team member during the two-week waiting period after embryo transfer and before their pregnancy test. Feelings of being out of control and of abandonment by the IVF team were expressed by some women.

The last open-ended question asked how the emotional experience of IVF treatment compared to what they expected. The most frequent response was they had been well informed as to what to expect during IVF treatment from the IVF staff nurses, friends that had participated in IVF treatment, and articles describing the IVF experience. Other women expressed feelings of disbelief, anger, and conflict whether to attempt another IVF treatment cycle in the future because the emotional turmoil experienced during IVF treatment was much greater than they had anticipated.

#### Summary

Chapter four described the IVF treatment sample and non-IVF sample used in the study. The pretest and posttest scores on the GEI-BR and DACL-B were compared between the two groups and within the two groups. The demographic variables--age, diagnosis of male or female reproductive fertility problem, years infertile, impact of financial investment in the IVF treatment program, and number of past IVF treatments--were compared to the level of grief (GEI-BR) and depression (DACL-B). No variable was found to be significantly related to the posttest scores. The coping strategies utilized by this sample of participants to cope with the uncertainty and stress of the fertility treatment were identified.

CHAPTER V  
SUMMARY, CONCLUSIONS, IMPLICATIONS,  
AND RECOMMENDATIONS

The purpose of this study was twofold. First, differences in the levels of grief and depression for infertile women enrolled in an IVF treatment program and women not enrolled in an IVF treatment program, all of whom were unsuccessful at achieving pregnancy, were examined. Secondly, the coping mechanisms utilized most frequently by the IVF treatment participants and non-IVF participants were identified. This chapter will describe the conclusions proposed from the results of the study, recommendations, and implications for future research.

Summary

This summary will be presented in two sections--hypotheses testing and examination of the questions.

Hypotheses Testing

It was hypothesized that the posttest scores on the GEI-BR and GACL-B would be significantly higher than the pretest scores for women who have a negative pregnancy test following IVF treatment. This hypothesis was supported in part; the GEI-BR scores were significant at the .01 level and the DACL-B scores were not significant.



The second hypothesis examined the difference in the pretest and posttest scores on the GEI-BR and DACL-B for non-IVF participants who did not achieve pregnancy. Support for this hypothesis was significant at the .001 and .05 levels, respectively.

The third hypothesis examined the difference in the means of the DACL-B and GEI-BR posttest scores of the IVF treatment group and non-IVF group. There was no statistical support for this hypothesis.

#### Examination of the Questions

The first two questions were designed to determine whether age, diagnosis of male or female reproductive fertility problem, years infertile, impact of financial investment in the IVF program, and number of past IVF treatments were significantly related to the posttest scores on grief (GEI-BR) and depression (DACL-B). These six independent variables were not found to be significantly related to the level of grief or depression of this sample of participants who were unsuccessful at achieving pregnancy after IVF or another fertility treatment. The financial impact of the IVF treatment program was significantly related to grief and depression at the .05 level but not at a level of .01 which was used to protect against a Type I error.

The third question was designed to investigate the coping strategies utilized most frequently by IVF treatment participants and non-IVF participants. The responses of the IVF treatment participants and non-IVF participants revealed that they relied on

emotional-focused coping styles more frequently than problem-focused coping strategies.

### Conclusions

This study examined the differences in the levels of grief and depression between women participating in IVF treatment and the non-IVF participants who were unsuccessful at achieving pregnancy. Both of these groups of women experienced measurable levels of grief and depression before, during, and after their treatment.

The statistically higher scores on the GEI-BR supports earlier cited research in which infertile women reported symptoms of grief when pregnancy does not occur (Bresnick & Taymor, 1979; Lukse, 1985; Menning, 1975). The losses associated with an unsuccessful IVF procedure include the loss of self-confidence, loss of control, the disappearance of the embryos, and financial loss (Seibel & Taymor, 1984).

There was no significant difference in the scores for depression on the DACL-B for IVF treatment participants since the pretest level of depression was reported above the therapeutic mean. Garner et al. (1984) reported that 38% of the women initiating IVF treatment began their IVF procedure with a measurable level of distress, which increased if pregnancy was not achieved. Similar results were found in this sample of IVF participants. Fifty-six percent of the participants reported feelings of depression prior to initiating IVF and 62% reported feelings of depression four weeks after the negative pregnancy test.

Perhaps this hypothesis was not supported because this group of IVF participants were aware that their chances of achieving pregnancy were low and, therefore, had more realistic expectations of treatment results. Many IVF participants have had previous unsuccessful pregnancy attempts with other fertility treatments and are aware that they may never be able to have their own biological child. Additionally, they may be using denial as a coping strategy to survive this difficult news, or have become desensitized to some of their feelings related to pregnancy failure.

The significant change in feelings of grief and depression experienced by non-IVF women after an unsuccessful pregnancy treatment cycle was expected. The literature has reported that infertile women experience feelings of grief and depression (Bresnick, 1981; Shapiro, 1982). Women initiate each treatment cycle with high expectations and hope and, therefore, are emotionally set up for disappointment.

In this study, the IVF treatment participants and non-IVF participants experienced similar levels of grief and depression prior to beginning treatment and following a negative pregnancy report. Research concerning the attitudes of IVF participants indicated IVF treatment to be one of the most stressful experiences of their life (Freeman, Boxer, Rickels, Tureck, & Mastroianne, 1985). In other research, Garner, Arnold, and Gray (1984) reported that IVF participants grieved the loss of their child. In this study, however, both groups of women were similar and reported comparable levels of

depression, despair, anger, and loss of control as the hope of pregnancy faded.

Age, reproductive problems, years infertile, financial impact, and number of past IVF cycles were not found to influence the level of grief or depression reported by this sample of women. These results contradicted research which reported length of time of infertility, complexity of infertility treatment, female reproductive problems, and age to be related to the levels of grief and depression experienced by infertile women (Edelmann & Connolly, 1986; McEwan et al., 1987). Women who reported the expense of the IVF program to be a significant or a very significant burden scored higher on the GEI-BR than did IVF participants who reported the expense as minimal or no burden. This relationship was not statistically significant but had some impact.

Effective coping behavior prevents the prolonged sense of threat and reduces emotional stress. The responses IVF treatment participants utilized to prevent, avoid or control the emotional distress had little effect on assisting them to deal with the stresses of infertility and IVF. Unger and Powell (1980) stated that one intervention to cope with stress was to strengthen the family's use of their social network. IVF participants identified isolation behaviors such as self-talk, sleep, and keeping their feelings to themselves as strategies they used to cope with this situational crisis. Isolation from their relatives and friends reduced the availability of a supportive network which could assist them to cope

more effectively with the stress of IVF and the despair of an unsuccessful pregnancy attempt.

### Implications

One of the major problems identified in this study was the high number of IVF treatment participants and non-IVF participants who began their treatment with a moderate to high level of depression. These results indicate therapeutic counseling may be more effective in the treatment of depression if initiated before infertility treatment is started. Also, more research needs to be done on the psychological characteristics of women participating in fertility treatment programs which could assist in identifying those at high risk for mood disorders.

Medical professionals and counselors need to consult with each patient to identify the woman's present level of distress and the coping strategies being employed prior to initiating IVF treatment. Many of these women have spent years attempting to achieve pregnancy and, with each failure, experienced feelings of grief. Their feelings of anger, frustration, hopelessness, and depression may influence their ability to cope with the stresses of infertility treatments and IVF treatments in a healthy way. Secondly, infertility programs should offer and encourage counseling services to patients. A therapeutic counseling service could provide the patient an opportunity to learn and practice more assertive communication styles, explore anger, depression, and other feelings they associate with the

crisis of infertility, and learn new behaviors that could enhance their ability to cope with their infertility and the IVF procedure. This could be provided on an individual basis or in a group counseling setting.

Marital stability, financial security, psychological stability, social support, and realistic expectations may influence the emotional integrity of IVF participants. Consideration of these issues by the infertile couple and IVF participants with a counselor or nurse may provide input and the identification of more effective coping strategies. As communication between the health care providers and the patients is enhanced, the patient has the opportunity to experience more control in making important decisions.

#### Recommendations

An important finding identified in this study is the high level of depression reported by the infertile women participating in the IVF treatment and the non-IVF treatment programs. Additional research is needed which identifies which psychological conditions put infertile women participating in treatments for infertility at risk if pregnancy is not achieved. A pretreatment interview with a counselor, as well as continued contact during the after treatment, may reduce the levels of grief and depression. The research question of interest is: What effect does therapeutic counseling have on the levels of grief and depression reported by women participating in infertility treatment? A second research questions is: What role is

there for counseling of infertile couples in an IVF program on infertility clinic?

Of interest would be which coping strategies were used by IVF treatment participants who reported pretest and posttest levels of depression within the normal range. The research question is which coping strategies are used most frequently by nondepressed IVF participants and nondepressed non-IVF infertile women.

Future research also needs to address the relationships between family variables and their influence on psychological status and effective coping behaviors of women participating in IVF treatment. To be studied is whether family variables, such as marital stability or socioeconomic status, influence the coping behaviors for infertile women participating in an IVF program. Another research question is which family variable, such as economic status, has the greatest influence on the level of grief and depression experienced by IVF program participants? This may lead to a better understanding of which coping behaviors enable some women to resolve their feelings of grief and depression.

Obtaining information from men participating in the IVF program would add another dimension to future research. Little data exist relating to the psychological experience of men participating in the IVF procedure. This could lead to additional research addressing the influence of IVF on the relationship between the couple, the couple's unique motivations to pursue pregnancy, and how the couple copes with pregnancy success or pregnancy failure. Of interest would be the

reasons for continuing to pursue fertility treatment or the reasons why a spouse continues infertility treatment. A third research question would be: What was your role in the medical decision-making for your fertility treatment? Did you feel well-informed about the alternatives regarding treatment, probability of a successful pregnancy, and the physical and emotional side effects of therapy? The use of a self-report instrument sensitive to the issues of infertility, as well as using structured interviews, seems conducive to obtaining this information.



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APPENDIX A  
SCHEDULE OF RECENT EXPERIENCE



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**Appendix A, 76-77**

**Appendix B, 79-82**

**Appendix C, 84**

**Appendix D, 86-87**

**University Microfilms International**

APPENDIX B  
GRIEF EXPERIENCE INVENTORY

APPENDIX C  
DEPRESSION ADJECTIVE CHECKLIST-B

APPENDIX D  
WAYS OF COPING QUESTIONNAIRE

APPENDIX E  
IVF DEMOGRAPHIC FORM

## IVF Demographic Form

Name: Patient \_\_\_\_\_

Spouse \_\_\_\_\_

Address: \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Phone: Home \_\_\_\_\_ Work \_\_\_\_\_ Spouse Work \_\_\_\_\_

Race: \_\_\_\_\_ Birthdate: \_\_\_\_\_

Education: High School \_\_\_\_\_ College \_\_\_\_\_ Graduate School \_\_\_\_\_

Post Graduate \_\_\_\_\_ Other \_\_\_\_\_

Combined Yearly Income Range:

\$10,000-\$ 20,000 _____	\$20,000-\$30,000 _____
\$30,000-\$ 40,000 _____	\$40,000-\$50,000 _____
\$50,000-\$ 60,000 _____	\$60,000-\$70,000 _____
\$70,000-\$ 80,000 _____	\$80,000-\$90,000 _____
\$90,000-\$100,000 _____	Above \$100,000 _____

Duration of present marriage: \_\_\_\_\_

Either partner previously married? Yes \_\_\_\_\_ No \_\_\_\_\_

Children from prior marriage: Yes \_\_\_\_\_ No \_\_\_\_\_

Pregnancy from present marriage? Yes \_\_\_\_\_ No \_\_\_\_\_ Outcome \_\_\_\_\_

Reason for infertility: \_\_\_\_\_

Duration of infertility investigation: \_\_\_\_\_ Year \_\_\_\_\_ Months

Previous infertility treatments (if applicable): Please check if "Yes"

Interuterine insemination \_\_\_\_\_ Artificial insemination donor \_\_\_\_\_

Clomid \_\_\_\_\_ Pergonal \_\_\_\_\_ Other \_\_\_\_\_

Is this your first IVF cycle? Yes \_\_\_\_\_ No \_\_\_\_\_

Number of previous IVF cycles \_\_\_\_\_

What impact does the investment in the IVF Program have on your financial position? (Please circle appropriate response)

No Impact    Minimal Impact    Significant Impact    <sup>Very</sup> Significant Impact

Have you considered any of these alternatives? Please check if "Yes"

adoption \_\_\_\_\_ Surrogate \_\_\_\_\_ AID \_\_\_\_\_

childless living \_\_\_\_\_ other \_\_\_\_\_

APPENDIX F  
NON-IVF DEMOGRAPHIC FORM



## Non-IVF Demographic Form

Name: Patient \_\_\_\_\_

Spouse \_\_\_\_\_

Address: \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Phone: Home \_\_\_\_\_ Work \_\_\_\_\_ Spouse Work \_\_\_\_\_

Education: High School \_\_\_\_\_ College \_\_\_\_\_ Graduate School \_\_\_\_\_

Post Graduate \_\_\_\_\_ Other \_\_\_\_\_

Combined Yearly Income Range:

\$10,000-\$ 20,000 _____	\$20,000-\$30,000 _____
\$30,000-\$ 40,000 _____	\$40,000-\$50,000 _____
\$50,000-\$ 60,000 _____	\$60,000-\$70,000 _____
\$70,000-\$ 80,000 _____	\$80,000-\$90,000 _____
\$90,000-\$100,000 _____	Above \$100,000 _____

Duration of present marriage: \_\_\_\_\_

Either partner previously married? Yes \_\_\_\_\_ No \_\_\_\_\_

Children from prior marriage? Yes \_\_\_\_\_ No \_\_\_\_\_

Pregnancy from present marriage? Yes \_\_\_\_\_ No \_\_\_\_\_ Outcome \_\_\_\_\_

Reason for infertility: \_\_\_\_\_

Duration of infertility investigation: \_\_\_\_\_ Year \_\_\_\_\_ Months

Previous infertility treatments (if applicable): Please check if "Yes"

Interuterine insemination \_\_\_\_\_ Artificial insemination donor \_\_\_\_\_

Clomid \_\_\_\_\_ Pergonal \_\_\_\_\_ Other \_\_\_\_\_

Is this your first treatment cycle? Yes \_\_\_\_\_ No \_\_\_\_\_

Number of previous cycles \_\_\_\_\_

What impact does the investment in the treatment have on your financial position?

No Impact    Minimal Impact    Significant Impact    <sup>Very</sup> Significant Impact

Have you considered any of these alternatives? Please check if "Yes."

Adoption \_\_\_\_\_ Surrogate \_\_\_\_\_ AID \_\_\_\_\_ IVF \_\_\_\_\_

childless living \_\_\_\_\_ other \_\_\_\_\_

APPENDIX G  
APPROVAL FROM HUMAN SUBJECTS COMMITTEE

## THE UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

Report to IRB on Research Project Involving Human Subjects  
(For HSRC Use Only)

This form is to be filed with the UNC-G Institutional Review Board (IRB) for all research projects conducted at the University of North Carolina at Greensboro that involve human subjects which have been judged to be subject to review. This form should be completed by the HSRC Chair or a member of the HSRC designated by the Chair and filed with the IRB together with Form 2 and a copy of the proposal or project description. If the project is judged to be exempt from review, Form A should be filed instead of Form 1.

=====  
Date: 12/1/88

Project Title: Attitude Changes of Partial Substitution

Principal Investigator(s): Michael P. Lukasz

Relationship to the University:

Faculty     Student     Other \_\_\_\_\_  
(Specify)

=====  
This proposed project has been reviewed by the HSRC and was found to:

involve minimal risk  
 involve more than minimal risk.

The project was:  approved unconditionally  
 approved with the following conditions:  
(attach additional sheet if necessary)

not approved for the following reasons:  
(attach additional sheet if necessary)



APPENDIX H  
INTRODUCTION LETTER TO DR. TALBERT

November 23, 1989

Dear Dr. Talbert:

It was really nice to see you and Linda on Friday. It has been especially wonderful to witness the IVF program experiencing such growth over the past five years. I believe my research will be helpful in identifying areas of emotional distress of women participating in IVF and interventions that may be useful in reducing stress.

I am enclosing the work I have done so far towards my dissertation proposal and pilot study. I have just received approval from my chair person at UNCG that I may begin my pilot study. I would like to meet with you as soon as possible to discuss this research, and if it is approved, begin the pilot study mid-December. I am in Greensboro several days each week. Would you be free to review the study with me on Monday, Tuesday, or Thursday? Please feel free to fax the appointment time to me at the Women's Specialty Center. I am looking forward to hearing from you.

Yours truly,

Micki Lukse, MHDL

ML/SIM/av

Enclosure

APPENDIX I  
MEETING AGENDA WITH IVF COORDINATOR



I am a doctoral candidate at UNC-Greensboro, currently working on my doctoral dissertation. I am presently involved in collecting information concerning various aspects of the in vitro fertilization treatment process. The participants in the IVF program will be asked to complete three questionnaires at the beginning of their IVF cycle and another set of three questionnaires after the results of the pregnancy tests have been determined. The purpose of this study is to identify the attitudes of IVF participants during their IVF treatment cycle. The women may refuse to participate in this study or withdraw at any point.

My goal in this meeting with Ms. Bailey, R.N. IVF Nurse Coordinator is to learn how I can most effectively reach the IVF participants and not be disruptive to the smooth functioning of the IVF program.

Thank you for taking the time to assist me with developing a plan to efficiently collect my data.

ML/SIM/ibu

APPENDIX J  
IVF LETTER AND RETURN POSTCARD

Dear IVF Participant,

I am a doctoral candidate in counseling at UNC-Greensboro, currently working on my doctoral dissertation. I am presently involved in collecting information concerning various aspects of the in vitro fertilization treatment process. You are being asked to complete one set of three questionnaires prior to initiating your IVF treatment cycle and another set of three questionnaires after the results of your pregnancy test has been determined. Each set of questionnaires can be completed at home and will take approximately 20 minutes. The purpose of this study is to identify the attitudes of IVF participants during their IVF treatment cycle. Your participation will assist in identifying areas of patient care that may need attention. You may refuse to participate in this study, or withdraw at any point, without jeopardizing your IVF services.

Please complete the enclosed questionnaires and return them to me immediately. A final set of questionnaires will be mailed to you within one month after your pregnancy test and are to be returned to me in the self-addressed stamped envelope which will be provided. The questionnaires will be scored by me, and I assure you all responses will be kept confidential. There will be no adverse risks as a result of completing the questionnaires.

Please notify me or Dr. Talbert if you have any questions regarding the procedure of this study. I can be reached at (704) 364-5843 and Dr. Talbert can be reached at (919) 966-5438.

Thank you for taking the time to assist the IVF team and myself in learning more about the psychosocial stresses of IVF.

Yours truly,

Micki Lukse, RN, MHDL  
Doctoral Candidate

I agree to participate in the study concerning attitudes about IVF.

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

City

State

Zip

(Please check if "Yes")

\_\_\_\_\_ Yes, I would like a copy of the results of this study.

\_\_\_\_\_ Month anticipated to start IVF treatment.

APPENDIX K  
IVF PARTICIPANT CONSENT FORM

## Research Consent Form

(Attitudes of Grief and Depression of Women Participating in IVF)

I agree to participate in the study concerning attitudes during IVF, being conducted by Michelle P. Lukse, a doctoral candidate in counseling at the University of North Carolina at Greensboro. I have been informed either orally or in writing or both about the procedures to be followed and about any risks which may be involved. I will complete one set of three questionnaires prior to initiating my IVF treatment cycle and one set of three questionnaires within one month after my pregnancy test. Each set of questionnaires may be completed at home and will take approximately 20 minutes. There will be no adverse risk as a result of completing the questionnaire. The purpose of this study is to identify the attitudes of IVF participants during their IVF treatment cycle.

The investigator is responsible for all mailing expenses. I understand that I will not receive payment for participating in this study. I further understand my responses will be kept confidential, and that my responses will not be entered into my medical records. The investigators have offered to answer any further questions that I may have regarding the procedures of this study.

I understand that this project has been approved by the Committee on the Protection of the Rights of Human Subjects at the University of North Carolina at Chapel Hill. If I believe that there is an infringement upon my rights, I may contact the Chairman of that Committee, John C. Herion, M.D. at (919) 966-1344.

I have the opportunity to ask, and have answered, all of my questions about this research.

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Witness: \_\_\_\_\_

Michelle P. Lukse, RN, MHDL  
Doctoral Candidate  
(704) 364-5843

Luther Talbert, MD  
(919) 966-5438

APPENDIX L  
LETTER TO DR. R. WING

March 19, 1990

Dear Dr. Wing:

Thank you very much for the opportunity to speak with you on the phone last week. I am presently in the last phase of my doctoral program at UNC-Greensboro and currently working on my doctoral dissertation. Although I occasionally miss my responsibilities as the IVF Coordinator of the Charlotte satellite of the Chapel Hill IVF Program, I have the wonderful opportunity to continue to work as a counseling therapist for infertility patients. I am presently involved in collecting information concerning various aspects of the attitudes of women attempting to achieve pregnancy by in vitro fertilization. I would also like to include non-IVF infertile women who are attempting to achieve pregnancy to compare the attitudes of these two groups.

As you may recall from our phone conversation, any of your fertility patients that volunteered to participate in this study will be asked to complete three questionnaires at the beginning of their menstrual cycle before initiating fertility therapy and another set of three questionnaires when she has completed her treatment cycle. The questionnaires may be completed at home and will take approximately 20 minutes to complete. There will be no adverse risks as a result of completing the questionnaires. Your patients may refuse to participate in this study or withdraw at any point. I would appreciate your agreeing to encourage your patients in this study as it will assist in identifying areas of patient care that may need additional attention.

Thank you again for taking the time to speak with me on the phone and for the invitation to speak with the other physicians at Women's Specialty Center.

Sincerely,

Micki Lukse, RN, M.H.D.L.  
Doctoral Candidate

ML:br



APPENDIX M  
PHYSICIAN STATEMENT

March 26, 1990

Women's Specialty Center  
Nalle Clinic  
1900 Brunswick Avenue  
Appendix K  
Charlotte, NC 28207

Dear Drs. Wing, Crain, and Whitesides:

I am a Doctoral Candidate at UNC-Greensboro currently working on my doctoral dissertation. I am presently involved in collecting information concerning the attitudes of women who are participating in in vitro fertilization. I am hoping you will assist me in obtaining information relating to the attitudes of women attempting to achieve pregnancy and who are not participating in in vitro fertilization.

The criteria for participation in this study are as follows: married, 25-45 years of age, high school graduate and attempting to achieve pregnancy and presently on Clomid or Pergonal therapy. Your patients will be asked to complete three questionnaires at the beginning of their menstrual cycle and another set of three questionnaires at the end of that treatment cycle after receiving a negative pregnancy test. The questionnaires will take approximately 20 minutes to complete. There will be no adverse risk as a result of completing the questionnaires.

Your participation in this study as well as your patients' participation will assist in identifying areas of patient care that may need attention. I am hopeful that you will agree to assist me in learning more about the emotional needs of women attempting to achieve pregnancy.

Thank you for taking the time to meet with me today.

Yours truly,

Micki Lukse, RN, M.H.D.L.

ML:br

APPENDIX N  
NON-IVF LETTER AND RETURN POSTCARD

Dear Participant:

I am a doctoral candidate at UNC-Greensboro, currently working on my doctoral dissertation. I was the IVF-Coordinator of the Charlotte Satellite at the Chapel Hill IVF Program from its inception in 1985 through the end of 1986, and have continued as a counseling therapist for infertility patients at this facility. I am presently involved in collecting information concerning various aspects of the attitudes of women attempting to achieve pregnancy by in vitro fertilization. I would also like to include non-IVF women who are attempting to achieve pregnancy to compare the attitudes of these two groups.

You will be asked to complete three questionnaires at the beginning of your menstrual cycle and another set of three questionnaires when you have completed your second menstrual cycle after attempting to achieve pregnancy. The questionnaires may be completed at home and will take approximately 20 minutes to complete. There will be no adverse risks as a result of completing the questionnaires. You may refuse to participate in this study or withdraw at any point without jeopardizing your services at your physician's office. Your participation will assist in identifying areas of patient care that may need additional attention.

Please notify me, or your physician, if you have any questions regarding the procedure of this study. I can be reached at (704) 364-5843 or (704) 343-3400. If you agree to participate in the study, please complete the attached information card and return it in the self-addressed stamped envelope.

Thank you for taking your time to assist physicians, the IVF team, and myself in learning more about the psychosocial stresses of women attempting to achieve pregnancy.

Yours truly,

Micki Lukse, RN, MHDL  
Doctoral Candidate

Attachment

I agree to participate in the study concerning attitudes about IVF.

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

City	State	Zip
------	-------	-----

(Please check if "Yes")

\_\_\_\_\_ Yes, I would like a copy of the results of this study.

APPENDIX O  
NON-IVF CONSENT FORM

## Research Consent Form

(Attitudes of Grief and Depression of Women Participating in IVF)

I agree to participate in the study concerning attitudes during IVF being conducted by Michelle P. Lukse, a doctoral candidate in counseling at the University of North Carolina at Greensboro. I have been informed either orally or in writing or both about the procedures to be followed and about any risks which may be involved. I will complete one set of three questionnaires prior to the first menstrual cycle while participating in this study and one set of three questionnaires within one month after my second menstrual cycle is completed. Each set of questionnaires may be completed at home and will take approximately 20 minutes. There will be no adverse risks as a result of completing the questionnaires.

The investigator is responsible for all mailing expenses. I understand that I will not receive any payment for participating in this study. I further understand my responses will be kept confidential, and that my responses will not be entered into my medical records. The investigator has offered to answer any further questions that I may have regarding the procedures of this study.

I have the opportunity to ask, and have answered, all of my questions about this research.

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Michelle P. Lukse, RN, MHDL  
Doctoral Candidate  
(704) 364-5843

APPENDIX P  
WAYS OF COPING CHECKLIST NON-IVF



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**Appendix P, 116-117**

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APPENDIX Q  
PRETEST FOLLOW-UP LETTER

Dear

Approximately two weeks ago I mailed the three research questionnaires to you. If you did not receive these questionnaires, I would appreciate it if you would contact me at (704) 343-3400 so I may send you another set. Please be sure to complete and return the questionnaires to me at your earliest convenience.

Thank you again for your participation and assistance with this important study.

Yours truly,

Micki Lukse, MHDL

APPENDIX R  
POSTTEST FOLLOW-UP LETTER

Dear

About two weeks ago three questionnaires related to the attitudes of women attempting to achieve pregnancy by in vitro fertilization was mailed to you. As of today, I have not yet received your questionnaires.

This study was undertaken to learn how to provide the best possible care to women attempting to achieve pregnancy. Knowledge about the emotional needs of women attempting to achieve pregnancy is critical information for the medical profession who are committed to the improvement of patient care.

I am writing to you because of the significance each questionnaire has to the usefulness of this study. In the event that your questionnaires have been misplaced, a replacement set is enclosed. Your cooperation is greatly appreciated.

Yours truly,

Micki Lukse, MHDL