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The Shared Burden of Infertility:

Gender Role Conformity as a Predictor of Infertility-Related Distress and

Relational Health in Couples Undergoing Treatment for Infertility

Committee:

_____

Aaron Rochlen, Supervisor

_____

Alissa Sherry

_____

David Drum

_____

Sheldon Ekland-Olson

_____

Carol Pierce-Davis

The Shared Burden of Infertility:

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by

Elisabeth Brooker Morray, B.S.; M.A.

Dissertation

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This dissertation is dedicated to my parents, Claudia Morray and Joseph P. Morray, Jr.

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Written in loving memory of my Grandma Marje,

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The Shared Burden of Infertility:

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Elisabeth Brooker Morray, Ph.D.

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Supervisor: Aaron Rochlen

This study explored gender role conformity as a predictor of infertility-related distress and relational health in women and men undergoing treatment for infertility. Other factors that have been linked to infertility-related distress, including diagnosis type, treatment type, and insurance coverage were also explored. Study participants were comprised of 185 women and 147 men who had received a diagnosis of primary infertility and were undergoing medical treatment for infertility. Participants completed an online measure which included the following instruments: the Fertility Problem Inventory (FPI: Newton et al., 1999); the Conformity to Feminine Norms Inventory (CFNI: Mahalik et al., 2004); the Conformity to Masculine Norms Inventory (CMNI: Mahalik et al., 2003); and the Relational Health Indices (RHI: Liang et al., 2001). Findings from the study demonstrate a significant relationship between gender role conformity and infertility-related distress for both men and women. Women reported significantly greater levels of infertility-related distress than did men. Biological sex was a stronger predictor of infertility-related distress than was gender role conformity for both

men and women. No significant differences in distress scores were found for individuals grouped by diagnosis type, treatment type, or insurance coverage status were detected. When the couple was used as the unit of analysis, no differences were found between couples with congruent distress scores and incongruent distress scores. Clinical implications linking the study findings with individual and couple-based interventions, as well as ideas for future research, are discussed.

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CHAPTER 1

Introduction

Infertility is often an unexpected, stressful, and life-changing event in the lives of individuals receiving this diagnosis. Recent estimates suggest that 15-27% of American couples will struggle with the inability to conceive at some point during their lifetime (Schmidt, 2006). Data from the National Survey of Family Growth suggests that approximately 7.1 percent of married couples in the United States (2.1 million couples) are currently experiencing infertility (Abma et al. 1997). The American Society for Reproductive Medicine has warned that infertility is becoming increasingly common (www.ASRM.org). In response to the increased prevalence of infertility amongst American couples, there has been a recent proliferation of sophisticated techniques for treating the medical conditions associated with this diagnosis.

Simultaneously, the field of psychology has experienced dramatic shifts and developments in its conceptualization of the infertility experience. Research studies focused upon the experiences of infertile men and women have identified complex physical, psychological, and social needs in this population (Daniluk, 2001). Descriptive and qualitative studies of infertility present a compelling picture of the devastating consequences of this diagnosis, especially for women. Central themes of "normative" responses to infertility depicted in this literature include: depression, hopelessness, anger, loss of control, alienation, and marital conflict (Becker, 1994; Freeman et al., 1985; Mahlstedt et al., 1987; Sandelowski, 1989).

Quantitative studies focused upon the mental health consequences of infertility reveal remarkably different results. In a comprehensive review of the literature, Dunkel-

Schetter and Lobel (1991) conclude that the assertions made by the qualitative literature are not supported by the results of quantitative studies. The empirical studies reviewed by the authors suggest that the prevalence of psychological distress is no higher among infertile individuals when compared with their fertile counterparts. Furthermore, Dunkel-Schetter and Lobel (1991) question the validity of the conclusions drawn from the qualitative literature, given that these studies do not include control groups for comparison purposes. In contrast, a number of studies published since this review highlight significant differences between infertile and fertile subjects on at least one measure of distress. Recently, the results of such studies have led some researchers to characterize the infertile population as "distressed but not impaired" (Downey & McKinney, 1992; Greil, 1997).

These comparisons between the bodies of descriptive and qualitative literature seem to embody a number of unanswered questions in regards to the impact of infertility on individuals and couples. The specific intra-personal and contextual factors that may influence this impact are also unclear. Biological sex and gender are intra-personal factors that may predict infertility-related distress, though their role is not yet well understood. When "biological sex" is used as a predictor of infertility-related distress, the results tend to be consistent, with women experiencing greater levels of distress and other adverse reactions than do men. Such approaches to understanding the role of gender attribute differences to innate sex-based characteristics. Little consideration is given to the socio-cultural factors that undoubtedly influence the role of gender in individual's lives. This has led some researchers to question the assertion that innate differences

between men and women explain why infertile women appear to be more distressed than infertile men.

Such questions have led to the exploration of gender as a socially constructed entity, with an emphasis on the cultural factors that define the gender roles and norms that constitute "masculinity" and "femininity." Approaching gender from the lens of social constructionism focuses on the active creation of gender in everyday lives interactions with significant others. Such processes of "doing gender" are not only carried on in our society by individuals, but also through socially standardizing norms, expectations, and practices. From this perspective, the constructs of sex and gender are not a collection of simplistic biological differences. Being a "man" or a "woman" instead reflects a complex process of rearing and education that instills in the individual a collection of social norms and values, stereotypes, identification, images and traditions (Lorber & Farrell, 1990). As such, there may be a wide range of gender role orientations for both men and women, and these may exert a considerable influence on experiences of and reactions to infertility.

When the relationship between gender role and infertility distress is examined, the results are much less consistent than are the results when biological sex is considered. For example, some support exists for a model in which increased endorsement of feminine norms and values, in both men and women, is associated with elevated distress levels. Given that these norms place a heavy emphasis on motherhood, such a relationship is not surprising.

Similarly, some studies have also linked masculine gender roles with decreased infertility-related distress, as might be expected from relatively lesser emphasis placed on

fatherhood in traditional masculine norms. Others have suggest that to the extent that an infertility diagnosis may threaten a man's sense of virility and potency, two characteristics that are closely connected to traditional definitions of masculinity, men who endorse highly masculine gender roles may be at risk of distress.

These relationships have not been supported unequivocally and it appears that the relationships between gender role and infertility distress are not fully understood. The current study will shift the focus of inquiry away from the question of whether women's experience of infertility is "worse" than men's, and instead explore how their experiences of infertility *differ*, and will evaluate the role of gender rather than biological sex in predicting these differences.

The impact of infertility on the marital relationship, like the role of gender in the infertility experience is not well understood. The body of descriptive data paints a picture of infertility as a "relational crisis" that evokes anger, resentment, and hostility between spouses (e.g., Andrews et al., 1991; Greil, 1991; Ravel et al., 1997; Whiteford and Gonzalez, 1995). However, a review of the empirical literature provides an entirely different perspective: one in which there seems to be little or no difference in marital satisfaction between fertile and infertile couples, and when differences are reported, they reflect a sense of increased closeness and marital satisfaction (e.g. Adler, 1985; Berg, 1991; Daniluk, 1987; Dennerstein, 1985; Raval, 1987; Schover, 1992).

Unlike most other medical diagnoses, infertility is a challenge that directly impacts both members of a couple. Treatment requires participation from both members of the dyad, and as a result, infertility may place a significant burden upon the relationship. However, a variety of intra-personal and contextual factors, including

gender role orientation and the nature of treatment, may influence the extent to which each member of the couple experiences infertility-related distress.

Broad measures of "marital satisfaction" and "marital adjustment" may not adequately capture the relational intricacies that influence the experiences of infertile couples. Examining the extent to which infertility influences factors associated with relational health (Jordan et al., 1991), including engagement, empowerment, authenticity, and conflict tolerance, may address some of the apparent contradictions in the current literature. Such an approach might also highlight the characteristics of the marital relationship that serve protective functions in the face of the challenges of infertility.

The current study will address two areas of inquiry that are the focus of considerable debate in the literature. The impact of gender role on the experience of infertility will be explored, utilizing a social constructionist approach to understanding gender. The study will also address the influence of infertility on marital satisfaction. Utilizing recently developed measures designed to assess gender role conformity (Mahalik et al., 2003, 2005) and relational health (Liang et al., 2001) may facilitate a more comprehensive understanding of the subtle qualities and complex dynamics of these relationships than have previously-utilized measures of both gender and marital adjustment.

This dissertation will focus on some specific potential predictors of distress in individuals experiencing infertility, as well as new ways to capture the influence of infertility and infertility-related distress on relational health. Much of the previous literature has situated infertility and its ramifications solely in the realm of an individual experience with psychological consequences. This study will consider infertility in light

of dynamic socio-cultural factors that influence the meanings attributed to this diagnosis, particularly those related to gender role conformity. The current study will attempt to address some of the inconsistencies that are apparent in the bodies of descriptive and empirical literature by examining gender role orientation as a potential predictor of infertility-related distress in both men and women. The potential intersection between relational health and infertility-related distress will also be examined, using the couple as the unit of analysis.

CHAPTER 2

Literature Review

Infertility: An Overview

Definition of infertility. Infertility is typically defined as the inability to conceive after one year of regular sexual intercourse, or the inability to carry a viable pregnancy to term (Meyers et al., 1995; Abbey et al., 1991; Fouad & Fahje, 1989). Though this definition of infertility originated within the context of medical research, it has been adopted by social scientists that have used this definition of infertility consistently. More recently the criteria for an infertility diagnosis has been adjusted for age. The new definition allows for an infertility diagnosis in women over the age of 35 if they fail to become pregnant after six months of unprotected intercourse (Inciid.com, 2006). Primary infertility refers to the inability to conceive a first child, whereas secondary infertility refers to the failure to achieve a child after one live birth.

Prevalence of infertility. The decline of the fertility rate among American women has been well documented. In the year of the first national census, 1790, the birth rate in the United States was 55 per 1,000 population (Westoff, 1986). Two hundred years later it had fallen to 15.5 per 1000 population. A large percentage (83%) of this decline in the fertility rate has been linked to couples' avoidance of pregnancy during the first few years of marriage (Mosher & Pratt, 1991).

Another key explanation for this decline is the postponement of parenthood past the age of peak reproductive capability. As a result of physiological changes that occur with advanced age, women between the ages of 35 and 44 are twice as likely to experience infertility than are those between the ages of 30 and 34 years (Speroff, 1994).

The decision to postpone conception past peak reproductive years can be attributed to a number of shifts in trends in women's lifestyles. These include choosing to marry at a later age, increased access to educational opportunity, and increased focus upon career (Dion, 1995).

Though it is clear that rates of infertility have increased, estimates of the prevalence of infertility in the United States have been inconsistent. Data from the National Survey of Family Growth suggests that approximately 7.1 percent of married couples in the United States (2.1 million couples) are currently experiencing infertility (Abma et al. 1997). Other sources suggest that 10 – 26% of all couples are impacted by infertility (www.inciid.org), and still others suggest that one out of twelve couples experience infertility (Mosher and Pratt, 1990).

Some researchers have suggested that only half of people who have trouble getting pregnant actually seek medical treatment (Sadler & Syrop, 1998). Couples who seek medical treatment are thought to represent a select subset within the larger population of people who experience trouble getting pregnant. Though statistics indicate that African-Americans have the highest risk of infertility, it is Caucasian women who are middle to upper-middle class and possess at least a high school degree who are most likely to seek treatment (Henshaw & Orr, 1987).

Infertility diagnosis. Until well into the second half of the twentieth century, emotional factors were assumed to be the cause of the majority of infertility cases (Seibel & Taymor, 1982). As a result of the technological advances in reproductive technology that have emerged since the advent of in-vitro fertilization (IVF) in 1978, the identification of the physiological origins of infertility has been possible. Currently, up

to 95% of infertile couples receive a diagnosis indicative of an organic cause for their infertility (Leblum, 1997; Resolve, 1999). "Female factors" and "male factors" each account for approximately 35% of infertility cases (Robinson & Seward, 1996). Couples who experience both male and female factor infertility account for 20% of the infertile population. In 5- 10% of infertility cases, an organic factor is not attributable to either partner and is considered "unexplained" or "idiopathic" (Salzer, 1991).

Infertility treatment. Despite the fact that only about half of couples experiencing infertility will seek medical treatment, the infertility service industry is growing rapidly. The US Congress Office of Technology Assessment estimated that the number of visits to physicians for fertility-related concerns rose from approximately 600,000 in 1968, to 1.6 million in 1984, to 1.35 million in 1988, and to over 2 million in 1990 (Mosher & Pratt, 1993). This trend has been attributed to the following factors: increased incidence of couples presenting with primary infertility, more readily available services, advances in techniques for diagnosis and treatment, a decline in the number of adoptable infants, an increased awareness of available technologies, and a greater expectation of the ability to control one's reproductive choices (Aral & Cates, 1983; Hirsch and Mosher, 1987; OTA, 1988).

Research on Infertility: From Psychological Causes to Psychological Consequences

Psychogenic theories. It is clear that significant progress has been made in the realm of the medical diagnosis and treatment of infertility. Although infertility is not a recent phenomenon, it is only during the past three decades that the incidence of infertility has been linked to organic factors in ninety-five percent of all cases. Prior to

this time, psychogenic factors were considered a leading cause of infertility, and women were held causally responsible for a couple's fertility.

The text Domestic Medicine (Buchan, 1812 as cited in Marsh & Ronner, 1996) provided one of the first descriptions of psychogenic infertility. "Barrenness" was thought to be caused by "passions which tend to obstruct the menstrual flux, including grief, sudden fear, and anxiety." Husbands were encouraged to help their wives become as "easy and cheerful as possible; all disagreeable objects are to be avoided, and every method taken to amuse and entertain the fancy" (p. 26).

Throughout the first half of the twentieth century, psychoanalytic theorists continued to focus exclusively on women in their explorations of infertility. Early researchers identified a range of intrapsychic conflicts that they posited to lie at the heart of infertility. These included: "possible hostile maternal role-identification" (Benedek & Rubenstein, 1939); tension arising from unresolved psychic conflicts (Kelley, 1942); and significant conflict over "issues of femininity" (Ford et al., 1953). Even when they verbalized their desire to have children, the infertile women who participated in these early studies were believed to unconsciously reject pregnancy, childbirth, and motherhood.

In reviewing a body of literature published between 1935 and 1963, Noyes and Chapnick (1964) described the literature they reviewed as "poorly organized", "badly analyzed", and "lacking in sufficient evidence to substantiate conclusions." The utilization of case study methods involving patients being treated in private practices, in which unconscious processes were the foci of the treatment, undoubtedly contributed to these theoretical biases. Indeed, later studies employing more rigorous empirical

methods refuted the psychogenic model that had once been accepted as source of infertility in women (Logan, 1988; Stanton & Dunkel-Schetter, 1991).

This unmistakable shift away from the psychogenic approach to understanding infertility is reflected in the literature from the mid 1980's onward. Whereas psychological correlates of infertility were once seen as causal factors, these reactions began to be depicted as psychological repercussions of organic stressors. Thus, earlier depictions of the psychologically abnormal woman who was considered most likely to be infertile were replaced with a realization that fertile and infertile individuals were similar across the psychological spectrum. There was a marked shift away from the conceptualization of psychological problems as a cause of infertility. These challenges instead were depicted as being the result of an infertility diagnosis. Though the relationship between psychological distress and infertility is a complex one, there is little evidence to suggest that stress causes infertility (ASRM, 2004). Conversely, there is an ample body of literature that suggests that infertility has a wide variety of negative psychological consequences (ASRM, 2004; Domar et al, 1993).

Theoretical models of the impact of infertility on the individual. The current literature on the impact of infertility on the individual focuses upon psychological and emotional distress as a consequence of the diagnosis. Though some have criticized this body of research as having little or no basis in theory (Greil, 1997), a review of the literature suggests that a number of theoretical perspectives have been borrowed from other substantive areas and successfully employed to conceptualize the infertility experience. A few of the most applicable theoretical models will be reviewed in the subsequent sections.

Normative grief model. Barbara Menning, founder of Resolve, a national infertility organization, utilized Elisabeth Kubler-Ross's theories of normative responses to grief as an initial framework for understanding responses to infertility. According to Kubler-Ross (1969), emotions that are triggered during the grieving process include surprise, denial, isolation, anger, guilt, unworthiness, and depression.

Shapiro (1986) outlined a series of five stages of grief as applied to the infertility crisis. Initially, the diagnosis is met with shock, manifested as confusion and disorganization. Following this period, attempts to reorganize responses to the crisis characterize the reassessment period. During the recovery period, new coping mechanisms are evaluated and incorporated into the individual's life. These coping techniques will be re-evaluated and dysfunctional techniques discarded as the individual gains additional perspective. Finally, resolution of the grieving process requires that the individual address, experience, and overcome these emotional responses, and develop a recognition that life can continue despite the loss**.**

Menning (1988) and Shapiro (1988) hypothesized that individuals and couples who face the "crisis" of infertility must find means by which to create a meaningful life during their pursuit of a child, to explore what having a child represents in their lives, and to make decisions regarding when to end infertility treatment. This process may be fraught with difficulties in the realm of sexuality, self-image, and self-esteem (Menning, 1988; Shapiro, 1988). However, no published studies have validated that individuals go through predictable stages of emotion during their adjustment to infertility, and this theoretical approach may minimize individual variability.

Stress / crisis theory. Other important contributions to the current understanding of the psychological consequences of infertility have emerged from stress or crisis theory (Boss, 1980; Valentine, 1986; Sandelowski et al, 1990). From this perspective, infertility is viewed as a life crisis, involving the "actual or threatened loss of a person, capacity, or function" (Valentine, 1986). The condition is signified by the continued absence of a much-wanted child, which results in immense psychological pain (Sandelowski et al, 1990). For couples and individuals desiring children, the infertility experience is likely to be characterized by factors that have been found to increase feelings of stress (Lazarus & Folkman, 1984, Taylor, 1990), including unpredictability, negativity, uncontrollability, and ambiguity.

For instance, an infertility diagnosis is often quite unexpected (Menning, 1990); is viewed as an unwanted, negative force (Miall, 1986); decreases the individual's sense of control over intimate, biological processes; and embodies great uncertainty about the outcome of the process (Campbell et al., 1991; Stanton et al., 1991). The continual, cyclical nature of most infertility treatment, as well as the likelihood of multiple failures, serves as profound reminders of this crisis. Valentine (1986) notes preoccupation and obsession with the stressor are common results. Not surprisingly, infertility has been called an "excellent opportunity for application of theory on the stress process" (Stanton & Dunkel-Schetter, 1991). The present study conceptualizes infertility as a life crisis that may result in anxiety, moodiness, stress, and depression (Valentine, 1986).

Identity theory. Identity theory suggests that an individual's perception of the self is based upon interactions between the individual and the external environment. Such identities provide structure, meaning, and purpose to the individual's life, and are thought

to play an integral role in the development of psychological well being (Thoits, 1991). Defined as "internalized sets of role expectations, with the person having as many identities as roles played in distinct sets of social relationships" (Stryker, 1987), a "valued identity" such as motherhood or fatherhood will be threatened by the experience of infertility. The greater the commitment to and salience of an identity such as parenthood, "the greater the probability that a person will actively seek out opportunities to perform in terms of that identity" (Matthews and Matthews, 1980). This theoretical perspective highlights the potential for psychological distress when pathways to the desired identity are blocked, as well as the environmental factors that may influence this distress.

It appears that a relationship exists between impediments to the achievement of these identities and psychological stress (Matthews & Matthews, 1986). As such, identity theory provides an additional basis for the current study. The experience of infertility represents an impediment to the development of a central identity (parenthood) for both men and women, and such challenges may be correlated with psychological distress. Gender role identity in particular will be explored, as it seems likely that the role expectations linked to an individual's identity as a man or woman will be especially salient in light of issues of infertility.

Socio-cultural perspectives. Socio-cultural perspectives on the psychological impact of infertility will also be primary foundations for the current study. In order to understand how a man or woman experiences and responds to infertility, the realities that shape his or her social context will be considered. Marcus et al. (1997) suggest that an individual makes sense of themselves and their life experiences as they learn and engage in culture. "Sociocultural understandings and practices will influence the form and

function of the psychological process that comprise the self- what people notice, and think about, what they feel moved to do, what they feel, how they feel, and how they organize, understand, and give meaning to their experiences" (p. 15). Greil (1991) conceptualizes infertility as such a dynamic and socially conditioned process, rather than a static condition with psychosocial consequences. As a part of this process, couples come to define their inability to bear their desired number of children as problematic, and attempt to correct the situation. This is an interactive, social process.

The life course perspective, most frequently used in family research, has been utilized in order to conceptualize the role of some of these socio-cultural factors in the infertility experience (Jordan, 2002). Primary foci of this model include the social context, the experience of normative life transitions including parenthood, and the process of evolution and change that characterizes the meanings attached to a stressor such as infertility over time. Infertility is a status that is imbued with evolving meanings as an individual progresses from diagnosis, through treatment, to resolution (whether this involves parenthood or not). The psychological consequences of infertility are viewed as changing in relation to this evolution, rather than as static or fixed.

From this perspective, the value placed upon transitions deemed "normative" by contemporary society should also be considered. Parenthood is highly valued within the dominant cultural framework, and the inability to successfully navigate this transition may be problematic, especially for women. When attainment of such "normative" life experiences is blocked, the consequences can range from individual distress to alienation from the larger society (Jordan, 2002). The inability to easily undergo a life course

transition can impact self-perception and social relationships, when long-held life plans as well as the expectations of significant others go unrealized (Loftus, 2003).

A theoretical conception of infertility that includes contextual factors, particularly elements of the social context, is a central foundation upon which the current study will be based. In order to understand how men and women experience infertility, it is crucial that we include in this conceptualization the cultural meanings of infertility and the role they play in this interactive process. Perhaps most central to this understanding will be an exploration of the role of gender as a socially constructed influence on men and women's lives. This topic will be explored in greater detail in a subsequent section.

Empirical support of theoretical models. A wide body of literature supports these theoretical models of the impact of infertility, demonstrating a range of associated psychological outcomes. Distress as an outcome variable has been conceptualized using a wide variety of constructs, including participants' reported mood (Edelmann et al, 1994; Leiblum et al, 1997; Raval et al, 1987); anxiety (Anderson et al, 2003; Beaurepaire et al, 1994; R. Cook et al, 1989; Demyttenaere et al, 1991; Domar el al, 1992; Domar et al, 1993; Edelmann & Connolly, 1996, 1998, 2000); depression (Anderson et al, Beaurepaire et al, Callan & Hennessey, 1989); Connolly et al, 1992); psychopathology (Perkel, 1985); and general psychological functioning (Adams, 2002; Beaurepaire et al; Connolly et al 1992; Demyttenaere et al; Edelmann & Connolly, 1998, 2000). It is important to note, however, that differences in the estimated prevalence of these responses exist between anecdotal and empirical studies. A summary of these bodies of literature will follow.

Anecdotal and descriptive literature. Within the anecdotal literature, grief and depression may be the most consistently cited emotional responses to infertility. Dunkel-Schetter and Lobel (1991) reviewed thirty studies and found that 77% reported the incidence of these reactions, supporting Menning and Mahlstedt's (1988) assertion that grief and depression are the most common emotional reactions of infertile individuals. Such responses may be triggered by the multiple losses described by Forrest & Gilbert (1992). These experiences include the losses of: a biological child; the social and biological experiences of pregnancy; genetic continuity; the parenting experience; the developmental progressions associated with parenting; status, prestige, and self-image; and the experience of childbirth and breastfeeding (Menning, 1998; Sadler & Syrop, 1987; Shapiro, 1982; Valentine, 1986)

Anger, ranging in intensity from feelings of injustice to those of rage, is reported in 73% of the anecdotal studies reviewed by Dunkel-Schetter and Lobel (1991). Some researchers theorize that anger emerges in reaction to feelings of helplessness, powerlessness, loss of control, and frustration (Batterman, 1985; Bresnick & Taymor, 1979; Covington, 1988; Shapiro, 1982). Others point to anger turned inward towards the self, which may also contribute to depression (Covington, 1988; Hertz, 1981; Shapiro, 1982).

Feelings of guilt, self-blame, or personal responsibility are mentioned in 68% of the anecdotal literature reviewed by Dunkel-Schetter and Lobel (1991). In some cases, an infertility diagnosis triggers feelings of guilt in regard to prior sexual practices, lifestyle choices, delay of childbearing, abortion, and use of contraception. Guilt may also be related to whom within a couple bears the infertility diagnosis, though several

researchers have noted tendencies for women to feel responsible for infertility even when the man holds the diagnosis (Miall, 1986; McEwan et al, 1987). Others have noted that the experience of infertility may be perceived as so unbearable that women may believe they are being punished (Covington, 1988; Matthews & Matthews, 1986).

In the majority of anecdotal studies reviewed (82%), participants report difficulty in the arena of social relationships and interactions (Dunkel-Schetter & Lobel, 1991), perhaps spurred on by such feelings as unworthiness, isolation, rivalry, jealousy, and envy. Such emotions may be particularly prominent in relationships with others who are pregnant or have children.

Finally, feelings falling within the broad category of "loss of control" are reported in 54% of the anecdotal literature reviewed by Dunkel-Schetter and Lobel (1991). Such feelings may be related to both daily experiences and future plans. Within the realm of day-to-day life, individuals may choose to pursue treatment options that interfere in areas ranging from work to social life, and even to matters as personal as bodily functions and the timing of sexual intercourse (Charmaz, 1983, 1987; McCormick, 1980; Mazor, 1978; Spencer, 1987; Strauss, 1984). As is with the case with other chronic illnesses, the infertility treatment process can be engulfing, overshadowing all other aspects of the patients' lives.

It may also become increasingly difficult to maintain emotional control in the face of the chronic stress associated with infertility. Individuals may lose their sense of control over future plans and events that are central to life goals, including the timing of pregnancy and parenthood. As expressed by one participant in Greil's (1991) study, "the most frustrating thing for me was the loss of control. You go through all of these

procedures, all these tests, all these pills, but there is nothing to guarantee that you are going to get pregnant" (p. 96).

Clearly, the descriptive and anecdotal studies present a picture of infertility as a process that can be fraught with pain, alienation, and guilt. Being the recipient of an infertility diagnosis is portrayed as a highly threatening event. In their attempts to attain a sense of "normalcy", infertile individuals undertake a course of action that is often lengthy in its duration and uncertain in its outcome. This journey is portrayed as involving loss of control, pain, humiliation, and an overshadowing of all other aspects of the individual's and couple's lives. The results of descriptive studies seem to almost unequivocally support the harmful psychological consequences of this process.

Scientific literature. The body of anecdotal literature presents strong support for the previously discussed theoretical models of the psychological impact of fertility. The empirical literature presents a somewhat different picture. According to Dunkel-Schetter and Lobel (1991), a review of the empirical literature published between 1963 and 1988 "does not support contentions that specific reactions are common" and provides "little or no consistent, strong effects of infertility" (p. 50). Their analyses demonstrate "no difference between fertile and infertile groups on most dimensions" (p.42). The only consistent area of significant difference is an increased level of anxiety and emotional distress in infertile women, when compared to infertile men and fertile men and women. Other studies conducted since the time of Dunkel-Schetter's (1991) review have yielded similar results. Callahan and Hennessey (1989), Connolly et al (1992), Edelmann and Connolly (1998, 2000), and Edelmann et al (1994) all reported that participants' distress levels differed little from the general population.

The majority of empirical studies published since Dunkel-Schetter's review, however, have demonstrated elevated levels of distress in individuals, particularly women, who experience infertility. These results are consistent with those of the descriptive literature and the theoretical models discussed above. Jordan's (2002) study of females diagnosed with infertility found that 17% of her participants reported clinically significant levels of depression. However, the majority of the studies that have reported elevated rates of depression in infertile individuals have not found these levels to be "clinically significant" (Bert et al., 1990; Wright et al., 1991; Bernstein et al., 1988; Beaurepaire et al., 1994; Demyttenaere et al., 1991; Domar et al., 1992; Klock et al., 1997; Lukse & Vacc, 1999). It may be that these samples could be characterized as "distressed but not impaired," in that they seem to experience elevated levels of depression, but these levels do not seem to meet clinical cut-off requirements for diagnosis.

Other indicators of distress have also been reported in empirical studies of infertility patients, including elevated levels of anxiety (Klock et al., 1997; Lukse & Vacc, 1999). These levels were not considered to be clinically significant. Klempner (1992) found that infertility acted as an impediment to identity formation for women, and that the psychological consequences included anxiety, inferiority, and low self-esteem. These findings were corroborated by a study by Whiteford and Gonzalez (1995).

Evidence of the distressing psychological consequences of infertility are not uniformly substantiated by the empirical literature, as seems to be the case in the descriptive literature. The most likely explanation for inconsistencies in the infertility literature is the enormous variability in individual responses to infertility. As in other

stressful life events, such as the loss of a loved one, diagnosis of an illness, sexual assault, and other traumas, responses are characterized by significant individual differences. Great variability exists in the extent to which emotions including depression, anger, and anxiety are experienced (Silver & Wortman, 1980). There are likely to be different psychological responses for individuals with different personal and social circumstances, and these experiences may change over time. Particularly relevant to the present study is the body of literature that highlights the role that gender role or gender role identity plays in the relationship between infertility and distress (Abbey at al, 1991; Adler & Boxley, 1985; Beaurepaire et al, 1994; R. Cook, 1993; Darsney, 1996; Edelmann & Connolly, 1996; Griel et al, 1996; Perkel, 1995). These studies will be discussed at length in the following section.

In sum, given the potential for the experience of infertility to be strongly influenced by both contextual and intra-personal variables such as gender role orientation, it is not surprising that the empirical literature finds "few or no normative negative reactions" (Dunkel-Schetter & Lobel, 1991). It does seem to be safe to assume, however, that infertile individuals (at least those who have been the subjects included in these studies) may be distressed in comparison with other individuals, but perhaps not in a manner that has been deemed "clinically significant."

Sex and Gender Differences in the Psychological Impact of Infertility

Infertility cannot be adequately understood without a thorough consideration of the influence of sex and gender on the experiences of those who receive this diagnosis. Indeed, the one research finding that has been observed somewhat consistently in the

literature is that men and women tend to differ in terms of the intensity of their reactions to infertility.

In general, research suggests that infertility is stressful for both men and women. A sizeable body of literature supports the notion that women experience relatively greater distress than men throughout the infertility experience (Abbey et al., 1995; Andrews et al., 1991; Wright et al., 1991; Daniels, 1989; Daniluk, 1988; McEwan et al., 1987; O'Moore et al., 1983; Platt et al., 1973). Others have found no difference in levels of distress between men and women (Daniluk, 1988; Abbey, 1991, Berg et al, 1991).

Biological sex and infertility. The vast majority of studies purporting to examine the influence of "gender" on the infertility experience focus upon biological sex, e.g., whether one is biologically "male" or "female." Studies that support the notion that men and women respond to infertility differently have demonstrated a number of significant findings, all of which suggest that women fare worse in the face of an infertility diagnosis than do their male counterparts. Infertile women may be more preoccupied with their infertility diagnosis than are infertile men, and find the issue "more central in their lives" and "more frequently on their minds" (Abbey, 1991).

Women tend to report more difficulty in dealing with reminders of their infertility, such as talking about children and television commercials with children, than do men (Berg, 1991). Mastroianni (1985) found that 50% of female participants classified infertility as the "most distressing event of their lives", and only 15% of male participants did so. Similarly, studies by Batterman (1985) and Greil (1988) suggested that the infertility experience is significantly "less disappointing" for men than it is for

women, which is corroborated by results that suggest that having children is more important to men than it is to women (Batterman, 1985; Freeman, 1985; Abbey, 1991).

In addition to being more invested in having children, infertile women seem to be less confident than infertile men that they will ultimately have a biological child (Abbey, 1991). Andrews et al. (1991) demonstrated more "negative impact" of infertility on women than on men, and Downey and McKinney (1991) found that infertile women perceived themselves as more "affected psychologically" by the diagnosis than did their partners. Abbey (1991) reported higher levels of stress among infertile women than infertile men. Greater levels of anxiety and depression have also been found in infertile women than in infertile men (Wright, 1991). Stanton (1992), Lank (1986), and Link & Darling (1986) found that infertile women experienced lower levels of general life satisfaction than did infertile men. Self-esteem was found to be negatively associated with infertility in women but not men in studies by Bernstein (1985) and McGrade (1981). Infertile women scored higher on measures of hostility and cognitive disturbance than did their male partners in one study (Wright et al., 1991). Finally, women are more likely to feel punished by infertility than are men (Berg et al., 1991).

These findings should be considered in light of some significant differences between the infertility experiences of men and women. The experience of infertility may indeed be more disruptive to the lives of women. The vast majority of diagnostic tests and treatments focus exclusively on the woman, regardless of whether she or her partner carries the diagnosis. A woman's day-to-day routine and physical comfort is much more likely to be compromised than is her male partner's (Abbey et al., 1992; Wright et al., 1991). Throughout the course of infertility treatment, women face significant risks to

their health and safety. Greater engagement in diagnostic and treatment procedures may lead to a sense of loss of control and threat to physical well-being, which may contribute to feelings of distress (Stanton et al., 1991).

Additionally, women are subject to cyclical reminders of their infertility and of the failure of a cycle's attempts at pregnancy with the onset of menses. For approximately thirty years, the female body is in a continuous cycle of preparing itself for pregnancy, through the monthly menstrual cycle, and "women are reminded on a monthly basis of their biological role in procreation" (Devereaux & Hammerman, 1988, pg. 66). Infertile women commonly report the highest levels of depression and stress with the onset of menses, when they are reminder of their failure to accomplish a biological goal. A potentially devastating series of disappointments is only heightened by an awareness of age-related declines in fecundity for women, a concern that does not exist for men, whose fertility is maintained throughout their lifetime. The lack of these biologically based stressors may mitigate the distress experienced by infertile men (Berg, 1991).

Some researchers have suggested that men adapt with greater ease than do women to the infertility diagnosis, failed treatments, and the prospect of permanent biological childlessness (Newton & Houle, 1993; Ulbricht et al., 1990). Other studies have suggested that while women may verbalize their reactions, be open about their distress, and seek support from their partners (McCartney & Wada, 1990); men tend to be more secretive, controlling their emotional expression and avoiding full disclosure of their distress (Lister, 1991; Berg & Wilson, 1991). Men have been found to be much less likely than women to confide in others regarding infertility (Daniluk, 1997); are more secretive (Czyba & Chevret, 1979); and to be less open to supportive counseling from

their partners (McCarney & Wada, 1990). Others have suggested that the sexual ramifications of infertility may be more troubling to men than to women, especially in regards to on-demand sexual performance (Berg & Wilson, 1991), and may result in temporary impotence in up to 63% of infertile males (Berger, 1980).

However, these findings should be reviewed in light of the fact that men's responses to infertility have received scant attention. In a comprehensive review of the literature, Berg et al. (1991) state that men have traditionally been omitted from the infertility research, and therefore little is known regarding their reactions to infertility. These limitations may be exacerbated by the reluctance to disclose distress or seek social support in the wake of an infertility diagnosis that has been noted by some researchers (Mahalik & Rochlen, 2006; Slade et al., 2007). These limitations may have a profound influence on the ways in which the influence of gender and sex are construed within the body of infertility literature.

Sociocultural factors: Addressing gender. Until recently, studies focused upon the role of "gender" in the infertility experience were focused not upon "gender" but upon "biological sex." All of the studies described above used the term "gender" to refer to what might more specifically and correctly be labeled "sex", a term that refers to whether one is born biologically male or female. Gilbert and Scher (1999) call for a shift away from the utilization of "sex" and its implication of innate, biological differences between men and women. They suggest that the use of the "gender" construct will be a "fundamental and important" (p. 3) goal in psychological research.

These authors define gender as construct that encompasses "what we assume is true or will be true of someone who is born biologically female or male" (p. 4). This

includes the psychological, social, and cultural features that have become strongly associated with these biological categories. From this perspective, gender is not located within a person's biological sex, but is instead socially constructed. Gender is therefore "created and maintained through complex processes within a cultural environment that consider them just and appropriate" (Deaux & LaFrance, 1998). In a similar manner as is applied to the infertility experience as described in a previous section, gender should not be considered a "static condition with social consequences" (Greil, 1991) but rather a socially-constructed, fluid, interactive process.

A number of researchers have suggested that cultural influences may account for a significant amount of the variability in experiences of and responses to infertility (Abbey et al., 1991; Daniluk, 1997; Deveraux & Hammerman, 1998). Parenting, family traditions, religion, and social norms play a role in gender socialization as forces that transmit values and messages regarding gender roles. The following sections will explore the potential intersections of the infertility experience with that of social constructions of gender and what it means to be "masculine" or "feminine."

Femininity and infertility. Although both men and women are socialized in regards to parenthood, this process may place much greater emphasis on the motherhood role as a central aspect of femininity than is placed the father role as an aspect of masculinity. Within the dominant American culture, the "motherhood mandate" (Wollett, 1991) is particularly strong and pervasive. While parenting is considered a developmental milestone for both men and women, Chodorow and Rich (1978) suggest that society reinforces motherhood as *the* defining role for women.

Adult female status is often equated with motherhood (Ireland, 1993). It is assumed that women will have children. The lack of status as a mother is perceived as a deficit, and a woman's life characterized by this deficit. Despite the fact that the opportunities for women to pursue multiple identities and roles are more numerous than ever before, this has not seemed to mitigate the critical importance of motherhood as part of the cultural definition of "normal adult womanhood" (Sandelowski, 1993).

Within the literature exist numerous accounts of women feeling that their status as women and their femininity are compromised by the infertility diagnosis (Michie & Cahn, 1997; Becker, 1991). For women immersed in a cultural belief system that includes this "motherhood mandate" as a central component of femininity, infertility becomes a major source of self-definition. As poignantly expressed by a female participant in Greil's (1991) study, "I had this feeling of failure, an overwhelming image as a baby machine and as a woman" (p. 53). It may be accurate to suggest that "the most debilitating effect of infertility is that it strikes at the very core of the female identity" (Williams, 1997).

The historical tendency to blame women for infertility regardless of who in the couple is the "cause", perhaps based in the belief that "men's egos were too fragile to deal with the possibility of their own infertility" (Marsh & Ronner, 1996) is another important gender-based difference. Gender role norms suggesting that women should be the "emotional caretakers" of the relationship may create a dynamic in which she "shields her husband from the burden of responsibility for deficits in procreative functioning" (Vieyra et al., 1990). The woman's acceptance of the burden of guilt and blame may serve to promote marital cohesion, and reinforces her socially defined role as the

guardian of emotional health within the relationship. In one study (Berger, 1980), 87% of women reported wanting to protect their husbands emotionally from the pain associated with an infertility diagnosis, but also felt angry with their husbands for their infertility. Women may frequently adopt and carry the burden of responsibility for infertility, and feel a sense of resentment within this role.

Given these ways in which traditional femininity seems to be intrinsically tied to motherhood and a caretaking role in relationships, (Mahalik et al., 2003) it is not surprising that much of the research supports the claim that infertility is more distressing for women than it is for men (Berg et al., 1991; Edelmann & Connolly, 1986; Greil, 1991; Greil, 1988; Abbey et at, 1992). The significant impact on some of the core values for feminine identity likely influences this tendency towards increased distress in women, regardless of who in the couple receives the infertility diagnosis.

Masculinity and infertility. Fatherhood is typically not depicted as being as central to cultural definitions of masculinity as motherhood is to femininity. Despite this difference, men are undoubtedly influenced by gender role socialization in a manner that impacts their experience of infertility. A central component of masculinity includes the ability to demonstrate strength, virility, and potency- all characteristics that may be called into question by infertility. Connolly and Cook (1987) suggest that "infertility and virility become intertwined for the infertile; a man who is unable to father a natural child may feel that others doubt his virility" (p. 56). Similarly, Grover et al. (1995) report that it is not uncommon for the infertile male to feel like "less of a man" as a result of the diagnosis (p. 31). Though husbands in Greil's (1991) study were less likely than wives to express feelings of having "spoiled identities", some used language of body failure to

capture their experience. In the words of one male participant, "to find out there's a part of me that doesn't work right was just crushing. I didn't feel like I was a complete man at the time" (p. 56).

Others have found that the infertility experience threatens the traditional masculine roles of father, protector, provider, and sexual performer, and leaves men feeling inadequate in these domains (Irvine & Cawood, 1996). One study (McNab, 1980) described infertility as "the most significant lapse in mastery since youth." In losing this sense of identity as a virile man, husband, and father, men may to some extent be faced with an extremely challenging threat to their masculinity.

Men may also conform to norms of masculinity that suggest that they should not communicate emotions that are painful or that insinuate vulnerability. As a result, men may be highly secretive and uncommunicative about such feelings (Daniluk, 1997). Studies have consistently demonstrated that men are less likely than women to seek social support throughout the infertility process (see meta-analysis by Jordan and Revenson, 1999). This tendency has been attributed to masculine norms that prohibit open expression of weakness or distress. Men may be extremely uncomfortable or unfamiliar with the process of sharing problems of such an intimate nature with others. The traditional conceptualization of men as active problem-solvers is also threatened by infertility, and the inability to quickly work to a solution of the infertility issue may further limit the extent to which men feel comfortable expressing their feelings.

In summary, though the norms and expectations associated with masculinity place less importance on fatherhood than do norms of femininity, these cultural expectations may contribute to vulnerability in other ways. Men who experience infertility may be

placed in a particularly precarious bind, in which the core of their identity as a virile, instrumental individual may be threatened. At the same time, cultural norms that emphasize the maintenance of this strong, impenetrable façade may prevent men from accessing the emotional support and expression that might help them to cope with this formidable threat to their identity and well-being.

Gender role and infertility. The concept of "gender role" emerged in the mid-1960's, as researchers attempted to operationalize the role that cultural expectations around gender played in the lives of individuals. Angrist (1969) defined gender roles as "the expectations that members of a culture have about the social positions men and women should occupy" (p. 18). Bem (1981) asserted that gender role is a basic organizing principle within society, one that socializes individuals to conform to gender-specific cognitions, skills, and characteristics.

An individual's gender role has been demonstrated to impact his or her behavior across environments and situations. Masculinity and femininity may shape the individual's experience of and responses to infertility, in that these role orientations influence commitments, beliefs, and behaviors throughout the full spectrum of an individual's life experiences.

Theoretically, women who are "highly feminine" in their gender role orientation may be more likely to experience distress as a result of an infertility diagnosis than their less feminine female counterparts. Given their perceived failure to meet traditional gender role norms, and the social costs that may accompany this failure, this group may be particularly at risk for infertility-related distress.

Additionally, a traditionally feminine gender role orientation may influence the ways in which a woman copes with her infertility diagnosis. Studies focused on biological sex have found that women tend to be more emotionally expressive in response to their distress, and to more frequently seek out opportunities for support, than do their male partners (McCartney & Wada, 1990). This greater willingness to express distress and seek support may contribute to some of the reported differences in distress levels between men and women. Given that these coping tendencies may be more strongly associated with gender role identity than with biological sex, and it will be important for future studies to explore these relationships.

The relationship between the possession of a highly masculine gender role identity and infertility stress seems to embody greater complexity. High levels of conformity to masculine ideals may be associated with lesser investment in parenthood than is conformity to feminine norms, and as such an orientation may serve as a protective factor against infertility distress. However, other traditional masculine ideals including virility, problem solving, and strength may be undermined by the diagnosis, resulting in increased stress.

Traditional masculine ideals may, as was suggested for women, also influence the coping resources that men adopt in the face of distress. Lister (1991) found that many men experiencing infertility tend to control their emotional expression and avoid full disclosure of their distress. Other studies have suggested that men tend to be secretive about infertility and do not display distress openly (Czyba & Chevret, 1979; Berg & Wilson, 1991). These tendencies may be strongly associated with gender role identity and conformity, and as such it will be important for future studies to explore this

relationship. It will be crucial to determine if the apparent "protective" nature of a masculine gender role orientation reflects lesser degrees of infertility stress, or whether this stress is masked by a tendency not to disclose affect and vulnerability related to these issues.

There have been numerous studies exploring the impact of biological sex on the distress experienced by men and women diagnosed with infertility. Although there exists a broad base of theoretical and anecdotal literature emphasizing a connection between gender and infertility, relatively few studies have systematically evaluated the impact of gender role on infertility-related distress. Recently, a few studies have attempted to translate these theoretical and anecdotal findings into empirical studies, focusing upon the concept of "gender role" or "gender role identity." Several studies that have examined the relationship between infertility distress and gender role identity will be discussed in the following section.

Gender role identity and infertility. In general, studies that examine the relationship between gender role and infertility-related distress have yielded inconsistent results. In women, high levels of femininity have been linked with increased anxiety (R. Cook, 1993), diminished self-esteem (Perkel, 1985), and problems in coping with the diagnosis (Adler and Boxley, 1985; Berg et al., 1992). This is consistent with the descriptive literature's depiction of the potential for increased vulnerability to infertility distress in highly feminine women. Collard found that androgeny in women was linked with lower levels of dysphoria, which might also support this hypothesis. Adler and Boxley (1985) and Berg et al., (1992) found that masculinity in females seemed to be

linked with increased adjustment, as indicated by lower distress levels and problems in coping.

In other studies, however, women who fell into the masculine subtype seemed to be more a risk than those who fell into feminine subtypes. Edelmann (1996) and Collard (1999) found that masculine-typed women experienced greater levels of anxiety than did women from all other gender role categories. Edelmann also reported decreased dyadic adjustment in this group, and Collard reported increased depression and hostility.

The results for men are somewhat less contradictory, and in general seem to support the hypothesis that masculinity may serve as a buffer against infertility distress in men. Edelmann (1996) found that men categorized as "masculine" reported lower levels of psychological disturbance and anxiety than did men in other gender role groupings. Adler and Boxley (1985) reported a positive relationship between masculinity and adjustment to the infertility diagnosis. Undifferentiated men, on the other hand, tended to report higher levels of anxiety (R. Cook, 1993; Edelmann, (1996), depression (R. Cook, 1993), and decreased dyadic adjustment (Edelmann, 1996) than did men from all other categories. Men who fell into the feminine category reported increased psychological disturbance in a study by Collard (1999). Similarly, in two other studies men who were categorized as feminine were found to have more trouble coping with an infertility diagnosis than did their more masculine or undifferentiated counterparts (Adler and Boxley, 1995; Berg, 1992).

These results on the relationship between masculine gender role and infertility-related distress should be interpreted cautiously. As discussed previously, men who are highly masculine may be less likely to disclose their distress than are men who endorse

other gender role orientations. This may influence the extent to which these studies have been able to adequately capture the levels of distress experienced by their male participants.

Some of the inconsistencies that are apparent in the results of these investigations of the influence of gender role on infertility-related distress may be a result of the measures that were utilized: the Bem Sex Role Inventory (Bem, 1974) and the Personal Attributes Questionnaire (Spence, Helmreich, & Stapp, 1978). Both measures operationalize gender as a unidimensional construct. The BSRI approaches "masculinity" and "femininity" as polar opposites on a continuum, and the PAQ equates masculinity with characteristics related to instrumentality and femininity as those reflecting expressiveness. Such broad, global approaches may simply be unable to capture the complexity of the multi-faceted nature of gender role. In order to address the inadequacies of previously-utilized measures of gender role, the present study will utilize two measures developed to address these limitations.

Assessing gender role conformity: The Conformity to Masculine Norms Inventory (CFNI) and Conformity to Feminine Norms Inventory (CMNI). More recently, Mahalik et al. (2003, 2005) have developed additional measures designed to capture gender role from a multidimensional perspective: the Conformity to Masculine Norms Inventory (2003) and Conformity to Feminine Norms Inventory (2005). These measures address a notable limitation in the prior research on gender role identity: the use of a global index to assess the complex and multi-faceted constructs of masculinity and femininity. The CMNI and CFNI focus upon the social norms that guide and constrain masculine or feminine behavior. Like the norms that govern behavior in social situations, gender role

norms operate when people witness what most men or women do in social situations, are told what is acceptable or unacceptable behavior for men or women, and observe how well known men or women act. Through this process, individuals come to learn what is expected of them in their gendered lives.

Under the influence of a variety of contextual and intrapersonal variables, there may exist a great deal of individual variability in the extent to which men and women conform to those normative messages. Mahalik's model posits that there are four primary sources of influence on an individual's gender role conformity. First, sociocultural influences, typically those norms embraced by the dominant groups in society, shape the gender role expectations and standards that constitute gender role norms. Second, the gender role norms of these dominant groups are communicated to individuals through descriptive injunction, and cohesive norms. Third, a wide variety of interpersonal and intrapersonal factors including socioeconomic status and racial identity serve as filters through which an individual perceives the gender role norms that are communicated by the dominant social group(s). Finally, this collection of factors affects the extent to which the individual conforms, or does not conform, to specific gender role norms. Conformity is reflected not only in an individual's behaviors, but also in his or her affect and cognitions.

Conformity and non-conformity to dominant gender role norms is met with both costs and benefits for the individual. Conformity to gender norms, therefore, is defined as meeting societal expectations for what constitutes masculinity or femininity in one's public or private life, and as a result, experiencing the associated costs and benefits. Conversely, nonconformity to gender role norms is defined as not meeting societal

expectations for what constitutes masculinity or femininity in one's public or private life, and again, being met with the corresponding costs and benefits.

Mahalik's theory of conformity to gender role norms may be a particularly useful one when it comes to the investigation of gender role identity and its influence on the experience of infertility. However, to this author's knowledge, no previously published studies have utilized the CFNI or CMNI in order to investigate the relationship between conformity to gender role norms and distress in infertility patients. Given the disparities that are evident in studies utilizing other measures of gender role identification, use of the CFNI and CMNI in the investigation of infertility-related distress may prove to be a particularly fruitful line of inquiry.

Impact of Infertility on the Marital Relationship

A review of the literature on the impact of infertility on the individual suggests that the experience of being diagnosed with and treated for this potentially life-altering condition can have a variety of psychological consequences. These responses may be different for men and women, or may vary based on the extent to which individuals endorse or conform to masculine and feminine gender role identities. Men and women's dissimilar experiences of infertility have the potential to significantly impact their marital relationships.

As is the case in the study of the impact of infertility on the individual, the literature on the influence of an infertility diagnosis on the couple embodies a number of apparent inconsistencies and reflects a wide range of variability. A significant portion of the empirical research suggests that individuals experiencing infertility fall within the normal range on normed marital adjustment measures, and that there exist no significant

differences in marital quality between infertile and fertile couples. Adler (1985), in comparing women seeking treatment for infertility with fertile and formerly infertile women, found no significant differences between the groups on the Marital Adjustment Scale. It is important to note that only women's perceptions of marital adjustment were assessed in this investigation, and the results must be considered in light of this significant limitation.

Studies that include both the male and female partner have yielded similar results. Berg (1991) compared the scores of couples recruited from clinics and Resolve support groups to published norms on the Locke-Wallace Marital Adjustment Test, and found these couples to have normal levels of marital adjustment. Similarly, Daniluk (1987, 1988) found that couples recruited from infertility clinics fell within the normal range according to published norms on the Relationship Change Scale and Marital Adjustment Test. Using the Dyadic Adjustment Scale, Dennerstein (1985), Raval (1987), and Schover (1992) all found that couples undergoing treatment for infertility fell within the normal range published for this scale.

Some studies have suggested that the experience of infertility may actually enhance and strengthen marital quality. Callen (1987), in a study of infertile and fertile women, found that infertile women endorsed greater levels of satisfaction in their marriages and happiness with their husbands than did fertile women. They also demonstrated higher levels of "dyadic satisfaction", indicative of lower levels of marital conflict and regret and higher levels of happiness with their partners. In another study that focused exclusively on women's perceptions of their marriages, Downey (1992) used the Partner Relationship Satisfaction Scale, and found that infertile women reported being

happier in their relationships than did the gynecology patients (presumed to be fertile) to whom they were compared. Two studies (Leiblum, 1987; Shaw, 1988) utilized the Locke-Wallace Marital Adjustment Scale to focus on both partners' perceptions of their marital quality during infertility treatment, and found that IVF patients have "better than average marital adjustment" than did presumably fertile controls. Gordon-Karp's (2002) doctoral work, utilizing the Lazarus Marital Satisfaction Questionnaire to evaluate the impact of IVF treatment on marriage, found that 70% of the couples in her study "saw infertility as having brought them closer together as a couple." Finally, in a study of couples that utilized the Family Environment Scale, Hearn found that men and women undergoing IVF fell within the "better than average" range on published norms for this measure.

Few empirical studies have reported evidence of the deleterious effects of infertility on the marital relationship. In a longitudinal study of 40 women undergoing IVF, Pepe (1991) found that levels of marital satisfaction as assessed by the Index of Marital Satisfaction were the same prior to and following treatment, but fell during the treatment process.

The lack of support for the potentially deleterious impact of infertility on marital satisfaction that is evident in the empirical literature stands in contrast to the predominant findings within the body of qualitative, anecdotal, and clinical literature. When these sources are examined, infertile couples are frequently described as being in a state of relational crisis. In a mixed-method approach that illustrates this disparity, Ravel et al. (1987) found that although couples undergoing infertility treatment fell within the normal range on the Dyadic Adjustment Scale, over half the women and one-third of the men

reported significant marital problems including emotional and communication difficulties.

In a qualitative study of 22 infertile couples, Greil (1991) found that all but one couple reported "increased tension and frustration" in their marital relationships. Whiteford and Gonzalez (1995) present accounts of women who report feelings of inadequacy and worthlessness that had profound impacts on their marriages. A study by Andrews et al. (1991) found that infertility problems seemed to work indirectly through marital relationships to adversely affect individual well being and life satisfaction. In these studies, infertile women experienced elevated levels of stress, which the authors hypothesized precipitated a crisis resulting in the decreased marital satisfaction reported by these women.

Other studies have cited increased levels of anger, resentment, and hostility between spouses, which may result from blaming a partner or feeling blamed for the infertility issues; feeling a lack of spousal understanding and emotional support; or the perception that one's spouse is not equally committed to having children (Mahlstedt, 1985; Mazor, 1978; Spencer, 1987; Wilson, 1979; Wollett, 1985). Other potential triggers of marital issues include fears of abandonment or break-up (Mahlstedt, 1985, Mazor, 1984; Williams & Power, 1977). An additional issue that is frequently cited in the literature is hesitancy to disclose feelings to the spouse, which results in feelings of isolation and alienation from the partner (e.g., Mahlstedt, 1985; West, 1983).

Spouses may rely largely on one another to provide esteem, affirmation, and support, given that many people feel hesitant to share their infertility problems with others due to embarrassment or discomfort in discussing sexual issues with others

(Menning, 1977; 1980). The almost exclusive reliance upon one's spouse for support throughout the crisis of infertility places an enormous burden on the relationship. Indeed, Greil (1997) notes that "an individual's response is likely to be dialectically related to the response of that individual's partner" (p. 1699). This statement is supported by the work of Andrews et al. (1991), which reports that an infertile individual's perception of quality of life influences that of his or her partner.

Andrews et al. (1991) found that it is not uncommon for different members of the same couple to experience different levels of infertility-related stress. Given that an infertility diagnosis' impact on one partner may influence its impact on the other partner, problems may arise when significant discrepancies exist in levels of distress experienced by each member of the marital dyad. These discrepancies may lead to increased conflict within the relationship, which may also be exacerbated by gender-related differences in responses to infertility discussed above. As such, the differing experiences of and responses to the infertility crisis may serve as a barrier to being able to fully understand and meet one another's needs in a manner that is conducive to relational health.

The research of Peterson et al. (2001) has addressed the issue of disparity in perceptions of infertility-related distress between members of married couples. In looking at "congruence", the extent to which couples are in agreement regarding the level of distress caused by infertility, these authors begun to explore the links between relationship and individual variables. Using the Fertility Problem Inventory (FPI), Beck Depression Inventory (BDI), and Dyadic Adjustment Scale (DAS) in a study of couples referred to a teaching hospital for infertility treatment, the authors found that higher levels of marital adjustment were found in couples whose perceptions of distress were

congruent than in those couples who reported differing levels of distress. Incongruence was also associated with depression scores in women, but not in men. Such findings may support the theory that congruence in the perceptions of infertility-related distress between members of a couple may provide an important buffer against the potentially deleterious impact of an infertility diagnosis.

Relational health. The impact of infertility on the marital relationship is clearly not yet fully understood. While no significant differences in perceptions of marital quality seem to emerge from the empirical literature, with the exception of a few studies that cite a positive impact, the descriptive literature points to a number of conflicts, stressors, and challenges that the infertility crisis places upon a marriage. These disparities beg the question of whether the intricacies of this relationship are being adequately captured by the published measures utilized in these studies.

Measures that present a global snapshot of satisfaction and adjustment with a marriage may fail to detect some of the relational intricacies that undoubtedly influence the experiences of both male and female partners. Future exploration that would elucidate these complex relational responses might shift the focus of inquiry away from broad measures of marital satisfaction, quality, and adjustment. Instead, the characteristics of the marital relationship that may serve protective functions in the face of the adversity of infertility might be evaluated. This shift in focus might facilitate additional insight and perspective on the experience of infertility for couples and its impact on their relationship.

The Relational Model (Jordan et al., 1991; Miller & Stiver, 1997) that has been proffered by researchers at the Wellesley College Stone Center may be a useful

theoretical and empirical tool in the study of the impact of infertility on marital relationships. According to the Relational Model, human beings experience a fundamental need for connection and "essential emotional joining." Such needs are served "by empathy, which in authentic relatedness, is characterized by mutuality" (Jordan, 1997). Through such connectedness, the individual also finds greater clarity about her own experiences and those of others; the capacity for meaningful action; increased vitality; and both a yearning for and capacity for further connection (Jordan, 1987; Miller, 1986).

From this relational perspective, the goals of development and adjustment include the building and maintaining of relationships, such that both members of the dyad benefit from the connection (Miller, 1988). Relationships characterized by mutuality and empathy are considered crucial to the psychological adjustment of individuals. When mutual empathy exists within a relationship, this reciprocal process affirms the individual, promotes his or her development, and "creates a sense of self as part of the relational unit" (Jordan, 1995).

These concepts have served to elucidate the specific factors that seem to contribute to the quality of interpersonal relationships. Specifically, four growth-fostering characteristics of "relational health" have been identified: mutual engagement (perceived mutual involvement, commitment, and attunement to the relationship); authenticity (the process of acquiring knowledge of the self and the other and feeling free to be genuine in the context of the relationship); empowerment/zest (feeling personally strengthened, encouraged, and inspired to take action); and the capacity to deal with difference or conflict (Liang et al., 2002). Relationships characterized by these features

have been associated with self-disclosure, emotional resiliency, healthy coping strategies, and the presence of additional social support in individuals' lives (Genero et al., 1992; Gottlieb, 1992; Jordan, 1992).

Though originally developed with the unique psychological experiences of women in mind, it seems likely that the benefits of relational health are not sex- or gender-specific. Given the reliance upon the marital relationship as the primary source of support that has been demonstrated in prior research, it is likely that if this relationship is characterized by the four characteristics of relational health, there may be numerous benefits for both the male and female partners involved in the dyad. The protective role of relationships has been demonstrated in a wide variety of other contexts, and it seems likely that these qualities might serve a mediating factor for couples experiencing the distress associated with infertility.

This potential association between relational health and adjustment to infertility has yet to be examined. The Relational Health Indices (RHI, Liang et al., 2002) provides an empirical tool by which to assess perceptions of these four qualities of relational health, and these scales have been suggested to have "great potential for enriching our understanding of important subtle qualities and complex dynamics of dyadic relationships" (Liang et al., 2002). The evaluation of such subtleties and complexities may help to address some of the apparent contradictions that characterize the current literature on the impact of infertility on marital relationships.

Current Study

As demonstrated by this review, a wide range of distress reactions for individuals and couples to the experience of infertility have been supported in the literature. It is

important, therefore, to begin to isolate specific variables that may predict increased levels of distress in women and men experiencing infertility, as well as increased risk to the marital relationship. This dissertation will focus on some specific potential predictors of distress in individuals experiencing infertility, as well as new ways to capture the influence of infertility on relational health.

Theoretically, the current study conceptualizes infertility as a life crisis that has the potential to evoke significant distress, anxiety, and depression in the individuals who experience this condition (Valentine, 1986). However, rather than situating infertility and its ramifications solely in the realm of an individual experience with psychological consequences, this study will consider infertility in light of dynamic socio-cultural factors that influence the meanings attributed to this diagnosis, particularly those related to gender role conformity.

Utilizing this theoretical framework, this study will attempt to address some of the inconsistencies that are apparent in the bodies of descriptive and empirical literature by examining gender role orientation as a potential predictor of infertility-related distress in both men and women. Other factors that will be examined that may influence this relationship between gender role and infertility distress include to whom the diagnosis is attributed, types of treatment pursued, and whether treatment is covered by insurance.

For both men and women, it is predicted that high levels of conformity to dominant cultural gender norms will be associated with increased reports of infertility-related distress. In order to facilitate a more complex understanding of the specific norms that seem most closely related to responses to the infertility experience, the relationship between individual subscales on both measures with reports of infertility-related distress

will also be examined. The analysis of the subscale that is indicative of men's avoidance of self-disclosure of painful emotions may be a particularly useful consideration.

Additionally, the study expects to find that men with male-factor diagnoses are more likely to experience distress than men from all other diagnosis groups. These men might be most likely to feel threatened by the affront that infertility presents to their masculine identities. Given the relative greater importance placed upon parenthood in constructions of femininity than in masculinity, it is expected that women will be significantly more distressed than their male partners, regardless of the diagnosis category into which the couple falls. This study is also expected to support Berg's (1991) conclusion that gender role is a better predictor of infertility-related distress than is biological sex.

The potential intersection between relational health and infertility-related distress will also be examined. Rather than using broad measures of "marital satisfaction" or "marital adjustment", the present study will utilize a model of relational health that identifies particular characteristics of relationships that have been associated with a variety of positive outcomes for the individual and the couple. It is predicted that level of congruence in each couple's infertility-related distress (FPI) scores will be negatively associated with levels of relational health reported by the couples. This outcome would support previous reports of a negative association between congruence in terms of distress levels reported and another measure of marital satisfaction (Peterson, 2001).

Chapter Three

Methodology

The following chapter outlines the methodology used in this dissertation study. Descriptions of participants, data collection procedures, and instruments are included, along with specific research questions and proposed hypotheses.

Participants

A minimum of 332 participants (185 women and 147 men) participated in the study. Of these participants, 124 couples were identified by matching completed datasets from the male and female partners. All study participants were married heterosexuals couples who had received a medical diagnosis of female-factor, male-factor, combined, or "unexplained" infertility. Participants were recruited from the following sources:

1. Three online support forums for couples experiencing infertility:
    a. www.ivfconnections.org
    b. www.thenestbaby.com (infertility forum)
    c. www.groups.msn.com/infertility
    d. RESOLVE: The National Infertility Association's online message boards – www.resolve.org
2. Two clinics specializing in the treatment of infertility:
    a. Carolina Conceptions (Durham, NC)
    b. Reproductive Medical Associates (Norwalk, CT / Westchester, NY)
3. Blogs written for and by individuals struggling with infertility
    a. http://infertilityblog.blogspot.com/
    b. Blog-roll at www.stirrup-queens.com

These data collection sources were selected in order to maximize the diversity of the subject pool. In order to address inconsistencies reflected in the results of previous studies with this population (Dunkel-Schetter, 1991) as well as concerns that this literature reflects the experiences of a narrow subset of infertile individuals (Greil, 1997), recruitment procedures for the present study attempted to create as broad and diverse a sample as possible by drawing from a variety of sources.

The online message boards and blogs chosen as recruitment sites are some of the most highly trafficked websites focused upon infertility. The primary advantage of using these online recruitment sources was the ability to reach participants from as broad a range of geographical, economic, and racial demographics as possible. Additionally, participants recruited from these sources represent a wide range of diagnoses, treatment choices, length of treatment, and site of treatment (general OB-GYN practice versus specialized infertility clinic). The infertility clinics through which participants were recruited reflect populations most frequently sampled by previous studies (Greil, 1997; Dunkel-Schetter, 1991). They represent leading centers of treatment for a full-spectrum of fertility-related disorders.

Inclusion criteria. Inclusion criteria for the present study were selected in order to recruit participants who had received a formal, medical diagnosis of primary infertility, and as such these criteria set forth by the American Society for Reproductive Medicine (ASRM, 2008). Additionally, in response to previous literature suggesting that psychosocial responses to infertility may be influenced by treatment status (Kadem et al., 1990; Sabetelli et al., 1998), only participants who were currently pursuing treatment were included in the study.

1. Heterosexual, married, childless couples who were currently receiving medical treatment for an infertility diagnosis.
2. Couples must have met the established criteria for the treatment of infertility:
    a. Failure to achieve pregnancy despite engaging in unprotected intercourse for 12 or more months, if the female was less than 35 years old.
    b. Failure to achieve pregnancy despite engaging in unprotected intercourse for 6 or more months, if the female was more than 35 years old.
3. Medical treatment must have included, at minimum, diagnostic testing of the female to investigate the causes of failure to achieve pregnancy.
4. Current, active participation in treatment for infertility, including the use of: oral medication to induce ovulation (e.g., Clomid, Femara); injectable medication to induce ovulation (e.g., Follistim, Gonal-F, Repronex); artificial reproductive techniques (intrauterine insemination, in vitro insemination); donor gametes (ovum, sperm); and gestational surrogacy. If not actively engaged in a treatment cycle, the couple must have been planning to engage in treatment within 4-6 weeks of the time of data collection.
5. Willingness on the part of both members of the couple to participate in the research study.
6. Both members of the couple must have had access to the Internet in order to complete the online measures.

Exclusion criteria. The present study did not include participants who were currently pregnant or had previous successful pregnancies, e.g., those who were experiencing "secondary infertility." Prior research has suggested that both men and women experiencing secondary infertility may experience significantly less depression than do childless couples experiencing primary infertility (Epstein & Rosenberg, 2005). As such, the current study focused upon participants diagnosed with primary infertility, who were considered to be at greatest risk of experiencing the negative psychological consequences of infertility.

1. Current pregnancy or previous live birth.

Compensation

Upon completion of this study by both partners, participants were given the option to choose one of two forms of compensation for their participation.

a. A voucher good for two free movie tickets

a. A donation of equivalent value was made in their names to the RESOLVE organization.

Protection of Human Participants

The proposed study was designed to comply with the guidelines with the Institutional Review Board of the University of Texas at Austin, as well as the Ethical Principles of Psychologists and Code of Conduct (APA, 2002). All participants were asked to electronically sign an informed consent form in order to ensure that they understand their rights as volunteer. The confidentiality of all participants was protected by assigning shared random identification numbers. Identifying information that could threaten their anonymity (including name, city of residence, and clinic providing

treatment) was not be requested. Only the primary investigator and her supervisors had access to participant's confidential information.

Procedures

Couples interested in participating in the study were asked to contact the principle investigator via email. All individuals expressing interest in participation were sent an email detailing inclusion and exclusion criteria, and basic information about the data collection process and the potential for compensation. Those individuals who met all criteria and expressed desire to participate were assigned a random, shared "couple identification number" which was required in order to log on to the data collection site. Both members of the couple were instructed to complete the measures independently.

All study documents were completed online using a data collection service (www.surveymonkey.com). Participants were asked to log onto the website and enter their couple ID in order to access the survey. Following completion of the informed consent and demographics pages, participants were directed to the three measures.

Once all study questionnaires were completed, a debriefing and explanation of the study was visible to all participants. A link to a national database of mental health service providers with expertise in the treatment of individuals coping with infertility was provided. Finally, participants were given the option to provide their email addresses and couple ID numbers, which were logged separately from their responses to ensure confidentiality, in order to receive results of the study and compensation if requested.

Measures

A summary of the instrumentation utilized in this study may be found in Table 1. Participants completed the following self-report measures: (1) a set of demographic

questions as seen in Appendix A; (2) an eighty-four (CFNI: Mahalik et al, 2004) or forty-six (CMNI: Mahalik et al., 2003) item instrument consisting of that measures a respondent's conformity to feminine (CFNI) or masculine (CMNI) norms; (3) a 23 item questionnaire that measures perceptions of relational health in the marital relationship (RHI: Liang et al., 2001); and (4) a forty-six item instrument that measures a respondent's perceived level of infertility-related stress (FPI: Newton et al., 1999).

Table 1.

Summary of Instruments

Instrument	Number of Items	Response Format	Possible Range of Scores
Conformity to Feminine Norms Inventory	84	Likert (0-3)	Global score / 8 Subscales
Conformity to Masculine Norms Inventory	46	Likert (0-3)	Global score / 11 Subscales
Relational Health Inventory	23	Likert (0-3)	Global score / 4 Subscales
Fertility Problem Inventory	46	Likert (0-3)	Global score / 5 Subscales

The Conformity to Feminine Norms Inventory. (See Appendix B) The CFNI (Mahalik, 2003) was used to measure conformity to traditional feminine norms in the dominant culture in U.S. society. The CFNI consists of 84 items answered on a 4-point scale (0 = *Strongly Disagree* to 3 = *Strongly Agree*) with factor analysis indicating that the CFNI has 8 distinct factors labeled as Nice Relationships, Having Children, Drive for Thinness, Sexual Fidelity, Modesty, Romantic Relationships, Domesticity, and Invest in Appearance (Mahalik et al., 2003). It is suggested that such norms and expectations, derived from dominant European American, heterosexual, middle-class culture, are among the most "pervasive and powerful" (Brown, 1998; Mahalik et al., 2003, 2004) in

U.S. society. As such, they are thought to impact members of both the dominant group from which they are derived as well as all other women who are subject to evaluation on this basis of these norms.

Mahalik and his colleagues define conformity to feminine norms as adherence to rules and standards in society pertaining to how to be "feminine." Such adherence is demonstrated in a woman's thoughts, feelings, and behaviors. The measure, therefore, assesses conformity as a reflection of the extent to which actions/behaviors are consistent with a norm; positive feelings such as pride associated with conformity to the norm (and conversely, shame with nonconformity to the norm); and beliefs that emphasize the importance of the norm.

Examinations of internal consistency for the CFNI measure indicate a coefficient alpha of .89 for the CFNI Total score, and alphas for the subscales range from .70 (Romantic Relationship) to .87 (Fidelity). Mahalik et al. (2003) reported a test-retest coefficient over a 2-3 week period of .94 for the Total CFNI score, and ranged from .83 ("Nice in Relationships", "Domestic") to .95 ("Caring for Children") on the subscales. Regarding validity, Mahalik et al. (2003) reported that CFNI scores significantly related to other femininity related measures.

Table 2.

Definitions and Sample Items for Each of the Eight Subscales of the Conformity to Feminine Norms Inventory

Subscale	Definition of feminine norm	Sample items
Nice in Relationships	Develop friendly and supportive relationships with others	It is important to let people know they are special I would be ashamed if someone thought I was mean I don't go out of my way to keep in touch with friends (reversed)
Thinness	Pursue a thin body ideal	I am always trying to lose weight I would be happier if I was thin I'd look better if I put on a few pounds
Modesty	Refrains from calling attention to one's talents or abilities	I always downplay my achievements I feel uncomfortable being singled out for praise There is nothing wrong with bragging (reversed)
Domestic	Maintain the home	I do all of the cleaning, cooking, and decorating where I live I enjoy spending time making my living space look nice It is important to keep your living space clean
Care for children	Take care of and be with children	I would babysit for fun Most people enjoy children more than I do (reversed) Taking care of children is extremely fulfilling
Romantic relationship	Invest self in romantic relationship	Whether I am in one or not, romantic relationships are often on my mind I pity people who are single I can be happy without being in a romantic relationship (reversed)
Sexual fidelity	Keep sexual intimacy contained within one committed relationship	I would only have sex if I was in a committed relationship like marriage I would feel guilty if I had a one-night stand There is no greater insult than to be called a "slut"
Invest in appearance	Commit resources to maintaining and improving physical appearance	I never wear make-up (reversed) I'd feel superficial if I wore make-up (reversed) It is important to look physically attractive in public

The Conformity to Masculine Norms Inventory – 46 . (See Appendix C) The CMNI was used to measure conformity to traditional masculine norms in the dominant culture in U.S. society. The CMNI-46, an adapted version of the original CMNI, includes 46 items answered on a 4-point scale (0 = *Strongly Disagree* to 3 = *Strongly Agree*) reflecting 9 distinct factors. These CMNI subscales include "Winning", "Emotional Control", "Risk-Taking", "Violence", "Playboy", "Self-reliance", "Primacy of Work", "Power Over Women", "Disdain for Homosexuals", (Parent and Moradi, 2009). As is the case with the CFNI norms, these values derived from the predominant white, middle-class culture are thought to play an central role in the definition of masculinity for men throughout the United States. The structure of the CMNI also parallels that of the CFNI, and operationalizes conformity as the extent to which actions/behaviors are consistent with a norm; positive feelings such as pride associated with conformity to the norm (and conversely, shame with nonconformity to the norm); and beliefs that emphasize the importance of the norm.

Examinations of internal consistency for the CMNI measure indicate a coefficient alpha of .87 for the CFNI Total score, and alphas for the subscales range from .74 (Risk Taking / Primacy of Work) to .86 (Disdain for Homosexuals). Mahalik et al. (2003) reported a test-retest coefficient over a 2-3 week period of .95 for the Total CMNI score, and ranged from .51 (Pursuit of Status) to .96 (Disdain for Homosexuals) on the subscales. Regarding validity, Mahalik et al. (2003) reported that CMNI scores significantly related to other masculinity related measures, including the Gender Role Conflict Scale and the Male Gender Role Stress Scale.

Table 3.

Definitions and Sample Items for Each of the Eight Subscales of the Conformity to Masculine Norms Inventory

Subscale	Definition of masculine norm	Sample items
Winning	Focus upon the importance of winning	In general, I will do anything to win Winning isn't everything, it is the only thing I don't mind losing
Emotional Control	Maintain emotional composure and distance	It is best to keep your emotions hidden I bring up my feelings when talking to others (reverse-scored) I like to talk about my feelings (reverse-scored)
Risk-taking	Willingness to put oneself in risky or dangerous situations	Taking dangerous risks helps me to prove myself I enjoy taking risks I never take chances (reverse-scored)
Violence	Acceptance of violence as a justified means to an end	I believe that violence is never justified (reverse-scored) I like fighting If there is going to be violence, I find a way to avoid it (reverse-scored)
Playboy	Engage in sexual behaviors with multiple partners or outside the confines of a committed relationship	An emotional bond with a partner is the best part of sex (reverse-scored) If I could, I would date a lot of people I would only have sex if I was in a committed relationship
Self-reliance	Depend on oneself rather than others in times of need	I hate asking for help I ask for help when I need it (reverse-scored) Asking for help is a sign of failure
Primacy of Work	Work as the central focus of life	I am often absorbed in my work Work is the most important thing in my life I don't like giving all my attention to work (reverse-scored)
Disdain for Homosexuals	Disgust for homosexuals or things related to homosexuality	Being thought of as gay is not a bad thing (reverse-scored) I make sure people think I am heterosexual I would feel uncomfortable if someone thought I was gay

The Relational Health Inventory (RHI, Liang et al., 2001, see Appendix D).

The RHI was used to assess the quality of couples' marital relationships. Though a

multitude of measures exist that produce a broad measure of "marital satisfaction" or "marital quality", the use of the RHI offers the potential to examine specific relational qualities that have been linked with healthy development and adjustment. Based upon the Relational-Cultural Model (Jordan et al., 1991; Miller & Stiver, 1997), the RHI assesses three relational dimensions that this model posits are characteristic of growth-enhancing relationships: engagement, authenticity, conflict tolerance, and empowerment/zest.

Originally developed to assess relational quality within peer, mentor, and community relationship domains, this measure was adapted for the purposes of the current study to focus on the marital relationship. This measure may hold particular promise as a tool for better understanding the relational qualities that underlie the health of marital relationships, as well as the role of relational health in couples' experiences of an infertility diagnosis.

Table 4.

Definitions and Sample Items for Each of the Four Subscales of the Relational Health Inventory

Subscale	**Definition**	**Sample item**
Engagement	Mutual involvement, commitment, and sensitivity to the relationship	It is important to my spouse and I to make our relationship grow.
Authenticity	Freedom to be oneself in the relationship Knowledge of self and other in the context of the relationship	I am uncomfortable sharing my deepest feelings and thoughts with my spouse
Conflict Tolerance	Ability to express, accept, and process diversity in the relationship	I can tell my spouse when he/she has hurt my feelings
Empowerment/Zest	Sense of personal strength and capacity for action that emerge from the relationship	My marriage causes me to grow in important ways

Liang et al. (2001) report that factor analyses confirm a three-factor ("engagement", "authenticity", "empowerment") model. In initial studies, the

"authenticity" and "conflict tolerance" subscales were modeled as a single factor. For the purpose of the present study the "authenticity" and "conflict tolerance" subscales will be kept separate.

Examinations of internal consistency for the RHI measure indicate a coefficient alpha of .92 for the RHI Total score, and alphas for the subscales range from .70 (Authenticity / Engagement) to .82 (Conflict Tolerance). Scores were found to be negatively associated with depression and stress, as measured by the Center for Epidemiological Studies Depression Scale (CES-D, Radloff, 1977) and Perceived Stress Scale (Cohen, Kamarck, and Mermelstein, 1983).

The Fertility Problem Inventory (FPI: Newton, Sherrard, & Glavac, 1999; see Appendix E). The FPI was used to assess perceptions of infertility-related stress. Unlike measures developed primarily for use with psychiatric patients, the FPI addresses specific domains of stress related to infertility, and therefore is sensitive to concerns that these broader measures may fail adequately capture. Based upon risks for infertility patients that have been identified in the literature, the FPI includes five themes related to infertility stress: social concern, sexual concern, relationship concern, need for parenthood, rejection of childfree lifestyle.

Table 5.
Definitions and Sample Items for Each of the Five Subscales of the Fertility Problem Inventory

Subscale	**Definition**	**Sample items**
Social Concern	Sensitivity to comments, reminders of infertility, social isolation, alienation from family or peers	When I see families with children I feel left out I still have lots in common with friends who have children (reverse-scored) I feel like friends or family are leaving us behind
Sexual Concern	Diminished sexual enjoyment or sexual self-esteem, scheduled sexual relations difficult	I feel like I've failed at sex During sex, all I can think about is wanting a child I feel just as attractive to my partner as before (reverse-scored)
Relationship Concern	Difficulty talking about infertility, understanding/accepting sex differences, concerns about impact on relationship	My partner doesn't understand the way the fertility problem affects me My partner and I work well together handling questions about our infertility (reverse-scored) My partner is quite disappointed with me
Need for Parenthood	Close identification with role of parent; parenthood perceived as primary or essential goal in life	Pregnancy and childbirth are the two most important events in a couples' relationship For me, being a parent is a more important goal than having a satisfying career I feel empty because of our fertility problem
Rejection of Childfree Lifestyle	Negative view of childfree lifestyle or status quo, future satisfaction or happiness dependent on having a child	Couples without a child are just as happy as those with children (are these items reversed?) Not having a child would allow me time to do other satisfying things We could have a long, happy relationship without a child

Examinations of internal consistency for the FPI indicate a coefficient alpha of .91 for the global score. Alphas for the subscales range from .80 (Need for Parenthood) to .89 (Social Concerns). Newton et al (1999) reported a test-retest coefficient over a 2-3 week period of .83 (women) and .84 (men) for the global FPI score. In terms of

convergent validity, global FPI scores and subscale scores were positively associated with depression for both men and women. Similarly, global and subscale scores were positively correlated with anxiety scores. Finally, a significant relationship between FPI global and subscores (particularly "Relationships Concerns" and "Sexual Concerns" has been reported.

Hypotheses

Main analyses.

Hypothesis 1a: Among women, gender role conformity (CFNI) scores will be positively associated with infertility-related distress (FPI) scores.

Hypothesis 1b: Among men, gender role conformity (CMNI) scores will be positively associated with infertility-related distress (FPI) scores.

Hypothesis 2: Gender role conformity will be a better predictor of infertility-related distress than will be biological sex.

Hypothesis 3: Women will report higher levels of distress (FPI scores) than men regardless of type of infertility being experienced by the couple (male factor, female factor, combined, or unexplained).

Hypothesis 4: Men who have received a male-factor infertility diagnosis will report higher infertility distress (FPI) scores than men with other diagnosis types.

Hypothesis 5: Couples who are less congruent in their distress scores will reports lower levels of relational health than will those who are more congruent in their perceptions of distress.

Exploratory analyses.

Hypothesis 6: Individuals without insurance coverage for infertility treatment will report higher levels of infertility-related distress than will those individuals with insurance for infertility treatment.

Hypothesis 7: Differences in mean distress scores will be detected when groups undergoing different treatment types are compared.

Chapter IV

Results

Introduction

This study explored the relationship between conformity to dominant cultural norms of femininity and masculinity, and measures of infertility-related distress and relational health in couples undergoing treatment for infertility. The following section will highlight the results of the study which attempted to answer the following research questions: 1) Is there a positive relationship between gender role conformity and infertility-related distress for men and women? 2.) Is level of gender role conformity a better predictor of relational health than is biological sex? 3.) Do women report higher levels of infertility-related distress regardless of the type of infertility (female-factor, male-factor, combined, or unexplained) being reported? 4.) Do men who receive a male-factor infertility diagnosis report higher levels of infertility-related distress than do men with other diagnosis types? 5.) Do couples who are less congruent in their distress scores report lower levels of relational health than will those who are more congruent in their perceptions of distress? 6.) Do individuals who do not have insurance coverage for infertility treatment report greater infertility-related distress than do individuals who have insurance coverage for treatment? 7.) Do individuals who experience different infertility treatment-modalities report differing levels of infertility-related distress?

Sample Description

Demographics. A total of 185 women and 147 men were included in the study. For the analyses that focused upon couple scores, 124 couples were included. The men and women who were not included in the dyadic analysis (61 females and 23 males) were

excluded because they did not have partners who also had completed data on each of the four data collection instruments.

Males were slightly older than females with a mean age (+ SD) of 32.77 + 5.66 compared to 31.22 + 4.97 for females (t = -2.65, $p < .01$). In terms of education level, 46.1% of participants report having attended graduate school, 35.4% have a college degree, 20.9% have a high school diploma, and .6% did not complete high school. The household incomes for the couples were as follows: 26% earn more than $150,000 per year; 47.5% earn $75,000 – 150,000 per year; 21.8% earn $30,000 – 75,000 per year; and 4.6% earn less than $30,000 per year. The vast majority of participants (89.3%) of the participants are White/Caucasian, African-Americans and Asian-Americans each constitute 2% of the sample, Hispanics represent 1.4% of the sample, and 5.2% describe their race as "other".

The majority of participants (41.4%) report that the duration of their engagement in medical treatment for infertility was less than one year. 37.7% report 1-2 year of treatment; 17.1% report 3-5 years of treatment; and 3.8% report five years of treatment or more. Couples who participated in the study report receiving infertility treatment at a variety of medical facilities: 60.4% at private infertility clinics, 28.8% at hospital-affiliated clinics, 7.2% at an OB-GYN's office, and 6.2% at "other" sites. Examples of treatment providers that were included in the "other" group include Traditional Chinese Medicine (TCM) practitioners, overseas programs, military facilities, and Naturopathic/Homeopathic clinics.

Forty-six percent of infertility diagnoses were attributable to females (e.g., tubal factors, endometriosis), 30% of diagnoses were idiopathic (e.g., unexplained), 14.8% was

attributable to males (e.g., low sperm count), and 18% to "combined-factor" (male and female) infertility. The majority of participants (89.8%) had pursued oral medication (Clomid, Femara) with timed intercourse or intra-uterine insemination as a part of their course of treatment. 52.2% had used injectable medication (Follistim, Gonal-F, Menapur) combined with timed intercourse or intrauterine insemination; 40% reported using in-vitro fertilization; 28.1% had required surgery for one or both of the partners; and 5.9% had used donor gametes or embryos. Other procedures reported include frozen embryo transfer, acupuncture, and herbal treatments.

The vast majority (95.7%) of study participants report that they currently have health insurance, though there is significant variability in terms of the infertility services covered by insurance plans. Most (77.4%) cover diagnostic tests and procedures and approximately half (48.1%) cover oral medications such as Clomid and Femara. Roughly one-third (31.9%) cover injectable medications such as Follistim and Gonal-F. 23.2% of participants report insurance coverage for in-vitro fertilization. 23.8% of plans cover infertility-related surgical procedures. Finally, very few participants (2.1%) report that their insurance plans cover the use of donor gametes or embryos.

Data Analysis Procedure

Inferential statistics were used to draw conclusions from the sample population tested. The Statistical Package for the Social Sciences (SPSS 17.0) was used to code and tabulate scores collected from the survey and provide summarized values where applicable including the central tendency, variance, and standard deviation. In addition, demographic data was processed using frequency statistics. Finally, Analysis of Variance (ANOVA), Linear regression and Moderated Multiple Regression was used to

detect amount of shared variance and strength of relationship between the variables of interest.

Results Detail

Preliminary analyses. Prior to analyzing the six hypotheses, data hygiene and data screening were undertaken to ensure the variables of interest met appropriate statistical assumptions. Thus, the following analyses followed a similar analytic strategy in that the dependent variables were first evaluated for missing data, outliers, normality, linearity, and homogeneity of variance. Subsequently, inferential statistics were run to determine if any statistical difference/relationship existed between participants. Sample size was sufficient for each hypothesis tested once missing data was removed, and so imputing mean scores to retain cases was not considered given this option can obscure the true relationship between variables (Tabachnick & Fidell, 2007).

Assumptions of normality, linearity, and homogeneity of variance were met for all dependent variables except for RHI.

Prior to presenting the detailed analyses for each hypothesis, a *quick-view* of results is provided. The summary presents results from the analyses including basic inferential statistics and confidence coefficient, i.e., *alpha*. Alpha values of less than .05 suggest a statistical difference or relationship between variables.

Table 6.

Results Table of Hypotheses Tests

Hypothesis Test	Analysis	Dependent Variable	Independent Variable	Covariate-Moderator	Sig.
H1A	Linear Regression	FPI	CFNI	N/A	.01
H1B	Linear Regression	FPI	CMNI	N/A	.05
H2	ANOVA	FPI	CFNI/CMNI	SEX	.01
H3	ANOVA	FPI	DX TYPE	SEX	.059
H4	ANOVA	RHI	FPI DIFF SCORE		.953
H5	ANOVA	RHI	FPI DIFF SCORE (LOW V. HIGH)		.258
H6	ANOVA	FPI	INSURANCE COVERAGE		.065
H7	ANOVA	FPI	TX TYPE		.535

Note. *N* =

Hypothesis 1a*:* Among women, gender role conformity (CFNI) scores will be positively associated with infertility-related distress (FPI) scores.

Female perceived infertility-related distress (FPI) served as the dependent variable while gender role conformity (CFNI) served as the predictor variable. Both measures were scaled continuously on a 1-4 point format where increasing scores meant more distress or more conformity, respectively. A total composite score for each inventory was constructed from the multi-item scales by simply adding up scores across items for each participant. Prior to testing the hypothesis, the FPI and CFNI scales were examined for missing data, univariate outliers and parametric assumption compliance.

Table 7.

Descriptive Statistics for H1 Variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
FPI TOTAL	172	83	156	118.39	15.67
CFNI TOTAL	169	206	287	245.22	17.53
Valid N (listwise)	160				

Using linear regression, a statistical relationship between FPI and CFNI was found; $r = .215$, *R-square* = .046, B = .192, $F = 7.66$, $p = .006$. Results indicate that as infertility distress scores increase, gender role conformity scores increase. Thus, the null hypothesis is rejected in favor of the alternative. Table 8 presents the inferential statistics in tabular form. This relationship suggests that for women, high levels of femininity were positively associated with infertility-related stress. Furthermore, women who conform to more traditional norms of femininity may experience more negative psychological consequences of their diagnosis that those who do not conform to these norms.

Table 8.

Inferential Statistics Generated from Linearity Regression Analysis for Hypothesis 1

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	p
CFNI TOTAL	0.21	0.05	0.04	15.41	7.65	0.006**

Note. Dependent Variable: FPI Total

** = $p < .01$

Bi-variate correlations for CFNI subscales and FPI scores. Table 9 presents the bivariate correlations between the subscale scores on the Conformity to Feminine Norms Inventory and infertility stress in the sample of 160 females. For females, significant correlations were detected between distress scores and scores on six of the eight CFNI subscales. Correlations between femininity subscale scores and infertility stress were significant for the following subscales: "Be relational" ($r = .162$, $p < .05$), "children" ($r = .252$, $p < .01$), "thinness" ($r = .282$, $p < .01$), "sexual fidelity" ($r = .151$, $p < .05$), "romantic relationship" ($r = .354$, $p < .01$), and "invest in appearance" ($r = .254$, $p < .01$). Correlations between distress scores and the "modesty" ($r = .081$, $p = .263$) and "domestic" ($r = .017$, $p = .814$) subscales were not significant. These relationships demonstrate that norms within two domains of femininity: those reflecting a focus on relationships within the nuclear family and those that are focused upon the body; may be particularly salient in terms of a woman's experiences of infertility-related distress.

Table 9.

Bi-variate correlations for H1 (CFNI / FPI)

(n=160)	FPI total score
CFNI Sub-scale	
Relational	.162*
Invest in Children	.252**
Thinness	.282**
Sexual Fidelity	.151*
Modesty	-0.081
Romantic Relationship	.354**
Domestic	0.017
Invest in Appearance	.254**

** Correlation is significant at the .01 level (two-tailed)
* Correlation is significant at the .05 level (two-tailed)

Hypothesis 1b*:* Among men, gender role conformity (CMNI) scores will be positively associated with infertility-related distress (FPI) scores.

Perceived infertility-related distress (FPI) served as the dependent variable while male gender role conformity (CMNI) served as the predictor variable. Both measures were scaled continuously on a 1-4 point format where increasing scores meant more distress or more conformity, respectively. A total composite score for each inventory was constructed from the multi-item scales by simply adding up scores across items for each participant. Prior to testing the hypothesis, the FPI and CMNI scales were examined for missing data, univariate outliers and parametric assumption compliance.

Table 10 presents descriptive statistics for the two variables including the minimum score, maximum score, mean, and standard deviation. Table 10 also presents the total number of participants with complete scores for each variable including listwise total.

Table 10.

Descriptive Statistics for H1b Variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
FPI TOTAL	135	61	140	99.68	13.97
CMNI TOTAL	135	60	142	105.73	12.28
Valid N (listwise)	129				

Using linear regression, a statistical relationship between FPI and CMNI was found; r = .197, *R-square* = .039, B = .197, F = 5.12, p = .025. Results indicate that as infertility distress scores increase, gender role conformity scores increase. Thus, the null hypothesis is rejected in favor of the alternative. Table 11 presents the inferential

statistics in tabular form. For men, greater levels of masculinity predicted higher infertility distress scores. As was the case for women, it may be that gender role conformity may be linked with negative psychological consequences related to an infertility diagnosis.

Table 11.

Inferential Statistics Generated from Linearity Regression Analysis for Hypothesis 1b

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	p
CMNI TOTAL	0.197	0.039	0.031	13.74	5.12	0.025**

Note. Dependent Variable: FPI Total

** = $p < .05$

Bi-variate correlations for CFNI subscales and FPI scores. Table 2 presents the bivariate correlations between the subscale scores on the Conformity to Masculine Norms Inventory and infertility stress in the sample of 129 males. For males, significant correlations were detected between distress scores and scores on six of the eight CFNI subscales. Correlations between masculinity subscale scores and infertility stress were significant for the "self-reliant" ($r = .234$, $p < .01$) and "emotional control" ($r = .192$, $p < .05$) subscales. These results suggest that for men, conformity to masculine norms related to a tendency to careful monitor and regulate ones outward affective displays, as well as valuing independence, may be threatened by the experience of infertility diagnosis and treatment.

Table 12.

Bivariate Correlations Between CMNI Subscales and Infertility-Related Distress Scores

	Males (n=129)
	FPI total score
CFNI Sub-scale	
Winning	.141
Playboy	.125
Self-reliance	.234**
Violence	.082
Homophobia	.038
Risk-taking	.032
Work	.025
Emotional control	.192*

** Correlation is significant at the .01 level (two-tailed)
* Correlation is significant at the .05 level (two-tailed)

Hypothesis 2*:* Gender role conformity will be a better predictor of infertility-related distress than will be biological sex.

To test the question, Analysis of Variance was used to detect differences between female and male infertility-related distress mean scores. Subsequently, the amount of shared variance (Eta-squared (ή)) was then used descriptively, to compare effect size between gender role conformity and sex. Thus, perceived infertility-related distress (FPI) served as the dependent variable while sex served as the independent variables in the ANOVA model. The FPI measure was scaled continuously on a 1-4 point format where increasing scores meant more distress or more conformity, respectively. Sex was codes as a nominal variable, with"1" for females and "2" for males. Prior to testing the hypothesis, the FPI and sex variables were examined for missing data, univariate outliers and parametric assumption compliance, $N = 307$.

Table 13 presents descriptive statistics for the FPI variable including the mean, and standard deviation. Tables 13 also presents the total number of participants with complete scores for each variable including listwise total.

Table 13.

Descriptive Statistics for Perceived Infertility-related Distress by Sex

SEX	Mean	Std. Deviation	N
Female	118.39	15.67	172
Male	99.68	13.97	135
Total	110.16	17.58	307

An analysis of variance was used to examine the relationship between the independent variable, sex; and the dependent variable, infertility-related distress. The ANOVA (table) showed a significant main effect for sex (F= 118.531, p <.001, $\acute{\eta}$ = .280). Approximately 28 percent of the variance in infertility-related distress was found to be associated with sex.

Table 14.

ANOVA: Fertility distress x Sex

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	26471.65(b)	1	26471.65	118.53	0	0.28
Intercept	3596828.53	1	3596828.54	16105.31	0	0.98
SEX	26471.65	1	26471.65	118.53	0	0.28
Error	68116.2	305	223.33			
Total	3820296	307				
Corrected Total	94587.85	306				

Note. Computed using alpha = .05, N = 307, DV = FPI total
b = R Squared = .280 (Adjusted R Squared = .278)

Figure 1 presents Mean scores for each level of Sex (Female, and Male). Women reported greater distress (*M* = 118.38 *SD* = 15.66) than Men (*M* = 99.68, SD = 13.97).

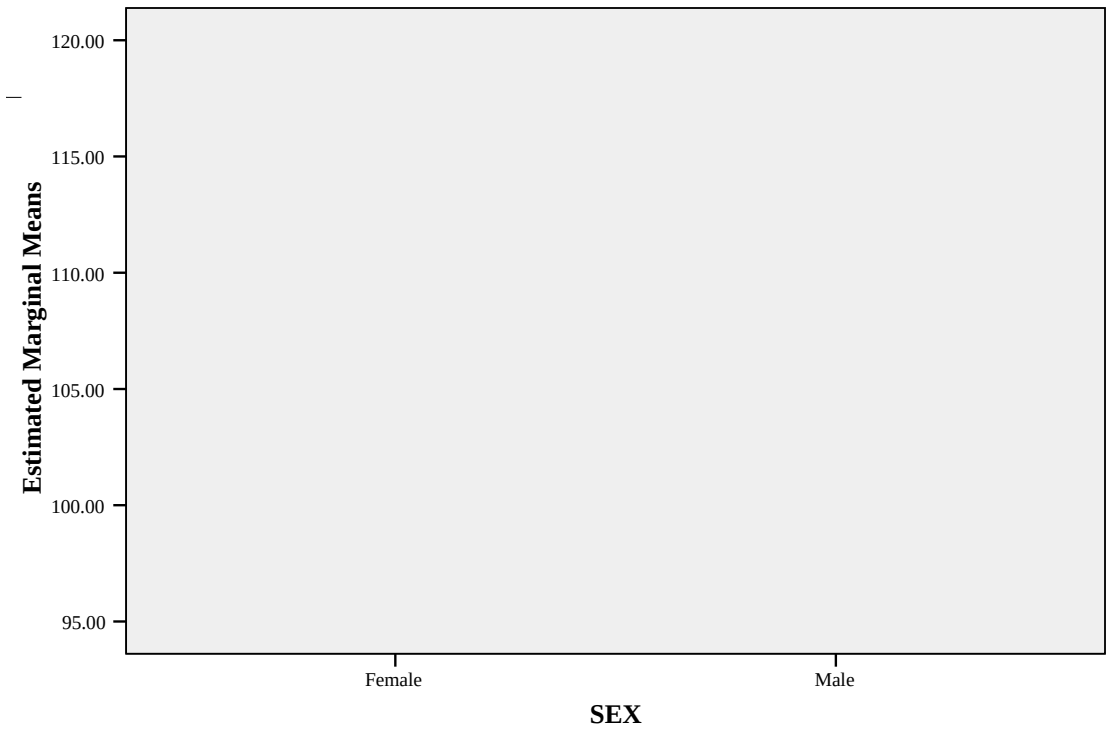

Figure 01. Perceived infertility-related distress (FPI) by sex

In order to explore whether "biological sex" or "gender role conformity" was a better predictor of infertility-related distress effect sizes were compared. Table 15 presents related hypotheses, type of test, dependent variable, independent variable, *F*-statistic, confidence level (*P*) and Effect Size. As presented, Sex captured 28 percent of the dependent variable, perceived distress, while the two gender role conformity variables captured CFNI = 4.6 percent and CMNI = 3.9 percent of perceived distress. As such, the results of these analyses do not support the stated hypothesis that gender role conformity

will be a better predictor of infertility-related distress than is biological sex. For participants in this study, sex appears to be a much better predictor of distress scores.

Table 15.

Summary Comparison of the Three Hypotheses

Hypothesis	Test	*DV*	*IV*	*F*	*P*	*Effect Size*
H1a	Regression	FPI	CFNI	7.65	0.006	0.046
H1b	Regression	FPI	CMNI	5.12	0.025	0.039
H2	ANOVA	FPI	SEX	118.53	<.001	0.280

Hypothesis 3: Women will report higher levels of distress (FPI scores) than men regardless of type of infertility being experienced by the couple (male factor, female factor, combined, or unexplained).

Perceived infertility-related distress (FPI) served as the dependent variable while type of infertility diagnosis (DXTYPE) and sex served as the independent variables. The FPI measure was scaled continuously on a 1-4 point format where increasing scores meant more distress or more conformity, respectively. DXTYPE is a nominal variable, in which female factor infertility is coded as “1”, male-factor infertility is coded as “2”, combined-factor infertility as “3”, and idiopathic/unexplained infertility is coded as “4”. Sex is coded as “1” for females and “2” for males.

Prior to testing the hypothesis, the FPI, and DXTYPE were examined for missing data, univariate outliers and parametric assumption compliance. Table 16 presents descriptive statistics for the FPI variable including the means and standard deviations. Table 16 also presents the total number of participants with complete scores for each variable including listwise total.

Table 16.

Descriptive Statistics for H3 variables

Dependent Variable:	FPI Total Score			
Diagnosis Type	SEX	N	Mean	Std. Dev.
Female Factor	Female	79	118.63	15.53
	Male	69	97.32	14.02
	Total	148	108.69	14.76
Male Factor	Female	21	113.1	13.03
	Male	15	102.00	15.49
	Total	36	108.47	14.26
Combined	Female	28	124.25	17.74
	Male	22	104.32	13.17
	Total	50	115.48	14.45
Unexplained	Female	44	116.75	14.94
	Male	29	100.59	13.13
	Total	73	110.32	14.04

A 2 (sex) by 4 (diagnosis type) analysis of variance was used to examine the relationship between the independent variable, infertility diagnosis (female factor, male factor, combined factor, and unexplained); and the dependent variable, infertility-related distress. Differences in scores for men and women were also explored.

The ANOVA (table 17) showed significant main effects for sex (F= 76.58, p <.001, ή = .204). Thus, approximately 20 percent of the reason why infertility-related distress varied was due to sex type. Women reported greater distress (M = 118.38, SD = 15.66) than Men (M = 99.68, SD = 13.97).

Table 17.

ANOVA: SEX x Diagnosis Type

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	29107.400[a]	7	4158.200	18.987	.000	.308
Intercept	2748395.141	1	2748395.141	12549.854	.000	.977
DXTYPE	1607.851	3	535.950	2.447	.064	.024
SEX	16771.491	1	16771.491	76.583	.000	.204
DXTYPE * SEX	888.837	3	296.279	1.353	.257	.013
Error	65480.457	299	218.998			

Note. Computed using alpha = .05, N = 307, DV = FPI total
b = R Squared = .308 (Adjusted R Squared = .292)

Post hoc tests (Tukey HSD) showed that the results approached, but did not meet, the threshold set for significance (p = .053). Individuals with diagnosed with combined infertility reported the highest distress scores (mean = 115.48, SD = 14.45), followed by those with unexplained infertility (mean = 110.32, SD = 14.04), followed by those with female-factor (mean = 108.69, SD =14.76) and male-factor (mean = 108.47, SD = 14.26) infertility diagnosis types. Results suggest that individuals with different diagnosis types may differ in terms of the levels of distress they report, but power in these analyses was not sufficient to detect this difference. Mean scores between participants grouped by sex and diagnosis-type did not vary significantly (p=.257).

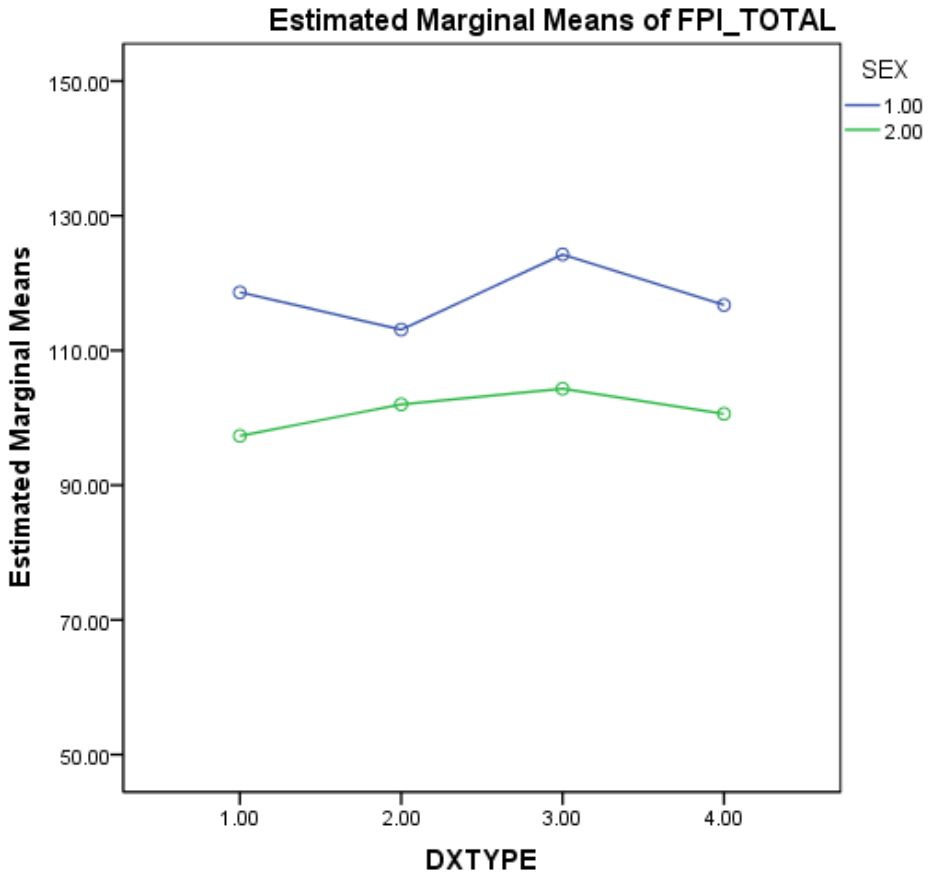

Figure 02. ANOVA: FPI scores by sex / diagnosis type

Hypothesis 5: Men who have received a male-factor infertility diagnosis will report higher infertility distress (FPI) scores than men with other diagnosis types.

An analysis of variance was conducted to compare distress scores for men diagnosed with male-factor infertility with distress scores of men who did not have a male-factor diagnosis. For the purpose of this analysis, "male-factor" infertility was defined as any diagnosis type that included the male partner (male-factor and combined-factor diagnoses) and other diagnosis types (female-factor and unexplained/idiopathic)

were grouped into a “non-male-factor” category. Descriptive statistics for these diagnosis-type variables are presented in Table 18.

Table 18.

Descriptive statistics for FPI by male diagnosis status

Dependent Variable:	FPI Total		
Diagnosis Type	N	Mean	Std. Dev.
Male factor	37	103.38	13.99
Non-Male Factor	98	98.29	13.77
Total	135	99.68	13.97

Inferential statistics for this analysis are presented in Table 19. There was a difference in the scores for male-factor diagnosis types (M=103.38, SD=14.00) and non-male-factor diagnosis types (M=98.29, SD=13.77) that approached statistical significance but narrowly missed the established $p < .05$ cut-off: $F(1)= 3.64$, $p = 0.059$. The relationship between these scores is presented in Figure 03.

Again, power was not sufficient to detect significant differences in this analysis. These results suggest that mean distress scores for men with male-factor diagnoses are higher than those for men with non-male-factor diagnoses, though not significantly so. It is possible that men who are the “carriers” of an infertility diagnosis report more distress than do those who do not carry the diagnosis, but further research will be required to confirm this relationship.

Table 19.

ANOVA: Fertility distress x male-factor diagnosis status

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	696.601[a]	1	696.601	3.640	.059	.027
Intercept	1092323.268	1	1092323.268	5708.251	.000	.977
MaleFactor	696.601	1	696.601	3.640	.059	.027
Error	25450.703	133	191.359			
Total	1367561.000	135				
Corrected Total	26147.304	134				

Note. Computed using alpha = .05, N = 307, DV = FPI total
b = R Squared = .027 (Adjusted R Squared = .019)

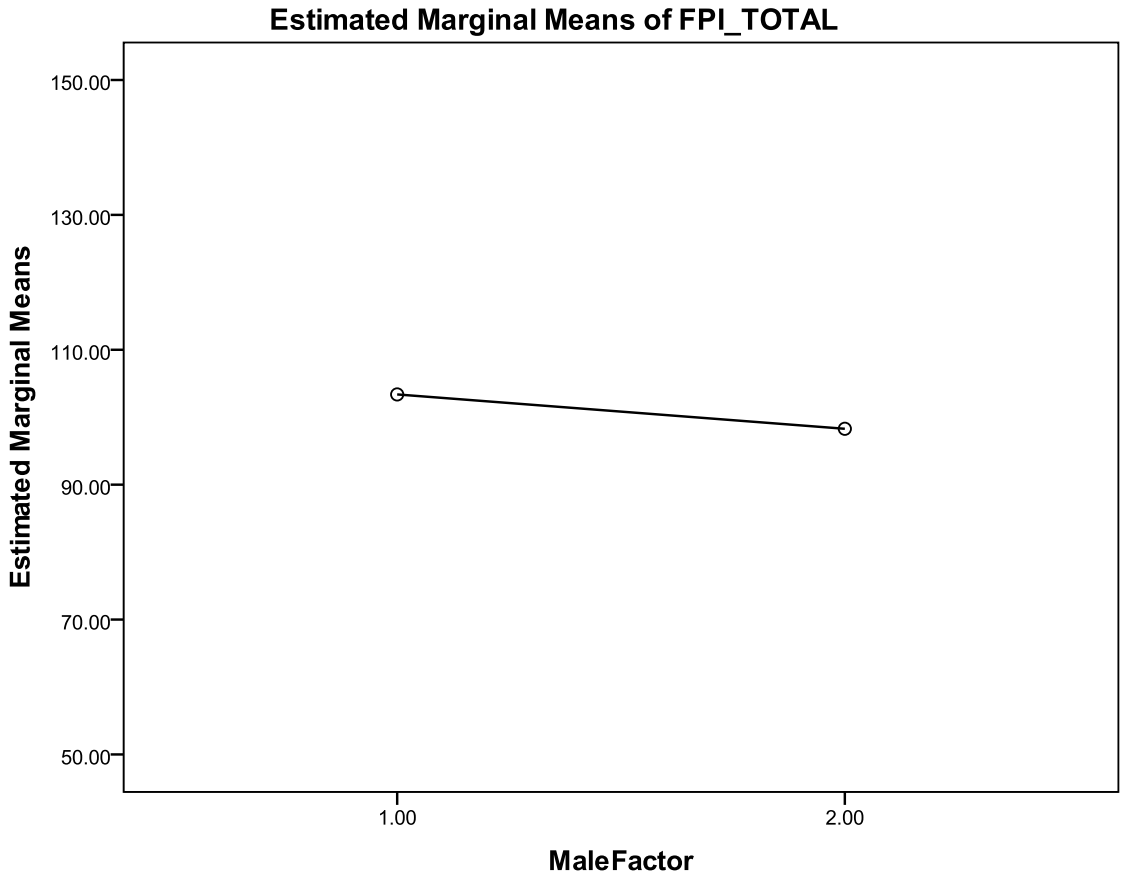

Figure 03. Mean FPI scores by male diagnosis status.

Hypothesis 5: When participants are grouped according to "high" versus "Low" FPI difference scores, "high difference score" couples will report lower levels of relational health than will "low difference score" couples.

The relational health variable was examined for skewness and kurtosis and found to be negatively skewed (-.802, z = 5.49), but with normal kurtosis (.632, z = 2.16). In general, participants in this study reported high levels of relational health within their marriages. Since skew z-score was greater than 3.29 ($p < .001$), the variable was transformed using the square root function in SPSS. Transformation was used to improve normalization of the variable. After transformation, skew = -.057, z = .39, which is considered to be a normally distributed variable. Given these results, the transformed variable was used in the analysis.

The independent variable in the ANOVA model was FPI difference scores (Low, High). Since the FPI variable was scaled continuously, scores were converted to z-scores and categorized as "high" if the z-score was greater than 1.0, and "low" if z-scores were less than -1.0. "Low difference" FPI scores were coded as "1" and "high difference" scores were coded as "2". Descriptive statistics and frequencies for Hypothesis 5 are presented in Table 20.

Table 20.

Descriptive statistics for low / high FPI difference score groupings on RHI scores

FPI Difference score	Mean	Std. Deviation	N
Low	2.0186	.31836	39
High	1.9320	.30467	30
Total	1.9809	.31320	69

An analysis of variance was used to examine the relationship between the independent variable, FPI difference score category; and the dependent variable, relational health score. The ANOVA (see Table 21) showed no significant main effect for difference score groupings (F= 1.301, p = .258, $\acute{\eta}$ = .019). Only 2 percent of the variance in relational health scores was found to be associated with high / low level of FPI difference score status. Those with distress scores that were more congruent with their partner's distress score reported higher mean scores (M= 2.019, SD= .318) than those with less-congruent distress scores (M= 1.932, SD= .305), though this difference was not significant. As such, congruence in distress scores does not appear to be related to level of distress reported by participants in this study. This relationship is depicted graphically in Figure 04.

Table 21.

ANOVA: RHI total scores by FPI difference score (low/high) groupings

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.127[a]	1	.127	1.301	.258	.019
Intercept	264.638	1	264.638	2709.748	.000	.976
HiDiff	.127	1	.127	1.301	.258	.019
Error	6.543	67	.098			
Total	277.430	69				
Corrected Total	6.670	68				

Note. Computed using alpha = .05, N = 307, DV = RHI total

b = R Squared = .019 (Adjusted R Squared = .292)

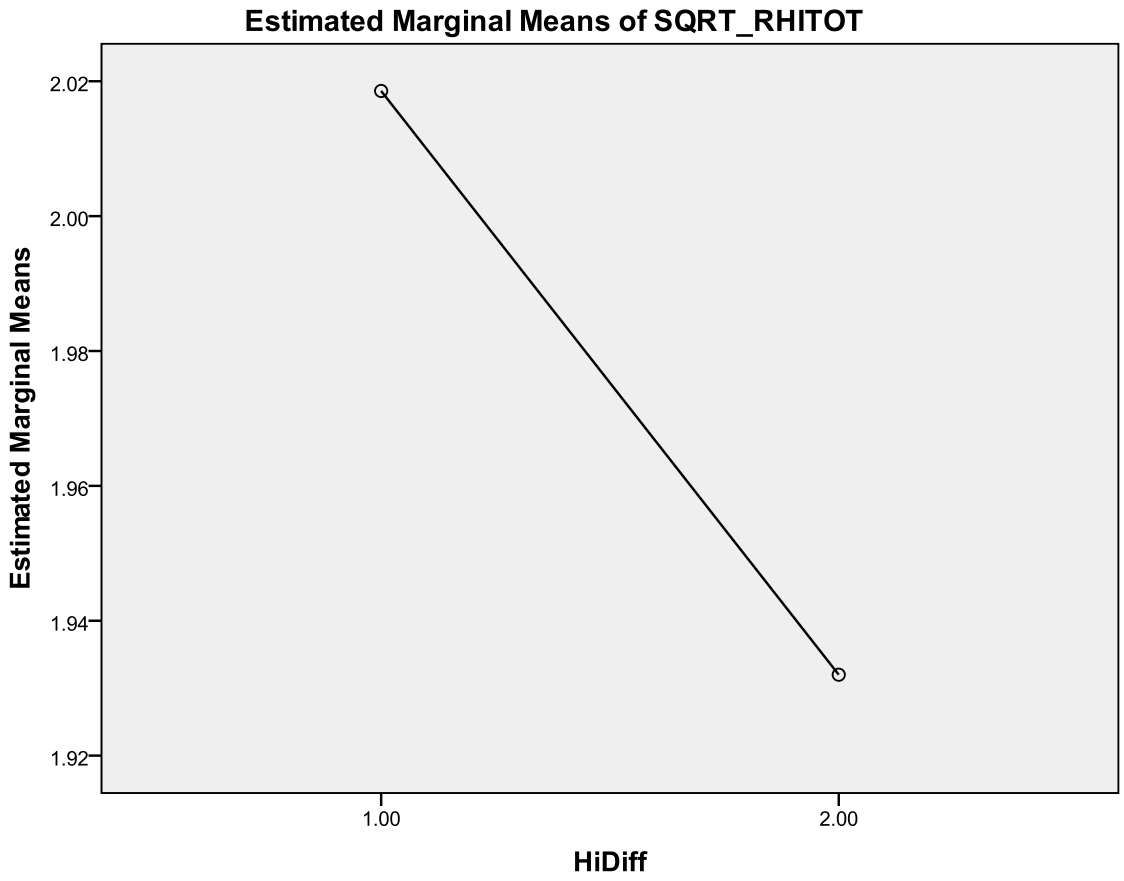

Figure 04.

RHI total scores by FPI difference score (low/high) groupings

Hypothesis 6*:* Individuals without insurance coverage for infertility treatment will report higher levels of infertility-related distress than will those individuals with insurance for infertility treatment.

Perceived infertility-related distress (FPI) served as the dependent variable while insurance coverage for infertility treatment served as the dependent variable. The FPI measure was scaled continuously on a 1-4 point format where increasing scores meant more distress or more conformity, respectively. Insurance coverage “TwoLevelIns” is a

nominal variable, in which no coverage or coverage for diagnostic testing only is coded as a “1”, and coverage for infertility treatment is coded as a “2”. Prior to testing the hypothesis, the FPI was examined for missing data, univariate outliers and parametric assumption compliance, and the insurance coverage variable “TwoLevelIns” was examined for missing data.

Table 22 presents descriptive statistics for the FPI variable for participants falling in the two insurance coverage categorizations, including the means and standard deviations. Table 22 also presents the total number of participants with complete scores for each variable including listwise total.

Table 22.

Descriptive statistics for FPI total scores by insurance coverage status

		FPI Total Score	
Insurance coverage level	N	Mean	Std. Dev.
No treatment coverage	116	107.97	16.69
Treatment Coverage	171	111.92	18.44
Total	287	110.32	17.83

An analysis of variance was used to examine the relationship between the independent variable, insurance coverage status; and the dependent variable, infertility-related distress. The ANOVA (table 23) did not demonstrate significant difference between the distress scores for participants without insurance coverage for infertility treatment (M = 107.97, SD = 16.69) and mean distress scores for participants who did (M

= 111.92, SD = 18.43), (F=3.427, p = .065). Surprisingly, the mean score on infertility distress for those with insurance coverage was higher than the mean distress score for those who lacked such coverage, though not significantly so. Power was not sufficient to detect a statistically significant difference. The relationship between the means for fertility-distress scores and insurance coverage status groupings is depicted in Figure 05.

Table 23.

ANOVA: FPI total scores by insurance coverage grouping

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1079.793[a]	1	1079.793	3.427	.065	.012
Intercept	3341627.695	1	3341627.695	10605.540	.000	.974
TwoLevelIns	1079.793	1	1079.793	3.427	.065	.012
Error	89798.716	285	315.083			
Total	3583848.000	287				
Corrected Total	90878.509	286				

Note. Computed using alpha = .05, N = 287, DV = RHI total

b = R Squared = .029 (Adjusted R Squared = .008)

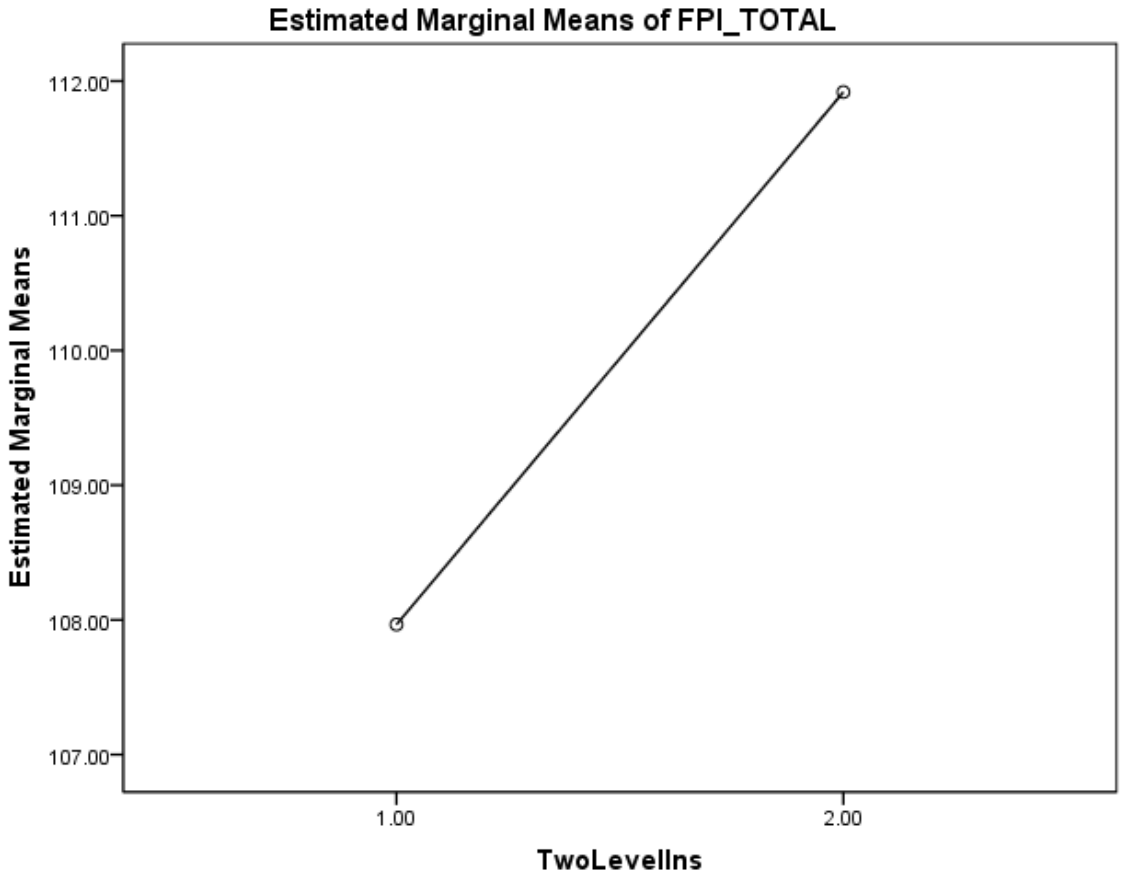

Figure 05.

Fertility-distress scores by insurance coverage status groupings

Hypothesis 7: Individuals undergoing invasive infertility treatment methods will report higher levels of distress than those undergoing less invasive treatment modalities.

Perceived infertility-related distress (FPI) served as the dependent variable while treatment modality and sex served as the independent variables. The FPI measure was scaled continuously on a 1-4 point format where increasing scores meant more distress or more conformity, respectively. Treatment modality "TXMode" is a nominal variable, in which use of oral medication is coded as "1", injectable medication as "2", in-vitro

fertilization as “3”, surgery as “4”, and use of donor gametes / embryos as “5” . Prior to testing the hypothesis, the FPI was examined for missing data, univariate outliers and parametric assumption compliance, and the treatment modality variable “TXMode” was examined for missing data.

Table 24 presents descriptive statistics for the FPI variable and the total number of participants with complete scores for each variable including listwise total.

Table 24.

Descriptive Statistics for FPI scores by treatment modality

Treatment Modality	Mean	N
IVF	108.5733	75
Surgery	109.8060	67
Injectable Medication	109.9241	79
Oral Medication	114.3095	42
Donor Embryos/Gametes	116.2500	16

An analysis of variance was used to examine the relationship between the independent variable, treatment modality (oral medication, injectable medication, IVF, surgery, donor gametes/embryos); and the dependent variable, infertility-related distress. The ANOVA (Table 25) showed no significant main effects for treatment modality (F= .787, p =.535). However, power was not sufficient to detect this difference.

Table 25.

ANOVA: Fertility distress x treatment modality

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1474.544[a]	4	368.636	1.167	.326
Intercept	2454895.946	1	2454895.946	7773.475	.000
TXMODE	1474.544	4	368.636	1.167	.326
Error	86530.345	274	315.804		
Total	3498091.000	279			
Corrected Total	88004.889	278			

Note. Computed using alpha = .05, N = 307, DV = FPI total
b = R Squared = .017 (Adjusted R Squared = .002)

Post hoc tests (Tukey HSD) showed that mean FPI scores for each of the treatment modality groups were as follows, in order from high to low: use of donor gametes/embryos (M = 116.25), oral medication (M = 114.31), injectable medication (M = 109.92), surgery (M = 109.81) and IVF (M = 108.57). The relationship between these scores is depicted in Figure 06. These results suggest that the relationship between treatment modality and distress may be a function of the point in the treatment process at which that procedure typically occurs, rather than how invasive the procedure is. Though not significant, the results of this study indicate that the treatments that typically occur at the beginning phases and final phases of treatment (oral medication and gamete/embryo donation, respectively) are associated with higher levels of stress than the other three treatment modalities.

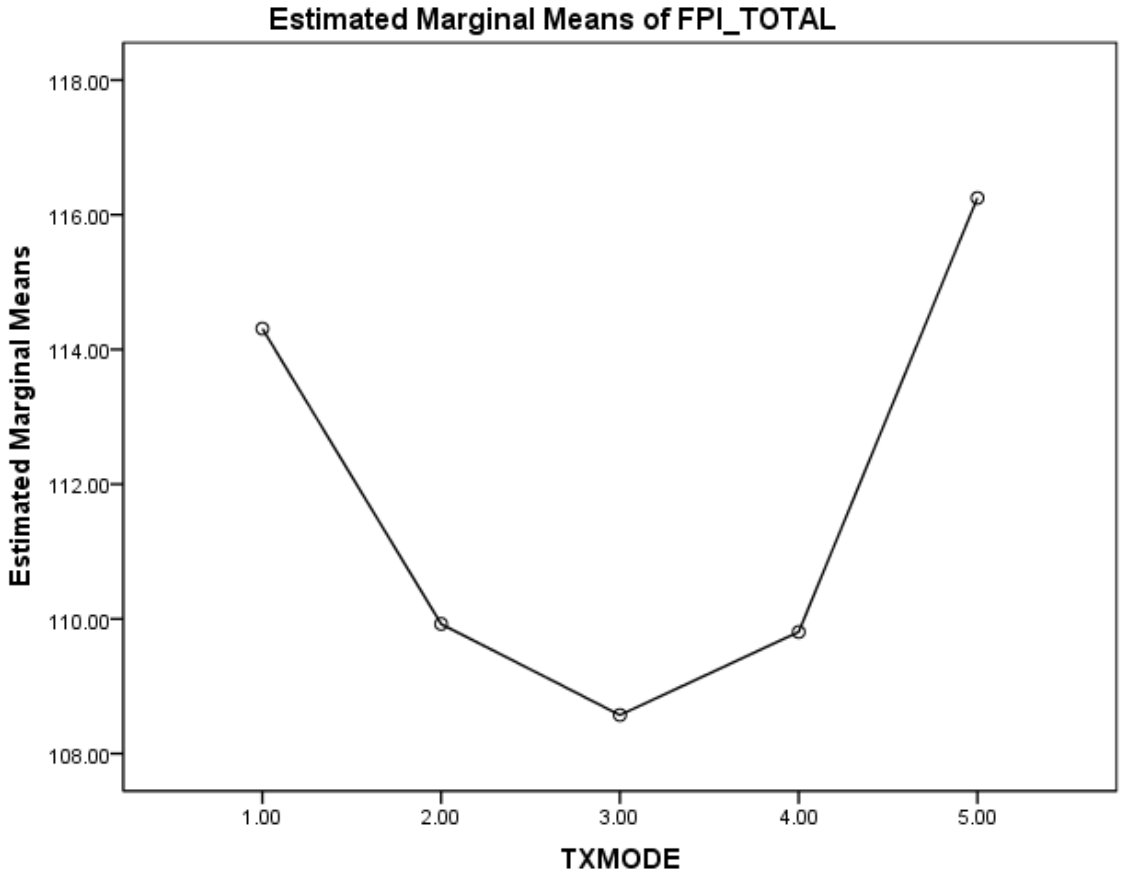

Figure 06.

Mean FPI scores by treatment modality grouping

CHAPTER V

Discussion

The purpose of this study was to explore potential predictors of infertility-related distress, including biological sex, gender role conformity, infertility diagnosis type, insurance coverage status, and infertility treatment modality. The relationship between infertility-related distress and relational health was also examined and a primary focus of the project.

When previous research has examined the relationship between these factors and infertility-related distress, inconsistencies have emerged in terms of the impact of an infertility diagnosis on individual well being as well as on the marital relationship. The specific intra-personal and contextual factors that may influence the psychological and relational consequences of infertility have also not been well defined. In light of these limitations, an examination into the predictors of distress in couples facing infertility and the ways in which infertility-related distress impacts relational health was pursued and perceived as a significant contribution to the literature. The following section provides an overview of the findings and implications stemming from the results of the study.

Summary of Key Findings

Gender role conformity and infertility-related distress. The influence of gender role conformity in predicting infertility-related distress for both men and women was explored. Results of this study suggest that for women, high levels of femininity were positively associated with infertility-related stress. Similarly, for men, greater levels of masculinity predicted higher infertility distress scores. These results suggest that

individuals who conform to more traditional and arguably more restrictive gender role norms may experience more negative psychological consequences of their diagnosis.

Femininity and infertility-related distress. For women, these findings align with those of Adler and Boxley (1985), Berg et al. (1992), R. Cook (1993), and Perkel (1985), each of whom found positive associations between feminine gender role and measures of infertility-related distress. However, these studies relied upon measures that operationalize femininity as a unidimensional construct. As has been argued previously (Gilbert, 1985; Mahalik, 2003), these measures may not fully capture the multi-faceted nature of gender role conformity, which may include endorsement of some dominant cultural norms of femininity but not others. A particular strength of the current study is the utilization of the Conformity to Feminine Norms Inventory, which facilitates a more in-depth understanding of the particular dimensions of femininity that may be associated with infertility-related distress.

When the specific cultural norms of femininity identified within the CFNI were examined, six of the eight subscales demonstrated statistically significant associations with infertility-related distress. These include: “Investment in Romantic Relationships”, “Thinness”, “Care for Children”, “Sexual Fidelity”, “Have Nice Relationships”, and “Invest in Appearance”. These positive associations reflect that conformity to norms of femininity that fall within two broad domains may have important implications for infertility-related distress.

First, investment in norms related to physical appearance and beauty, as captured by the “thinness” and “invest in appearance” subscales on the CFNI, appears to increase risk of infertility-related distress. Second, investment in relationships as demonstrated by

endorsement of items on the “investment in romantic relationships”, “care for children”, “sexual fidelity”, “have nice relationships” subscales of the CFNI may also have relevant bearings for experience of infertility-related distress. The latter norms reflect an overall orientation towards the traditional role of women as a loyal, dedicated caretaker of the nuclear family. Other dimensions of femininity, including modesty and domesticity, were not associated with infertility distress scores.

Conceptually, it seems plausible that women who conform to high standards of physical fitness and beauty may feel particularly distressed and “betrayed” when their bodies fail to meet their expectations for performance, such as when pregnancy is not achieved. Heimline, (2006) found that among women with Polycystic Ovarian Syndrome, a common form of female-factor infertility, body dissatisfaction measures explained 66% of variance in depression scores, even after controlling for body mass. Future research might further elucidate the complex relationship between women’s conformity to cultural norms of appearance, their dissatisfaction with their bodies, and the relationship between these factors and their reported infertility-related distress.

Similarly, the second grouping of dominant cultural norms that was significantly associated with distress focuses around the centrality of marital and family relationships in women’s lives. Broadly speaking, the four subscales of the CFNI within this group are all focused upon a woman’s roles as a dedicated and faithful wife, a devoted mother, and an active participant in the care and maintenance of all her relationships. An infertility diagnosis may be particularly distressing to women who identify with these norms. The inability to conceive a child will threaten a central life goal, and may undermine a fundamental sense of purpose as a woman. Therefore, the conflict between conformity to

the oft-described "motherhood mandate" (Russo, 1976) and a physical inability to achieve the status of mother may be profound for infertile women. Further research might continue to explore the intricacies of the connections between relationally-oriented norms of femininity and infertility distress.

It is important to note that feminine gender role conformity accounted for a relatively small amount of the variance in distress scores (approximately 5%). This suggests that findings regarding gender role conformity as a predictor of infertility-related distress should be interpreted cautiously. Clearly, there are other strong predictors of infertility-related distress that were not included in the current project. As will be discussed in a subsequent section, biological sex may be a more useful predictor of infertility distressed than is gender role conformity.

Masculinity and infertility-related distress. The use of the CMNI facilitated an exploration of the multidimensionality of gender role conformity within the male sample included in this study. The scale reflects the theoretical assumption that men may conform to some dominant cultural norms of masculinity but not others. This approach addresses some of the limitations of previous research (Berg, 1991; Greil, 1991) and allowed for a more nuanced perspective on the domains of masculinity that may be associated with infertility-related distress.

The positive association between scores on gender role conformity and infertility-related distress for men seems to contradict the findings of the limited body of previous quantitative research on this topic. These studies posited that masculinity serves as a "buffer" against infertility-related distress in men (Adler & Boxley, 1985; Berg, 1992; Collard, 1999; R. Cook, 1993; Edelmann, 1986), and relied upon measures that frame

masculinity as a unidimensional construct.

As was the case for women, the use of the multidimensional CMNI in the present study allowed for a more nuanced understanding of the relationship between gender role conformity and infertility-related distress. Only two of the CMNI subscales were correlated with distress scores: "self-reliance" and "emotional control." From a conceptual perspective, these positive correlations reflect the domains of masculinity that might be most impacted by an infertility diagnosis.

For men who conform to norms of masculinity that embody independence and instrumentality, a number of aspects of the infertility diagnosis and treatment process may be problematic. Help-seeking behaviors such as those that are involved in infertility treatment may be ego-incongruent. Mahalik et al. (2003) suggest that "seeking help often implies dependence, vulnerability, or even submission to someone with more power (such as a physician)". Having to ask for medical help in a domain in which high-conforming men may expect themselves to be fully capable and self-reliant, e.g., the performance of sexual intercourse, may further exacerbate infertility-related distress. In addition to coping with the more direct consequences of an infertility diagnosis, therefore, men may also struggle with feelings of helplessness and loss of power in a context of masculinity that demands independence and invulnerability (Pollack, 1998; Sutkin & Good, 1987).

An adherence to cultural norms surrounding "emotional control" may also heighten the risk of infertility-related distress for some men. As is the case for women, an infertility diagnosis may threaten to undermine some of a man's central goals, most notably the establishment of a family and his role as the "provider and protector" for his

family (Seppa, 1997). The potential loss of this goal may invoke feelings of loss, despair, and hopelessness. These emotions may be particularly egodystonic for men who endorse norms of masculinity related to emotional stoicism.

Highly masculine men may struggle to cope with these intense emotions, and this may a serve to exacerbate infertility-related distress for these men. Levant (1997, 2009) highlights what he terms "normative male alexithymia", which describes the result of a developmental process by which men learn to repress their vulnerable emotions. Levant (2009) posits that men who have been raised to conform to traditional norms of masculinity tend to "lack the vocabulary for or awareness of" their emotions. This limits their ability to express and appropriately respond to their own feelings, even when they are in obvious distress. Furthermore, men who do not feel comfortable sharing their emotions with others may feel overwhelmed by their wives' need to process their emotional responses to the diagnosis (Mahlsted, 1985; West, 1983).

As was the case with femininity for the female sample, masculine gender role conformity accounted for a relatively small amount of the variance in distress scores (approximately 3%), so caution in interpretation of these results is warranted. However, it seems likely that for both men and women, a more detailed understanding of the intersection between conformity to dominant gender role norms and infertility-related distress might help shape interventions designed for these populations.

Biological sex and infertility-related distress. While gender role conformity was positively correlated with higher levels of infertility-related distress, biological sex played more prominently into distress scores than gender role conformity. Women reported significantly higher levels of infertility-related distress than did men, regardless

of diagnosis type and treatment modality. This finding is congruent with those of Abbey (1991), Andrews et al. (1991), Berg (1991), Downey and McKinney (1991), Stanton (1992), and Wright et al. (1991).

There may be a number of reasons for this disparity in distress scores between men and women, many of which have been highlighted in prior literature. Women may be more invested in having children, and motherhood may be seen as a more central aspect of "womanhood" than is fatherhood of "manhood" (Mastroianni, 1985). The process of diagnosis and treatment almost invariably focuses on the woman, regardless of whether male- or female-factor infertility is the focus of treatment. The female's physical comfort and daily routines are typically more negatively impacted by infertility treatment than are her male partner's (Abbey et al., 1992; Wright et al., 1991). These stressors likely exacerbate the distress experienced by female infertility patients, and the distress of male patients may be mitigated by their lesser exposure to these elements of treatment.

However, these reported differences in distress between male and female infertility patients should be interpreted with an awareness of men's tendency to underreport distress in mind (Edelmann & Connolly, 2000). If men are indeed less likely to identify and acknowledge distress than are their female partners (Deaux, 1976; Levant, 2007 & 2009; McMullen & Gross, 1983), it is possible that differences in levels of distress reported by men and women may not be as significant as previously assumed. Men may simply be less adept at recognizing their own emotional distress, and less likely to acknowledge this distress openly, whether on a self-report measure such as that utilized in the present study, or as a part of an intervention with a mental health professional (Jordan & Revenson, 1999).

The clinical implications of these findings are two-fold. First, rather than adopting a "one-size-fits-all" approach to adjunctive psychological care for infertility patients, the type, context, and focus of mental health interventions that are offered to men and women may need to be tailored to their unique struggles and needs. Infertility treatment is typically more disruptive to women's lives than it is to their male partner's, women may perceive a greater sense of loss as a result of the diagnosis, and women may be more receptive to mental health intervention than are their male partners. As such, there is a strong case that could be made for choosing to target female patients as the most in need of and receptive to mental health interventions.

However, clinicians should be cognizant of the possibility that their male patients are under-reporting their distress, and consider this factor as they select the populations to be targeted by mental health interventions. Different approaches to engaging male patients in a dialogue about their infertility than would be used with female patients should be explored. Also, interventions that are sensitive to the experiences of male patients, facilitate self-awareness, and nurture sources of social support may be warranted.

Differences in relational health scores among couples grouped by infertility-related distress difference scores. A second goal of this study was to examine differences in scores on infertility-related distress between male and female spouses, and whether these scores were predictive of the level of relational health reported by the couple. This hypothesis was not supported. The results of the current study, which utilized the Relational Health Indices as a measure of marital satisfaction, failed to replicate the results obtained by Peterson (2001). Results of the Peterson study indicate

that levels of congruence in distress scores were positively associated with marital satisfaction, as assessed using the Dyadic Adjustment Scale.

An examination of the scores on the Relational Health Indices revealed that the distribution was negatively skewed. In general, participants in the present study report high levels of relational health with their partners. This finding parallels those of researchers who have suggested that the experience of being diagnosed with and seeking treatment for infertility may serve to enhance perceptions of marital quality (Callen, 1987; Downey, 1992; Gordon-Karp, 2002; Leiblum, 1987; Shaw, 1988).

The results of the present study may have been influenced by the nature of the data collection methodology. The majority of participants were recruited from online sources, including online discussion boards, support groups, and blogs. These communities are populated almost exclusively by female infertility patients. For instance, of the thousands of blog-writers who were targeted as potential participants by virtue of their writings focused on their experiences as infertility patients, only three were men. Female infertility patients were, for the most part, the "point of contact" for the primary investigator. These women then solicited their partners' participation. Men may have been less likely to participate in research focused on infertility, due to the greater discomfort in disclosing information of such an intimate nature that has been well-documented in the literature (e.g., Caldwell & Peplau 1982; Dindia & Allen 1992).

It seems plausible that the results of the study were influenced by an unintended "self-selection process". Those women who had the healthiest relationships with their husbands may have been the most likely to convince them to participate in the study.

This may have restricted the range of scores on the RHI, limiting the predictive utility of distress score differences on relational health.

A follow-up examination of the correlation between scores on the individual subscales on the RHI (Engagement, Empowerment, Authenticity, and Conflict Tolerance) and total FPI scores was also conducted. With the influence of sex was controlled for in the correlational analyses, no significant associations between distress scores and relational health subscale scores were detected. Future investigations might continue to explore the utility of the Relational Health Indices for research and clinical work with an infertile population.

Source and type of infertility. Research questions 2 and 3 examined how the source and type of infertility impacted distress. Women were shown to report higher levels of infertility related distress regardless of the type of infertility they were facing than their male partners. This finding contradicts that of Nachtigal (1992), who found that men who received male-factor diagnoses reported distress levels similar to that of female infertility patients. The comparatively high distress scores reported by women even when their partner who "carried the diagnosis" could be influenced by the following factors: the focus of the diagnosis and treatment process on women (e.g., Greil, 1991); a tendency for women to feel responsible for infertility even when her partner is the focus of the diagnosis (Miall, 1986; McEwan et al., 1987); potential loss of a role that is fundamental to a woman's identity (e.g., Menning, 1988); or, as mentioned previously, a greater ability to identify and willingness to disclose this distress.

When distress scores for both men and women were included in the analyses of differences between participants grouped by diagnosis type, the results approached

significance. Participants who had received singular, definitive "male-factor" or "female-factor" diagnosis types reported the lowest distress levels, with mean scores for male-factor and female-factor groups that were nearly identical. Participants who had received "combined infertility" (both male- and female-factor) diagnoses reported the highest distress levels, a result that parallels those of Drosdzol and Skrzypulec (2009). Given that each member must cope with his or her own reproductive "inadequacy" as well as his or her feelings about the partner's limitations, this result is not surprising.

Couples experiencing idiopathic or "unexplained" infertility reported the next highest mean distress scores. This result also makes sense on a theoretical level, as the uncertainty as to the cause or source of infertility, and the lack of clarity as to the medical intervention that will most effectively treat the problem, may be quite distressing to both partners. In addition to the lack of control over the process and outcome of infertility treatment that has been well-documented in the literature, couples may experience additional self-blame and hopelessness when there is no clear, organic "cause" for their inability to conceive.

The experiences of couples who fall into this idiopathic category, as well as those who experience combined infertility, have received scant attention within previous literature on the impact of infertility diagnoses types on mental health and well-being. The results of the present study indicate that this might be an important area of future investigation, and that future results might guide the allocation of mental health resources to patients who may be at heightened risk of distress due to their diagnosis type.

This study hypothesized that men who had received a male-factor diagnosis (either alone or in conjunction with a female-factor diagnosis) would report higher mean distress

scores than would those men who had been diagnosed with unexplained or female-factor diagnoses. Significance was approached but not established for this hypothesis. Although the results of the present study failed to achieve statistical significance, they document a potential relationship between male-factor diagnosis type and distress that previous researchers have failed to capture (e.g. Boivin, 2006; Tarlatzis, 1993). Future research should continue to examine this relationship between diagnosis type and male distress. Such research might be able to inform interventions designed to address the needs of couples who fall into specific diagnostic categories, particularly those that might be determined to be at increased risk for distress.

An important limitation to these analyses of the impact of source or type of infertility was the relatively small number of male participants with male-factor diagnosis types. Although up to 40% of all infertility cases are thought to reflect a male-factor diagnosis, less than 12% (N = 36) of the sample for the current study fell into this category. This meant that these analyses lacked sufficient power to detect statistically significant differences. The results of this study, which nearly achieved statistical significance, indicate that future studies that include larger samples of men and women with male-factor diagnoses may be a particularly fruitful area of inquiry.

Experiences related to treatment.

Insurance coverage. Given the high cost of infertility treatment, research question 6 explored the correlation between insurance coverage and distress. On this measure, the correlation could not be proven, but the results approached significance. Surprisingly, the results of the present study indicate higher levels of distress reported by couples who have insurance coverage for infertility treatment than those reported by individuals who

lack such insurance coverage. This relationship is counterintuitive for a number of reasons.

First, the cost of infertility treatment, when paid for "out of pocket", undoubtedly puts a financial strain on couples. According to the American Society for Reproductive Medicine, the average cost for an IVF cycle in the United States is $12,400 per cycle (http://www.asrm.org/Patients/faqs.html). Though the less invasive treatment modalities are relatively less costly, they likely represent a significant financial burden for all but the wealthiest of American families.

Secondly, the outcome of any given infertility treatment cycle is never guaranteed. This reality has led some to term the process of infertility treatment a "high stakes gamble" (Schuchman & Wilkes, 1990) It is likely that the inherent, costly financial risks associated with infertility treatment would serve to increase levels of distress in patients who lack infertility coverage for these services. The participants in the current study represent a sample that is relatively affluent, and this may have lessened the impact of "paying out of pocket" on their distress levels. Future studies should continue to explore this relationship between financial factors and distress within more socio-economically diverse participant groups.

Treatment modality. The ways in which different treatment modalities impacted the experience of distress were also explored in this study. Results indicated that there was no difference in mean levels of distress across participants grouped by treatment modality. Interestingly, the highest mean scores for distress were found in the groups using oral fertility medication (Clomid, Femara, etc) and those who were pursuing donor gametes/embryos. It is possible that these scores are related less to the type of treatment

being pursued, and more to the infertility treatment stage at which those treatments are typically pursued.

For instance, oral medication is usually considered a “first line of defense” in the treatment of multiples infertility diagnoses. For many patients, the use of oral medications represents their introduction to the experience of assisted reproductive technology. It is possible that the distress scores for individuals pursuing this type of treatment may be a reflection of the challenges inherent in adjusting to an infertility diagnosis. Furthermore, success rates per cycle with oral medication are relatively low, typically approximately 10%, as compared to up to 25% success rates for use of injectable medication and up to 70% success rates for IVF. Patients using oral medication may experience increased distress as a result of the relatively greater uncertainty of the desired outcome.

The use of donor embryos or gametes, by comparison, often represents the “end of the road” in terms of the process of infertility treatment. Though some couples are required to use this kind of intervention immediately upon pursuing treatment, the vast majority arrive at this option after repeated, unsuccessful cycles. Creating a child using genetic material that is not ones own is often seen as a final, “last ditch” attempt to experience pregnancy and bring a much-desired child into the world. Using donor gametes represents a qualitatively different choice from the other treatment modalities examined. Because the child may be genetically related to only one of the parents, this treatment can be considered somewhat akin to adoption, with all the ensuing psychological complexity. This complexity is increased by the fact that partners do not necessarily share the same genetic relationship with the child, as opposed to families with

either a jointly conceived or an adopted child.

These issues related to the point within the infertility process at which interventions are typically pursued may have important implications for the study of infertility-related distress. In addition to continuing to explore differences in psychological sequellae related to treatment type, future research should address the influence of the "infertility treatment lifecycle" on couples' experiences of these treatments.

Clinical Implications

Findings from the current study enhance our understanding of how several intrapersonal and contextual factors influence the experiences of men and women undergoing treatment for infertility. These results have important implications for the role of counseling psychologists who work with clients whose lives are impacted by infertility. Programs designed to foster mental health in infertility patients have become an increasingly common adjunct component of medical treatment for infertility (Domar, 2002). Most major hospital-based and private infertility clinics employ psychologists with specializations in this area to provide assessment, primary prevention, and counseling to their patients. Others have implemented innovative mind-body based programming designed for this population (e.g., The Domar Center / Boston IVF). The clinical implications of this study may be used to inform such programming on two levels: (a) determining which patients might be most in need of services, and (b) how interventions might be shaped to address their concerns.

First, these results draw attention to subsets of infertility patients who might be deemed at increased risk of distress, and may merit targeted interventions designed to meet their specialized needs. Infertility programs with limited resources devoted to

mental health care would be wise to create interventions that address the differential needs and experiences of men and women, as well as those of patients within specific treatment categories, rather than adopting a broader and potentially more costly approach.

For a woman, infertility treatment is almost invariably more disruptive to her life than it is to her partner's. Throughout the process of treatment, women's bodies are subjected to painful and invasive procedures. Their daily lives are interrupted by injections, frequent monitoring appointments, and painful physical side-effects of treatment. . These realities highlight the intricate connection between physical experiences and emotional responses throughout the treatment process.

Also of concern are the "emotional side-effects" of treatment for women. For instance, female infertility patients frequently report a persistent, overwhelming sense of apprehension about the possibility of a negative outcome (Abbey, 1991). Women may perceive a greater sense of loss as a result of the diagnosis, and more intense fears of not achieving parenthood than do their male partners (Andrews, 1991). Also, it is likely that women will be more receptive to mental health intervention than are their male partners (Moller-Leimkuhler, 2002). As such, there is a strong case to be made for addressing the unique needs of female infertility patients through the development of specialized mental health interventions.

However, this is not to say that the unique experiences and needs of male infertility patients should continue to be overlooked by clinicians. (Berg, 1991). Mental health practitioners should be cognizant of the possibility that their male patients are likely to under-report their distress. Also, both medical professionals and mental health practitioners should be made aware of the ways in which the process of infertility

treatment may place a man in a role that may be experienced as highly egodystonic. For instance, a man must surrender control of his most intimate functions when he and his partner must carefully time their intercourse or when he is required to ejaculate "on command" as a part of an IUI or IVF procedure. For a man who is uncomfortable in the role of "help-seeker", the process of infertility treatment may be particularly stressful. Interventions designed to address these common concerns of the male infertility treatment are uncommon, and should be the focus of future research and development.

To accommodate the needs of male clients, non-traditional approaches may be indicated. For instance, McKelley and Rochlen (2010) suggested that interventions framed as "coaching" may be more appealing to many male patients than would those that are marketed as more traditional individual counseling or psychotherapy. Online therapy may be another valuable form of intervention for some men (Day & Schneider, 2002; Jedlicka & Jennings, 2001; Kessler et al., 2009). There is evidence to suggest that altering the typical "conditions" of mental health services may make seeking these services more palatable for some men (Brown & Chambers, 1986; Mansfield, Addis, & Courtenay, 2005; Rochlen, McKelley, & Pituch, 2006). Clinicians working with infertile men may want to integrate non-traditional approaches to counseling and psychotherapy into their practices.

The results of this study also suggest that individuals with certain diagnoses and facing particular treatment approaches may deserve targeted mental health interventions due to potentially increased risks of distress in these groups. For instance, men and women who have been diagnosed with combined infertility or unexplained/idiopathic infertility may struggle with psychological complications that are unique to their

diagnostic types. Those with combined infertility may feel profoundly "unlucky" or "cursed" in being forced to confront biological inadequacies on the parts of both partners. Their individual distress may also take on a reciprocal, interactive pattern. One partner's psychological symptoms may exacerbate and/or be exacerbated by those of his or her partner. Also, one partner's potentially diminished capacity for emotional availability and support as a result of her/his own struggles will undoubtedly influence the experience of the partner. These dynamics may be pronounced in couples for whom both partners are struggling to accept their individual diagnosis as well as that of the partner.

In a similar manner, couples in which neither member has received a medical explanation for their infertility may have unique experiences and needs. The distress of couples with unexplained/idiopathic infertility may be heightened by uncertainty that is more pronounced than that which is typically inherent in infertility treatment. Unlike patients with a "known" diagnosis, individuals with unexplained infertility face a profound lack of clarity about the organic cause of their infertility, as well as whether treatment will effectively address this unknown deficiency.

Another diagnostic grouping that warrants specific attention is that of men who have received male-factor diagnoses. Results of the study suggest that these men may experience more distress than do their counterparts who are not considered "medically accountable" for their infertility. If a man who receives a male-factor diagnosis conforms to a traditional model of masculinity, he may feel that his status as a virile, capable, and self-sufficient leader within the family unit in compromised. He may also feel humiliated and "emasculated" by the process of infertility treatment. These issues unique to the experiences of men within this diagnostic category warrant specialized clinical attention.

Finally, patients may require intervention at particular stages of the infertility treatment "life cycle", or when pursuing certain treatment modalities. For instance, it would likely be beneficial to develop targeted intervention strategies for those individuals who are newly diagnosed with infertility and embarking on their treatment journey. Other interventions might address the concerns of those who have reached the "end of the road" and are considering such options as use of donor gametes / embryos, surrogacy, adoption, or child-free living. Each of these subgroups of infertility patients faces unique liabilities that may warrant targeted programming, both at the primary prevention / psychoeducational level and in terms of interventions to address existing symptoms.

The results of the present study not only inform "who" might be the focus of mental health intervention, but also provide some important potential foci for treatment. Issues related to gender role conformity may be particularly salient for those patients who experience heightened levels of infertility-related distress. Mahalik et al. (2005) presented a model of clinical intervention in which mental health providers assess the individual's level of conformity to gender role norms, and this assessment provides a basis for exploration in individual therapy.

Mahalik et al. recommended administering the CMNI (and CFNI) to clients, and examining the pattern of conformity that is reflected in the subscales. Clients may conform to certain norms of gender and not others, and some subscales may hold stronger implications for the impact of an infertility diagnosis than others. The authors suggested that systematically exploring the benefits and costs of both conformity and non-conformity to dominant cultural norms of gender may be a fruitful component of the therapeutic process.

Within the context of support services for infertility patients, clinicians might address the potential liabilities associated with high levels of gender role conformity with their clients. Explorations of how clients define "femininity" and "masculinity", and how these definitions influence their experience of the infertility diagnosis, may provide a useful focus of treatment.

The results of the present study suggest that for women, conformity to norms of femininity related to the body and its appearance ("Thinness" and "Invest in Appearance") may be predictive of infertility distress. With this awareness, clinicians might facilitate a discussion of a female patient's thoughts and feelings about her body. This might include her standards for its appearance and expectations for its performance.. Important connections may be drawn between the experience of infertility and treatment, including a sense of bodily "failure", loss of control, and need for medical intervention in order to "correct" these deficiencies, and the failures, disappointment, and shame that women may have experienced in their relationship with their bodies in other contexts. Similarly, women clients who adhere strongly to norms of femininity that embrace the roles of mother, wife, and relational nurturer may benefit from an exploration of the importance of these roles in her life, along with the inherent threats to these roles posed by an infertility diagnosis.

Within the context of clinical interventions with men, the results of the present study indicate that an exploration of masculine norms related to expression of affect and help-seeking may be warranted. Men who endorse the belief that they should remain in "emotional control" and not share their feelings with significant others may be at heightened risk for distress in the wake of an infertility diagnosis. While it is likely that a

variety of emotions, including shame, inadequacy, hopelessness, and despair may be triggered by the experience of infertility treatment, these men may not feel comfortable sharing these feelings with others. This may limit their access to the support of others that has been deemed so critical in adjustment to stressful life events (e.g. Cassel, 1975; Cohen & Wills, 1985).

Furthermore, male partners may struggle to respond to their wives' needs for emotional openness and support (Mahlstedt, 1985; West, 1983) if they feel that they masculinity will be compromised by the expression of emotional vulnerability or "weakness". Men who assume that help-seeking behaviors are incompatible with masculinity might benefit from an exploration of the intersections between these beliefs and the experience of infertility treatment.

It will be critical for clinicians to recognize that men who experience heightened risk of distress as a result of issues related to gender role conformity may be the least likely to present for individual or couples' therapy. Rochlen (2005) urged clinicians to address issues related to the underutilization of services by men, including those who adhere to norms that emphasize self-reliance and discourage help-seeking. Rochlen further suggested that mental health clinicians identify alternative marketing approaches (such as emphasizing the clinician's role as a "coach" rather than a "therapist") and counseling techniques (such as online counseling) that target this population.

Finally, though results of the present study on the impact of infertility distress on couples' reported relational health were inconclusive, it seems likely that fostering healthy relationships could be an important focus of treatment for both men and women. Clinicians could provide psychoeducation about the common "pitfalls" that couples

experience as they undergo treatment, including topics that address the differing experiences of men and women and how these might impact the relationship. For instance, it might be useful to draw attention to the possibility that each partner may experience attitudes towards help-seeking, need for emotional disclosure and support, level of intrusiveness of treatment, and investment in the outcome than his or her spouse.

Clinicians could provide the infertile couple with tools that might allow these experiences of difference to promote rather than detract from relational health. Developing interventions that support the four dimensions of relational health, including authenticity, engagement, empowerment, and conflict tolerance, within infertile couples may provide an important buffer against the negative marital and individual consequences of the infertility treatment process.

Limitations

A variety of limitations naturally constrain the conclusions drawn from this research. These also outline the promise of further research. The most significant limitation of this study lay in the challenge of recruiting a sample that is representative of the infertile population. Participants from this study were predominantly Caucasian, upper-middle class, and highly educated. This may be a sample that is representative of those infertile individuals who are most likely to pursue medical treatment. However, it is likely that this sample did not include those who are at most risk of experiencing infertility, namely, low-income individuals who are not Caucasian. The use of an online forum as a vehicle for data collection may have exacerbated this limitation. The underrepresentation of minority groups is a common limitation in the infertility literature

as a whole (Greil, 1997), and unfortunately this study was subject to similar consequences of convenience sampling.

The sample included in this study was also not representative of the infertile population in terms of the predicted distribution of diagnosis types and corresponding treatments. As noted previously, a relatively small number of participants with male-factor diagnosis types were included in the sample. Less than 12% of participants (N=36) in this study fell in the "male factor" category, whereas up to 40% of all infertility cases are thought to reflect a male-factor diagnosis. Similarly, the inclusion of larger numbers of participants who were pursuing less common treatment modalities, such as surgery to correct anatomical abnormalities and use of donor gametes or embryos, would have allowed the study to make more definitive inferences about the experiences of individuals in these groups.

Finally, participation in this study was limited to married, heterosexual couples and therefore did not capture the experiences of homosexual couples, unmarried heterosexual couples, or single individuals who are pursuing parenthood. Although the current study did not specifically address the specific experiences of under-studied populations, it provides a relevant theoretical basis for future investigations of the experiences of individuals and couples from these groups. The unique experiences of individuals from these subgroups should certainly be granted attention in future investigations.

Another significant limitation of the study was its reliance upon self-report measures, which increased the risk that responses from participants were influenced by a social-desirability bias. However, given that a primary motivation for infertile

individuals to respond in such a way as to appear "normal" is that they fear that their responses may influence their medical treatment, the fact that this study is not affiliated with any fertility clinic or medical center may have ameliorated this limitation. These limitations must be noted, but should not diminish the value of the research. The following section considers the ways in which the results and limitations of this study can provide a basis for future inquiry in this area.

Recommendations for Further Study

Several recommendations for future research in this area can be suggested. Specifically, there are five foci for extensions of the current study that hold the potential to further advance findings in this area.

Perhaps most critical to the development of the existing body of infertility literature will be the inclusion of individuals who are underrepresented in this sample, as well as the literature as a whole. Patients from minority groups, low socio-economic status, homosexual partners, single-by-choice parents, and those who choose not to pursue medical treatment should be the focus of future research. It is likely that their experiences of infertility-related distress may be exacerbated by factors that are not relevant for an upper-middle class, highly educated infertile couple. For instance, cultural stigmas against homosexual parents and single-by-choice parents undoubtedly shape their treatment experiences. For those who lack access to infertility treatment due to financial limitations, or others who for religious or ethical reasons choose not to pursue treatment, infertility-related distress may be experienced in a manner that differs significantly from that of those who have the means to overcome their infertility.

The roles of sex and gender within the context of the infertility experience also

warrant further attention. While this study provides an initial exploration into the complex relationship between conformity to gender role norms and the infertility experience, further research into the specific norms that are most salient is warranted. This is particularly true in terms of addressing limitations of the current body of literature in adequately capturing men's experiences of infertility. The possibility that men under-report their distress, their hesitance to seek out support services, and their responses to the stress placed on their marriages by an infertility diagnosis all could be fruitful areas of future inquiry. This need for further research applies to the experiences of individuals from the GLBT population. Gay and lesbian infertility patients may demonstrate different patterns of relationships between gender role conformity and infertility-related distress than do heterosexuals.

Future research on the impact of infertility on relationships is also warranted. While there is a well-validated measure designed to capture infertility distress within the individual, no parallel instrument exists that looks at manifestations of distress in the marital relationship. The creation of a new instrument designed to more adequately capture the impact of an infertility diagnosis on marriage would facilitate a more thorough understanding of the ways in which infertility diagnosis and treatment influence relational health. Furthermore, the use of such a measure might allow researchers and clinicians to identify particular components of relational health that are critical to a couples' adjustment to infertility.

Given that the present study may have been limited by its cross-sectional research format, future studies might take a longitudinal approach to better understand trends in mental health symptomatology across the "treatment lifespan". The results of this study

were unclear as to whether distress levels are associated with treatment modality (invasive versus less invasive) or perhaps instead with the point in the treatment lifespan in which these treatments typically take place. Future research might follow individuals through initial diagnosis, the process of various treatments, critical decision-making points, and periods of "success" and "failure" in order to develop a more comprehensive understanding of infertility-related distress.

Finally, further exploration into contextual factors that may have repercussions for patient's responses to infertility should also be pursued. Of particular importance is the role that financial stress (such as that which may result from a lack of coverage of infertility treatment) may play in exacerbating infertility-related distress. Given that the results of the present study were inconclusive as to whether a relationship between insurance coverage and distress exists in the infertile population, future studies should explore this topic more thoroughly. Results of such studies could be particularly critical in supporting the role of psychologists as advocates for mandated infertility coverage.

Summary

The results of this study highlight several intra-personal and contextual factors that have potential consequences for the experiences of individuals seeking treatment for infertility. As has been widely documented in the literature, women report significantly greater levels of infertility-related distress than do their male partners. Regardless of whether the "organic cause" of infertility lies within the male or the female partner or both, or whether a cause of infertility has been identified, women report that they experience the treatment process as significantly more distressing than do men.

Understanding the interplay between gender role conformity and infertility may

help researchers and clinicians better understand the disparity between distress scores for men and women. Results of this study indicate that there is a positive relationship between women's conformity to dominant cultural norms of femininity, particularly those that emphasize control over ones appearance and body, and infertility-related distress. For women who hold themselves accountable to a (perhaps unobtainable) standard of bodily perfection, an infertility diagnosis may represent an inherent threat to this ideal. Similarly, for those women who seek self-definition through conformity to norms that emphasize femininity as embodying investment in relationships within the nuclear family, the potential inability fulfill the goal of creating such a family is likely devastating.

For male participants, a positive relationship between gender role conformity and infertility-related distress was also detected. Two norms for masculinity are particularly salient as predictors of distress scores: "self-reliance" and "emotional control. Men who equate their masculine identities with independence, instrumentality, and control may be particularly distressed by certain factors inherent in the infertility treatment process. Such factors might include having to seek external assistance in order to successfully fulfill their role in procreation, and having to rely on the expertise and guidance of medical professionals, and having limited (if any) control over the outcome of treatment. For men who tend maintain careful control over their emotional states and displays, the intense helplessness, despair, shame, and sense of inadequacy that they may feel in the wake of an infertility diagnosis may pose a challenge to their very sense of masculine identity. This may be particularly true of those men who are diagnosed with male-factor infertility, who carry the "responsibility" for the diagnosis.

In addition to these intra-personal factors, this study highlights several contextual factors that have potential ramifications for infertility distress. These include insurance coverage status and treatment modality pursued. Though the results of the present study were inconclusive, they suggest that these factors may be influential predictors of distress and thus this area warrants further examination.

Finally, this study attempted to elucidate the impact of an infertility diagnosis on relational health. Differences between distress scores for each member of the couple were not positively associated with relational health, as was predicted. In general, the couples included in this study reported high levels of relational health, reflecting a sense of authenticity, engagement, empowerment, and conflict tolerance within the context of their relationships. It is encouraging to note that previous literature that cites the ways in which couples grow closer and more connected throughout the course of their infertility treatment was supported in this study.

Infertility represents an ever-growing concern for American couples, and may impact up to 15% of the population at some point in their lives. Medical technology has developed accordingly, and the efficacy of infertility diagnosis and treatment is improving. As researchers and clinicians within the mental health profession, psychologists have made great strides in improving the field's ability to meet the emotional needs of the infertile population. With further exploration, and application of findings such as those detailed in this study to clinical intervention, psychologists are poised to become critical advocates and facilitators of mental health in this population.

Appendix A

Demographics Questionnaire

Couple ID#_____

1. What is your sex?
   - ☐ Female
   - ☐ Male

2. What is your age? _____

3. What is the highest level of education you have completed?
   - ☐ Some high school
   - ☐ High School degree or equivalent
   - ☐ Some college
   - ☐ College Degree
   - ☐ Some graduate school
   - ☐ Graduate degree (e.g., M.A., Ph.D., J.D., M.D)

4. What is your yearly income?
   - ☐ Less than $10,000
   - ☐ $10,000-$19,999
   - ☐ $20,000-$29,999
   - ☐ $30,000-$39,000
   - ☐ $40,000-$54,999
   - ☐ $55,000-$74,999
   - ☐ $75,000 or higher

5. My racial background is:
   - ☐ African-American / Black
   - ☐ American Indian / Alaskan Native
   - ☐ Asian-American
   - ☐ Caucasian / White
   - ☐ Hispanic
   - ☐ Other

6. Are you or your partner currently pregnant? Y N

7. Do you and your current spouse have any living biological children together? Y N

8. Have you been attempting to conceive for one or more years? Y N
   If so, how many? _____

9. Are you currently receiving medical treatment for infertility? Y N
   If so, where?

   Hospital-affiliated clinic Private infertility clinic OB-GYN office

   Other (please specify):_____

10. How long have you been receiving medical treatment for infertility?
    - ☐ Less than one year
    - ☐ 1-2 years
    - ☐ 3-4 years
    - ☐ 5 years or more

11. My partner and I have been given the following explanations for our infertility:
    - ☐ Female-factor infertility (e.g., endometriosis, PCOS, diminished ovarian reserve)
      - o Please specify: _____
    - ☐ Male-factor infertility (e.g., diminished sperm count, varicocele, hypogonadism)
      - o Please specify: _____
    - ☐ Combined-factor infertility (both male and female infertility)
      - o Please specify female: _____
      - o Please specify male: _____
    - ☐ Unexplained

12. Which of the following treatments have you undergone? Please check all that apply:
    - ☐ Oral ovulation induction (e.g. Clomid / Femara) with timed intercourse
    - ☐ Oral ovulation induction (e.g. Clomid / Femara) with intrauterine insemination (IUI)
    - ☐ Injectable medications (Follistim, Menapur, Gonal-F, Perganol, Repronex) with timed intercourse
    - ☐ Injectable medications (Follistim, Menapur, Gonal-F, Perganol, Repronex) with intrauterine insemination (IUI)
    - ☐ In-vitro fertilization (IVF)
    - ☐ Surgery to correct anatomical problem in female
    - ☐ Surgery to correct anatomical problem in male
    - ☐ Cycle with donor eggs
    - ☐ Cycle with donor sperm

- ☐ Cycle with donor embryos
- ☐ Other: _____

12. Do you currently have health insurance? Y N

13. Which of the following procedures have been paid for by your insurance? Please check all that apply.

- ☐ None / I don't have insurance
- ☐ Diagnostic tests
- ☐ Oral medications (Clomid, Femara)
- ☐ Injectable medications (Follistim, Menapur, Gonal-F, Perganol, Repronex)
- ☐ Intrauterine insemination (IUI)
- ☐ In-vitro fertilization (IVF)
- ☐ Surgery to correct anatomical problem in female
- ☐ Surgery to correct anatomical problem in male
- ☐ Cycle with donor egg
- ☐ Cycle with donor sperm
- ☐ Cycle with donor embryos

Appendix B

Conformity to Feminine Norms Inventory (CFNI)

The following pages contain a series of statements about how people might think, feel or behave. The statements are designed to measure attitudes, beliefs, and behaviors associated with both traditional and non-traditional feminine gender roles. For example, the statements are about issues such as appearance, taking care of others, sexuality, and relationships. Thinking about your own actions, feelings and beliefs, please indicate how much you personally agree or disagree with each statement by circling SD for "Strongly Disagree", D for "Disagree", A for "Agree", or SA for "Strongly agree" to the right of the statement.

EXAMPLE ITEM:

It is important to let people know they are special

SD
D
A
SA
Circle SD if you strongly disagree with the statement.
Circle D if you disagree with the statement.
Circle A if you agree with the statement, or
Circle SA if you strongly agree with the statement

There are no right or wrong responses to the statements. You should give the responses that most accurately describe your personal actions, feelings and beliefs. It is best if you respond with your first impression when answering.

1. It is important to let people know they are special
SD D A SA

2. I would baby-sit for fun
SD D A SA

3. I would be happier if I was thinner
SD D A SA

4. I would feel extremely ashamed if I had many sexual partners
SD D A SA

5. I feel uncomfortable being singled out for praise
SD D A SA

6. When I am in a romantic relationship, I give it all my energy

SD D A SA
7. It is important to keep your living space clean
SD D A SA

8. I spend more than 30 minutes a day doing my hair and make-up
SD D A SA

9. Putting energy into friendships is a waste of time
SD D A SA

10. I participate in activities that include kids
SD D A SA

11. I don't tend to worry about gaining weight
SD D A SA

12. If I was single, I would want to date a lot of people
SD D A SA

13. Being mean gets you ahead in life
SD D A SA

14. I tell everyone about my accomplishments
SD D A SA

15. Whether I'm in one or not, romantic relationships are often on my mind
SD D A SA

16. I clean my home on a regular basis
SD D A SA

17. I feel attractive without makeup
SD D A SA

18. I believe that my friendships should be maintained at all costs
SD D A SA

19. I find children annoying
SD D A SA

20. Being thin is important
SD D A SA

21. I prefer long-term relationships to casual sexual ones
SD D A SA

22. There is nothing wrong with bragging
SD D A SA

23. I pity people who are single
SD D A SA

24. I am comfortable when my living space is a little cluttered
SD D A SA

25. I'd feel superficial if I wore make-up
SD D A SA

26. I feel good about myself when others know that I care about them
SD D A SA

27. Taking care of kids is just not for me
SD D A SA

28. I would only diet if a doctor ordered me to do so
SD D A SA

29. I would feel guilty if I had a one-night stand
SD D A SA

30. When I succeed, I tell my friends about it
SD D A SA

31. Having a romantic relationship is essential in life
SD D A SA

32. I enjoy spending time making my living space look nice
SD D A SA

33. Being nice to others is extremely important
SD D A SA

34. I regularly wear makeup
SD D A SA

35. I don't go out of my way to keep in touch with friends
SD D A SA

36. Most people enjoy children more than I do
SD D A SA

37. I would like to lose a few pounds

SD D A SA

38. It is impossible to always be nice to others
SD D A SA

39. It is not necessary to be in a committed relationship to have sex
SD D A SA

40. I hate telling people about my accomplishments
SD D A SA

41. I can be happy without being in a romantic relationship
SD D A SA

42. I haven't cleaned my living space in the past week
SD D A SA

43. I get ready in the morning without looking in the mirror very much
SD D A SA

44. I would feel burdened if I had to maintain a lot of friendships
SD D A SA

45. When I want to relax, I don't want to be around kids
SD D A SA

46. I tend to watch what I eat in order to stay thin
SD D A SA

47. I would feel comfortable having casual sex
SD D A SA

48. I make it a point to get together with my friends regularly
SD D A SA

49. I always downplay my achievements
SD D A SA

50. Being in a romantic relationship is important
SD D A SA

51. I don't care if my living space looks messy
SD D A SA

52. I never wear make-up
SD D A SA

53. I always try to make people feel special
SD D A SA

54. Caring for children adds meaning to one's life
SD D A SA

55. I'd look better if I put on a few pounds
SD D A SA

56. I frequently change sexual partners
SD D A SA

57. I am not afraid to tell people about my achievements
SD D A SA

58. My life plans do not rely on my having a romantic relationship
SD D A SA

59. I do all of the cleaning, cooking and decorating where I live
SD D A SA

60. It is important to look physically attractive in public
SD D A SA

61. If a friendship isn't working, I'll end it
SD D A SA

62. I would feel empty if my life did not involve children
SD D A SA

63. I try to be sweet and nice
SD D A SA

64. I am always trying to lose weight
SD D A SA

65. I would only have sex with the person I love
SD D A SA

66. I don't seek recognition for my efforts
SD D A SA

67. When I have a romantic relationship, I enjoy focusing my energies on it
SD D A SA

68. There is no point to cleaning because things will get dirty again
SD D A SA

69. I am not afraid to hurt people's feelings to get what I want
SD D A SA

70. Taking care of children is extremely fulfilling
SD D A SA

71. I would be perfectly happy with myself even if I gained weight
SD D A SA

72. It would be enjoyable to date more than one person at a time
SD D A SA

73. I enjoy being in the spotlight
SD D A SA

74. If I were single, my life would be complete without a partner
SD D A SA

75. I rarely go out of my way to act nice
SD D A SA

76. I actively avoid children
SD D A SA

77. I am terrified of gaining weight
SD D A SA

78. I would only have sex if I was in a committed relationship like marriage
SD D A SA

79. I am only nice to people I like
SD D A SA

80. I like being around children
SD D A SA

81. I tend to eat whatever I want
SD D A SA

82. I don't feel guilty if I lose contact with a friend
SD D A SA

83. I feel uneasy around children
SD D A SA

84. I would be ashamed if someone thought I was mean
SD D A SA

Appendix C

Conformity to Masculine Norms Inventory

The following pages contain a series of statements about how people might think, feel or behave. The statements are designed to measure attitudes, beliefs, and behaviors associated with both traditional and non-traditional masculine gender roles.
Thinking about your own actions, feelings and beliefs, please indicate how much you personally agree or disagree with each statement by circling SD for "Strongly Disagree", D for "Disagree", A for "Agree", or SA for "Strongly agree" to the left of the statement. There are no right or wrong responses to the statements. You should give the responses that most accurately describe your personal actions, feelings and beliefs. It is best if you respond with your first impression when answering.

1 In general, I will do anything to win SD D A SA

2 If I could, I would frequently change sexual partners SD D A SA

3 I hate asking for help SD D A SA

4 I believe that violence is never justified SD D A SA

5 Being thought of as gay is not a bad thing SD D A SA

6 In general, I do not like risky situations SD D A SA

7 Winning is not my first priority SD D A SA

8 I enjoy taking risks SD D A SA

9 I am disgusted by any kind of violence SD D A SA

10 I ask for help when I need it SD D A SA

11 My work is the most important part of my life SD D A SA

12 I would only have sex if I was in a committed relationship SD D A SA

13 I bring up my feelings when talking to others SD D A SA

14 I would be furious if someone thought I was gay SD D A SA

15 I don't mind losing SD D A SA

16 I take risks SD D A SA

17 It would not bother me at all if someone thought I was gay SD D A SA

18 I never share my feelings SD D A SA

19 Sometimes violent action is necessary SD D A SA

20 In general, I control the women in my life SD D A SA

21 I would feel good if I had many sexual partners SD D A SA

22 It is important for me to win SD D A SA

23 I don't like giving all my attention to work SD D A SA

24 It would be awful if people thought I was gay SD D A SA

25 I like to talk about my feelings SD D A SA

26 I never ask for help SD D A SA

27 More often than not, losing does not bother me SD D A SA

28 I frequently put myself in risky situations SD D A SA

29 Women should be subservient to men SD D A SA

30 I am willing to get into a physical fight if necessary SD D A SA

31 I feel good when work is my first priority SD D A SA

32 I tend to keep my feelings to myself SD D A SA

33 Winning is not important to me SD D A SA

34 Violence is almost never justified SD D A SA

35 I am happiest when I'm risking danger SD D A SA

36 It would be enjoyable to date more than one person at a time SD D A SA

37 I would feel uncomfortable if someone thought I was gay SD D A SA

38 I am not ashamed to ask for help SD D A SA

39 Work comes first SD D A SA

40 I tend to share my feelings SD D A SA

41 No matter what the situation I would never act violently SD D A SA

42 Things tend to be better when men are in charge SD D A SA

43 It bothers me when I have to ask for help SD D A SA

44 I love it when men are in charge of women SD D A SA

45 I hate it when people ask me to talk about my feelings SD D A SA

46 I try to avoid being perceived as gay SD D A SA

Appendix D
Relational Health Indices

RHI- Spouse

The following questions pertain to your relationship with your spouse.

Next to each statement below, please indicate the number that best applies to your relationship with your spouse.

1. Even when I have difficult things to say, I can be honest and real with my spouse.

1 Never
2 Seldom
3 Sometimes
4 Often
5 Always

2. After a conversation with my spouse, I feel uplifted.

1 Never
2 Seldom
3 Sometimes
4 Often
5 Always

3. The more time I spend with my spouse, the closer I feel to him/her.

1 Never
2 Seldom
3 Sometimes
4 Often
5 Always

4. I feel understood by my spouse.

1 Never
2 Seldom
3 Sometimes
4 Often
5 Always

5. It is important to my spouse and I to make our relationship grow.

1 Never
2 Seldom

3 Sometimes
4 Often
5 Always

6. My relationship with my spouse inspires me to seek close relationships, such as with other friends.

1 Never
2 Seldom
3 Sometimes
4 Often
5 Always

7. I am uncomfortable sharing my deepest feelings and thoughts with my spouse.

1 Never
2 Seldom
3 Sometimes
4 Often
5 Always

8. I have a greater sense of self-worth through my relationship with my spouse.

1 Never
2 Seldom
3 Sometimes
4 Often
5 Always

9. I feel positively changed by my spouse.

1 Never
2 Seldom
3 Sometimes
4 Often
5 Always

10. I can tell my spouse when he/she has hurt my feelings.

1 Never
2 Seldom
3 Sometimes
4 Often
5 Always

11. My relationship with my spouse causes me to grow in important ways.

1 Never
2 Seldom
3 Sometimes
4 Often
5 Always

Appendix E

Fertility Problem Inventory

The following pages contain a series of statements about how people might think or feel about infertility. Please indicate how much you personally agree or disagree with each statement by circling SD for "Strongly Disagree", D for "Disagree", A for "Agree", or SA for "Strongly agree" to the left of the statement. There are no right or wrong responses to the statements. You should give the responses that most accurately describe your personal thoughts and feelings. It is best if you respond with your first impression when answering.

1. It doesn't bother me when I'm asked questions about children.

2. Family members don't seem to treat us any differently.

3. The holidays are especially difficult for me.

4. Family get-togethers are especially difficult for me.

5. I can't help comparing myself with friends who have children.

6. I still have lots in common with friends who have children.

7. I find it hard to spend time with friends who have young children.

8. When I see families with children I feel left out.

9. I feel like friends or family are leaving us behind.

10. It doesn't bother me when others talk about their children.

11. I find I've lost my enjoyment of sex because of the fertility problem.

12. I feel just as attractive to my partner as before.

13. I don't feel any different from other members of my sex.

14. I feel like I've failed at sex.

15. During sex, all I can think about is wanting a child.

16. Having sex is difficult because I don't want another disappointment.

17. If we miss a critical day to have sex, I can feel quite angry.

18. Sometimes I feel so much pressure, that having sex becomes difficult.

19. I can't show my partner how I feel because it will make him/her feel upset.

20. My partner doesn't understand the way the fertility problem affects me.

21. My partner and I work well together handling questions about our infertility.

22. It bothers me that my partner reacts differently to the problem.

23. My partner is quite disappointed with me.

24. My partner and I could talk more openly with each other about our fertility problem.

25. I couldn't imagine us ever separating because of this.

26. When we try to talk about our fertility problem, it seems to lead to an argument.

27. Because of infertility, I worry that my partner and I are drifting apart.

28. When we talk about our fertility problem, my partner seems comforted by my comments.

29. Couples without a child are just as happy as those with children.

30. I could see a number of advantages if we didn't have a child.

31. I could visualize a happy life together, without a child.

32. At times, I seriously wonder if I want a child.

33. Not having a child (or another child) would allow me time to do other satisfying things.

34. Having a child (or another child) is not necessary for my happiness.

35. We could have a long, happy relationship without a child.

36. There is a certain freedom without children that appeals to me.

37. Pregnancy and childbirth are the two most important events in a couple's relationship.

38. For me, being a parent is a more important goal than having a satisfying career.
39. My marriage needs a child.
40. It’s hard to feel like a true adult until you have a child.
41. A future without a child would frighten me.
42. I feel empty because of our fertility problem.
43. Having a child is not the major focus of my life.
44. I have often felt that I was born to be a parent.
45. As long as I can remember, I’ve wanted to be a parent.
46. I will do just about anything to have a child.

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