AN INVESTIGATION OF SOURCES OF WOMEN’S INFERTILITY-SPECIFIC DISTRESS AND WELL-BEING

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AN INVESTIGATION OF SOURCES OF WOMEN’S INFERTILITY-SPECIFIC DISTRESS AND WELL-BEING

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Dissertation

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ABSTRACT

Infertility is a medical issue that affects approximately one-fifth of the population and represents a major life crisis for many individuals and couples. Yet, little is known about these issues in the field of counseling psychology, despite our focus on normal development and adjustment. Given the likelihood of encountering persons with infertility in clinical work, it is imperative that counseling psychologists become more aware of the issues facing these individuals. Previous research suggested that gender ideologies may be related to the distress individuals experience due to infertility, but research aimed at understanding this relationship is lacking. The motherhood mandate, as discussed by Nancy Russo in 1976, provides a theoretical understanding of the link between gender ideologies and infertility-related distress. The motherhood mandate may serve to inform women’s primary appraisal (Lazarus & Folkman, 1984) of their experience of infertility, such that if motherhood is linked to attainment of an adult female identity, the inability to have a child may contribute to women’s distress and lesser well-being. The current study, then, aimed to increase knowledge of infertility and the distress experienced due to infertility through examination of the socialization practices that may shape women’s desires to have children, their appraisals of infertility, and the distress that may result when infertility blocks fulfillment of a desired social role. Using an online sampling method, 185 women with infertility completed the
demographic and reproductive health questionnaire, the Satisfaction with Life Scale (SWLS), the Infertility-Specific Distress scale (ISD), the Appraisal of Life Events scale (ALE), and the Conformity to Feminine Norms Inventory (CFNI). Results indicated that higher adherence to traditional gender ideologies is related to higher threat and loss appraisals, and the relationship between traditional gender ideologies and infertility-specific distress is fully mediated by threat and loss appraisals. Lower general well-being is related to higher threat and loss appraisals and higher infertility-specific distress. Limitations to the current study, implications for practice, and future research directions are discussed.
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I have felt blessed over the past five years to have a cohort that has been capable of maintaining support and encouragement regardless of the circumstances. In addition to these four, I am thankful to my fellow students and interns, who have been friends as well as colleagues. I am also appreciative of the significant support provided by my clinical supervisors, with particular regard to Drs. Tandy McClung, Donna McDonald, and Lynda Birckhead Hurley.

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td></td>
<td>ix</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td></td>
<td>xi</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. STATEMENT OF THE PROBLEM</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Societal Views of Infertility and Parenthood</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Women and Infertility</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Summary</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>II. REVIEW OF THE LITERATURE</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Gender as Social Construction</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>The Motherhood Mandate</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Mandated Motherhood and Infertility</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Gendered Experiences of Infertility</td>
<td></td>
<td>33</td>
</tr>
<tr>
<td>Infertility as a Stressor</td>
<td></td>
<td>43</td>
</tr>
<tr>
<td>Summary and Hypotheses</td>
<td></td>
<td>53</td>
</tr>
<tr>
<td>III. RESEARCH METHOD</td>
<td></td>
<td>58</td>
</tr>
<tr>
<td>Participants</td>
<td></td>
<td>58</td>
</tr>
<tr>
<td>Measures</td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>Procedures</td>
<td></td>
<td>78</td>
</tr>
</tbody>
</table>
Data Analysis .......................................................................................................................... 79

IV. RESULTS .......................................................................................................................... 83
Data Screening ........................................................................................................................ 83
Descriptive Statistics ............................................................................................................. 85
Covariates .............................................................................................................................. 88
Tests of the Hypotheses ......................................................................................................... 91
Exploratory Analyses ............................................................................................................. 106
Summary of Results .............................................................................................................. 125

V. DISCUSSION ....................................................................................................................... 128
Stress and Coping Model Applied to Infertility ................................................................. 130
Motherhood Mandate and Infertility .................................................................................. 134
Limitations ............................................................................................................................ 138
Implications for Future Research ...................................................................................... 141
Implications for Practice ..................................................................................................... 143

REFERENCES ....................................................................................................................... 147

APPENDICES ......................................................................................................................... 158

APPENDIX A. STUDY QUESTIONNAIRES ........................................................................ 159

APPENDIX B. PERMISSION FORM FOR CONFORMITY TO FEMININE NORMS INVENTORY .............................................................................................................. 171

APPENDIX C. IRB APPROVAL FORM ................................................................................. 176

APPENDIX D. STEPWISE REGRESSION RESULTS .......................................................... 179

APPENDIX E. NONSIGNIFICANT MEDIATION ANALYSES ........................................... 180
<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Correlations between predictors, criterion variables, and covariates (N=185)</td>
<td>90</td>
</tr>
<tr>
<td>2. Summary of regression analyses for models predicting Infertility-Specific Distress (ISD) in Hypothesis One (N=185)</td>
<td>93</td>
</tr>
<tr>
<td>3. Summary of regression analyses for models predicting Satisfaction with Life (SWLS) in Hypothesis Two (N=185)</td>
<td>96</td>
</tr>
<tr>
<td>4. Summary of regression analyses for models predicting Infertility-Specific Distress (ISD) and Satisfaction with Life Scale (SWLS) in Hypothesis Three (N=185)</td>
<td>98</td>
</tr>
<tr>
<td>5. Summary of regression analyses for mediation Hypothesis 4b (N=185)</td>
<td>101</td>
</tr>
<tr>
<td>6. Summary of regression analyses for mediation Hypothesis 4d (N=185)</td>
<td>103</td>
</tr>
<tr>
<td>7. Summary of regression analyses predicting Satisfaction with Life Scale (SWLS) in Hypothesis Five (N=185)</td>
<td>105</td>
</tr>
<tr>
<td>8. Summary of exploratory regression analyses for Hypothesis Three (N=185)</td>
<td>107</td>
</tr>
<tr>
<td>9. Summary of exploratory regression analyses for mediation Hypothesis 4a (N=185)</td>
<td>109</td>
</tr>
<tr>
<td>10. Summary of exploratory regression analyses for mediation Hypothesis 4c (N=185)</td>
<td>110</td>
</tr>
<tr>
<td>11. Summary of exploratory regression analyses for mediation Hypothesis 4e (N=185)</td>
<td>111</td>
</tr>
<tr>
<td>12. Summary of exploratory regression analyses for mediation Hypothesis 4b (N=185)</td>
<td>113</td>
</tr>
<tr>
<td>13. Summary of exploratory regression analyses for mediation Hypothesis 4d (N=185)</td>
<td>115</td>
</tr>
</tbody>
</table>
14. Summary of exploratory regression analyses for mediation
   Hypothesis 4f (N=185) ..........................................................117

15. Results of first exploratory path analysis (N=185) ..................................121

16. Results of second exploratory path analysis (N=185) .............................123

17. Summary of stepwise regression analyses to identify covariates (N=185) ....179

18. Summary of regression analyses for mediation Hypothesis 4a (N=185) ........180

19. Summary of regression analyses for mediation Hypothesis 4c (N=185) ........181

20. Summary of regression analyses for mediation Hypothesis 4e (N=185) ........182

21. Summary of regression analyses for mediation Hypothesis 4f (N=185) .........183
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conceptual Model of Sources of Distress and Well-Being among Women with Infertility</td>
<td>57</td>
</tr>
<tr>
<td>2. First Exploratory Path Analysis (N=185)</td>
<td>119</td>
</tr>
<tr>
<td>3. Second Exploratory Path Analysis (N=185)</td>
<td>124</td>
</tr>
</tbody>
</table>
CHAPTER I
STATEMENT OF THE PROBLEM

Infertility is defined as the inability to become pregnant after one year of regular intercourse or insemination without contraception, or the inability to carry a pregnancy to term (Born, 1989; Holbrook, 1990; Jordan & Revenson, 1999; Link & Darling, 1986; McEwan, Costello, & Taylor, 1987; Morokoff & Calderone, 1994; Notman & Nadelson, 1983; Olshansky, 2003; Read, 1995; Romeo, Clapp, Raugust, Bergman, & Pincus, 1998; Shapiro, 1993). One year is used as the cutoff for diagnosing infertility as 80% of sexually active women will become pregnant after one year of unprotected intercourse (Gerrity, 2001). For women over 35 years of age, diagnosis and treatment for infertility can be considered after six months of unprotected intercourse (Olshansky).

The inability to conceive can take the form of primary or secondary infertility. Primary infertility means having the inability to conceive at the present time, with no known history of conception (Berk & Shapiro, 1984; Liebmann-Smith, 1987; McEwan, Costello, & Taylor, 1987; Morokoff & Calderone, 1994; Read, 1995; Robinson & Stewart, 1995; Shapiro, 1993). Secondary infertility occurs when a woman has been able to conceive in the past, but is not able to do so currently. This can include women with histories of miscarriage, ectopic pregnancy, or medically-necessary abortion (Berk &
Shapiro; Liebmann-Smith; McEwan, Costello, & Taylor; Morokoff & Calderone; Robinson & Stewart; Shapiro). More than twice as many women experiencing infertility fit the description for secondary as opposed to primary infertility. The concern over experiencing secondary infertility is often misunderstood by family and friends of women who have children, due to the myth that a woman who has given birth will always be fertile, and because they are viewed as already having what they desire (Greenfeld, 1997; Shapiro).

Letherby (2002) distinguished between infertility and involuntary childlessness. She stated that infertility can occur biologically for women who are either unconcerned with having children, or already fill roles as social mothers. In this description, a woman may experience infertility with or without intention to have children. Involuntary childlessness refers to the desire to have a child but the inability to do so for biological, social, or financial reasons (e.g., having no partner, lacking finances to raise a child, carrying a genetic disease, or loss of child). Those who are involuntarily childless also do not have exposure to social mothering opportunities, which are parenting opportunities that are of a nonbiological nature, including foster, adoptive, and step parenting.

The experience of involuntary childlessness merits attention as childbearing and parenting are considered by U.S. society to be normalized aspects of adult development and motherhood is regarded by many as a rite of passage to adulthood (Koropecsky-j-Cox & Pendell, 2007). Most couples expect children to be part of marital life (Koropecsky-j-Cox & Pendell; Liebmann-Smith, 1987; Ulbrich, Coyle, & Llabre, 1990). During the 1980s, over 90% of married couples in the United States had at least one child (Link &
Darling, 1986) and recent data from the National Survey of Family Growth indicated that 77% of childless men and women between the ages of 15 and 44 intend to have children (Martinez, Chandra, Abma, Jones, & Mosher, 2006). Yet, nearly 10% of women experience a reproductive loss each year, whether that is miscarriage, stillbirth, medically-necessary abortion, or infertility (Leon, 1996). Estimates suggest that between 2 and 10 million people experience infertility in the U.S. each year (Gerrity, 2001; Meyer, 1999). Infertility affects between 4 and 10 million married people of childbearing age in the U.S. (Gibson & Meyers, 2002; Jordan & Revenson, 1999; Romeo, Clapp, Raugust, Bergman, & Pincus, 1998; Rosenthal & Goldfarb, 1997), and between 60 and 80 million people worldwide (van den Akker, 2001a).

Though infertility has been conceptualized as a woman’s problem, decades of medical evidence have indicated men and women are affected by infertility at approximately the same rate (Liebmann-Smith, 1987; Rosenthal & Goldfarb, 1997). Approximately 70 to 80% of cases are attributable to either the male or female partner and about 10% of cases are attributable to both partners (Jordan & Revenson, 1999; Meyer, 1999; Santona & Zavattini, 2005). Despite medical advances in the ability to determine causal factors, infertility remains unexplained in the remainder of cases (Jordan & Revenson; Meyer; Romeo, Clapp, Raugust, Bergman, & Pincus, 1998).

For women who desire children, but are unable to fulfill this desire, infertility is viewed as a major life disruption (Exley & Letherby, 2001). Individuals are likely to experience increased psychological distress and lower well-being due to ongoing lack of
control, unpredictability, and chronicity of infertility (Exley & Letherby; Herz, 1989; Jordan & Revenson, 1999).

In particular, social pressures for biological parenthood are suggested to be greater for women than for men, and those who are infertile may experience social criticism for their inability to fulfill this social role (Kikendall, 1994). Further, social constructions of gender typically include nurturing and mothering qualities as components of the female gender identity (Deaux & Kite, 1993). For those women unable to bear children, then, some may experience psychological distress and difficulties in coping due to a perceived inability to fulfill their prescribed gender role.

This “motherhood mandate” (Russo 1976; 1979) suggests that the primary goal for women in U.S. society is to bear and raise children. It further suggests that those women who do not do so are perceived negatively by society. Motherhood is constructed as the necessary step for women to achieve adulthood, and is cognitively linked to feminine identity. Brothers and Maddux (2003) reported that linking is a process through which concepts are cognitively associated with goals. In the case of the motherhood mandate, motherhood may be linked with adulthood and femininity. For women who link the concept of motherhood to adult female identity, then, infertility may be viewed as an obstacle to achieving a desired goal. If a woman adheres strongly to the motherhood mandate, she may be more likely to appraise infertility as a threat or loss to a desired goal, which in turn may increase psychological distress and decrease subjective well-being. Should she not view motherhood as a necessary step in attaining an adult female
identity, she may be more likely to view infertility as a challenge and therefore experience higher well-being and lower psychological distress.

Despite repeated discussions in the literature suggesting a connection between gender ideologies and infertility-related distress (e.g., Baumann, 1999; Berk & Shapiro, 1984; Leon, 1990; Liebmann-Smith, 1987; Morokoff & Calderone, 1994; Olshansky, 2003; Raphael-Leff, 1992; Robinson & Stewart, 1995), research has been lacking to provide support for this connection. Qualitative research suggests that infertility may be related to gender role conflict, but quantitative data and discussion of the mechanisms for this relationship are absent. This study seeks to fill a gap in the psychological literature on infertility by exploring the question of whether greater adherence to traditional feminine gender role ideology is related to greater distress in women who are infertile. It explores whether women who perceive motherhood as necessary to fulfillment of their adult female gender role identity are more distressed when faced with infertility.

Societal Views of Infertility and Parenthood

Though discussion and research about infertility have increased in the past century, infertility is still at times mistakenly viewed as a woman’s problem (Greenfield, 1997; Romeo, Clapp, Raugust, Bergman, & Pincus, 1998). Infertility research before the 1980s described women with infertility as neurotic, immature, dominating, or masculine (Born, 1989). The psychogenic etiology of infertility was the focus of this early research; it was assumed that infertility resulted from psychological crises, such as neurosis, unconscious conflicts, or rejection of the female sex-role (Blyth, 1990; Born; Liebmann-
With advances in the ability of medical technology to diagnose causes of infertility, the assumption of psychogenic infertility has become a less prominent, but by no means nonexistent, concept in the literature (Greenfield; Noy-Sharav, 2002; Read). During the 1980s, researchers began to theorize that infertility is a source of stress, rather than stress causing women to experience infertility. According to studies, stress included experiencing alienation from the fertile culture, anxiety and tension, and as a higher tension-producing experience than the death of one’s partner (Born; Noy-Sharav).

Within the past two decades, however, researchers have focused on infertility as a crisis in normal lifespan development (Eunpu, 1995; Miller et al., 1998). This research indicates that the experience of infertility may be linked to higher rates of emotional and medical health problems and not to preexisting psychopathology (Bergart, 2003; Greenfeld, 1997; Hansell et al., 1998; Jordan & Revenson, 1999). Clearly, continued research is needed to understand the relationship between infertility and well-being.

Societal views of infertility must be considered within the context of social norms for parenthood. Biological parenthood is viewed by U.S. society as one of the most important developmental goals, and a necessary part of marital relationships (Daniluk & Hurtig-Mitchell, 2003; Lampman & Dowling-Guyer, 1995; Link & Darling, 1986; Morse & Dennerstein, 1985; van den Akker, 2001b). In her review of literature on adoptive and birth fathers, Carol Baumann suggested that many view parenthood as the means of gaining fulfillment, social acceptance, filling one’s gender role, psychological adjustment, and necessary for status within one’s religion and as an adult (Baumann,
1999). The inability to fill this goal is viewed by many as a sign of marital unhappiness, psychological distress, inadequate psychosocial development, and lack of a capacity for caregiving (Blyth, 1990; Jordan & Revenson, 1999; Miller, Mischel, Schroeder, Buzaglo, Hurley, Schreiber, & Mangan, 1998; Morse & Dennerstein). This can instill a sense of minority status, low self-esteem, anger, and frustration in those unable to meet society’s goals for parenting (Link & Darling).

Negative views can easily be seen in the words that are used synonymously with infertility: barren, unproductive, wasted, desolate, and being ineffectual (Leon, 1996; Read, 1995). In historical and religious accounts, fertility is seen as a gift from deities, while infertility is a curse or a result of sin (Berk & Shapiro, 1984). Infertility continues to be viewed by many as a disability, and as a result is often kept secret to avoid social stigma (Cudmore, 2005; van den Akker, 2001b). Families without children, regardless of the reasons, are viewed more negatively than are those with children (Lampman & Dowling-Guyer, 1995). Individuals with infertility are likely to be viewed as having chosen to be without children, as they are unlikely to share their infertility status openly. As a result, they often are viewed similarly to people who are voluntarily without children (LaMastro, 2001; Robinson & Stewart, 1995). Women who have experienced infertility at some point in their lives often indicate having experienced negative attributions from U.S. society due to nonmotherhood (Letherby, 2002). Whether by choice or infertility, it appears that women who do not have children tend to be viewed more negatively than those with children.
Women and Infertility

Though both male and female partners are believed to experience distress due to infertility, they appear to experience divergent attitudes, roles, and feelings within the process of diagnosis and medical treatment. Women tend to face more diagnostic and treatment procedures than do men, whose testing is less expensive, invasive, and dangerous than that of women (Daniluk & Fluker, 1995; Jordan & Revenson, 1999; Read, 1995; Romeo, Clapp, Raugust, Bergman, & Pincus, 1998). Despite facing more risk, women tend to be more willing to seek medical treatment and remain committed to it throughout the process (Edelmann & Connolly, 2000; Jordan & Revenson). Women are generally the first to recognize a problem, and often feel they must convince their male partner of the issue (Liebmann-Smith, 1987). About one-third of female infertility patients report experiencing clinically significant psychological distress, but only 1% of male infertility patients report that level of distress (McEwan, Costello, & Taylor, 1987).

There is an obvious disparity, then, between the experiences of marital partners seeking treatment for infertility: women are more active than their male partners in seeking medical treatment for infertility (Daniluk & Fluker, 1995; Jordan & Revenson, 1999; Liebmann-Smith, 1987; Read, 1995; Romeo, Clapp, Raugust, Bergman, & Pincus, 1998), women with infertility tend to experience greater distress than do men with infertility (Brand, 1989; Greil, 1997; Kikendall, 1994; Newton & Houle, 1993), and are more likely to know in the early stages that there is a problem (Liebmann-Smith). This disparity may derive in part from typical social constructions of the feminine gender identity as it is posited to include mothering qualities (Deaux & Kite, 1993).
Summary

Beyond the medical aspects of infertility, then, women appear to experience significant social and personal pressures for motherhood, and these may contribute to distress and interfere with well-being among women who are unable to have children (Kikendall, 1994). Indeed, some conceptual literature has suggested a connection between gender ideologies and infertility-related distress (e.g., Baumann, 1999; Berk & Shapiro, 1984; Leon, 1990; Liebmann-Smith, 1987; Morokoff & Calderone, 1994; Olshansky, 2003; Raphael-Leff, 1992; Robinson & Stewart, 1995), but research has been lacking to provide support for this connection and an understanding of its mechanism. In order to better understand the role that gender plays in infertility-related distress, this study focuses on gender role ideology and cognitive appraisal of infertility as they relate to the well-being of women experiencing infertility.
Laparoscopic surgeon Leonard Shlain (2003) writes, “The uncertainty of conception, both for those who yearn for it and those who don’t, has been among men’s and women’s most consistent causes of stress, anguish, and anxiety down through the generations” (p. 51). Though research regarding infertility-related distress has documented some individual differences, there is little doubt that the majority of adults expect to have children at some point in their lives (Daniluk & Hurtig-Mitchell, 2003; Lampman & Dowling-Guyer, 1995; McQuillan, Greil, White, & Jacob, 2003; van den Akker, 2001b).

For many, having children is viewed as a central part of identity, life meaning, social integration and identification as an adult, and few men or women want or expect to be without children (McQuillan et al., 2003). Some would argue that the desire for children is a biological imperative; however, evidence tends to point toward parenthood as a response to social rules and expectations (Jordan & Revenson, 1999; Mahowold, 2000; McQuillan et al.). In fact, some evolutionary accounts suggest that women’s reproductive cycles developed as a response to the threat to personal survival that bearing children poses for women, in effect making it more difficult for women to conceive so as
to minimize the threat of childbirth (Shlain, 2003). If such evidence is true, it seems likely that the desire to have children has its origin in social attitudes and values.

Greil (1997) stated in his critical review of research on infertility and psychological distress that women with infertility experience lower self-esteem and life satisfaction, more depression and self-blame for infertility, higher avoidance of children and pregnant women, and are more likely to seek treatment and information about infertility than are men with infertility. Women without children also appear to experience more criticism and are viewed as more psychologically and physically unfit than are men without children (Kikendall, 1994). It has been shown that women experience more intense emotional reactions initially and take longer coming to terms with infertility than do their male partners (Brand, 1989).

Kikendall (1994) stated that women’s lives might be more disrupted by infertility because of the pressure U.S. society places on the role of motherhood. Women have experienced greater social criticism regarding infertility in that the inability to conceive historically has been seen as a result of psychological maladjustment on the part of women. Given that there is no evidence of a biological drive to parent and that men appear to experience less distress if unable to parent, the distress that women experience due to infertility may be better accounted for by social factors such as gender and gender identity. Examining the social constructions of gender within our society and exploring the role of appraisals of motherhood as a necessary condition for adult female identity may be useful in understanding the experience of infertility. Thus, a comprehensive review of literature regarding social construction of gender, the motherhood mandate,
gender identity and infertility, and coping and appraisals in the infertility literature is offered in this chapter.

Gender as Social Construction

Social constructionism posits that gender is a collection of behaviors in response to social interactions. Rather than gender being a personal trait, it is enacted due to situational demands (Mansfield, Addis, & Mahalik, 2003). Differences between masculine and feminine behavior are assumed to change according to characteristics of situations and persons within situations, such as race, ethnicity, class, sexual orientation, and women’s status within the culture (Mansfield, Addis, & Mahalik; Russo & Green, 1993). Gender as a social construct is the idea that differences between men and women are perceptions rather than reflections of reality (Russo & Green).

Eagly and Diekman (2003) stated that the sex differences seen across situations and cultures are dependent on the contexts and norms within those contexts rather than biologically based differences between men and women. Eagly’s social role theory supposes that stereotypical gender differences are due to women and men taking part in different roles within their society. We behave in accordance with our social roles and those roles reinforce gender stereotypes: women acting in nurturing ways because of the stereotypes regarding the role of ‘mother’ reinforces that women are nurturing (Deaux & Kite, 1993). Often these gender differences are due to structural sexism that seeks to reinforce the lower status of women within society (Katz, Boggiano, & Silver, 1993).
Gender and gender roles are forms of social norms, or rules that guide behavior in social contexts (Ludlow & Mahalik, 2001). Gender role norms are considered among the most constricted and strongest social norms and are learned through the process of gender role socialization (Sirin, McCready, & Mahalik, 2004). Gender role norms can range from traditional or complementary to flexible or egalitarian orientations (Mintz & Mahalik, 1996). Because men and women receive differential gender role socialization and experience divergent expectations for behavior, they typically identify as masculine or feminine. These terms are based on average group differences and may not reflect inborn characteristics of each sex or actual individual characteristics. Rather, they reflect situational and cultural norms that define behaviors as part of the masculine or feminine role (Russo & Green, 1993).

In viewing gender as a social construction, typical feminine gendered behavior may be seen as consistent with lower status within society (Rider, 2005). Women are taught behaviors that prepare them for social roles within the family and they are reinforced for engaging in such behaviors (Katz, Boggiano, & Silver, 1993). Because men hold power in society, the characteristics expected of women are defined by and reinforced by men. The feminine gender role includes nurturing and giving attention to relationships. In fulfilling this role, women are expected to behave in passive, dependent, and submissive manners (Rider). Women’s self-esteem and identity thus are dependent upon their relationships to others and the extent to which they fulfill their prescribed gender role (Katz et al.; Rider).
Ludlow and Mahalik (2001) described several ways by which individuals learn which norms operate in situations. Descriptive norms are those that are learned by observation of common behavior in a situation. Injunctive norms are explicit verbalizations of what is acceptable and unacceptable behavior. The third way to learn social norms is through cohesive norms, or observation of how popular or admired people act. Clear prescriptions and proscriptions for the behavior of girls and women exist in every culture, and usually include expectations to be quiet, obedient, caring, and to eventually be mothers (Reid & Paludi, 1993). Using Ludlow and Mahalik’s understanding, girls observe common behavior of women (descriptive norms) and behavior of admired women (cohesive norms), and are told how women are supposed to behave (injunctive norms). For example, girls are provided with toys such as dolls and kitchen toys that represent the expectation to be nurturing (Reid & Paludi). Women are socialized to have low self-esteem and the need for external approval, to value caring and connectedness, and to view children as highly important, and this often limits aspirations to marriage and motherhood (Newton & Houle, 1993; Russo, 1979).

The difficulty inherent in traditional gender roles and norms is that gender related characteristics are not dichotomous (Kaschak, 1992), but men and women are judged by their ability to fit neatly into gender roles (Mansfield, Addis, & Mahalik, 2003). The inability to conform, regardless of the reason, leaves individuals open to negative evaluation, humiliation, and possible violence (Kaschak; Sirin, McCreary, & Mahalik, 2004). Within these rigid norms is the expectation that women desire children, are
capable of conceiving and bearing children, and will do so to fulfill what is considered the central life goal of womanhood.

The Motherhood Mandate

In 1976, Nancy Russo defined the motherhood mandate as society’s emphasis on motherhood as the defining characteristic of adulthood for women. Russo wrote, “The centrality of motherhood to the definition of the adult female is characterized in the form of a mandate which requires having at least two children and raising them well (p. 143).” Historically, this mandate meant that women were expected to have as many children as possible. Leta Hollingworth first discussed a similar idea in 1916, labeling it as pronatalist ideology or a social device to promote childbearing (Russo, 1979). This link between womanhood and social pressures for motherhood has existed throughout much of human history (Kikendall, 1994). Socialization practices regarding gender and gender roles create strict prescriptions and proscriptions for behavior. For women, socialization has included pressures to have children and to devote attention to nurturing and raising the children. In particular, women are socialized for the roles of wife and mother (Russo & Green, 1993).

Russo (1976) discussed this motherhood mandate as a nonconscious ideology, stating that the idea of woman and mother are so intertwined for most people in our society that it is nearly impossible to think of one and not the other. For instance, Reid and Bing (2000) discussed an incident in which a young boy asked one of the authors if she was a girl or a mother, indicating that women are understood as a child or a mother.
The values and beliefs of society regarding womanhood include that the central goal of women’s lives is to bear and raise children and nurture children and husband, regardless of other life goals or activities such as work. Maternity has been considered equal to adulthood for women, such that there are no normative identities or developmental paths for women who are not mothers (Reid & Bing).

Russo (1979) suggested that the motherhood mandate is carried out through socialization practices such as access to role models. She suggested that most young children have limited access to female role models who are not mothers or who work outside of nurturing professions. Young children may encounter women who are not mothers but these women are often in professions such as teacher, day care worker, nurse, or other professions with the primary goal of caring for others. Many of these women also are or aspire to be wives and mothers. The images of women in the media also emphasize the centrality of motherhood to adulthood for females. Russo pointed out that in the mid-1970s, 90% of women over the age of 25 were married and 90% of married women had children. Etaugh (1995) reported that about 90% of women in 1993 were mothers, suggesting that the centrality of motherhood to womanhood had not changed much in two decades. The majority of women continue to have children currently (Rider, 2005).

The motherhood mandate as discussed by Russo (1979) indicated that women were expected to have between two and four children. Though both sons and daughters would fulfill the mandate, the preference was for sons to be born first and have the benefits of being first-born. Women who did not have children were considered to be
lacking. The mandate is supported by societal myths according to Russo. For instance, only children are sometimes viewed as “spoiled” to encourage women to seek to have more than one child and some believe that mothers should not work outside the home because it has a detrimental effect on children. Societal views of what it means to be a good mother suggest that mothers who stay home with their children are viewed more positively by others.

Elaborating further on the motherhood mandate, Seegmiller (1993) posited that pregnancy is considered a normal part of female development. Marriage and motherhood have been viewed societally as a woman’s entrance into adulthood and the fundamental part of her development (Anderson, Stewart, & Dimidjian, 1994; Zucker, 1999). Those who are without children, whether voluntarily or involuntarily, are viewed negatively by society. Women who do not have children are often labeled as not identifying with the feminine role, being immature, having unresolved psychological conflicts, and being unhealthy in general (Seegmiller).

Not only is motherhood considered equal to womanhood, but the qualities that define both motherhood and femininity are similar (McQuillan, Greil, White, & Jacob, 2003). Regardless of whether a woman is a mother or not, she is expected to like babies and children and to act in nurturing ways with them to fulfill her gender role and the motherhood mandate (Russo & Green, 1993). Women’s sense of self-esteem is based on concern and responsibility for men and children, being in relationships, providing the primary care for the relationship, and often subjugating one’s own needs to the needs of men, children, and relationships (Kaschak, 1992). Women are taught that communality is
central to their identity, which may include selflessness, concern for others, and desire for harmony in relationships. Communality is not only considered central to the feminine role, but is necessary to fulfilling the mandate of being a good mother (Gorman & Fritzsche, 2002). According to Rider (2005) a woman must not only be a mother, but is also expected to be entirely devoted to mothering and enjoy all aspects of her life as a mother.

In 1997, Riggs conducted a study of social perceptions of mothers, fathers, and employment status within the context of Eagly’s social role theory. One hundred seventeen introductory psychology students at a private college were assigned randomly to experimental conditions and asked to read a description of a target person and answer questions based on their perceptions of this individual. The target person differed by sex, employment status, and personal versus financial motivations for employment or nonemployment in each experimental condition. Once the participant read the description of the target person, she or he was asked to rate the person on a series of Likert scales indicating perception of the person’s communality and agency characteristics and overall approval of the target person.

When the target person was employed, participants tended to rate the person higher on agentic and lower on communal characteristics regardless of the target person’s sex. Male target individuals who were not employed in order to care for children received lower approval ratings whereas this behavior received high approval ratings for female target individuals. Riggs (1997) also suggested that these data indicated college students preferred for mothers of young children to quit jobs or take leaves of absence to stay at
home. These findings support that there is a continuing social mandate for fathers to provide financially and for mothers to provide nurturance within a family. Riggs’ sample was limited, however, as it was primarily White and all were introductory psychology students attending a private college. These findings may not replicate to people who have had more personal experience balancing work, family, and gender roles. In addition, data were not analyzed according to participant demographics and may overlook important differences between the perceptions of male and female participants.

Lampman and Dowling-Guyer (1995) conducted an earlier analogue study regarding views of individuals who do not have children. They had participants rate descriptions of couples who either did not have children due to infertility or voluntarily chose not to have children. The participants were 215 undergraduate students in introductory sociology and psychology courses at the University of Alaska, with a mean age of 25.1 years and a range of ages from 18 to 55. Participants were asked to read one of six scenarios describing a couple and the scenarios differed by child status and profession. Couples were either voluntarily childless, involuntarily childless, or had two children, and both the wife and husband were either professionally or nonprofessionally employed. The participants were asked to rate the husband and wife separately on 26 characteristics using seven-point bipolar scales (e.g., happy-unhappy and ambitious-unambitious), as well as rating the quality of the couple’s relationship on 12 items using a five-point scale. Participants also completed a demographic questionnaire that included information about age, sex, marital status, number of children, religious affiliation, and race/ethnicity.
During data analysis, Lampman and Dowling-Guyer formed several scales by averaging responses to items. These included drive, caring, emotional health, and relationship. The internal consistency for drive, caring, and relationship health were good, but the emotional health scale had low internal consistency.

The authors found that people who choose not to have children are viewed as lazy, insensitive, lonely, emotionally immature, career driven, selfish, unhappy, and dissatisfied in marriage. Although couples with infertility were not viewed as negatively as were voluntarily childless couples, it is worth noting that the only sign of infertility that society sees may be the lack of children. As a result, the fundamental attribution error may be applied to couples with infertility; they may be seen as having chosen to be without children, and if so would be subjected to all of the negative stereotypes of that status. The authors also found that the manipulation of professional versus nonprofessional jobs did not have an effect on any of the variables and indicated that the job types may not have been different enough to suggest varying levels of job-related stress. The measures used in this study were developed for the study, and the use of previously constructed measures or different measurement development strategies might have bolstered the researchers’ conclusions, particularly given the low internal consistency of the emotional health scale. Lampman and Dowling-Guyer (1995) provided some evidence to suggest that individuals without children are viewed more negatively by society than are those with children or with desires to have children.

LaMastro (2001) used a design similar to that of Lampman and Dowling-Guyer (1995), but had participants attribute the couple’s reasons for not having children.
Participants were 274 undergraduate students in introductory or lower-level psychology courses, the majority of whom were female and between the ages of 18 and 21. Ages ranged from 17 to 64 and nearly all of the participants were single and had no children. They were randomly assigned to read one of 24 short descriptions of a married couple.

The descriptions varied by number of children (zero, one, two, or six), man’s occupational status (successful corporate finance executive or construction worker), and woman’s occupational status (successful corporate human resources executive or legal secretary). They then rated the man and woman individually using items from Lampman and Dowling-Guyer along with eight additional items, as well as rating the couple using the relationship quality items from Lampman and Dowling-Guyer. In an effort to expand upon the previous study, LaMastro had participants provide attributions for the size of family. Participants first agreed or disagreed to statements about the voluntary or involuntary nature of the family size (i.e., the couple would have liked more children), then they responded to a series of statements concerning reasons the couple chose or did not choose their family size. Participants also provided information regarding their sex, age, marital status, number of children, and completed the Bem Sex Role Inventory.

An improvement over the work of Lampman and Dowling-Guyer was LaMastro’s (2001) use of exploratory factor analysis to create the scales used in data analysis. The resultant scales included interpersonal warmth, agency, and negative emotionality. These factor-based scales had acceptable internal consistency when used for the male partner, but when used for the female partner the negative emotionality factor had poor internal consistency and the marital satisfaction internal consistency was somewhat low. Results
nevertheless indicated that the fundamental attribution error was at work. Women without children were rated as less warm and more emotionally unstable, and men were viewed as less warm and agentic. Participants did not attribute lack of children to infertility, concerns about overpopulation, or lack of finances, though these were all given as options. Family size was viewed by participants as due to voluntary factors. Finally, sex role identification of the participant was unrelated to perceptions of the couple.

These results support the idea that individuals with infertility may receive negative attributions due to the private nature of reasons for childlessness. LaMastro (2001) also found that over 90% of female participants planned to become mothers and suggested that some of these women may do so to avoid negative attributions. This may present a limitation to the study, in that subsequent experience with difficulties regarding infertility, miscarriage, or financial limitations might change the participants’ perceptions of other individuals who do not have children. Another limitation is the relatively low internal consistency of two of the scales. Though LaMastro improved upon the Lampman and Dowling-Guyer (1995) study, the use of standardized measures may still be implicated.

A more recent analogue study was conducted by Koropecky-j-Cox, Romano, and Moras (2007) regarding perceptions of individuals without children. They gave hypothetical vignettes to 478 college students to assess their perceptions of childless couples related to their race, occupations, and reasons for childlessness. Participants were undergraduate students in liberal-arts courses in a public university, the majority of whom were single and one third of whom were identified as racial or ethnic minorities.
The couples described in the vignettes varied by race and the occupation of the wife and husband; all couples were heterosexual, married, and did not have children. Participants were asked to imagine they had just met the couple at a neighborhood function and to write their perceptions of the couple including reasons the couple does not have children. They were also asked to complete several structured measures regarding perceptions of the couple’s relationship, interpersonal warmth and agency of the husband and wife, and negative emotionality of the husband and wife. Koropecky-j-Cox and colleagues also gathered information about perceptions of the likelihood of infertility or choice in current childlessness, the likelihood that the couple would eventually have children, and demographic information about the participants, such as gender, race, age, religion, and current and future family characteristics.

Results were examined in regards to gender or race of the participants and they found that ratings of the vignette did not differ based on these variables. Ratings of the couples did not differ significantly based on occupation, perceived reasons for current childlessness, or race of the couple. Participants who believed the couple would eventually have children indicated higher warmth \( r = .21, p < .01 \) and drive \( r = .28, p < .001 \) for the wife, higher warmth \( r = .17, p < .05 \) for the husband, and a more positive couple relationship \( r = .15, p < .09 \). Both male and female participants also perceived childlessness as due to the wife’s choice more often than the husband’s choice, though data were not provided for this test. Though there were few significant relationships between participants’ perceptions of the couple and inferred reasons for current childlessness, couples who were viewed as temporarily rather than permanently childless
were rated more positively by participants. These results suggest that delayed parenthood is considered normative; however, not having children is not viewed positively.

One drawback to the Koropecky-j-Cox et al. (2007) study is that the rating scales were nonstandardized. The researchers took items from outcome measures used in earlier studies, particularly relying on measures developed in the study by LaMastro (2001). Most of these measures had adequate internal consistency, but using more widely accepted and validated measures of interpersonal warmth, agency, negative emotionality, and relationship quality could have provided greater support for the results. In addition, the negative emotionality measures had poor internal consistency and were based on only three or four items each. Another concern with this study is that the occupations originally included a professional and non-professional option for both husband and wife. Stockbroker was chosen for professional men and lawyer for professional women, and construction worker was used for non-professional men and nursing assistant for non-professional women. While the study was in progress, participants reported confusion regarding the education, skill, and income level of nursing assistants. The occupational category of secretary was added and the study was continued with three conditions for the occupational status of wife. This addition later in the study may have introduced unexpected differences between participants within each condition. Though several of the t-tests were significant, the authors also interpreted effect sizes that were marginally significant. Finally, the authors used the sex of the target as a proxy variable for gender.

Overall, this research generally supports the premise that women are viewed negatively by society if they do not have children, but the motherhood mandate also
addresses how women are supposed to enact the motherhood role. Russo (1979) further suggested that the motherhood mandate includes pressures to be a good mother, which is often incompatible with holding other roles in society such as working outside the home. Women who attempt to have multiple roles thus may experience role conflict regardless of how well they balance multiple roles (Russo). Subsequent research regarding perceptions of parental role satisfaction and childrearing outcomes suggests a mother who is satisfied by working is believed by others to have a detrimental effect on child outcomes, but a mother who works and is dissatisfied is believed to have positive effects on child outcomes, regardless of contrary findings in parenting research.

Stereotypes regarding mothers and their commitment to motherhood were examined by Gorman and Fritzche (2002) using a sample of 207 undergraduate students. The hypotheses for the study were based on Russo’s (1976) motherhood mandate and Eagly and Steffen’s (1984) theory of gender stereotypes, and results were discussed within this context. Participants were assigned randomly to read one of six descriptions of a mother whose employment and childrearing patterns were varied along with her satisfaction with the maternal role. The target woman chose to discontinue employment following the birth of her child, to interrupt employment until the child entered school or to continue employment after maternity leave, and was described as satisfied or dissatisfied with the arrangement. Participants were asked to rate their perceptions of the target woman’s communality on a measure adapted from the Personal Attributes Questionnaire and commitment to motherhood using three items adapted from previous work by Bridges and Etaugh (1995).
Gorman and Fritzche found that participants rated the mother who discontinued or interrupted employment as more committed to motherhood than the continuously employed mother \([F(2, 186) = 8.67, p < .001]\), particularly when she was described as satisfied with her decision to discontinue employment \((r = .5)\). The mother who chose to continue employment was rated more committed to motherhood \((r = .29)\) when she was dissatisfied with working outside of the home rather than satisfied with working. The results were interpreted as providing support for stereotypes about good mothers, particularly that a good mother either chooses to be home with her children or regrets her employment.

This study may be limited, however, in its application to non-student populations, as students have not yet made choices regarding employment and parenting arrangements. In addition, the rating measures both had low internal consistency reliability. The commitment to motherhood measure had a coefficient alpha of .68. The perceived communality measure had a Cronbach’s coefficient alpha of .70, which was much lower with this sample than was observed in previous studies and it was also found to have a different factor structure, indicating that it may not have been measuring the construct as the researchers had expected. Despite these limitations, the study provides some support for stereotypes regarding motherhood and the motherhood mandate.

Central as well to the motherhood mandate is that all married couples should want to reproduce and are able to do so (Zucker, 1999). Having a family consisting of a man, woman, and biological children is considered part of the traditional U.S. societal definition of a healthy life (Anderson, Stewart, & Dimidjian, 1994). Adults experience
pressure to have children from parents and friends, particularly those who are parents themselves. Aside from these explicit pressures, some authors indicate that the desire to have children has to do with wanting to carry on a family name, being viewed by others as an adult, fulfilling beliefs about morally correct lifestyles, experiencing the joys of having a family (Rider, 2005), or to meet the demands of society or their significant other (Kikendall, 1994).

Sociocultural pressures to bear children are reflected in a study by Letherby (2002), in which she interviewed women between the ages of 20 and 70 who dealt with infertility during their lives. Letherby obtained a self-selected group of women who defined themselves as involuntarily childless and/or infertile currently or at some time in the past through advertising in national and local newspapers, support group magazines, university publications, and women’s magazines. She interviewed 24 women in person and corresponded through writing with another 41 women who were either inaccessible for interviews or preferred to write rather than talk about their experiences.

The group included both women who did not have children due to non-medical reasons and those for whom medical factors were either diagnosed in the male partner, self, both, or were unexplained. Twenty of the 65 women had children, whether biological, foster, adoptive, or stepchildren. Though the group varied significantly by age, parenting status, and reasons for current or past infertility, the group was mostly white, heterosexual, and of higher socioeconomic status. Letherby stated that she employed grounded theory techniques, but also indicated that the study was undertaken with feminist principles in mind and therefore was not entirely without theoretical basis. The
article did not include any information about the interviews or use of any standardized protocol, data analysis, or use of any specific approaches from grounded theory. Based on these interviews, she suggested that motherhood is valued rhetorically, but has little social or material value, aside from avoiding the negative attributions regarding nonmotherhood.

Due to the limitations in description of methodology, it is difficult to determine how Letherby came to this conclusion and how her biases may affect it. In addition, the participants were wide-ranging on a number of demographic and fertility variables and qualitative methodology is best suited to purposive selection or selection of individuals who exemplify a particular experience and collecting saturated descriptions of this experience (Polkinghorne, 2005). As these individuals represented various experiences of infertility, it is difficult to view the experiences described in this study as exemplifying any particular experience and instead may overlook differences between these individual experiences.

In a report that more clearly delineated their methods, Daniluk and Hurtig-Mitchell (2003) performed a qualitative study of the experiences of couples with infertility who adopt children. The participants included 39 heterosexual couples from four geographical regions who had experienced infertility and successfully adopted a child within the past five years. They were between the ages of 27 and 46, with an average of seven years of infertility treatment and four years to adopt. Most of the participants were European Americans from higher socioeconomic statuses. Daniluk and Hurtig-Mitchell interviewed spouses using a narrative approach, with about 90 minutes to
two hours of unstructured interview time. They reported difficulty in getting male partners to participate in the interviews. All interviews were transcribed verbatim and independently analyzed using phenomenological data analysis, and this included use of bracketed biases, collaboration for themes following analysis, and review and validation by four randomly selected couples from the study and one from outside of the study.

Three major themes were found and described in detail in this study. The first theme included revisioning the family. During this time, the couples had to restructure their ideas about what a family would be for them and to deal with issues such as grieving for the loss of having biological children and uncertainty about the adoption process. The next theme regarded the process of adoption and the sense of powerlessness, frustration, and loss of hope that paralleled many experiences during the infertility treatment process. The final theme had to do with parenting the adopted child and experiencing mixed emotions. Though the couples indicated a sense of accomplishment and optimism, many also indicated lacking support and validation from society and struggling with issues of legitimacy and insensitivity about adoptive parenting. The authors indicated that these couples experienced stigma from society due to violation of norms regarding biological parenthood and that couples experiencing these issues may benefit from counseling to explore the social importance of having a biological tie to children.

The research on views of women who do not have children, then, is consistent with the writing of Etaugh (1993) who suggested that women who do not or cannot have children may experience significant negative perceptions by society and individuals.
Often women without children are viewed as selfish, immature, unhappy, overly career focused, or unnatural. This is in accord with theoretical work regarding the motherhood mandate that states marriage and motherhood are treated as such mandatory aspects of female life that women who deviate from this path are seen as unfulfilled (Reid & Bing, 2000). Women who do not want children are believed to have detached the closely entangled concepts of motherhood, female identity, adulthood, and life satisfaction (Anderson, Stewart, & Dimidjian, 1994). The literature regarding connections between these constructs, however, is theoretical in nature and is in need of empirical research to support or deny the claims.

Mandated Motherhood and Infertility

Infertility represents a deviation from the motherhood mandate, albeit an involuntary one. Though women who experience infertility do not choose to diverge from the mandate, they often experience the difficulties inherent in breaking with tradition. For example, despite desire and attempts to have children, women with infertility are viewed as maladjusted (Zucker, 1999). Especially for women who have internalized the motherhood mandate, then, infertility is likely a major life crisis that threatens their identity (Russo & Green, 1993). Previous literature on infertility has suggested a link between the distress women experience due to infertility and gender socialization (e.g., Allison, 1979; Daniluk, 1996; Edelmann, Connolly, & Robson 1989), but research has not explicitly examined this link. The motherhood mandate may provide a useful framework for understanding the relationship.
Over two decades ago, Crowe (1985) examined women’s motivations for seeking in vitro fertilization (IVF). She conducted interviews with women in the In-Vitro Fertilization (IVF) program at the Royal North Shore Hospital in Sydney, Australia using an interview schedule focused on motherhood, infertility, and women’s experiences in the IVF program. Aside from this information, Crowe did not provide any information about her participants, selection of her participants, the interview schedule, or how data were analyzed. Crowe reported that women who choose to undergo IVF have to first view motherhood as desirable. Women in this study not only valued motherhood, but considered motherhood and marriage to be inseparable conditions. They often defined ‘family’ as a heterosexual couple with children, and a couple without children was not considered a family. The women in this study also tended to see femininity and being female as synonymous, with femininity defined as being emotional, mothering, and nurturing within a support role.

The primary reason women in this study chose IVF was to adhere to social ideologies regarding motherhood according to Crowe (1985). In a society in which women’s roles are primarily childbearing and childraising, the inability to reproduce for these women resulted in feeling social rejection, isolation, negative body image, and that they were lacking in feminine qualities. Though the choice of IVF was risky in terms of physical, emotional, and financial consequences, women in Crowe’s study viewed the choice as between a negative experience with IVF or a negative experience with society. Though this study did not explicitly address gender socialization, Crowe did shed
light on the social experience of infertility. The lack of description of the methods is a major limitation to this study as it is difficult to determine how the conclusions were drawn.

Because infertility is often attributed to a definite medical cause (Romeo, Clapp, Raugust, Bergman, & Pincus, 1998; Rosenthal & Goldfarb, 1997; Santona & Zavattini, 2005), the distress that is experienced due to infertility may also be seen as medically related, such as resulting from medical treatment. McQuillan and colleagues (2003), however, found that neither childlessness nor infertility alone predicted distress; rather, distress was related to involuntary childlessness. They surveyed a random sample of 580 women between the ages of 25 and 50 in the upper Midwest and included 15% African American women and 4% Latinas. McQuillan and colleagues measured distress using the Center for Epidemiological Studies Depression scale (CES-D; Radloff, 1977). Infertility was categorized into three groups: no fertility problems, subfecundity (women meeting the medical definition of infertility), and other fertility problems that did not meet the medical definition of infertility. Other variables included the number of years of education completed, family income, race/ethnic status, marital status, employment status, and social roles including biological motherhood or social motherhood (e.g. adoption, stepchildren, foster children). McQuillan et al. also included dichotomous measures to assess whether participants were satisfied with the social roles indicated. Control variables included age, a single-item indicator of general health, and a single-item measure of presence or absence of a chronic health condition.
They found that women who wanted children but did not have them either because of medically related infertility or social causes (e.g., lacking access to a male partner or donor) were at higher risk for experiencing distress than were women who did not want children and did not have them because of medical or social reasons ($d = .68$). In fact, women who did not have children only had higher distress if they were in the subfecund group, whereas women with children did not differ by distress level across fecundity and subfecundity groups. Women appeared to experience distress because of the inability to achieve the role of motherhood, which the authors suggested was viewed by these women as a central life identity. As much of the infertility research uses clinic-based samples, the use of a randomly selected sample of women using a lifetime measure of infertility status allowed for greater generalizability and balanced the effects of medical treatment on sources of distress. Nevertheless, it is difficult to determine whether women were categorized into fecundity groups appropriately, as they lacked the ability to corroborate their reports with medical records.

Overall, these results suggest the possibility that infertility-related distress may be of a social or psychological nature, rather than solely medical. The following section discusses research regarding gender in the experience of infertility.

Gendered Experiences of Infertility

Though research has been lacking overall regarding the relationship between gender identity, adherence to social norms, and infertility-related distress, the relationship of these variables has been addressed through some qualitative research and through
secondary results in quantitative and case studies. Several of these articles situate the studies and results within concepts such as mandated motherhood and pronatalist ideologies, and the connections in others can be inferred from results.

Looking specifically at infertility and distress, McEwan, Costello, and Taylor (1987) gathered data from 62 women and 45 men who visited the Infertility Clinic at the University of Calgary Health Sciences Center. These individuals completed the General Health Questionnaire (GHQ; Goldberg 1978) which measures general emotional disturbance with recent onset; the Social Adjustment Scale-Self Report (SAS-SR; Weissman & Bothwell, 1976) which measures one’s social role performance in work, social and leisure, extended family, marital, parental and family unit roles; the Derogatis Sexual Function Inventory (DSFI; Derogatis, 1976) scales; and the Quantity-Frequency Alcohol Index (Q-FAI; Edwards, Chandler, & Hensman, 1972). McEwan and colleagues also had participants complete a screening instrument that addressed life events and difficulties during the past year, perceived social support and the availability of a confidant, perceptions of infertility and the likelihood of conceiving, demographic information including sex, age, religion, and occupation, and medical chart information.

McEwan and colleagues (1987) found that 37% of their women reported significant psychological disturbance, whereas 1% of their men reported clinically significant disturbance. Among women, medical, cognitive, and sociodemographic factors contributed to adjustment. Sociodemographic variables significantly predicted distress ($R^2 = .186$), with age ($R^2 = .077$) and religion ($R^2 = .109$) accounting for the variance. Distress was found to decrease with increasing age and affiliation with a
Protestant religion. Medical factors, primarily diagnostic status ($R^2 = .084$), accounted for 12% of the variance in predicting distress. Individuals who had not received a diagnosis reported greater distress than those who had a diagnosis. Cognitive factors, primarily self-attribution for the source of infertility status ($R^2 = .057$), accounted for 6% of the variance after controlling for sociodemographic, general life stress, relationship, and medical factors. The length of time spent trying to conceive and the cause of infertility were unrelated to distress levels on all of the instruments. McEwan and colleagues also found that when infertility was due to male factors, 30% of women continued to blame themselves.

The use of standardized instruments with high reliability and good validity indices is an advantage in this study, as it allowed for more clearly interpretable results and greater ability to generalize to other research and clinical uses. Yet, the use of a sample that was seeking infertility treatment at the time may have confounded emotional distress with difficulties associated with medical treatment in general, rather than those specific to infertility. Also, the design was cross-sectional which limits the ability to generalize across time in the experience of infertility. Overall, the authors suggested that the profile for a woman with infertility who is most likely to experience emotional difficulties is that she is a younger woman who is affiliated with a religion that places importance on childbearing, does not have a confiding relationship with a partner, is dealing with other life stressors, and is experiencing unexplained infertility. The study provides support for examining cognitive, medical, and personal factors in the experience of infertility.
In a pilot study regarding the experiences of men and women seeking medical treatment for infertility, Edelmann, Connolly, and Robson (1989) reported data from four couples who participated in an ongoing study for 22 weeks after initial assessment at an infertility clinic. Demographic information was collected at the initial assessment. In addition, each individual completed the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975), General Health Questionnaire (GHQ; Goldberg, 1978), Beck Depression Inventory (BDI; Beck, Ward, Medelson, Mock, & Erbaugh, 1961), State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970), Dyadic Adjustment Scale (DAS; Spanier, 1976), Interpersonal Support Evaluation List (Cohen, Mermelstein, Kamark, & Hoberman, 1985), and Bem Sex Role Inventory (BSRI; Bem, 1974, 1981). The individuals also completed a weekly diary throughout the 22-week period of the study. Seven months after initial assessment, these 8 individuals were again administered the GHQ, BDI, STAI, DAS, Interpersonal Support Evaluation List, and BSRI.

Though adjunct to the main purpose of this study, which was to investigate changes in adjustment and distress over a period of treatment, Edelmann and colleagues found that all eight men and women showed decreases in both masculinity and femininity scores on the BSRI. These results were not given much attention in discussion within the article; however, it appeared that gender roles and infertility treatment are correlated. Why this occurred is unclear from the results. After the initial pilot study, Edelmann and Connolly (1998) completed this study with 130 couples, and obtained complete data for 116 females and 107 males. However, they did not use several of the instruments from
the pilot study, including the BSRI, and therefore the follow-up study does not provide any data regarding sex role.

A larger sample study conducted by Ulbrich, Coyle, and Llabre (1990) examined a nonprobability sample of 103 couples who were either in treatment for infertility with a physician or were gathered through RESOLVE, a support group for individuals with infertility. Though the primary purpose of this study was to examine marital relationships, Ulbrich and colleagues also reported data on gender and distress that are useful to examine. The couples completed the Dyadic Adjustment Scale (DAS; Spanier, 1976) to measure adjustment within the relationship. In addition, they completed demographic forms which asked for the number of years the couple had been married, the number of months one or both partners had been in treatment, which partner received a diagnosis for infertility, and whether they were experiencing primary or secondary infertility. They also indicated their attitudes toward not having children and the stress they experienced due to infertility on several Likert scales created or adapted for this study. Finally, they indicated age and education in years, employment or nonemployment status, and income in brackets of $10,000 up to over $50,000 per year.

The results indicated that spouses generally viewed marital adjustment similarly, but wives viewed remaining without children as less acceptable ($r = .55$) and indicated experiencing more stress from infertility ($r = .34$). Women experienced lower marital cohesion with longer time in treatment ($r = -.244$). Both husbands and wives had lower marital satisfaction ($r = -.362$ for men and -.41 for women), lower marital consensus ($r = -.235$ for men and -.376 for women), and lower marital affection ($r = -.388$ for men and -
.489 for women) relative to higher infertility distress. The authors did not provide statistical comparisons of these marital adjustment variables for men and women. Finally, in couples with employed wives, husbands experienced higher marital satisfaction \((r = .182)\). Attitudes toward childlessness and infertility-related stress were both measured with unstandardized instruments and the authors did not provide any psychometric information, which limits interpretability and generalizability of the results. Despite the specificity of adjustment data to marital relationships, the results do suggest that men and women experience infertility differently, and this provides support for examining gendered experiences of infertility.

Another study that suggests gender differences in the experience of infertility was conducted by Brand (1989). Brand explored differences in response to infertility in male and female members of couples seeking medical treatment for infertility. Participants were 118 patients from 59 married couples in South Africa, primarily seeking medical treatment for infertility related to female factors. Most had been in treatment for a period of one year or less. Each member of the couple was interviewed individually using a thirteen-item semistructured interview based on previous research. Questions focused on acceptance of infertility, onset and development of infertility and its effect on the spousal relationship, and the personal impact of infertility.

Brand (1989) found that women more frequently talked about problems with infertility and found it easier to do so outside of the marriage. Women indicated that the initial disappointment caused by infertility, the present intensity of the problem, and the psychological effect of infertility, such as envy and stress, were greater for them than for
men. Men also indicated that the psychological effects of infertility were likely greater for women than for men. Unfortunately, Brand did not provide information as to how the interview data were analyzed using chi-square analysis. The study also did not explore the participants’ views of why they believed infertility to be more difficult for women, which may have provided important information about social roles and expectations. An important difficulty with this study is that Brand used sex rather than gender, but interpreted the findings as gender differences.

Though these studies have suggested the importance of exploring gender differences in adjustment and distress relative to infertility, gender has neither been a primary focus nor have differences been adequately explained. Raphael-Leff (1992) discussed data based on an in-depth study of psychoanalysis of couples therapy patients, giving particular attention to a single case study described in-depth. Themes from therapy indicated that most of the individuals experienced distress because of a perceived attack on their gender identity which was defined by their ability to have biological children. A limitation of this study is the lack of description of methodology and data analysis; however, Raphael-Leff provided some evidence that gender differences in infertility may be related to social constructions of gender and motherhood.

Also suggesting a link between infertility-related stress and gender identity of women is an interview study by Daniluk (1996). Based on interviews with 37 women following their decision to end infertility treatment, Daniluk found through phenomenological analysis that these women experienced loss, distress, and a shift in identity. The results suggest that the lack of non-mothering roles for women in our
society and the value placed on motherhood as central to adult female identity is linked to
the distress that these women experienced. This study, however, also suffers from a lack
of description of methodology and data analysis.

Another qualitative study regarding socially constructed gender ideologies
improves upon the work of Daniluk (1996) by providing more information regarding
methods and analysis. Using a grounded theory approach, Remennick (2000) interviewed
26 Jewish women with infertility in Israel. She described the culture in Israel as having a
particularly pronatalist ideology which increases the stigma that women with infertility
experience there. Pronatalism is the idea that the value of a woman is based on her ability
to reproduce and forms the basis for the motherhood mandate.

The results of this qualitative investigation indicated that these women with
infertility in Israel attempted to use identity management strategies such as selective
disclosure, avoidance, and other information management techniques to hide their
identity as women with infertility. In addition, Remennick reported that many of them
appeared to have internalized the pronatalist ideologies as evidenced by their willingness
to continue with costly, long-term, and painful medical treatments to bear biological
children; however, this was not studied directly. Remennick concluded by suggesting that
only those women who question the motherhood imperative are able to view infertility
without stigma, but that this is a difficult if not impossible case for many within
pronatalist societies. She also indicated that infertility carries an increased stigma for
women with less education who do not have careers or other outside pursuits. Remennick
also suggested that the amount of stigma a woman experiences appears to be related to the woman’s conformity to norms.

An earlier study by Allison (1979) explicitly used the motherhood mandate as a theoretical basis for hypotheses regarding gender role norms and infertility. Allison surveyed and interviewed 29 women and their husbands who were beginning an infertility treatment program and a comparison group of 29 married women and their husbands who had no history of known fertility problems. Specifically, Allison predicted that women with infertility would have self-perceptions based on more traditional gender role conceptions and experience more discrepancy between their real and ideal selves due to their desire to fulfill the motherhood mandate, and that they would perceive less gender role conflict in their lives due to not having to balance family and work roles. Women with infertility were also expected to be employed at a higher rate than women who had not experienced infertility, due to the lack of need to stay home with children.

Both the husbands and wives completed the Maferr Inventories of Feminine Values (Steinmann & Fox, 1974). The wives also completed the Life Style Questionnaire (Nevill & Damico, 1974) to measure role conflict across several life areas and a semi-structured interview to examine identity. The women with infertility in this study showed significantly greater traditionality in feminine role concepts than did the comparison group. Sufficient data to estimate effect sizes were not presented. Allison suggested that women who were unable to fulfill gender role norms due to infertility would adopt more traditionally feminine views of themselves to decrease dissonance between actual and ideal self. However, this study is nearly thirty years old and does not appear to make a
connection between traditionality of gender role and distress experienced due to inability to fulfill expected gender role.

Also based within ideas like pronatalism and mandated motherhood is research done by Ulrich and Weatherall (2000) who interviewed 19 women with infertility in New Zealand using a feminist discourse analysis. The sample was predominantly white, middle-class, and married. These women indicated that their reasons for wanting children included that they believed motherhood was a natural instinct for women, that motherhood represented the final stage in the development of a heterosexual relationship and that these relationships were only worthwhile when children were present, and that motherhood was a social expectation developed through the female socialization experiences. Though this qualitative study indicates again that women experience social pressures to have children as part of their adult female identity development, it does not indicate how these social pressures relate to adjustment or distress levels.

A similar study conducted in the United States provides further evidence that women with infertility experience distress related to gender ideologies. Gonzalez (2000) interviewed 25 women with infertility through purposive sampling and analyzed the data through a qualitative descriptive approach to understand the phenomenon of infertility. She found several themes which emerged from individuals’ statements and confirmed them through cross-case comparisons. The women reported feeling that they had failed to fulfill a prescribed social norm and that their personal identity was under attack. Later they reported experiencing mourning, transformation, and restitution for their identities through the process of infertility treatment. In particular, the women in her study
indicated feeling that they were inadequate as women and as a result lost their purpose in life, self-concept, and body image.

Given that women with infertility appear to experience distress related to gender ideologies and social expectations, Parry (2005) conducted a qualitative study to begin to understand how these women are able to cope with these experiences. Interviews were conducted with 32 women experiencing infertility to explore coping skills for those who are infertile in a pronatalist society. Parry found that the women were aware of pronatalism within their lives and could give examples of ways they were treated by others within this value system. These women reported that they were able to deal with experiencing infertile within a pronatalist society by devoting more attention to work, leisure activities and experiences, and support groups. Essentially, these women found ways to expand their identities beyond what society expected of them.

The articles in this section repeatedly suggest that infertility is a particularly gendered experience which can be understood through socialization and social norms, such as the motherhood mandate. However, authors have not addressed the mechanism by which gender, infertility-specific distress, and overall adjustment are related.

Infertility as a Stressor

Not all people who experience infertility report psychological distress and research is inconsistent regarding the severity of distress (Drewett, 1994; Edelmann & Connolly, 1998). One way to understand individual differences in the experience of infertility may be through the stress and coping model of Lazarus and Folkman (1984).
Lazarus and Folkman discussed psychological stress as the “relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being” (p. 21).

Essentially, an individual experiences more stress when they appraise a situation as a significant stressor or if they believe they do not have sufficient coping resources to handle the stressor. The stress and coping model labels these as primary and secondary appraisals. Primary appraisal can include evaluating the situation as a harm or loss, a threat, or a challenge. The individual then engages in secondary appraisal that involves evaluating her or his coping resources, including physical, social, psychological, and material resources. The amount of stress an individual feels regarding a situation is believed to increase as the situation is appraised as a higher threat or loss, and coping resources are appraised as insufficient for the stressor.

For those who identify motherhood as a necessary condition to attaining an adult female identity as discussed in the motherhood mandate (Russo, 1976; 1979), infertility may be appraised as a greater threat than to those who do not make this cognitive link. These individuals, then, may experience increased difficulties in adjusting to infertility due to the processes of primary appraisal. Infertility literature regarding stress and coping and appraisal offers some support for the application of Lazarus and Folkman’s (1984) model.

Zucker (1999) conducted a longitudinal study of women’s experiences with reproductive loss using Lazarus and Folkman’s (1984) stress and coping model to ground her hypotheses for the study. Specifically, she predicted that women would recall
different types of emotions based on the type of reproductive loss; that is, women who had abortions would be more political at midlife than others and women who experienced a loss of control in reproduction through either miscarriage or infertility would compensate by being more agentic parents later in life. She collected questionnaire data from 107 white female college graduates when they were approximately 47 years old. The sample originally was contacted in 1967 and participated in follow-up data collection three times between the first and final contact. Over half of the women in the sample reported that they had experienced at least one reproductive loss, which included abortion, miscarriage, and infertility.

At the final data collection, women were asked to complete a four-part questionnaire that included both open and closed ended questions, only some of which were used in this study. Reproductive history was measured through closed-ended questions asking if and when the women experienced an abortion, miscarriage, or infertility. As one-third of the sample had experienced multiple losses, Zucker (1999) included some women in several groups during data analysis which may have muddled the findings. Participants indicated emotional responses to reproductive loss through an open-ended question asking them to discuss the experience. Independent raters categorized these responses as measuring relief, regret, depression, trauma, uncertainty, or failure. Political identity was measured through an index of attitudes regarding past and current politics, political ideology, and political salience that has been used in a number of studies regarding social and political identities. Orientation to motherhood was
rated using three open-ended questions that were coded for mentions of agency and communality.

Zucker (1999) found support for the hypothesis that different types of reproductive loss are related to different emotions. Women who had experienced abortions recalled experiencing more relief and regret [$\chi^2(1, 50) = 10.4, p < .01$], miscarriage was related to depression and trauma [$\chi^2(1, 50) = 3.85, p < .05$], and infertility was related to feelings of failure and uncertainty [$\chi^2(1, 50) = 2.74, p < .10$], though the results for infertility were not significant at the .05 level. Women who had experienced a loss of reproductive control through miscarriage or infertility also perceived themselves as more agentic parents at midlife than those who had not experienced a reproductive loss or had experienced an abortion ($r = .27$). Previous miscarriage or infertility were also predictive of greater agency in parenting style ($R^2 = .08, p < .05$).

Though interrater reliability for the coding of open-ended questions was high (.89 for emotions and .91 for parenting style), Zucker (1999) did not use a theoretical approach to analyzing qualitative data which may have affected her interpretation of the women’s responses. Another limitation is that Zucker did not employ any measures of stress, coping, or appraisal, despite using Lazarus and Folkman’s theory as the context for this study. Also, women were asked to recall experiences which may have occurred more than twenty years prior to the study and they may have had difficulty recalling their experiences and emotions clearly. The study does suggest, however, the possibility that
women’s experiences may differ by type of reproductive loss and that these differences may be related to appraisals of the event, albeit retrospectively.

A study by Van den Akker (2001b) used the construct of primary appraisal from Lazarus and Folkman’s (1984) stress and coping model to understand obtained results, despite not grounding the methods in this model. Van den Akker conducted a retrospective questionnaire study using a semi-structured questionnaire including questions regarding fertility, the importance of having a genetic link to one’s child, the willingness to disclose adoption or medical treatment to the child, and perceptions of adoption. Participants included 105 women who were located through adoption agencies which were members of the British Association for Adoption and Fostering. They were grouped according to individuals with female factor infertility, male factor infertility, male and female factors, or those who did not experience infertility. Most were married and had a child through adoption, foster care, or previous pregnancy. Women were asked to complete a questionnaire with sociodemographic items, fertility status items, and other reproductive information as well as reasons for considering adoption, reproductive technology, or surrogacy. The questions were semi-structured and many provided the opportunity to add qualitative answers. Van den Akker reported that the questionnaire had been used previously and showed good internal consistency reliability; however, she did not provide data to support this statement.

The women indicated that they felt devastated by the initial diagnosis of infertility, with higher distress related to one partner receiving a diagnosis and lower distress related to both partners receiving a diagnosis. Women also indicated that they
believed their male partners were less devastated by the diagnosis, with many indicating their partners felt neutral about it. Though most of the sample indicated they did not believe a genetic link was important, almost all of the women had received in vitro fertilization (IVF) and gamete intrafallopian transfer (GIFT) as an attempt to maintain a genetic link to their child prior to applying for adoption. Women who chose not to adopt and those who stated they were unlikely to disclose the child’s origin indicated high importance of having genetic links with their children.

The participants in this study only attempted to pursue adoption after extensive tests and treatments were unsuccessful. Van den Akker (2001b) suggested the possibility that these women underwent a shift in their appraisals of the importance of having a genetically-related child. Many appeared to have participated in numerous costly and painful medical procedures due to the initial belief of the importance of a genetic link, but their attitudes changed when adoption became the only available choice. Van den Akker indicated that this is likely due to cognitive dissonance. Though this study raises an important question about shifts in cognitive appraisals between initial diagnosis and eventual parenthood, data were collected only after women completed years of medical treatment and do not allow for examination of the changes in attitudes suggested by the author. In addition, the central purpose of the study and data collection was to examine attitudes toward infertility options, rather than how these individuals appraised their situation. Nevertheless, this study suggests that cognitive appraisals of infertility and parenthood are important factors in the experience of infertility.
Though not specifically discussed in the stress and coping model (Lazarus & Folkman, 1984), the process of “linking” may be important in understanding how primary appraisals are related to distress and well-being. Linking is a cognitive process by which individuals associate certain concepts, such as associating parenthood with happiness. Brothers and Maddux (2003) examined the role of linking in infertility-related distress. Participants were 69 married women with infertility, and they were primarily White and from higher socioeconomic groups. They were recruited through two fertility clinics, a national electronic mailing list, a national newsletter, and an internet bulletin board. They were given a linking questionnaire which included 11 items measuring how closely linked having a biological child was to several higher order goals, such as happiness, marital satisfaction, femininity, social acceptance, and achievement of full adult status. The importance of having a child was measured with a one-item Likert scale. The participants completed the Symptom Checklist-90-R (SCL-90-R; Derogatis, 1994) to measure emotional distress, the Revised Impact of Events Scale (RIES; Horowitz, Wilner, & Alvarez, 1979) to measure intrusive rumination and avoidance, the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960), and a brief demographic and infertility history questionnaire.

Though distress was not related to the importance placed on parenthood, linking the concept of parenthood to marital satisfaction was related to distress ($r = .25, p < .01$) and linking parenthood to femininity was related to distress ($r = .23, p < .05$) Linking parenthood to marital satisfaction, femininity, social acceptance, and attainment of adult status was related to increases in the amount that participants ruminated about infertility
(r = .48, p < .01), and rumination was related to increases in psychological distress (r = .58, p < .01). Mediational analysis, according to the Baron and Kenny (1986) procedures, suggested that rumination mediated the relationship between linking and distress, as the partial correlation coefficient for rumination remained significant (β = .53, p < .01) while the partial correlation coefficient for linking was nonsignificant (β = .11, p > .05).

Generalizability of results is limited by the specific demographic characteristics of the sample, and causality cannot be inferred due to the correlational and cross-sectional nature of the research design. Additionally, the use of several instruments which were designed specifically for this study and have no psychometric data to support their use may be problematic. The results nevertheless suggest that examining cognitions and appraisals regarding parenthood may be useful in helping to understand further distress related to infertility.

This view is supported by a review of literature on mental health treatment for infertility distress in which Eunpu (1995) suggested that focusing on primary appraisal, and increasing both problem-focused and emotion-focused coping can be beneficial in decreasing emotional distress due to infertility. Indeed, Hansell and colleagues (1998) subsequently conducted a study exploring the role of both primary and secondary appraisal which provides some support for Eunpu’s statement. The authors explored the role of primary and secondary appraisal in infertility distress using the stress and coping model (Folkman & Lazarus, 1980). Primary appraisal styles included categorizing the stressor as loss or harm (i.e., harm that has already occurred), threat (i.e., possibility of harm or loss), and challenge (i.e., potential for growth). Secondary appraisal assessment
included coping abilities and resources, such as emotion-focused (e.g., wishful thinking, seeking social support, or use of escape or avoidance), and problem-focused coping. According to the model, choice of coping strategy differs according to the way people appraise a stressor. Emotion-focused coping is believed to be chosen when people appraise the situation as outside of their control, whereas problem-focused coping is chosen more often when stressors are appraised as a challenge or something that can be changed. Threat appraisals are most likely to be met with coping strategies like wishful thinking, escape, and seeking social support.

Participants in the study included 100 adult women seeking gynecological services for different reasons. Hansell et al.’s (1998) sample included 25 women diagnosed with primary infertility seeking medical treatment, 25 seeking further investigative gynecological procedures due to receiving abnormal medical examination results, 22 women in their third trimester of pregnancy seeking routine obstetric examinations, and a control group of 28 women seeking a regular annual gynecological checkup. Primary appraisal was measured through subjective ratings of the current stressor as a loss, threat, challenge, or neutral. Women responded to the stressors of infertility, pregnancy, abnormal exam results, or regular checkup depending on which they were experiencing at the time. Rather than providing continuous data on primary appraisals, participants were asked to choose which of the four primary appraisal types expressed how they viewed their individual situation. Coping strategies were measured with a shortened version of McCrae’s coping questionnaire (1984). Nine scales from this measure were used in this study, including rational action, seeking help, perseverance,
fatalism, expression of feelings, restraint, wishful thinking, humor, and faith. Factor analysis indicated that the scales were accounted for by five factors, which were labeled action, wishful thinking, seeking social support, fatalism, and restraint.

Although the authors presented results separately for each of the four groups, results specific to the infertility group are presented here. The authors found that half of the women experiencing infertility appraised it as a loss and half appraised infertility as a challenge. None in their sample reported infertility as a threat or neutral condition. Those who reported infertility as a challenge also reported significantly less psychological distress than did women who appraised it as a loss. However, the authors reported these conclusions without providing data regarding the results. Limitations to this study include relatively small samples for each group. In addition, the samples were not randomly selected and may not represent the four group conditions adequately. As in many studies regarding reproductive health, many of the participants were White, young, well-educated, and belonged to higher socioeconomic statuses. Still another limitation is the method by which appraisals were measured. Rather than having women rate each type of appraisal, they were asked to choose the one which best fit their views of the stressor. The use of a standardized measure to assess appraisals would be an improvement over this methodology. Regardless of these limitations, Hansell and colleagues provided important data that suggest that differing primary appraisals of infertility are related to varying levels of distress, such that appraising infertility as a loss is related to higher distress but appraising it as a challenge is related to lower distress.
Overall, then, although infertility has been associated with distress and well-being, few studies have directly explored the mechanism by which infertility may be related to distress and well-being. Some emerging research suggests that Folkman and Lazarus’ (1984) model of stress and coping may be a useful framework for such research. In particular, it appears that the way women appraise infertility may affect their distress level. Women who appraise infertility as a threat or loss to a desired life goal may experience more distress as a result of viewing motherhood as necessary to attaining an adult female status in society.

Summary and Hypotheses

The reviewed research suggests that women who experience infertility often report more psychological distress than do men (Brand, 1989; Greil, 1997; Kikendall, 1994). Women’s experiences in this regard occur in the context of a society in which motherhood is viewed as a normative status for women and in which women who do not have children often are viewed negatively (Reid & Bing, 2000). This social context has been suggested to pose a difficulty for women who experience infertility, and perhaps to contribute to their infertility-specific distress (Allison, 1979; Daniluk, 1996; Russo & Green, 1993), as well as to compromise their general-well-being; these women experience an inability to fulfill a valued and expected social role and are viewed negatively by others as a result (Koropecy-j-cox et al., 2007; Riggs, 1997; Zucker, 1999). One lens through which to understand the observed relation between infertility and distress/well-being is Lazarus and Folkman’s (1984) model of stress and coping.
Lazarus and Folkman’s (1984) stress and coping model posits that the stress experienced due to life situations may differ as a function of primary and secondary appraisal processes, such that appraising a situation as a threat or loss for which one does not have sufficient coping resources increases the individual’s stress. A woman’s beliefs about her expected gender role in a society that adheres to the “motherhood mandate” (Russo, 1976) may be relevant to her primary appraisal of the experience of infertility. If she adheres to the social belief that the central goal of a woman’s life is to bear and raise children and considers motherhood the path to achieving an adult status, her appraisal of infertility may be more negative (i.e., threat or loss) and her experience of stress as a result may be increased.

Some literature supports that the way in which infertility is appraised (e.g. Brothers & Maddux, 2003; Hansell et al., 1998), gender (e.g. Edelmann, Connolly, & Robson, 1989; Gonzalez, 2000) and adherence to social pressures to parent (Ulrich & Weatherall, 2000) are related to the amount of reported distress or well-being of individuals experiencing infertility. The extant research is limited, however, by its focus on infertility clinic samples, inconsistent consideration of demographic and individual variables in data analysis, and use of unstandardized measurement of variables.

In sum, although the literature suggests a link between gender ideologies and the experience of stress as a result of infertility, researchers have yet to explicitly test this link empirically. In addition, few studies overall have taken a theoretically based approach to investigating infertility-related distress and adjustment. Conceptualization of distress and adjustment related to infertility may be informed, then, by use of Lazarus and
Folkman’s stress and coping model (Folkman & Lazarus, 1980; Lazarus & Folkman, 1984) and the motherhood mandate (Russo, 1976, 1979).

No previous studies have examined empirically the relationships between social pressures for motherhood, appraisal processes regarding the experience of infertility and infertility-related distress in a nonclinical sample of women who are experiencing infertility. Infertility-specific distress may be better understood through examination of individual differences in appraisals of infertility and adherence to feminine ideologies such as the motherhood mandate. The current study addresses gaps in the literature by testing the relationships between appraisals, gender ideologies, general well-being, and infertility-specific distress. Hypotheses are grounded in the stress and coping model (Folkman & Lazarus, 1980; Lazarus & Folkman, 1984), the motherhood mandate (Russo, 1976, 1979), along with previous research on infertility adjustment and distress. Figure 1 provides a conceptual model for understanding the current study, with paths numbered to correspond to the following hypotheses.

Hypotheses of the present research include:

1) Consistent with Lazarus and Folkman’s (1984) stress and coping model, it is expected that women’s primary appraisal of infertility is related to their experience of infertility-specific distress. Specifically,
   a. increases in appraisal of infertility as a threat are associated with increases in women’s infertility-specific distress.
   b. increases in appraisal of infertility as a loss are associated with increases in women’s infertility-specific distress.
   c. increases in appraisal of infertility as a challenge are associated with decreases in women’s infertility-specific distress.

2) Consistent with Lazarus and Folkman’s (1984) stress and coping model, it is expected that women’s primary appraisal of infertility is related to their experience of general well-being. Specifically,
a. increases in appraisal of infertility as a threat are associated with decreases in women’s general well-being.
b. increases in appraisal of infertility as a loss are associated with decreases in women’s general well-being.
c. increases in women’s general well-being are associated with increases in appraisal of infertility as a challenge.

3) Consistent with the motherhood mandate (Russo, 1976), it is expected that women’s adherence to traditional gender ideologies is related to their experience of infertility-specific distress and general well-being. Specifically,
   a. greater adherence to traditional gender ideologies among women experiencing infertility is related to greater infertility-specific distress.
   b. lesser adherence to traditional gender ideologies among women experiencing infertility is related to greater general well-being.

4) The relations of women’s adherence to traditional gender ideologies to their infertility-specific distress and general well-being are expected to be partially mediated by primary appraisal. Specifically,
   a. women’s greater adherence to traditional gender ideologies is related to lesser general well-being in part through greater threat primary appraisals of infertility
   b. women’s greater adherence to traditional gender ideologies is related to greater infertility-specific distress in part through greater threat primary appraisals of infertility
   c. women’s greater adherence to traditional gender ideologies is related to lesser general well-being in part through greater loss primary appraisals of infertility
   d. women’s greater adherence to traditional gender ideologies is related to greater infertility-specific distress in part through greater loss primary appraisals of infertility
   e. women’s lesser adherence to traditional gender ideologies is related to higher general well-being in part through greater challenge primary appraisals of infertility
   f. women’s lesser adherence to traditional gender ideologies is related to lesser infertility-specific distress in part through greater challenge primary appraisals of infertility.

5) Greater infertility-specific distress is expected to be related to lower general well-being. Though this link has not been empirically tested, numerous studies and authors have included the implication that infertility-specific distress is related inversely to general well-being (e.g., Edelmann, Connolly, & Robson, 1989; Greil, 1997).
Figure 1. Conceptual Model of Sources of Distress and Well-Being among Women with Infertility.
CHAPTER III
RESEARCH METHOD

The purpose of my study was to explore the various sources of distress and well-being among women who experienced infertility. Although numerous past reviews, studies, and theories have suggested a connection between social pressures for motherhood and infertility-specific distress, quantitative research was lacking to provide evidence for this conjecture. The current study explored possible sources of distress according to the motherhood mandate (Russo, 1976; 1979) and the stress and coping model (Folkman & Lazarus, 1980; Lazarus & Folkman, 1984).

Participants

The study sampled 239 women through email contacts for RESOLVE, a support group for individuals experiencing infertility. RESOLVE is the national infertility association founded in 1974 to assist men and women experiencing reproductive health concerns, including infertility and other reproductive disorders (http://www.resolve.org/site/PageServer?pagename=abt_home.). Only women were sampled because research suggests that women who experience infertility are at higher risk of distress than are men who experience infertility (Brand, 1989; Greil, 1997; Kikendall, 1994). In addition, RESOLVE support group leaders and members were encouraged to share the survey link
with other possible participants, allowing for a broader sampling of individuals through various online infertility communities.

The sample size was determined using the Power and Precision software to estimate the required sample size to test the two-step regression analysis for mediation at an alpha level of .05, as this was the most demanding test. Past research (Brand, 1989) suggests that the relationship between gender and infertility-specific distress is a medium effect size ($r = .30$ or $R^2$ of .09). The relationship between primary appraisals and measures of distress and well-being was estimated as medium, given past research on cognitive linking, ideation about infertility, and distress (Brothers & Maddux, 2003; Miller et al., 1998). A power of .90 is achieved using 100 participants when regression includes two predictors in the regression analysis. If four predictors are entered into the regression analysis, 110 participants would allow for a power of .82 to detect a medium effect size. There were limited prior studies on which to base expected effect sizes, as few have included the variables in question and several which did include these variables did not provide the information necessary to determine effect sizes. Given that exploration of potential covariates and exploratory path analysis was undertaken, the necessary sample size was increased to account for the increases in power needed to complete the analyses. Kline (2004) reported that medium sample sizes for path analysis are typically between 100 and 200 participants. However, he suggested that a more accurate estimate of the number of cases needed is 10 participants per parameter. Given 18 parameters for the full conceptual model, the sample size required was 180 participants, so data collection remained open until this size was reached.
Of the 239 women sampled 54 could not be used due to lack of completed information beyond the dependent measures. The final sample consisted of 185 women between the ages of 21 and 54 ($M = 34.78$, $SD = 5.78$). They were asked to complete surveys regarding adherence to traditional feminine gender norms, primary appraisal of infertility, infertility-specific distress, subjective well-being, and demographic and reproductive information. Participants included 103 women experiencing primary infertility, 55 women experiencing secondary infertility, and 27 women who had experienced primary infertility but have since given birth. The average length of infertility was 5.09 years with a range from under one year to 41 years. The modal number of children that women reported was zero, with a mean of .51, standard deviation of .848, and range of zero to three. Women reported an average of 25.65 months of medical treatment, with a standard deviation of 25.80, and range of zero to 156 months. The average cost of medical treatment after insurance coverage was $16,804.60, with a standard deviation of $26,455.29 and a range of $0 to $240,000.

According to reported race/ethnicity, there were 159 European American/White women, nine Hispanic American/Latina women, five Native American women, four African American women, four Asian American/Pacific Islander women, three multiracial women, and one Arab American woman. Participants primarily represented higher yearly income levels ($M = $108,953.85, $SD = 57,482.27$) but ranged from $14,000 to $450,000 per year. The sample was representative of individuals with higher educational attainment, with 84 completing graduate degrees, 51 completing bachelor’s degrees, 16 with associate’s degrees, 26 who had completed some college, and eight
having graduated from high school. The majority of the sample reported that they were married or partnered at the time of the study ($N = 177$), but two reported being single, five were divorced, and one was engaged. The average length of relationships was 8.52 years with a standard deviation of 5.24 and a range of zero to 33 years. Participants were recruited through the email contacts for RESOLVE support groups and were asked to complete the measures through the online survey program, Survey Monkey. As the link to the survey could be shared with other online communities and individuals, the demographic questionnaire included an item regarding how participants learned about the study. Eighty participants responded to the request sent through RESOLVE, 19 through the American Fertility Association, 15 through CafeMom, nine through No Kidding!, five through Infertility Network, four each through a Yahoo! infertility group and a Facebook infertility group, three through Childfree, and 34 through unspecified websites, with 12 participants not providing data on this item. Two participants were randomly selected to receive a $25 gift card of their choice.

Measures

This section reviews the demographic and reproductive health questionnaire developed for this study. In addition, the development and research for each of the included measures is discussed.
Demographic and Reproductive Health Questionnaire

Based on previous research and literature reviews (e.g., Daniluk & Fluker, 1995; Edelmann & Connolly, 1998; Edelmann, Connolly, & Robson, 1989; McQuillan, Greil, White, & Jacob, 2003; Miller et al., 1998; Ulbrich, Coyle, & Llabre, 1990), a demographic and reproductive information questionnaire was developed for the present study. Demographic items were intended to gather information about age, race, sexual orientation, relationship status and duration, amount of perceived support by partner, education, income, employment status and occupational title, geographical region, religion, and past or current use of mental health treatment. The demographic questionnaire also included an item on which participants identify gender, as a validity check.

Reproductive health items were intended to gather information about fertility status, number of children, number of previous pregnancies and outcomes (e.g., miscarriage, abortion, stillbirth, or live birth), number of adopted children, duration of infertility status, time in medical treatment in months, source of infertility (e.g., self, partner, both, undetermined), medical treatments attempted, and diagnostic status. Questions regarding educational status, employment, income, relationship status, number of children, age, and fertility status were drawn from a study conducted by McQuillan, Greil, White, and Jacob (2003). Length of relationship, source of infertility in relationship, primary versus secondary infertility, and number of months in medical treatment were taken from demographic and reproductive questions asked by Ulbrich, Coyle, and Llabre (1990). Several authors also have suggested the importance of looking
at religiosity, diagnosis, treatment procedures attempted, and duration of infertility
(Daniluk & Fluker, 1995; Edelmann & Connolly, 1998; Edelmann, Connolly, & Robson,
1989; Miller et al., 1998; Ulbrich et al.). Items on options regarding particular treatments were taken from the study by Miller et al., as they allowed participants to list treatments they had attempted. The most common treatments used by participants in that research were monitoring of basal body temperature, use of fertility drugs, home or ultrasound ovulation monitoring, and artificial insemination by partner. Demographic and reproductive information was gathered as a means of describing the sample and further elaborating upon results of the study.

Gender Role Norms

Mahalik, Morray, Coonerty-Femiano, Ludlow, Slattery, and Smiler (2005) developed the Conformity to Feminine Norms Inventory (CFNI) through identifying and categorizing dominant U.S. cultural norms for femininity. The authors defined conformity to feminine norms as “adhering to societal rules and standards about how to be feminine” (p. 418) and suggested that it is shown through women’s feelings, thoughts, and actions. Norms were identified by a review of literature, then five focus groups consisting of diverse groups of adult women were asked to reflect on their experiences as women, particularly regarding how they have heard women are supposed to think, act, and feel and the costs and benefits of adhering to or rejecting these norms.

Norms were grouped by researchers according to content and those which overlapped groups or were too global were removed from the list. Two focus groups of
female counseling psychology students met with the lead author for eight months to clarify the norms, provide examples, and assist in construction of items for each norm. The categories were refined into 12 norms, including Relational, Sweet and Nice, Thinness, Put Others First, Look Young, Sexy, Modesty, Domestic, Caring for Children, Romantic Relationship, Sexual Fidelity, and Invest in Appearance. Items were constructed to reflect the continuum of conformity, including extreme conformity, moderate conformity, moderate nonconformity, and extreme nonconformity. The authors provide examples of this continuum using Relational items. Extreme conformity was expressed through the item “It would be awful if I ever lost touch with someone in my life”, and “I feel good about myself when others know that I care” reflects moderate conformity. “I don’t feel guilt if I lose contact with a friend” reflects moderate nonconformity, and “I would feel burdened if I had to maintain relationships with others” is extreme nonconformity. Items were also written to reflect cognitive, affective, and behavioral components of femininity. The original measure included 144 items rated on a four-point scale, with response options ranging from strongly disagree (SD) to strongly agree (SA).

Mahalik and colleagues (2005) reported that exploratory factor analysis in a sample of 733 undergraduate female psychology students resulted in an eight-factor solution with 84 items, after 60 were removed due to redundancy, error variance, and cross-loading. Principal axis extraction with Oblique (Oblimin) rotation was completed. The authors reported that factor loadings below .3 were removed from analysis. In the exploratory factor analysis, Mahalik and colleagues found 34 factors using the Kaiser
criterion, which suggests the number of factors based on the number of eigenvalues that are at or above 1.0. Using a series of step-down factor analyses, they determined that a 10-factor solution provided the greatest interpretability. Items that did not clearly load on any factors were removed, and the exploratory factor analyses were rerun. This resulted in an eight-factor solution accounting for 34.6% of the variance. Items were then retained if they loaded at .4 or higher on one factor, but did not cross-load above .3 on another factor. The final eight factors, comprised of 84 items, were named Nice in Relationships, Thinness, Modesty, Domestic, Care for Children, Romantic Relationship, Sexual Fidelity, and Invest in Appearance. With the exception of combining items from the original Relational and Sweet and Nice factors, items loaded on the factors expected through categorization during item development. Mahalik and colleagues did not undertake confirmatory factor analysis following this solution.

Nice in Relationships is defined as developing friendly and supportive relationships with others, and includes such items as “It is important to let people know they are special”. Thinness addresses the pursuit of the thin body ideal and includes items about losing or gaining weight. Modesty involves restraint from calling attention to accomplishments or abilities and includes items such as “I always downplay my achievements”. Domestic includes items about maintaining one’s home. Care for Children involves taking care of and spending time with children and is measured by items such as “I would baby-sit for fun” and reverse scored items like “Most people enjoy children more than I do”. Romantic Relationship involves norms about investing one’s self and time in relationships and valuing relationships as central to one’s
happiness. Sexual Fidelity includes norms about commitment and monogamy in sexual relationships. Invest in Appearance regards time and resources spent maintaining and improving upon one’s physical appearance.

Scoring for the CFNI includes 42 reverse scored items. Once the scores on these items are reversed, the total score is the sum of each item score (0 = strongly disagree and 3 = strongly agree). The total score ranges from 0 to 252, with a mean of 162.73 among the norm sample of women (Mahalik et al., 2005).

Mahalik et al. (2005) reported that, for 733 undergraduate female psychology students and 98 undergraduate male college students, internal consistency for the CFNI total score was estimated at .88 and the coefficient alpha across subscales ranged from .77 for Romantic Relationship to .92 for Caring for Children. Correlations between subscales and the total score are moderate to low after removing that subscale from the total score, and intercorrelations between subscales are low to moderate. Women score significantly higher than do men on Nice in Relationships, Sexual Fidelity, Be Domestic, Invest in Appearance, Caring for Children, and Thinness, and men and women had similar scores on Modesty and Romantic Relationship. In a recent study of person inputs and learning experiences in Social Cognitive Career Theory, Tokar and colleagues (Tokar, Thompson, Plaufcan, & Williams, 2007) found that the CFNI total score has a mean of 145.39, standard deviation of 22.47, and coefficient alpha of .91 among a sample of 144 women and 113 men in undergraduate psychology courses. Test-retest reliability estimates for a two to three week period were .94 of the Total Score, .83 for Nice in Relationships, .93 for Sexual Fidelity, .83 for Be Domestic, .91 for Invest in Appearance,
.95 for Caring for Children, .85 for Modest, .86 for Thinness, and .86 for Romantic Relationship for a subsample of 308 women from the original 733 undergraduate female psychology students (Tokar et al.).

The CFNI Total score among a group of 98 men and 211 of the original 733 women correlated significantly and positively with the Bem Sex Role Inventory (BSRI; Bem, 1974, 1981) Femininity Score ($r = .4, p < .001$), significantly and negatively with the BSRI Masculinity Score ($r = -.2, p < .01$), and significantly and positively to the Passive Acceptance subscale of the Feminist Identity Composite (FIC; Fischer, Tokar, Mergl, Good, Hill, & Blum, 2000) ($r = .26, p < .001$). In examining subscales of the CFNI, the Nice in Relationship scale significantly and positively correlated with the BSRI Femininity scale ($r = .41, p < .001$) but was unrelated to the FIC or BSRI Masculinity scales. Modesty was related negatively to BSRI Masculinity ($r = -.19, p < .01$) and both Embeddedness-Emanation ($r = -.18, p < .05$) and Synthesis ($r = .25, p < .001$) on the FIC. Domestic related positively to Passive Acceptance on the FIC ($r = .25, p < .001$). Care for Children and Romantic Relationship correlated positively with the BSRI Femininity ($r = .37, p < .001$, and $r = .2, p < .01$) and Passive Acceptance on the FIC ($r = .15, p < .05$, and $r = .19, p < .01$). Sexual Fidelity also correlated positively with the BSRI Femininity ($r = .3, p < .001$) and Passive Acceptance on the FIC ($r = .14, p < .05$), and correlated negatively with the BSRI Masculinity ($r = -.24, p < .01$). Finally, the Invest in Appearance scale related negatively to Active Commitment on the FIC ($r = -.14, p < .05$).
Mahalik and colleagues (2005) also reported significant positive correlations between the CFNI total scores and the total score for the Eating Disorder Inventory – 2 (EDI-2; Garner, 1991)($r = .18$, $p < .001$), as well as the EDI-2 subscale scores of Drive for Thinness ($r = .27$, $p < .001$), Bulimia ($r = .15$, $p < .01$), Body Dissatisfaction ($r = .26$, $p < .001$), and Interoceptive Awareness ($r = .12$, $p < .05$).

For the present research, the total score for the CFNI was used because this study examined gender role norms as a whole construct and previous research had not examined the relationships presented in this study. The lack of previous research regarding these relationships limited the ability to make informed hypotheses regarding how individual scales of the CFNI would relate to the dependent variables in this study. In addition, subscales such as Caring for Children were more likely to have significant and positive relationships with variables in this study and may have presented overestimates of the relationship between gender role norms and distress and well-being related to infertility.

**Primary Appraisals**

The Appraisal of Life Events scale (ALE; Ferguson, Matthews, & Cox, 1999) was used to measure primary appraisals of infertility. The ALE is a measure of the three primary appraisal types described by Lazarus and Folkman (1984) in their stress and coping model. Namely, the measure is an adjective checklist used to assess appraisals of retrospective or current stressors and it provides continuous data regarding appraisal of the stressor as a threat, challenge, and/or loss. The measure can pertain to any stressor an
individual has experienced or is currently experiencing, or the instructions can be altered
to measure appraisals of a specific event.

The ALE is a 16-item measure and each item is rated on a 6-point scale, ranging
from 0 (not at all) to 5 (very much so). The retrospective version asks participants to
briefly describe the most stressful event experienced within the past three months, and the
situational version asks participants to rate perceptions of the current stressor. Examples
of items on the retrospective questionnaire include, “At the time it occurred the event was
fearful” (threat), “At the time it occurred the event was painful” (loss), and “At the time it
occurred the event was stimulating” (challenge). The adjectives are the same for the
situational version, but include the stem “I find my current circumstances” rather than the
retrospective recall. Given that this study asked participants to respond to the particular
stressor of infertility, the item instructions were adapted to ask participants to rate their
appraisals of infertility rather than another current or past stressor.

More specifically, the Threat subscale is scored by summing the responses for the
following items: Threatening, Fearful, Worrying, Hostile, Frightening, and Terrifying.
Mean scores in the norm group were 8.89 when responding to work pressure and 5.46
when responding to being away from home. Scores on the Threat subscale range from 0
to 30. Loss is scored by summing the responses for these items: Intolerable, Painful,
Depressing, and Pitiful. Mean scores were 4.59 for the norm group when responding to
pressure at work and 4.57 for being away from home. Loss scores range from 0 to 20.
Finally, the Challenge subscale includes summing the responses to these items:
Challenging, Enjoyable, Stimulating, Exhilarating, Informative, and Exciting. The mean
scores for the Challenge subscale were 15.7 in the norm group when responding to pressure at work and 12.6 when responding to being away from home. Challenge scores range from 0 to 30 (Ferguson, Matthews, & Cox, 1999). The authors did not provide information regarding standard deviations. Due to the possibility that women would not endorse several of the items for the Challenge subscale, one backup item was added to the demographic form inquiring about perceptions of challenge. Specifically, the item reads, “Please rate your agreement with the following statement: When thinking of my experience of infertility, I find myself feeling that I am facing a challenge to try to overcome.” Respondents were asked to rate their agreement with this statement on a five-point Likert scale.

The ALE has demonstrated evidence of reliability and validity. Ferguson and colleagues (1999) reported data from exploratory (EFA) and confirmatory factor analyses (CFA) as well as test-retest reliability and convergent and divergent validity studies. Exploratory factor analysis among a sample of 260 college students (143 female, 111 male) suggested that the ALE is best described by three factors which account for 59.3% of the variance. Participants were presented with 20 adjectives describing loss, threat, challenge, and benefit appraisals and they were asked to respond to a stressful even experienced within the past three months. Items which were related to social desirability, measured by the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960), were removed prior to the EFA. Ferguson and colleagues used parallel analysis (PA) to determine the appropriate number of factors to retain by eigenvalues. Factor loadings were set at .4 to retain a factor. The authors factorially crossed the method of extraction
(i.e., Maximum Likelihood or Principal Components) with the rotation method (i.e., orthogonal or oblique) to calculate factor congruency coefficients. Those above .9 are indicative of high factor replicability. Items with significant skew, kurtosis, and cross-loading were removed.

The PA indicated a three-factor solution that combined the challenge and benefit factors, accounting for 59.7% of the variance with 16 items. Factor congruence for the three-factor solution ranged from 94 to .99, indicating high replicability. The factors were interpreted as representing loss, threat, and challenge appraisals as described by Lazarus and Folkman (1984). Each of the factors showed good internal consistency reliability; coefficients ranged from .74 to .86. The EFA also indicated that challenge and threat appraisals were orthogonal and that loss showed a significant negative correlation with challenge and positive correlation with threat, providing evidence of convergent and divergent validity within the factors.

Using a new sample of 344 undergraduate students (205 female, 127 male, 2 unspecified), CFA also indicated that the three factors provided the best solution for the data. Ferguson et al. (1999) tested the fit of a one, two (negative and positive appraisals), three (threat, loss, and challenge appraisals), and four (threat, challenge, loss, and benefit appraisals) solution using both orthogonal and oblique rotation. The three factor oblique solution that matched the results of the EFA and prior theory was found to be the best solution. The chi-square goodness of fit index was significant $[\chi^2 (df) = 463.1 (102), p < .05]$, indicating problems with the model, and the remainder of the fit indices were lower than the recommended .9 level [Goodness of Fit Index (GFI) = .85; Bentler-Bonett Index
(BBI) = .82; Tucker-Lewis Index (TLI) = .83; Relative Noncentrality Index (RNI) = .86]. However, the results for the three-factor hypothesized model were improvements on the remainder of the models that were tested. The internal consistency reliability was similar to the EFA study, again demonstrating adequate reliability (threat = .82, challenge = .87, loss = .75).

Test-retest reliability was ascertained by Ferguson et al. (1999) for 9 women and 8 men over a one-month period, and for 33 male and 44 female first-year undergraduate students over a three-month period. In one study, participants were given the ALE and asked to provide a detailed description of the stressful event to which they were responding. After a one-month period, participants were presented with a transcript detailing the original stressful event and asked to complete the ALE again for this event. Appraisals at time one and two were significantly correlated (threat = .90; challenge = .86; loss = .77). The second test-retest study involved having students appraise the recent life-event of leaving home. They responded to the event shortly after it occurred, then again three months later. All three correlations were again significant (threat = .49; challenge = .48; loss = .59).

Ferguson and colleagues also presented data on convergent and divergent validity between the ALE factors and neuroticism, extraversion, coping behavior (emotion-focused, task-focused, and avoidance), the General Health Questionnaire (GHQ; Goldberg, 1978) scales, and a measure of homesickness among a sample of 268 graduate students in either master’s or doctoral programs in three universities (121 female, 147 male). The sample responded to both the stress of pressure at work and to being away
from home while at school. They found significant positive correlations between both threat and loss appraisals and neuroticism, emotion-focused coping, avoidance coping, and all indicators of poor psychological health among both samples. Challenge appraisals were significantly positively correlated with extraversion and task-focused coping among the work sample, and extraversion, task-focused and avoidance coping among the school sample. They found significant negative correlations between challenge appraisals and neuroticism, emotion-focused coping, and four of the health indicators (GHQ-total, GHQ-Depression, GHQ-Social Dysfunction, and Homesickness) for the work sample, and with GHQ-Social Dysfunction and Homesickness for the school sample. The authors had predicted that neuroticism would be related to perceiving the environment as more threatening and loss-related; therefore, the negative relationship between challenge appraisals and neuroticism and the positive relationships between threat and loss appraisals and neuroticism follow expected patterns. Extraversion was expected to be related to challenge appraisals, as extraverted individuals were believed to hold more proactive views about negative situations, and emotion and avoidance coping were expected to occur more often in situations that individuals appraised as a threat or loss, due to theory and research that suggests that individuals engage in these coping styles when they perceive little control over a situation. Finally, theory suggests that loss and threat appraisals are related to higher distress scores and challenge to lower distress scores, which the data supported.
Infertility-Specific Distress

Miller et al. (1998) devised a measure to assess infertility-specific distress and dysfunction. The measure is a six-item self-report instrument created by the authors for their study based on a previously developed measure regarding general gynecological distress. The measure developed by Miller and colleagues is designed to assess an individual’s perception of the stressfulness of experiencing infertility as well as the extent to which infertility affects functioning across the dimensions of work, social relationships, partner relationships, sexual relationships, and daily living. The measure is specific to psychological aspects of distress and was devised with the intention of being unrelated to medical sources of distress.

Items are rated on a five-point Likert scale, ranging from 1 (not at all) to 5 (extremely). Examples of items include, “How stressful is your infertility condition for you?”, and “To what extent has your infertility condition interfered with your ability to carry on with your life as usual?” Scoring is accomplished by summing item responses across the six items. Scores range from 0 to 5; item scores are summed and averaged across the number of items, with a mean of 2.63 and standard deviation of 0.89 reported for the original sample (Miller et al., 1998).

Miller et al. (1998) reported good internal consistency reliability ($\alpha = .85$) for a sample of 64 female patients at a medical practice for infertility. Participants in their study had a mean score on the measure of 2.63 and standard deviation of 0.89. In addition, the measure did not correlate with any of their demographic items, including the number of unsuccessfully attempted medical treatments an individual had undertaken.
Miller and colleagues expected no relationship between these variables, as the intention was to create a measure that assessed distress specific to the psychological and social factors of infertility, rather than distress due to medical procedures. Many studies regarding distress related to infertility have measured distress in nonspecific manners, which may confuse medical and psychological sources of distress. In addition, Miller and colleagues found that the Beck Depression Inventory (BDI; Beck, Ward, Medelson, Mock, & Erbaugh, 1961), State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970), and avoidant and intrusive ideation from the Revised Impact of Events Scale (RIES; Horowitz, Wilner, & Alvarez, 1979) were predictive of infertility-specific distress scores.

**General Well-Being**

The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) was used to measure general well-being. The SWLS is a five-item survey used to assess individual’s global cognitive perceptions of satisfaction with life. Life satisfaction is defined as a judgmental process through which individuals rate their own life quality through criteria based on personal values and goals. Items are written in global rather than specific language, allowing the measure to be used for a variety of purposes. The items are written at a sixth to tenth grade reading level and have been normed on a variety of populations, including college students, elderly populations, persons with disabilities, psychotherapy clients, and a number of cross-cultural samples (Pavot & Diener, 1993a).
Scale construction originally included 48 theoretically developed items which were reduced through factor analysis to eliminate redundancy and items which loaded on positive and negative affect factors rather than life satisfaction. The five remaining items are rated on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) and include statements such as, “In most ways my life is close to my ideal,” and, “So far I have gotten the important things I want in life.” The measure can be scored by adding item responses and comparing to a norm-based scale ranging from extremely dissatisfied (5-9) to extremely satisfied (31-35) (Diener et al., 1985). Among a sample of 176 college students, Diener and colleagues found a mean of 23.5 and standard deviation of 6.4.

A number of authors have reported adequate internal consistency and test-retest reliability (Pavot & Diener, 1993a) for the SWLS. Pavot, Diener, Colvin, and Sandvik (1991) reported a test-retest coefficient of .84 for a one month interval with an internal consistency coefficient of .85 for a sample of 130 undergraduate students and 39 older adults. Two other studies reported test-retest reliability for a two-month period. Blais, Vallerand, Pelletier, and Briere (1989) reported a test-retest coefficient of .64 and internal consistency coefficients between .79 and .84 for a sample of 355 male and 472 female French-Canadian college students and 77 male and 236 female older French-Canadian adults. Diener, Emmons, Larsen, and Griffin (1985) reported a test-retest coefficient of .82 and an internal consistency reliability coefficient of .87 for a sample of 176 undergraduate students. At ten weeks, Yardley and Rice (1991) reported a test-retest coefficient of .50 and internal consistency coefficients ranging between .80 and .86 for 65
undergraduate students. Finally, Magnus, Diener, Fujita, and Pavot (1993) reported a test-retest coefficient of .54 for a four-year interval, with an internal consistency coefficient of .87 for 62 female and 35 male undergraduate students.

Pavot and Diener (1993a) also reported construct validity evidence for the SWLS. They reported that the groups which have scored lowest on the SWLS include psychiatric patients, prisoners, students in poor and turbulent countries, and women who have experienced abuse. In addition, several authors have provided convergent and divergent validity evidence using a variety of methodological approaches to measure life satisfaction. Correlations between the SWLS and the Andrews/Withey scale, which is a self-report measure of life satisfaction, range from .58 to .68 among undergraduate students and elderly adults (Diener, Emmons, Larsen, & Griffin, 1985; Larsen, Diener, & Emmons, 1985). Correlations with another self-report measure of life satisfaction, the Fordyce Global Scale, are more variable and range from .45 to .82, among samples of 255 nurses and health workers, 130 college students, 176 college students, and 39 older adults (Judge, 1990; Diener, Emmons, Larsen, & Griffin; Pavot & Diener, 1993b; Pavot, Diener, Colvin, & Sandvik, 1991).

Interviewer ratings of life satisfaction correlated with the SWLS at .43 for a sample of 176 college students (Diener et al., 1985) and informant reports correlated with the SWLS between .43 and .54 for samples of nurses and health workers, college students, and older adults (Judge, 1990; Pavot & Diener, 1993b). Negative correlations have been shown between the SWLS and measures of distress, including -.72 with the Beck Depression Inventory among French-Canadian college students and older adults.
(Blais, Vallerand, Pelletier, & Briere, 1989) and -.31 with a general measure of negative affect among two samples of college students and 53 elderly adults (Larsen, Diener, & Emmons, 1985). A more recent review by Pavot and Diener (2008) indicated that the SWLS has been used extensively to examine the quality of life of individuals with serious health concerns and that reliability and validity statistics have supported its use in this population.

Procedures

After ethical approval was granted by the University of Akron Institutional Review Board for the Protection of Human Subjects, women were recruited through RESOLVE support groups. See Appendix 3 for a copy of the IRB approval letter. E-mails were sent to support group leaders and members describing the study. In addition, the e-mail included a request to forward the study information to other eligible women who met criteria for the study. Women were asked to complete the surveys through the online survey program Survey Monkey. Informed consent was provided through the link to the survey site and participants were assumed to have provided consent if they continued with the survey. Potential participants were asked to answer items regarding gender and fertility status as part of the demographic questionnaire as a validity check, and individuals who did not meet criteria for the study were linked to the survey completion page which included a link to enter a drawing for one of two $25 gift certificates.
Participation in the study took approximately 10-20 minutes. Participants first completed several items from the demographic questionnaire as screening measures, including sex, age, and fertility status. They then completed the SWLS followed by the Infertility-Specific Distress measure, as these were the dependent variables. The ALE was presented following the dependent variable. Finally, they completed the CFNI and the remainder of the demographic and reproductive questions. Most of the demographic and reproductive questions were presented at the end of the study so that responses to these questions would not affect responses to the questionnaires. When participants completed the surveys, they were provided a list of phone numbers and websites for counseling and support services in case they experienced distress while completing the study. As participants were geographically diverse, websites were provided for the regional HelpLines for RESOLVE (http://www.resolve.org/site/PageServer?pagename=abt_HelpLine), the National Board of Certified Counselors CounselorFind (http://www.nbcc.org/counselorfind2), and the Psychologist Finder for the American Psychological Association (http://locator.apa.org). Two participants were randomly selected to receive a $25 gift card following completion of data collection.

Data Analysis

All variables were screened to determine that they met the requirements of a normal distribution, including checking for skewness and kurtosis. In addition, data were checked for multicollinearity which is defined as correlations above .90 (Tabachnick & Fidell, 2007). Past research and reviews (e.g. Daniluk & Fluker, 1995; Domar, Clapp,
Slawsby, Kessel, Orav, & Freizinger, 2000; Edelmann & Connolly, 1998; Edelmann, Connolly, & Robson, 1989; Mikulincer, Horesh, Levy-Shiff, Manovich, & Shalev, 1998; Miller et al., 1998; Ulbrich, Coyle, & Llabre, 1990) have suggested that important covariates to examine include age, number of children, religious identification, diagnostic status, treatment procedures, and duration of infertility. Specifically, distress appears to peak between the second and third years of the diagnosis and treatment process (Daniluk & Fluker; Domar et al.). Distress also appears to be higher when the male partner receives a diagnosis, in relationships with less support, with increases in the number of unsuccessful medical treatments, and when individuals have no previous children (Mikulincer et al.). McEwan and colleagues (1987) reported that distress appears to be lower among older participants, those who reported supportive relationships, who do not have medical diagnosis, and among those in Protestant religions. Potential covariates were examined for their relation to the other primary variables through stepwise regression.

Hypotheses were tested with simple or multiple regression via SPSS. The first hypothesis was tested through three simple regressions in which infertility-specific distress, as measured by the Miller et al. (1998) instrument, was the dependent variable and loss, threat or challenge appraisals of infertility, as measured by the ALE, were the independent variable. A significant and positive relationship was expected for the loss and threat appraisals and a negative relationship was expected for the challenge appraisal. The second hypothesis was tested using a similar procedure but substituted general well-being, as measured by the Satisfaction with Life Scale, as the dependent variable. A
significant and negative relationship was expected for the loss and threat appraisals and a positive relationship was expected for the challenge appraisal.

The third hypothesis was tested using two simple regressions. Infertility-specific distress or general well-being was the dependent variable and traditional gender ideology, as measured by the total score from the Conformity to Feminine Norms Inventory (Mahalik et al., 2005), was the independent variable. It was expected that infertility-specific distress is significantly and positively related to traditional gender ideologies and that well-being is significantly and negatively related to traditional gender ideology for these women who are experiencing infertility.

The fourth hypothesis was tested using multiple regression following the Baron and Kenny (1986) steps for tests of mediation. First, the expected relations of greater adherence to traditional gender ideologies to lower general well-being and higher infertility-specific distress was examined via two simple regressions. Next, the expected relation of greater adherence to traditional gender ideologies to higher threat and loss appraisals and lower challenge appraisals was examined via three simple regressions. The third step involved testing whether the appraisals of infertility partially mediate the relations between adherence to traditional gender ideologies and distress or well-being. This step was tested with six multiple regressions. If evidence of mediation was found, six Sobel tests (Sobel, 1982) would be conducted to determine whether the relationships between traditional gender ideologies and infertility-specific distress and well-being are characterized by partial or full mediation through primary appraisals.
Finally, the fifth hypothesis, that infertility-specific distress is expected to be related to lower general well-being, was tested through a simple regression. General well-being served as the dependent variable and infertility-specific distress as the independent variable. A significant, negative relation was expected.

Exploratory path analysis was completed following tests of the hypotheses. Path analysis included those variables and relationships specified in the conceptual model in Figure 1 that were found to be significant predictors in the tests of the hypotheses. In addition, exploratory analyses included testing the third and fourth hypotheses substituting the Care for Children subscale of the CFNI in place of the total score.
CHAPTER IV
RESULTS

This chapter discusses the data screening, descriptive statistics, and results of the tests of the hypotheses. In addition, results of the exploratory analyses are described. Data screening included analysis of missing data, outliers, and normality. The descriptive statistics involved the means and standard deviations for each measure, a correlation table for variables of interest, and identification of covariates. Tests of the hypotheses are presented in terms of the regression analyses. Exploratory analysis included regressions for the Caring for Children scale of the Conformity to Feminine Norms Inventory (CFNI) and a path analysis including the relationships identified in the hypothesis tests.

Data Screening

Cases with significant amounts of missing data were deleted prior to analyses. These included 54 individuals who did not provide information beyond the questions about sex, age, and fertility status, and the two dependent measures. Following this step, I completed a missing values analysis through SPSS to determine the amount of and any patterns in missing data. The missing values analysis permits exploration of possible patterns of missing data and can provide estimated values for the missing data through a variety of procedures, including mean imputation, regression, and maximum likelihood
estimation. This analysis, as well as visual scanning of the data, did not indicate any patterns to the data that were missing. As such, I used the expectation maximum procedure for imputing data in SPSS as it is based on maximum likelihood estimation. Howell (2008) recommended maximum likelihood as one of the most reliable and accurate methods of dealing with missing data; it uses the available data to estimate model parameters and imputes missing data through an iterative process. This procedure for estimation overcomes drawbacks of regression and mean imputation by adding error variance to the estimates (Allison, 2001; Howell).

Following missing data procedures, the data were screened for outliers according to recommendations provided by Tabachnick and Fidell (2007) who defined outliers as observations beyond three standard deviations from the mean of the scale. One observation was more than three standard deviations below the mean on the Conformity to Feminine Norms Inventory (CFNI) and it was fixed to the next lowest observation (from 101 to 106). On the Involvement with Children scale of the CFNI, four observations were found more than three standard deviations below the mean and were fixed from 2.5 to 3. Finally, two observations were found more than three standard deviations above the mean on the Challenge subscale of the Appraisal of Life Events scale and were fixed from 20.8 to 20.

Normality of scales was checked through skew and kurtosis statistics, histograms, and Q-Q plots. The scales were found to be within reasonable standards for normality according to recommendations for moderate sample sizes by Tabachnick and Fidell (2007), except that the Challenge subscale of the Appraisal of Life Events scale had a
slight positive skew and was leptokurtic (skew = .57, std error = .179; kurtosis = .95, std error .35). The Challenge subscale is discussed in further detail below.

Descriptive Statistics

Following data cleaning, I calculated means, standard deviations, and internal consistency reliability for each measure. This information is presented in Table 1. The participants reported a mean score on the Conformity to Feminine Norms Inventory (CFNI) of 160.87 with a standard deviation of 19.81, which is similar to that reported by Mahalik and colleagues (2005) among 733 undergraduate women (X = 162.73, SD = 18.26) and somewhat higher than that reported by Tokar and colleagues (2007) among 144 women and 113 men in undergraduate psychology courses (X = 145.39, SD = 22.47). Internal consistency reliability was calculated using coefficient alpha and was found to be .89 in the present sample. Mahalik et al. reported an alpha of .88 and Tokar and colleagues found an alpha of .91. As the Caring for Children subscale of the CFNI was used in exploratory analyses, descriptive statistics are also presented for this scale. In this sample, the mean was 25.39 with a standard deviation of 7.53, which was similar to that found by Mahalik and colleagues (X = 26.51, SD = 6.24). Coefficient alpha was .92 in this sample, .92 in the sample presented by Mahalik, and .91 in the study by Tokar and colleagues.

The Threat subscale of the Appraisal of Life Events scale (ALE) had a mean of 16.45 and standard deviation of 8.65 in the current sample. Ferguson and colleagues (1999) reported a mean of 8.89 among participants responding to work pressures and a
mean of 5.46 among participants responding to adjusting to homesickness in college, but
did not provide standard deviations. Alpha in the current sample is .90, and was reported
as .82 among the participants in the Ferguson et al. study. On the Loss subscale of the
ALE, participants in the current study had a mean of 12.37 and standard deviation of
5.68; the participants responding to work pressures had a mean of 4.59 and the college
sample had a mean of 4.57, according to Ferguson and colleagues. Alpha in the current
sample was .86 and was reported as .75 by Ferguson et al.

The Satisfaction with Life Scale (SWLS) had a mean of 23.33 and standard
deviation of 7.05 among the current sample, which was similar to that reported by Diener
et al. (1985) among college students ($X = 23.5$, $SD = 6.4$). Alpha in the current study was
.86, which is comparable to previous studies, including Diener et al. ($\alpha = .87$), Yardley
and Rice (1991; $\alpha = .80$-.86 for several samples of undergraduates), Magnus et al. (1993;
$\alpha = .87$ for undergraduates), Pavot et al. (1991; $\alpha = .85$ for undergraduates and older
adults), and Blais et al. (1989; $\alpha = .79$-.84 for French-Canadian undergraduates and older
adults).

The Infertility-Specific Distress measure (ISD) had a mean of 19.64 and standard
deviation of 5.69 in this sample, using a sum of the items. Miller et al. (1998) averaged
each item and provided the mean for the sum of these averages, presenting a mean of
2.63 and standard deviation of 0.89. If the average of items was used to calculate the
mean in the current study, the mean would be 3.27 with a standard deviation of .95.
Alpha in the present sample was .86, which was similar to that of a sample of female
infertility patients at a medical clinic reported by Miller et al. ($\alpha = .85$).
Appraisal of Life Events – Challenge Subscale

The mean for the Challenge subscale of the ALE was 8.42 with a standard deviation of 3.83 among the current sample. Ferguson and colleagues (1999) provided the only prior information regarding this subscale, with a mean of 15.7 among participants responding to work pressures and 12.6 among college students responding to homesickness. No standard deviations were provided for these samples. Alpha among the current sample was only .49, but it was reported at .87 for the Ferguson sample. The scale also displayed the problems with normality discussed previously. As such, I made a number of attempts to correct the scale for low internal consistency and nonnormality.

First of all, I attempted to respond to problems in alpha and normality by performing item analysis and including the additional item regarding challenge appraisals that I added to the demographic questionnaire. The highest alpha that was possible to attain was .68 by eliminating three items. Subsequent to that change, however, normality statistics became worse for the scale (skew of 1.89, std error .17, kurtosis = 3.13, std error = .35). The revised Challenge subscale had six outliers at the high end which I fixed to the next highest score within three standard deviations of the mean, but this change did not beneficially impact alpha or normality. In addition, the items which were eliminated (i.e., challenging, informative, and the additional challenge item) were those of greatest interest for the present hypotheses as these items were more directly linked to the concept of challenge. The items remaining (i.e., enjoyable, stimulating, exhilarating, and exciting) were not well connected to the purpose of the current study and lacked the variability provided by the other three items. Given that this revised scale did not provide the
conceptual information important to this study and had problematic normality and internal consistency, it was not used further for analyses.

I also attempted to create a scale using the three items of greatest conceptual interest (i.e., challenging, informative, and the additional challenge item). This scale had an alpha of .49 and was negatively skewed (skew = -.87, std error = .17; kurtosis = .62, std error = .35). Due to lack of improvement in normality or internal consistency, and the loss of variability using fewer items, I decided to proceed with caution and use the original Challenge scale of the ALE for the tests of the hypotheses.

Covariates

Examination of the full correlation matrix identified several possible covariates for the primary criterion variables in the regression analyses. Significant correlates of the Infertility-Specific Distress (ISD) scale included age ($r = -.19, p = .008$), total number of mental health treatments utilized ($r = .26, p < .001$), months of medical treatment ($r = .22, p = .002$), cost of medical treatment after insurance ($r = .25, p = .001$), and number of medical treatments attempted ($r = .34, p < .001$). Correlates of the Satisfaction with Life Scale (SWLS) include fertility status ($r = .25, p < .001$), perceived relationship support ($r = .18, p = .01$), yearly income in dollars ($r = .24, p = .003$), number of children ($r = .23, p = .001$), and total number of mental health treatments utilized ($r = -.34, p < .001$).

Stepwise regression analyses including the potential covariates for the SWLS and ISD were conducted next. Potential covariates were also examined in terms of their conceptual and statistical overlap with the predictors of interest for the subsequent
hypothesis tests. Covariates were retained for the hypothesis tests if they were identified in the stepwise regression analyses and did not overlap with the predictors of interest.

For the ISD, number of medical treatments attempted, age, and total medical cost after insurance were retained from the stepwise regression analysis. In hypotheses with the ALE Threat and ALE Challenge measures, only total medical cost was retained because both age and total medical treatments were significantly correlated with the ALE Threat and Challenge scales. No covariates were retained for the ALE Loss hypothesis with the ISD, as age, total medical cost, and total medical treatments were all correlated with ALE Loss. For the CFNI hypothesis with the ISD, total medical treatment and total medical cost were identified, but they were correlated with one another so only total medical treatments attempted was used as a covariate with the CFNI because it was identified first in the stepwise regression.

Covariates identified in the stepwise regression analysis for the SWLS included total mental health treatment, number of children, and income. Income and number of children were both used in the analyses with the ALE Threat and Loss measures, as they were uncorrelated with these scales. Income and total mental health treatment were used as covariates with the ALE Challenge scale. All three potential covariates were found to be unrelated to the CFNI and were therefore used in the analyses for which it was a predictor. Finally, income and number of children were found to be unrelated to the ISD and were used as covariates with this measure when it was used to predict well-being. The correlations for the retained covariates are seen in Table 1 and the results of the stepwise regression analyses are included in Appendix D.
Table 1. Correlations between predictors, criterion variables, and covariates (N=185).

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
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<td>-</td>
<td>.66**</td>
<td>.26**</td>
<td>.26**</td>
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<td>.00</td>
<td>.18*</td>
<td>.01</td>
<td>.05</td>
<td>.08</td>
<td>.13</td>
</tr>
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<td>2. CFNI-C</td>
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<td>-</td>
<td>.26**</td>
<td>.03</td>
<td>-.03</td>
<td>.24**</td>
<td>.08</td>
<td>.05</td>
<td>.06</td>
<td>.21**</td>
<td></td>
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<td>.22**</td>
<td>-</td>
<td>-.22*</td>
<td>.65**</td>
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<td>.24**</td>
<td>.00</td>
<td>.00</td>
<td></td>
<td></td>
</tr>
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<td>4. ALE Loss</td>
<td>.14</td>
<td>-.39*</td>
<td>.73**</td>
<td>-</td>
<td>.18*</td>
<td>.34**</td>
<td>-.06</td>
<td>.00</td>
<td>.00</td>
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<td></td>
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<td>5. ALE Challenge</td>
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<td>.09</td>
<td>.08</td>
<td>.18*</td>
<td>-</td>
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<td>-.18**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>6. SWLS</td>
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<td>-.10</td>
<td>-.06</td>
<td>.24**</td>
<td>-</td>
<td>.24**</td>
<td></td>
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<td></td>
</tr>
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<td>7. ISD</td>
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<td>-.35**</td>
<td>-.02</td>
<td>.13</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8. Cost</td>
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<td>.29**</td>
<td>.06</td>
<td></td>
<td></td>
<td>-</td>
<td>-.02</td>
<td>.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Treatment</td>
<td></td>
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<td></td>
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<td>.15</td>
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<td></td>
<td></td>
<td></td>
<td>.08</td>
</tr>
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<td>11. Children</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.86</td>
</tr>
</tbody>
</table>

| X       | 160.9 | 25.39 | 16.45 | 12.37 | 8.42 | 23.33 | 19.64 |
| SD      | 19.81 | 7.53  | 8.65  | 5.68  | 3.83 | 7.05  | 5.69  |
| α       | 0.89  | 0.92  | 0.9  | 0.86  | 0.49 | 0.86  | 0.86  |

Note. * p < .05, two-tailed, ** p < .01, two-tailed. Conformity to Feminine Norms Inventory (CFNI), Involvement with Children subscale of the CFNI (CFNI-C), subscales of the Appraisal of Life Events scale (ALE), Satisfaction with Life Scale (SWLS), Infertility-Specific Distress scale (ISD), and covariates of Total Medical Cost, Number of Medical Treatments Attempted, Income, and Number of Children.
Tests of the Hypotheses

This section describes the five hypotheses of this research and the statistical techniques used to test them. Results are provided in the following text and tables.

_Hypothesis One_

Consistent with Lazarus and Folkman’s (1984) stress and coping model, it was hypothesized that women’s primary appraisal of infertility is related to their experience of infertility-specific distress. First, it was predicted that increases in appraisal of infertility as a threat are associated with increases in infertility-specific distress. The covariate of medical cost after insurance was entered first and significantly predicted infertility-specific distress ($R^2 = .07, p < .001; \beta = .25, p < .001$). When threat appraisals were included with total medical cost, the model was significant ($R^2 = .47, p < .001$) with an increase in $R^2$ of .40 ($p < .001$). Greater threat appraisals were related to more infertility-specific distress as expected ($\beta = .64, p < .001$).

The second part of the hypothesis predicted that increases in appraisal of infertility as a loss are associated with increases in infertility-specific distress, and this was also supported ($R^2 = .53, p < .001$). As previously specified, only the ALE Loss subscale was included in this analysis, and it was significantly predictive of infertility-specific distress ($\beta = .73, p < .001$).

The final piece of this hypothesis, that increases in appraisal of infertility as a challenge would be associated with decreases in infertility-specific distress, was tested with the covariate of total medical cost. Total medical cost was a significant positive
predictor of infertility-specific distress ($R^2 = .07, p < .001; \beta = .25, p < .001$), but the ALE Challenge scale added no predictive value of the model ($R^2 = .07, p < .001; R^2 \Delta = .00, p = .26$). The ALE Challenge scale was not a significant predictor of infertility-specific distress ($\beta = .08, p = .26$). The regression analyses for Hypothesis One are presented in Table 2.
Table 2. Summary of regression analyses for models predicting Infertility-Specific Distress (ISD) in Hypothesis One (N = 185).

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>R</th>
<th>R²</th>
<th>R² Δ</th>
<th>F Δ</th>
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<td><strong>Hypothesis 1a</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1 Medical cost</td>
<td>.00</td>
<td>.00</td>
<td>.25**</td>
<td>.25**</td>
<td>.07**</td>
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<td>.68**</td>
<td>.47**</td>
<td>.40**</td>
<td>28.09**</td>
</tr>
<tr>
<td>ALE Threat</td>
<td>.41</td>
<td>.04</td>
<td>.64**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hypothesis 1b</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ALE Loss</td>
<td>.73</td>
<td>.05</td>
<td>.73**</td>
<td>.73**</td>
<td>.53**</td>
<td>.53**</td>
<td>209.36**</td>
</tr>
<tr>
<td><strong>Hypothesis 1c</strong></td>
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<td>1 Medical cost</td>
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<td>.25**</td>
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<td>.08</td>
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</tbody>
</table>

Note. * p < .05, two tailed; ** p < .001, two tailed. Appraisal of Life Events scale (ALE).
Hypothesis Two

Consistent with Lazarus and Folkman’s (1984) stress and coping model, it was predicted that women’s primary appraisal of infertility is related to their experience of general well-being. The first part of the hypothesis predicted that increases in appraisal of infertility as a threat are associated with decreases in general well-being. The covariates of income and number of children were entered first; the model was found to be significant ($R^2 = .10, p < .001$) with both covariates significant positive predictors of general well-being ($\beta = .21, p < .05$, and $\beta = .20, p < .05$). The ALE Threat scale was added next and found to be a significant negative predictor ($\beta = -.16, p < .05$) of well-being above and beyond both income and children. The total model was significant ($R^2 = .12, p < .001$), but the addition of the Threat scale only accounted for 2% more variance than the covariates alone ($R^2 \Delta = .02, p = .04$).

The second part of this hypothesis predicted that increases in appraisal of infertility as a loss are associated with decreases in general well-being. Income and number of children were entered as covariates and accounted for 10% of the variance in general well-being ($R^2 = .10, p < .001$) with both covariates serving as significant positive predictors of well-being ($\beta = .21, p < .05$ for income, and $\beta = .20, p < .05$ for number of children). Loss appraisals were added next to the regression model and significantly negatively predicted well-being ($\beta = -.33, p < .001$) above and beyond income and number of children. The addition of the loss appraisal accounted for 11% more variance in general well-being than the covariates alone ($R^2 = .21, p < .001, R^2 \Delta = .11, p < .001$).
The final part of this second hypothesis predicted that increases in appraisal of infertility as a challenge are related to increases in general well-being. Income and total number of mental health treatments were entered first as covariates ($R^2 = .16, p < .001$); income predicted higher general well-being ($\beta = .22, p < .05$) and total mental health treatments predicted lower well-being ($\beta = -.33, p < .001$). When entered with the covariates, the ALE Challenge scale was not a significant predictor of general well-being ($\beta = .10, p = .21$) and the total model only accounted for 1% more variance ($R^2 = .17, p < .001, R^2 \Delta = .01, p = .21$). Regression results for Hypothesis Two are presented in Table 3.
Table 3. Summary of regression analyses for models predicting Satisfaction with Life (SWLS) in Hypothesis Two (N = 185).

<table>
<thead>
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<th>Variable</th>
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<tr>
<td></td>
<td>B</td>
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<td>.00</td>
<td>.21*</td>
<td>.31**</td>
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<tr>
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<td>.20*</td>
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<tr>
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<td>.00</td>
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<td>.35**</td>
</tr>
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<td>-.16*</td>
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</tr>
<tr>
<td>Income</td>
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<td>.00</td>
<td>.20*</td>
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</tr>
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</tr>
<tr>
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<td>.10</td>
<td>-.33**</td>
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</table>

Hypothesis 2c

<table>
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<td></td>
<td>B</td>
<td>SE B</td>
<td>β</td>
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<td>Income</td>
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<tr>
<td>ALE Challenge</td>
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<td>.15</td>
<td>.10</td>
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</tbody>
</table>

Note. * p < .05, two tailed; ** p < .001, two tailed. Appraisal of Life Events (ALE).
Hypothesis Three

Consistent with the motherhood mandate (Russo, 1976), it was expected that women’s adherence to traditional gender ideologies is related to their experience of infertility-specific distress and general well-being. First, medical treatment was entered as a covariate and found to be a significant positive predictor of infertility-specific distress ($R^2 = .12, p < .001, \beta = .35, p < .001$). Traditional gender ideology scores were then added to the model and did not add predictive power when entered with medical treatment ($\beta = .10, p = .17$). The full model predicted only 1% more variance ($R^2 = .13, p < .001, R^2 \Delta = .01, p = .17$).

The second part of Hypothesis Three predicted that lesser adherence to traditional gender ideologies is related to greater general well-being. Total mental health treatments, number of children, and income were entered as covariates in the first step and the model was significant ($R^2 = .20, p < .001$). Total mental health treatments was a significant negative predictor of general well-being ($\beta = -.32, p < .001$), and both number of children and income were significant positive predictors of well-being ($\beta = .19, p < .05$, and $\beta = .20, p < .05$, respectively). Traditional gender ideology adherence was added next and did not predict well-being above and beyond the covariates ($\beta = -.06, p = .46$); the full model did not account for any more variance than the covariates alone ($R^2 = .20, p < .001, R^2 \Delta = .00, p = .46$). Results for these regressions are presented in Table 4.
Table 4. Summary of regression analyses for models predicting Infertility-Specific Distress (ISD) and Satisfaction with Life Scale (SWLS) in Hypothesis Three (N = 185).

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>R</th>
<th>R²</th>
<th>Δ R²</th>
<th>F Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hypothesis 3a - ISD</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Medical treatment</td>
<td>.81</td>
<td>.17</td>
<td>.35**</td>
<td>.35**</td>
<td>.12**</td>
<td>.12**</td>
<td>24.73**</td>
</tr>
<tr>
<td>2 Medical treatment</td>
<td>.80</td>
<td>.17</td>
<td>.35**</td>
<td>.36**</td>
<td>.13**</td>
<td>.01</td>
<td>1.91</td>
</tr>
<tr>
<td>CFNI</td>
<td>.03</td>
<td>.02</td>
<td>.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hypothesis 3b - SWLS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 MH treatment</td>
<td>-2.82</td>
<td>.68</td>
<td>-32**</td>
<td>.44**</td>
<td>.20**</td>
<td>.20**</td>
<td>11.42**</td>
</tr>
<tr>
<td>Children</td>
<td>1.63</td>
<td>.66</td>
<td>.19*</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Income</td>
<td>.00</td>
<td>.00</td>
<td>.20*</td>
<td></td>
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<tr>
<td>2 MH treatment</td>
<td>-2.84</td>
<td>.68</td>
<td>-32**</td>
<td>.45**</td>
<td>.20**</td>
<td>.00</td>
<td>.56</td>
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<td>Children</td>
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<td>.67</td>
<td>.20*</td>
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<td></td>
</tr>
<tr>
<td>Income</td>
<td>.00</td>
<td>.00</td>
<td>.20*</td>
<td></td>
<td></td>
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<td></td>
</tr>
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<td>CFNI</td>
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<td>.03</td>
<td>-.06</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Note. * p < .05, two-tailed; ** p < .001, two-tailed. Conformity to Feminine Norms Inventory (CFNI), number of mental health treatments utilized (MH treatment), number of children (Children), and yearly income in dollars (Income).
Hypothesis Four

The fourth hypothesis predicted that the relationships between traditional gender ideologies and both infertility-specific distress and general well-being are at least partially mediated by women’s primary appraisal of infertility. Covariates were not used in the mediation analyses to maintain clarity in the analyses. Each of the parts (a through f) of this hypothesis was examined using Baron and Kenny’s (1986) steps to test for mediation.

Specifically, Hypothesis 4a predicted that greater adherence to traditional gender ideologies is related to lesser general well-being in part through greater threat primary appraisals of infertility. As gender ideologies were not related to well-being when no covariates were used ($R^2 = .00, \beta = .00, p = .97$), the first step of mediation was not met and therefore this hypothesis was not supported. Hypothesis 4c (i.e., greater adherence to traditional gender ideologies is related to lesser well-being through greater loss primary appraisals of infertility) and 4e (i.e., lesser adherence to traditional gender ideologies is related to greater well-being through greater challenge primary appraisals of infertility) were not supported for this same reason.

Hypothesis 4b predicted that greater adherence to traditional gender ideologies is related to greater infertility-specific distress in part through greater threat primary appraisals of infertility. The expected relationship of greater adherence to traditional gender ideologies and higher infertility-specific distress was supported, verifying the first step in testing for mediation ($R^2 = .03, \beta = .18, p < .05$). Greater traditional gender ideologies also were found to be a significant positive predictor of threat appraisals ($R^2 = \ldots$)
.07, $\beta = .26, p < .001$), and greater threat appraisals were found to be related to greater infertility-specific distress ($R^2 = .42, \beta = .65, p < .001$), supporting the second and third steps in testing for mediation. Finally, Baron and Kenny’s (1986) fourth step was verified, as gender ideologies ($\beta = .02, p = .79$) were no longer predictive of infertility-specific distress when threat appraisals ($\beta = .65, p < .001$) were also included in the regression equation. The Sobel test (Sobel, 1982) was significant ($z = 3.14, p < .001$), indicating that the effect of gender ideologies on infertility-specific distress is fully mediated by threat appraisals. These regressions are summarized in Table 5.
Table 5. Summary of regression analyses for mediation Hypothesis 4b (N=185).

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>R</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CFNI on ISD:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>CFNI</td>
<td></td>
<td>.05</td>
<td>.02</td>
<td>.18*</td>
<td>.18*</td>
<td>.03*</td>
</tr>
<tr>
<td>2</td>
<td>CFNI on ALE Threat:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI</td>
<td></td>
<td>.11</td>
<td>.03</td>
<td>.26**</td>
<td>.26**</td>
<td>.07**</td>
</tr>
<tr>
<td>3</td>
<td>ALE Threat on ISD:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALE Threat</td>
<td></td>
<td>.43</td>
<td>.04</td>
<td>.65**</td>
<td>.65**</td>
<td>.42**</td>
</tr>
<tr>
<td>4</td>
<td>CFNI and ALE Threat on ISD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>.00</td>
<td>.02</td>
<td>.02</td>
<td>.65**</td>
<td>.42**</td>
</tr>
<tr>
<td>ALE Threat</td>
<td></td>
<td>.42</td>
<td>.04</td>
<td>.65**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. * p < .05, two-tailed; ** p < .001, two-tailed. df for Analyses 1, 2, and 3 = 1, 183. df for Analysis 4 = 2, 182. Conformity to Feminine Norms Inventory (CFNI), Infertility-Specific Distress scale (ISD), and Threat subscale of the Appraisal of Life Events scale (ALE Threat).
Hypothesis 4d predicted that greater adherence to traditional gender ideologies is related to greater infertility-specific distress in part through greater loss primary appraisals of infertility. The expected relationship of greater adherence to traditional gender ideologies to higher infertility-specific distress was supported, verifying the first step in testing for mediation ($R^2 = .03$, $\beta = .18$, $p < .05$). Greater traditional gender ideology scores also were found to be a significant positive predictor of loss appraisals ($R^2 = .07$, $\beta = .26$, $p < .001$) and greater loss appraisal scores were found to be related to greater infertility-specific distress ($R^2 = .53$, $\beta = .73$, $p < .001$), verifying the second and third steps in testing for mediation. Finally, Baron and Kenny’s (1986) fourth step in testing for mediation was verified, as gender ideologies ($\beta = .00$, $p = .88$) were no longer predictive of infertility-specific distress when loss appraisals ($\beta = .73$, $p < .001$) were also included in the regression equation. The Sobel test (Sobel, 1982) was significant as well ($z = 3.38$, $p < .001$), indicating that the effect of gender ideologies on infertility-specific distress is fully mediated by loss appraisals. Regressions for this hypothesis are presented in Table 6.
Table 6. Summary of regression analyses for mediation Hypothesis 4d (N=185).

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>SE $B$</th>
<th>$\beta$</th>
<th>$R$</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis 1 – CFNI on ISD:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI</td>
<td>.05</td>
<td>.02</td>
<td>.18*</td>
<td>.18*</td>
<td>.03*</td>
</tr>
<tr>
<td>Analysis 2 – CFNI on ALE Loss:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI</td>
<td>.07</td>
<td>.02</td>
<td>.26**</td>
<td>.26**</td>
<td>.07**</td>
</tr>
<tr>
<td>Analysis 3 – ALE Loss on ISD:</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALE Loss</td>
<td>.73</td>
<td>.05</td>
<td>.73**</td>
<td>.73**</td>
<td>.53**</td>
</tr>
<tr>
<td>Analysis 4 – CFNI and ALE Loss on ISD:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI</td>
<td>.00</td>
<td>.02</td>
<td>-.01</td>
<td>.73**</td>
<td>.53**</td>
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<tr>
<td>ALE Loss</td>
<td>.73</td>
<td>.05</td>
<td>.73**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. * $p < .05$, two-tailed; ** $p < .001$, two-tailed. df for Analyses 1, 2, and 3 = 1, 183. df for Analysis 4 = 1, 182. Conformity to Feminine Norms Inventory (CFNI), Infertility-Specific Distress scale (ISD), and Loss subscale of the Appraisal of Life Events scale (ALE Loss).
Hypothesis 4f that women’s lesser adherence to traditional gender ideologies is related to less infertility-specific distress in part through greater challenge primary appraisals of infertility was not supported. Baron and Kenny’s (1986) first step was verified, in that greater adherence to traditional gender ideologies were related to greater infertility-specific distress ($R^2 = .03, \beta = .18, p < .05$). However, gender ideologies were not predictive of challenge appraisals ($R^2 = .001, p = .69, \beta = .02, p = .69$), failing to support the second step of a test for mediation. Regression results for all nonsignificant mediation hypotheses are shown in Appendix V.

_Hypothesis Five_

The final hypothesis predicted that greater infertility-specific distress is related to lower general well-being. The covariates of income and number of children were significant positive predictors of well-being ($R^2 = .10, p < .001; \beta = .21, p < .001$, and $\beta = .20, p < .001$, respectively). When infertility-specific distress was included with the covariates, the full model predicted 11% more variance ($R^2 = .21, p < .001$, $R^2 \Delta = .11$) and infertility-specific distress was a significant negative predictor of general well-being ($\beta = -.33, p < .001$). Regression results are shown in Table 7.
Table 7. Summary of regression analyses predicting Satisfaction with Life Scale (SWLS) in Hypothesis Five (N = 185).

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE B$</th>
<th>$\beta$</th>
<th>$R$</th>
<th>$R^2$</th>
<th>$R^2 \Delta$</th>
<th>$F \Delta$</th>
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</thead>
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<td>.00</td>
<td>.21*</td>
<td>.31**</td>
<td>.10**</td>
<td>.10**</td>
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<tr>
<td></td>
<td>Children</td>
<td>1.79</td>
<td>.70</td>
<td>.20*</td>
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</tr>
<tr>
<td>2</td>
<td>Income</td>
<td>.00</td>
<td>.00</td>
<td>.20*</td>
<td>.46**</td>
<td>.21**</td>
<td>.11**</td>
</tr>
<tr>
<td></td>
<td>Children</td>
<td>2.10</td>
<td>.66</td>
<td>.24*</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>ISD</td>
<td>-.42</td>
<td>.10</td>
<td>-.33**</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Note. * $p < .05$, two-tailed; ** $p < .001$, two-tailed. Infertility-Specific Distress scale (ISD), number of mental health treatments utilized (MH treatment), and number of children (Children).
Exploratory Analyses

Following tests of the hypotheses, several exploratory analyses were undertaken. First, hypotheses using the Conformity to Feminine Norms Inventory (CFNI) were re-run with the Caring for Children subscale. Path analysis was then used to test the full model based on the results of the hypotheses.

*Caring for Children Scale*

Hypotheses involving the Conformity to Feminine Norms Inventory (CFNI) were re-run using the Caring for Children subscale of this measure as part of exploratory analyses. These included Hypotheses Three and Four. The covariates were not included in these analyses, as they were exploratory in nature. Overall, the exploratory analyses matched the outcomes of those using the total CFNI scale. In general, the relationships were stronger when using the full CFNI rather than the Caring for Children subscale.

The first part of Hypothesis Three stated that greater adherence to traditional gender ideologies is related to greater infertility-specific distress. The strength of the relationship between the Caring for Children subscale and the Infertility-Specific Distress (ISD) scale, however, was slightly larger ($\beta = .24, p < .001$) than the relationship between the CFNI total scale and the ISD ($\beta = .18, p < .001$). The second part of Hypothesis Three stated that lesser adherence to traditional gender ideologies is related to greater general well-being. The CFNI Caring for Children scale was not predictive of the SWLS ($\beta = -.03, p > .05$), as was the case with the CFNI total score ($\beta = .00, p > .05$). See Table 8 for exploratory regression analyses for Hypothesis Three.
Table 8. Summary of exploratory regression analyses for Hypothesis Three (N=185).

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>R</th>
<th>R²</th>
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<tbody>
<tr>
<td>Hypothesis 2a – CFNI-C on ISD:</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>CFNI-C</td>
<td>.18</td>
<td>.05</td>
<td>.24**</td>
<td>.24**</td>
<td>.06**</td>
</tr>
<tr>
<td>Hypothesis 2b – CFNI-C on SWLS:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI-C</td>
<td>-.03</td>
<td>.07</td>
<td>-.03</td>
<td>.03</td>
<td>.00</td>
</tr>
</tbody>
</table>

Note. * p < .05, two-tailed; ** p < .001, two-tailed. Caring for Children scale of the Conformity to Feminine Norms Inventory (CFNI-C), and Satisfaction with Life Scale (SWLS).
Hypothesis 4a stated that greater adherence to traditional gender ideologies is related to lesser general well-being in part through greater threat primary appraisals of infertility. In this exploratory analysis, the CFNI Caring for Children scale was not predictive of the SWLS \((\beta = -.03, p > .05)\). As the CFNI Caring for Children scale was not predictive of the SWLS, the mediation steps were not met for the first part of Hypothesis 4a. Both Hypothesis 4c (i.e., greater adherence to traditional gender ideologies is related to lower well-being through greater loss primary appraisals of infertility) and 4e (i.e., lesser adherence to traditional gender ideologies is related to higher well-being through greater challenge primary appraisals of infertility) were not supported for this same reason. See Tables 9, 10, and 11 for exploratory regression analyses for Hypothesis 4a, 4c, and 4e.
Table 9. Summary of exploratory regression analyses for mediation Hypothesis 4a (N=185).

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE$ $B$</th>
<th>$\beta$</th>
<th>$R$</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis 1 – CFNI-C on SWLS:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI-C</td>
<td>-.03</td>
<td>.07</td>
<td>-.03</td>
<td>.03</td>
<td>.00</td>
</tr>
<tr>
<td>Analysis 2 – CFNI-C on ALE Threat:</td>
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<td>.25**</td>
<td>.25**</td>
<td>.06**</td>
</tr>
<tr>
<td>Analysis 3 – ALE Threat on SWLS:</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>ALE Threat</td>
<td>-.18</td>
<td>.06</td>
<td>-.22*</td>
<td>.22*</td>
<td>.05*</td>
</tr>
<tr>
<td>Analysis 4 – CFNI-C and ALE Threat on SWLS:</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>CFNI-C</td>
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<td>.07</td>
<td>.03</td>
<td>.22**</td>
<td>.05**</td>
</tr>
<tr>
<td>ALE Threat</td>
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<td>.06</td>
<td>-.23**</td>
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<td></td>
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</tbody>
</table>

Note. * $p < .05$, two-tailed; ** $p < .001$, two-tailed. df for Analyses 1, 2, and 3 = 1, 183. df for Analysis 4 = 2, 182. Caring for Children scale of the Conformity to Feminine Norms Inventory (CFNI-C), Satisfaction with Life Scale (SWLS), and Threat subscale of the Appraisal of Life Events scale (ALE Threat).
Table 10. Summary of exploratory regression analyses for mediation Hypothesis 4c (N=185).

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>R</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analysis 1 – CFNI-C on SWLS:</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>CFNI-C</td>
<td>-.03</td>
<td>.07</td>
<td>-.03</td>
<td>.03</td>
<td>.00</td>
</tr>
<tr>
<td><strong>Analysis 2 – CFNI-C on ALE Loss:</strong></td>
<td></td>
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</tr>
<tr>
<td>CFNI-C</td>
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<td>.05</td>
<td>.26**</td>
<td>.26**</td>
<td>.06**</td>
</tr>
<tr>
<td><strong>Analysis 3 – ALE Loss on SWLS:</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ALE Loss</td>
<td>-.49</td>
<td>.08</td>
<td>-.39**</td>
<td>.39**</td>
<td>.15**</td>
</tr>
<tr>
<td><strong>Analysis 4 – CFNI-C and ALE Loss on SWLS:</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI-C</td>
<td>.07</td>
<td>.07</td>
<td>.07</td>
<td>.40**</td>
<td>.16**</td>
</tr>
<tr>
<td>ALE Loss</td>
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<td>.09</td>
<td>-.41**</td>
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<td></td>
</tr>
</tbody>
</table>

Note. * p < .05, two-tailed; ** p < .001, two-tailed. df for Analyses 1, 2, and 3 = 1, 183. df for Analysis 4 = 2, 182. Caring for Children scale of the Conformity to Feminine Norms Inventory (CFNI-C), Satisfaction with Life Scale (SWLS), and Loss subscale of the Appraisal of Life Events scale (ALE Loss).
Table 11. Summary of exploratory regression analyses for mediation Hypothesis 4e (N=185).

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE$</th>
<th>$\beta$</th>
<th>$R$</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis 1 – CFNI-C on SWLS:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI-C</td>
<td>-.03</td>
<td>.07</td>
<td>-.03</td>
<td>.03</td>
<td>.00</td>
</tr>
<tr>
<td>Analysis 2 – CFNI-C on ALE Challenge:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI-C</td>
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<td>.04</td>
<td>.03</td>
<td>.03</td>
<td>.00</td>
</tr>
<tr>
<td>Analysis 3 – ALE Challenge on SWLS:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALE Challenge</td>
<td>.04</td>
<td>.14</td>
<td>.02</td>
<td>.02</td>
<td>.00</td>
</tr>
<tr>
<td>Analysis 4 – CFNI-C and ALE Challenge on SWLS:</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>CFNI-C</td>
<td>-.03</td>
<td>.07</td>
<td>-.03</td>
<td>.04</td>
<td>.00</td>
</tr>
<tr>
<td>ALE Loss</td>
<td>.04</td>
<td>.14</td>
<td>.02</td>
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<td></td>
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</tbody>
</table>

Note. * $p < .05$, two-tailed; ** $p < .001$, two-tailed. df for Analyses 1, 2, and 3 = 1, 183. df for Analysis 4 = 2, 182. Caring for Children scale of the Conformity to Feminine Norms Inventory (CFNI-C), Satisfaction with Life Scale (SWLS), and Challenge subscale of the Appraisal of Life Events scale (ALE Challenge).
Hypothesis 4b stated that women’s greater adherence to traditional gender ideologies is related to greater infertility-specific distress in part through greater threat primary appraisals. The exploratory mediation analysis for Hypothesis 4b was supported. The CFNI Caring for Children scale was predictive of the ALE Threat scale ($\beta = .25$, $p < .001$). In addition, the CFNI Caring for Children scale was a significant positive predictor of the ISD ($R^2 = .06$, $\beta = .24$, $p < .001$) and the ALE Threat subscale was a significant positive predictor of the ISD ($\beta = .65$, $p < .001$). The final step of the mediation analysis showed that the CFNI Caring for Children scale ($\beta = .08$, $p > .05$) was no longer predictive of the ISD when included with the ALE Threat subscale ($\beta = .63$, $p < .001$). See Table 12 for these results. A Sobel test (1982) confirmed full mediation through threat appraisals in the relationship between the Caring for Children subscale of the CFNI and infertility-specific distress ($z = 3.35$, $p < .001$).
Table 12. Summary of exploratory regression analyses for mediation Hypothesis 4b (N=185).

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE$ B</th>
<th>$\beta$</th>
<th>R</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analysis 1 – CFNI-C on ISD:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI-C</td>
<td>.18</td>
<td>.05</td>
<td>.24**</td>
<td>.24**</td>
<td>.06**</td>
</tr>
<tr>
<td><strong>Analysis 2 – CFNI-C on ALE Threat:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI-C</td>
<td>.29</td>
<td>.08</td>
<td>.25**</td>
<td>.25**</td>
<td>.06**</td>
</tr>
<tr>
<td><strong>Analysis 3 – ALE Threat on ISD:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALE Threat</td>
<td>.43</td>
<td>.04</td>
<td>.65**</td>
<td>.65**</td>
<td>.42**</td>
</tr>
<tr>
<td><strong>Analysis 4 – CFNI-C and ALE Threat on ISD:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI-C</td>
<td>.06</td>
<td>.04</td>
<td>.08</td>
<td>.65**</td>
<td>.43**</td>
</tr>
<tr>
<td>ALE Threat</td>
<td>.41</td>
<td>.04</td>
<td>.63**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. *  $p < .05$, two-tailed; **  $p < .001$, two-tailed. df for Analyses 1, 2, and 3 = 1, 183. df for Analysis 4 = 2, 182. Caring for Children scale of the Conformity to Feminine Norms Inventory (CFNI-C), Infertility-Specific Distress scale (ISD), and Threat subscale of the Appraisal of Life Events scale (ALE Threat).
Hypothesis 4d stated that greater adherence to traditional gender ideologies is related to greater infertility-specific distress in part through greater loss primary appraisals. This fourth exploratory mediation analysis for Hypothesis Four was supported. The CFNI Caring for Children scale was predictive of the ALE Loss scale ($\beta = .26, p < .001$). The CFNI Caring for Children scale was also a significant positive predictive of the ISD ($R^2 = .06, \beta = .24, p < .001$) and the ALE Loss scale was predictive of the ISD ($\beta = .73, p < .001$). The Caring for Children scale of the CFNI was no longer predictive of the ISD ($\beta = .05, p > .05$) when entered with the ALE Loss scale ($\beta = .72, p < .001$. See Table 13 for these results. Full mediation was confirmed through a Sobel test ($z = 3.46, p < .001$), indicating that the relationship between the Caring for Children subscale of the CFNI and infertility-specific distress is mediated through loss appraisals.
Table 13. Summary of exploratory regression analyses for mediation Hypothesis 4d (N=185).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Analysis 1 – CFNI-C on ISD:</th>
<th>Analysis 2 – CFNI-C on ALE Loss:</th>
<th>Analysis 3 – ALE Loss on ISD:</th>
<th>Analysis 4 – CFNI-C and ALE Loss on ISD:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFNI-C</td>
<td>.18</td>
<td>.19</td>
<td>.73</td>
<td>.04</td>
</tr>
<tr>
<td></td>
<td>.05</td>
<td>.05</td>
<td>.05</td>
<td>.04</td>
</tr>
<tr>
<td></td>
<td>.24**</td>
<td>.26**</td>
<td>.73**</td>
<td>.73**</td>
</tr>
<tr>
<td></td>
<td>.24**</td>
<td>.26**</td>
<td>.73**</td>
<td>.73**</td>
</tr>
<tr>
<td></td>
<td>.06**</td>
<td>.07**</td>
<td>.53**</td>
<td>.54**</td>
</tr>
</tbody>
</table>

Note. * p < .05, two-tailed; ** p < .001, two-tailed. df for Analyses 1, 2, and 3 = 1, 183. df for Analysis 4 = 2, 182. Caring for Children scale of the Conformity to Feminine Norms Inventory (CFNI-C), Infertility-Specific Distress scale (ISD), and Loss subscale of the Appraisal of Life Events scale (ALE Loss).
Finally, Hypothesis 4f stated that lesser adherence to traditional gender ideologies is related to lesser infertility-specific distress in part through greater challenge appraisals. The Caring for Children scale was predictive of the ISD ($R^2 = .06, \beta = .24, p < .001$). The CFNI Caring for Children scale was not predictive of the ALE Challenge subscale ($R^2 = .00, \beta = .03, p > .05$), however, so the exploratory mediation analysis for Hypothesis 4f was not supported. Results are shown in Table 14.
Table 14. Summary of exploratory regression analyses for mediation Hypothesis 4f (N=185).

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>R</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis 1 – CFNI-C on ISD:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI-C</td>
<td>.18</td>
<td>.05</td>
<td>.24**</td>
<td>.24**</td>
<td>.06**</td>
</tr>
<tr>
<td>Analysis 2 – CFNI-C on ALE Challenge:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI-C</td>
<td>.02</td>
<td>.04</td>
<td>.03</td>
<td>.03</td>
<td>.00</td>
</tr>
<tr>
<td>Analysis 3 – ALE Challenge on ISD:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALE Challenge</td>
<td>.13</td>
<td>.11</td>
<td>.10</td>
<td>.10</td>
<td>.01</td>
</tr>
<tr>
<td>Analysis 4 – CFNI-C and ALE Challenge on ISD:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI-C</td>
<td>.18</td>
<td>.05</td>
<td>.23*</td>
<td>.25*</td>
<td>.06*</td>
</tr>
<tr>
<td>ALE Challenge</td>
<td>.12</td>
<td>.11</td>
<td>.08</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. * p < .05, two-tailed; ** p < .001, two-tailed. df for Analyses 1, 2, and 3 = 1, 183. df for Analysis 4 = 2, 182. Caring for Children scale of the Conformity to Feminine Norms Inventory (CFNI-C), Infertility-Specific Distress scale (ISD), and Challenge subscale of the Appraisal of Life Events scale (ALE Challenge).
Path Analysis

Path analysis was used to explore the conceptual model that served as the foundation for this research, while excluding those relationships which were not supported by the hypotheses. These excluded paths included those involving the Challenge subscale of the Appraisal of Life Events scale (ALE) and the direct path from the Conformity to Feminine Norms Inventory (CFNI) and the Satisfaction with Life Scale (SWLS). The tested model is illustrated in Figure 2.
Figure 2. First Exploratory Path Analysis (N = 185).

Note. ** p < .001, two-tailed.
Mplus Version 5 (Muthén & Muthén, 1998-2007) with maximum likelihood estimation using the raw data as input was used to test this model. The model fit to data was examined using four indices recommended by Kline (2005) and provided by Mplus, including the Chi-squared goodness-of-fit, comparative fit index (CFI), the standardized root-mean square residual (SRMR), and the root-mean square error of approximation (RMSEA). Recommendations for good fit are that Chi-squared is small and nonsignificant, CFI above .95, SRMR of .08 or lower, and RMSEA below .06, while acceptable fits for CFI are between .90 and .94, SRMR of .09 to .10, and RMSEA of .07 to .10 (Hu & Bentler, 1999; Kline, 2005).

Overall, the model did not fit well to the data. The Chi-squared goodness-of-fit statistic was significant, $\chi^2(2, N = 185) = 212.78, p < .001$. The CFI was .48, SRMR was .28, and the RMSEA was .75 with a 90% confidence interval of .67 to .84. These indices suggest that the model in Figure 2, which included all those paths that were significant in regression analyses, is not a good fit to the data. Table 15 summarizes the results of the path analysis, and as can be seen in it, significant paths were found from the Threat subscale of the Appraisal of Life Events scale (ALE) and the Loss subscale of the ALE to the Satisfaction with Life Scale (SWLS). Notably, the parameter estimate of the Threat subscale was a positive number, while the Loss subscale had a negative parameter estimate. In the correlations and regressions, the Threat subscale was a negative predictor of the SWLS, which suggests that suppression is occurring in the path analysis. Kline (2005) defined suppression as occurring when the absolute value of a beta weight is greater than the correlation, or as applies to this case, when the bivariate correlation has a
Table 15. Results of first exploratory path analysis (N=185).

<table>
<thead>
<tr>
<th>Variables on</th>
<th>Standardized estimates</th>
<th>SE</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISD</td>
<td>-.15</td>
<td>.12</td>
<td>-1.26</td>
</tr>
<tr>
<td>ALET</td>
<td>.31**</td>
<td>.10</td>
<td>3.10**</td>
</tr>
<tr>
<td>ALEL</td>
<td>-.77**</td>
<td>.17</td>
<td>-4.55**</td>
</tr>
<tr>
<td>ISD on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI</td>
<td>.00</td>
<td>.02</td>
<td>-.25</td>
</tr>
<tr>
<td>ALET</td>
<td>.08</td>
<td>.06</td>
<td>1.26</td>
</tr>
<tr>
<td>ALEL</td>
<td>.64**</td>
<td>.09</td>
<td>6.98**</td>
</tr>
<tr>
<td>ALET on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI</td>
<td>.11**</td>
<td>.03</td>
<td>3.58**</td>
</tr>
<tr>
<td>ALEL on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI</td>
<td>.07**</td>
<td>.02</td>
<td>3.59**</td>
</tr>
</tbody>
</table>

Note. * p < .05, two-tailed; ** p < .001, two-tailed. Satisfaction with Life Scale (SWLS), Conformity to Feminine Norms Inventory (CFNI), Infertility-Specific Distress scale (ISD), Threat subscale of the Appraisal of Life Events scale (ALET), and Loss subscale of the Appraisal of Life Events scale (ALEL).
different sign than the parameter estimate. The ALE Threat and Loss subscales have a large positive correlation ($r = .84, p < .001$) and both were shown to be negatively correlated with the SWLS ($r = -.22, p < .001$, and $r = -.39, p < .001$, respectively), so it is likely that the ALE Loss subscale is causing a negative suppression effect for the ALE Threat estimate due to sharing common variance that accounts for the negative correlation with the SWLS. The only significant predictor of the Infertility-Specific Distress scale (ISD) was the Loss subscale of the ALE.

In addition, the Conformity to Feminine Norms Inventory was a significant predictor of both the Threat and Loss subscales of the ALE. Model modification indices suggested that the relationship between the ALE Threat and Loss subscales should be freed. This relationship makes theoretical sense, as the stress and coping model indicates that loss and threat appraisals are related, and it would account for measurement overlap, as the two scales are part of the same measure.

Thus, the model in Figure 2 was modified to include covariance between the ALE Threat and Loss subscales and significant improvements in the model were found. Chi-squared goodness-of-fit was not significant, $\chi^2 (1, N = 185) = 1.83, p = .18$. The CFI was 1.0, SRMR was .02, and the RMSEA was .07 with a 90% confidence interval of .00 to .22. These indices suggest that the model shown in Figure 3 is a very good fit to the data. See Table 16 for results of the modified path analysis. As can be seen in Table 16 and Figure 3, significant paths predicting the Satisfaction with Life Scale (SWLS) included the Threat and Loss subscales of the ALE. Again, the parameter estimate of the Threat
Table 16. Results of second exploratory path analysis (N=185).

<table>
<thead>
<tr>
<th>Variables on</th>
<th>Standardized estimates</th>
<th>SE</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWLS on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISD</td>
<td>-.15</td>
<td>.12</td>
<td>-1.26</td>
</tr>
<tr>
<td>ALET</td>
<td>.31***</td>
<td>.10</td>
<td>3.10**</td>
</tr>
<tr>
<td>ALEL</td>
<td>-.77***</td>
<td>.17</td>
<td>-4.55***</td>
</tr>
<tr>
<td>ISD on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI</td>
<td>.00</td>
<td>.02</td>
<td>-.25</td>
</tr>
<tr>
<td>ALET</td>
<td>.08</td>
<td>.06</td>
<td>1.26</td>
</tr>
<tr>
<td>ALEL</td>
<td>.64***</td>
<td>.09</td>
<td>6.98***</td>
</tr>
<tr>
<td>ALET on</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>CFNI</td>
<td>.11***</td>
<td>.03</td>
<td>3.58***</td>
</tr>
<tr>
<td>ALEL on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI</td>
<td>.07***</td>
<td>.02</td>
<td>3.59***</td>
</tr>
<tr>
<td>ALET with ALEL</td>
<td>37.91***</td>
<td>4.39</td>
<td>8.64***</td>
</tr>
</tbody>
</table>

Note. * p < .05, two-tailed; ** p < .01, two-tailed; *** p < .001, two-tailed.
Satisfaction with Life Scale (SWLS), Conformity to Feminine Norms Inventory (CFNI), Infertility-Specific Distress scale (ISD), Threat subscale of the Appraisal of Life Events scale (ALET), and Loss subscale of the Appraisal of Life Events scale (ALEL).
Figure 3. Second Exploratory Path Analysis (N = 185).

Note. ** p < .001, two-tailed.
subscales were positive while the Loss subscale remained negative, which may again be due to significant overlap between these two measures. Only the ALE Loss subscale was a significant predictor of the ISD. The CFNI was a significant predictor of both the ALE Loss and Threat subscales, and the relationship between the ALE Threat and Loss scales was significant and positive. The indirect effect of the CFNI on the ISD was .05. No model modification indices were reported for this model.

Summary of Results

Consistent with Lazarus and Folkman’s (1984) stress and coping model, I found that increases in appraisal of infertility as a threat are associated with increases in women’s infertility-specific distress, providing support for part one of Hypothesis One. I also found that increases in appraisal of infertility as a loss are associated with increases in women’s infertility-specific distress, providing support for part two of Hypothesis One. The third part of Hypothesis One, that increases in appraisal of infertility as a challenge are associated with decreases in women’s infertility-specific distress, was not supported.

Hypothesis Two was also based on Lazarus and Folkman’s (1984) stress and coping model. Specifically, it was expected that women’s primary appraisal of infertility is related to their experience of general well-being. Part one of this hypothesis, that increases in appraisal of infertility as a threat are associated with decreases in women’s general well-being, was supported, as was the second part that suggested increases in appraisal of infertility as a loss are associated with decreases in women’s general well-
being. The third part of the hypothesis was not supported. Women’s general well-being was not predicted by appraisal of infertility as a challenge.

Hypothesis Three was based on the motherhood mandate (Russo, 1976). Adherence to traditional feminine gender ideologies was expected to be related to infertility-specific distress and general well-being. Greater adherence to traditional gender ideologies was related to greater infertility-specific distress, but not to general well-being.

Hypothesis Four posited six mediation analyses suggesting that the relation of women’s adherence to traditional gender ideologies to infertility-specific distress and general well-being is partially mediated by primary appraisal. As gender ideologies were not related to general well-being, only the parts of this hypothesis that addressed infertility specific distress were tested. The hypothesis that the relationship between gender ideologies and infertility-specific distress is mediated through challenge appraisals, was not supported, but mediation of these variables by threat and loss appraisals was supported. Namely, greater adherence to traditional gender ideologies is related to greater infertility-specific distress through greater threat primary appraisals of infertility. Also, greater adherence to traditional gender ideologies is related to greater infertility-specific distress through greater loss primary appraisals of infertility. In both cases, full mediation was observed. Finally, Hypothesis Five was supported as greater infertility-specific distress was related to lower general well-being.

Exploratory analyses were also undertaken, replacing the CFNI total score with the Caring for Children subscale of the CFNI. Results were similar to those of the
original hypotheses. Finally, exploratory path analysis supported a modified model without inclusion of challenge appraisals and the direct path between gender ideologies and general well-being, and with the addition of a path between loss and threat appraisals.
Past research and theories suggested that gender role conformity is related to distress due to infertility, but researchers had not yet investigated this hypothesis (e.g., Baumann, 1999; Berk & Shapiro, 1984; Leon, 1990; Liebmann-Smith, 1987; Morokoff & Calderone, 1994; Olshansky, 2003; Raphael-Leff, 1992; Robinson & Stewart, 1995). Research also suggested that appraisals of infertility are related to distress and well-being (Hansell et al., 1998). Through this study, I attempted to determine whether adherence to traditional gender ideologies is related to higher distress due to infertility and lower subjective well-being. I also attempted to examine how primary appraisals of infertility relate to infertility-specific distress and well-being. Finally, I explored whether adherence to traditional feminine gender ideologies is related to infertility-specific distress and subjective well-being through one’s primary appraisal of infertility.

One hundred eighty five women who had experienced infertility filled out a demographic and reproductive information form, the Satisfaction with Life Scale (Diener et al., 1985), the Infertility-Specific Distress scale (Miller et al., 1998), the Appraisal of Life Events scale (Ferguson et al., 2005), and the Conformity to Feminine Norms Inventory (Mahalik et al., 2005). Requests for participation were sent by email to
RESOLVE, Inc., support group leaders and participants also forwarded the link to other relevant groups and individuals. The survey was completed online through Survey Monkey.

The data indicated that greater adherence to traditional gender ideologies related to higher threat and loss appraisals, which in turn related to greater infertility-specific distress. Thus, the present results provide some support for past suggestions that gender role impacts distress due to infertility. Lower general well-being also related to higher threat and loss appraisals as well as to greater infertility-specific distress. It is notable, too, that this was the first study to explore primary appraisals in infertility using more than a single-item measure, and the first to examine general well-being among women with infertility.

These results extend prior research by including both social (i.e., traditional gender ideologies) and cognitive (i.e., primary appraisals) variables to understand the psychological outcomes of infertility, specified as infertility-specific distress and general well-being in this study. Not only are these theories brought together in this study, but they are also examined using multi-item measures which have data to support their reliable and valid use in the present sample. Although no past infertility research examined these variables, the work of Brothers and Maddux (2003) provided a basis for studying both social and cognitive variables. Specifically, they viewed infertility-specific distress as due to appraisal of parenthood as a way to meet socially desirable goals. In the current study, women who internalized social norms regarding femininity were more likely to view infertility as a threat or loss, and to report higher distress as a result. These
women may have linked infertility to a threat or loss regarding the desired goal of meeting social expectations. If motherhood is constructed as necessary to achieving an adult feminine identity in U.S. society, as suggested by Russo (1976), infertility may be seen as a deterrent to fulfilling this social norm. The present data suggest that women who adhere more closely to traditional feminine norms, and thus to the motherhood mandate, are more likely to appraise infertility as a threat or loss and to report higher distress. The findings are in line with the motherhood mandate and the stress and coping model, as well as past research on both theories among women with infertility.

Stress and Coping Model Applied to Infertility

According to the stress and coping model of Lazarus and Folkman (1984), primary appraisals of a situation as a threat or loss are likely to increase one’s distress and decrease well-being, but appraisals of the situation as a challenge are expected to be associated with a decrease in distress and increase in well-being. The current study provided support for threat and loss appraisals as predictors of distress and well-being in the regression analyses, as well as the path analysis for loss appraisals. That challenge appraisals of infertility were not found to be predictive of distress or well-being raises questions about the utility of this construct in understanding infertility reactions, but this lack of relation also may not be surprising given the problems found with the use of the Challenge subscale of the Appraisal of Life Events scale, which are discussed among the limitations of this study.
Women’s primary appraisals of infertility as a threat or loss were significant predictors of infertility-specific distress and general well-being, beyond the effect of covariates, and this was consistent with Lazarus and Folkman’s (1984) stress and coping model and past research. Several past studies have focused on cognitive variables such as linking (Brothers & Maddux, 2003) and primary appraisals of infertility (Hansell et al., 1998). Brothers and Maddux examined linking through self-report measures and determined that distress due to infertility was not related directly to the importance placed on parenthood, but rather because parenthood was linked cognitively to socially desirable goals, such as marital satisfaction and femininity. Indeed, in the current study, women who viewed infertility as a loss or threat to desired goals reported higher distress.

Appraisal of infertility as a loss or threat may be similar to the findings of Brothers and Maddux, in that women who view infertility as a loss or threat may cognitively link parenthood to attainment of desired life goals. It is important to note that Brothers and Maddux did not directly measure or discuss primary appraisals, and therefore the connection between primary appraisals and cognitive link between parenthood and socially desirable goals is not well-defined.

Only one previous study (Hansell et al., 1998) specifically used primary appraisals as a predictor of distress related to infertility and the researchers operationally defined appraisals using single-item measures. Nevertheless, Hansell and colleagues did find support for their hypothesis that challenge, threat, and loss appraisals predict distress related to infertility. The present use of the Appraisal of Life Events scale was an attempt to overcome limitations common in the use of single-item measures and further improve
the extant literature. Both the regression analyses and the path analysis supported the relationship between negative (i.e., threat and loss) appraisals of infertility and distress, as found in the Hansell et al. study, but not positive appraisals (i.e., challenge). It appears that for the present sample and given the current methods, positive appraisals of infertility are not relevant to infertility specific distress.

It is important to note that threat appraisals added 2% more variance above the social and medical covariates in prediction of general well-being, but loss appraisals added 11% more variance than the covariates in the regression model. In addition, the path analysis showed loss appraisals as a significant negative predictor of well-being, while threat appraisals were a significant positive predictor (perhaps due to statistical overlap in construct measurement). One perspective on these findings may be that as loss and threat appraisals overlap and both represent negative evaluations of infertility, it may not be necessary to delineate in future research or practice what specific appraisals are made about infertility, but instead to determine only whether the individual makes negative appraisals.

An alternative view, however, may be that the present results reflect conceptual differences in the appraisals rather than statistical overlap. Loss of a desired life goal may be more uniquely impactful on one’s distress and general well-being levels than the threat of losing that goal because loss is more definitive than the potential of loss. Women who view infertility as a threat to a goal may continue to have hope of attaining that goal, while those who see infertility as a loss are less likely to believe there are actions which will bring about the desired goal. Although the present findings are specific to the current
sample of women experiencing infertility, loss and threat appraisals may work similarly in regard to other life goals as loss will always represent actual deprivation or harm while threat is a potential for harm. Although Hansell and colleagues (1998) found that both loss and threat appraisals predicted distress, they did not compare effect sizes or include both variables in one model.

Both the regression analyses and the path analysis provided support for the stress and coping model, but interestingly, infertility-specific distress and general well-being were only modestly related in the regression analysis and were not related in the path model. Distress regarding infertility may be only a weak contributor to one’s overall well-being. General well-being takes into account broad aspects of one’s life and women facing infertility may be especially likely to have developed other areas of life in order to compensate. Covariates indicated that women who are younger and have engaged in more medical and mental health treatment are likely to experience higher levels of infertility-specific distress. Women who are younger and more highly engaged in treatment may not have had the opportunity to develop other areas of life, have had less time to adjust to infertility, or may not have children previously. In addition, women who reported secondary infertility, having children, less engagement in mental health treatment, higher relationship support, and higher income also indicated higher general well-being. Women with higher general well-being appear to have had children already and have other sources of support in life, such as relationship and career, given the higher relationship support and higher income variables. These covariates provide some indication that women are likely to experience higher distress and lower well-being when
they have not fulfilled the desired goal of having children and have fewer resources, such as partner relational support and income.

Overall, the current results expand upon those of past research by specifically focusing on primary appraisals within the stress and coping model, using a multiple-item measure, and examining the link between primary appraisals and well-being rather than only distress. Most importantly, the current results add to the past finding that infertility-specific distress is related to cognitive variables, beyond the social and medical factors examined in much of the previous infertility research.

Motherhood Mandate and Infertility

The present research also speaks to the motherhood mandate (Russo, 1976) which suggests that women experience significant social pressures to bear children and are likely to report distress and lower well-being when unable or unwilling to fulfill this social pressure. Past research regarding this link has been qualitative in nature, including the work of Crowe (1985), Raphael-Leff (1992), Remmenick (2000), and Gonzalez (2000). Crowe interviewed women undertaking IVF and reported that many women chose to undergo this treatment in order to adhere to social norms regarding motherhood. Raphael-Leff determined from psychoanalysis with couples that a primary theme of treatment was that individuals experienced distress due to perceived attacks on their gender identity, which they defined as their ability to have biological children. Remmenick interviewed 26 Jewish women with infertility in Israel and found that these women used identity management strategies and underwent costly and painful medical
treatments to bear biological children, which she attributed to internalization of pronatalist ideologies. Gonzalez reported that women with infertility felt that their personal identity was under attack due to failure to fulfill the prescribed social norm of motherhood, based on her interviews with 25 women. The current study was an attempt to examine the impact of the motherhood mandate on distress among women with infertility through the use of quantitative methods.

Using a measure of traditional gender ideologies to assess women’s adherence to social norms, I predicted that greater adherence to traditional gender ideologies would be related to greater infertility-specific distress and lower general well-being. Traditional gender ideologies did predict infertility-specific distress, but predicted only 3% of the unique variance in infertility-specific distress and this variance appeared to be subsumed by negative appraisals in the path analysis. This finding indicates an indirect relation of traditional gender ideologies to distress due to infertility, which was supported by the indirect effect of 5% in the path analyses. Unexpectedly, traditional gender ideologies were unrelated to general well-being in both the regression and path analyses, although they did relate modestly to threat and loss appraisals of infertility. This overall pattern of findings suggests support for previous authors’ conclusions regarding implications of the motherhood mandate, but caution in regard to the magnitude of its effect.

Ancillary support for the relevance of the motherhood mandate to women’s mental health was garnered from observations that having children was a significant predictor of higher well-being for the women in this research. It seems that fulfilling the expected social role of biological motherhood may increase one’s satisfaction with life.
These results suggest that well-being is linked more directly to fulfilling one’s expected social role, than to one’s internalized beliefs about women’s social roles. In sum, adherence to traditional gender ideologies predicted infertility-specific distress, and having children predicted higher general well-being, and both provide some support for the motherhood mandate and the conclusions from past qualitative studies.

Finally, given that the Caring for Children scale of the Conformity to Feminine Norms Inventory (CFNI) is conceptually relevant to infertility-specific distress and the motherhood mandate, hypotheses involving the CFNI total scale were rerun using this scale to determine if relations observed with the total scale would be enhanced with this more specific subscale. Results were similar to those using the full scale despite the fact that subscale items are more relevant to childbearing and rearing. Notably, however, the relationship between the Caring for Children scale and the Infertility-Specific Distress scale (ISD) was slightly larger than that for it and the CFNI total scale; this makes sense as both the Caring for Children scale and the ISD focus on the presence or absence of children in one’s life while the CFNI total scale includes numerous other concepts. Overall, however, the Caring for Children scale did not significantly improve on predictions obtained using the Total CFNI scale. Given these results, it appears that conformity to general feminine norms is as important as the specific norm regarding caring for children in a model of infertility-specific distress. This finding is interesting in that it appears that the broad construct of feminine gender ideologies is involved in women’s experience of infertility, in addition to norms specifically regarding motherhood. As such, exploration of broader social norms and pressures may be useful in
understanding infertility-specific distress. Overall, this suggests that the social pressures impinging upon women dealing with infertility expand beyond fulfillment of the motherhood role, as specified in the motherhood mandate. Distress related to infertility may be in part due to concerns about fulfilling overall gender norms, and the inability to fulfill norms regarding motherhood may be one aspect of that distress.

Overall, then, results supported the hypotheses that the effect of traditional gender ideologies on infertility-specific distress is mediated through both loss and threat appraisals, and it was found to be full mediation in both cases. These results were supported in both the regression and path analyses. The present data, thus, are consistent with the idea that adhering to social norms regarding gender impacts the way one appraises infertility, and that it is the appraisal that affects one’s distress in regard to infertility. This result is clearly in line with the stress and coping model of Lazarus and Folkman (1984), which suggests that responses to situations are a function of one’s appraisal of the situation. Similar support can be found in theories of psychotherapy, such as Cognitive Therapy (Beck, 1976) and social construction approaches (Rosen & Kuehlwein, 1996). For instance, Paul Watzlawick, a constructivist psychologist, wrote, “…the meaning attributed to a set of circumstances within a given frame of assumptions, ideologies, or beliefs constructs a reality all of its own and reveals that ‘truth,’ so to speak” (p. 62, 1996). Rather than the situation or social attitudes about the situation, it appears that women’s thoughts about infertility and social roles may affect the level of distress experienced. This is similar to the findings of Brothers and Maddux (2003), who stated that distress is due to linking parenthood with the fulfillment of desired life goals,
such as being viewed by others as an adult. In the current study, women with infertility who viewed motherhood as an essential aspect of the adult feminine role were more likely to appraise infertility as a loss or threat to fulfilling the expected social role, and were therefore at greater risk of experiencing distress due to infertility.

Limitations

Two limitations of this study suggest some caution in interpretation of the results. First, the sample primarily consisted of middle to upper class, highly educated, married, European American women. The use of an online sample was an attempt to overcome this limitation that had been present in much previous research due to past researchers’ use of patients at infertility clinics. However, it appears that involvement in online infertility communities may also be limited to this particular subgroup. Given that infertility is most likely to occur among African American women from lower socioeconomic classes (Greenfield, 1997), the lack of research among this population and other racial/ethnic minority groups is a serious limitation in the infertility literature. The disparity in incidence of infertility between European American and African American women is believed to be due to lower access to comprehensive health care, socioeconomic status, and other forms of environmental racism (Morokoff & Calderone, 1994), which would suggest a much different experience with infertility than that shared by the participants in this study.

The second limitation involves the Challenge subscale of the Appraisal of Life Events measure. None of the hypotheses involving challenge appraisals were supported.
Only one previous study has attempted to examine primary appraisals of infertility (Hansell et al., 1998), and the measurement of appraisals was limited in that study by the use of single-items for challenge, threat, loss, and neutral appraisals. The Appraisal of Life Events scale was chosen for this study because it is the only measure currently available for the three primary appraisals as discussed by Lazarus and Folkman (1984). Although women in the Hansell et al. study indicated appraising infertility as a challenge, the introduction of various items on the Challenge subscale of the ALE (e.g., stimulating, exciting) resulted in problems with normality and internal consistency in the current study.

The Challenge subscale of the Appraisal of Life Events scale represented a major departure from the Ferguson (1999) study in which its development was discussed. The mean in the current sample was much lower than in either the work or school sample in Ferguson. In addition, internal consistency in the Ferguson study was .87, while only .49 in the current sample. Internal consistency in the current study could not be improved, despite numerous attempts, without increased threats to normality. It seems that the Challenge subscale, as devised by Ferguson and colleagues, works very differently across populations and situations. Ferguson had individuals respond to work stress and homesickness, both of which are relatively expected and manageable stressors, whereas infertility represents a deviation from what is seen as a normative developmental transition and is a stressor over which women have little control. As such, women experiencing infertility are perhaps unlikely to experience the positive aspects of challenge (e.g., finding a stressor to be stimulating and exciting) that are present in the
Challenge subscale as created by Ferguson and colleagues. Rather, most women in the current sample only responded affirmatively to an item representative of growth through challenge (e.g., finding the experience to be informative) and the challenge item itself. It appears that women in this sample perceived infertility as a challenging experience through which they learned about themselves and infertility, but not as a challenge as defined by Ferguson and colleagues.

Although literature on the stress and coping model supports the links between challenge appraisals and well-being, this has never been examined within a sample of women experiencing infertility. It is possible that use of a more applicable challenge measure would provide support for this hypothesis. However, it is also possible that general well-being is such a global construct that it is not as affected by the relatively modest positive appraisals of infertility, as the predictor and criterion are at different levels of specificity. Indeed, well-being in this sample was related to other life factors, such as income level and number of children. Having negative appraisals of infertility may potentially be influential on one’s general well-being, but only availability of desired life goals (e.g., having children) seemed to be related to increased well-being among these women. Given the difficulties with the Challenge subscale of the Appraisal of Life Events scale, it is important to examine these relationships in future research.

In addition to the lack of relationship between challenge appraisals and well-being, the hypothesized link between challenge appraisals and infertility-specific distress was not supported in this sample. Although challenge appraisals and general well-being may not be related due to differences in specificity of constructs, this is unlikely to be the
case with infertility-specific distress and challenge appraisals. Both are specific measures of an individual’s response to infertility. This provides some evidence to suggest that challenge appraisals, as theorized by Lazarus and Folkman (1984) and defined in the Appraisal of Life Events measure by Ferguson and colleagues (1999), may not be relevant to women with infertility. Challenge appraisals assume the ability to take active steps to overcome the situation, and though women experiencing infertility have choices regarding medical treatment, they often report feeling little power in regard to the situation (e.g., Daniluk & Fluker, 1995). As such, the stress of infertility may be more frequently viewed as a threat or loss than as a challenge because women have difficulty perceiving a sense of control over this situation. Challenge appraisals, or how they were conceptualized in this research, may not have been relevant to the experiences of the present sample of women.

Implications for Future Research

A majority of the infertility research to date has included samples seeking medical or psychological treatment (Greil & McQuillan, 2004; Letherby, 2002; Robinson & Stewart, 1995) and typically lacks adequate comparison groups (Hansell et al., 1998). Fewer than half of women in the United States who experience infertility actually seek medical treatment; therefore, a significant portion of the population has been unexamined in infertility research (Greil & McQuillan). Those who seek treatment may differ in significant ways from those who do not (Robinson & Stewart). For instance, they may have sought treatment due to experiencing higher levels of infertility-specific distress.
Treatment seekers also tend to be within a narrow age range (Letherby), and are middle to upper class, well-educated, heterosexual, European American couples (Gerrity, 2001; Jordan & Revenson, 1999; King, 2003). This was the case for the current sample, so the results of the current study are limited in their application.

The current study used the Appraisal of Life Events (ALE) scale as an attempt to understand how primary appraisals impact distress and well-being. Although both the Threat and Loss subscales worked well in this study, the Challenge subscale had several drawbacks which severely limited it usefulness. Future research could explore measurement differences between the use of the ALE among women with infertility and individuals responding to other stressful life events. In addition, further exploration of primary appraisals may lead to a more useful measure for infertility and other health-focused populations. In addition to further examination of primary appraisals, inclusion of both primary and secondary appraisals may assist in developing a broader and more inclusive model for path analysis, as both primary and secondary appraisals are present in the stress and coping model (Lazarus & Folkman, 1984).

Future research could also explore various methods of gauging social pressures for motherhood. The Conformity to Feminine Norms Inventory (CFNI) was used in this study, as the motherhood mandate (Russo, 1976, 1979) suggests that women experience pressure to fit social norms regarding gender and motherhood. Although the results supported that greater adherence to traditional gender norms leads to greater loss and threat appraisals, which in turn lead to increased infertility-specific distress, it is possible that other measures could be located or developed that would more closely assess
Russo’s theory. The CFNI measures the social construction of traditional femininity rather than the social pressure for motherhood, as specified in the motherhood mandate. It served as a proxy for the influence of social pressures to parent, but it measures a wide array of feminine gender norms, such as cleanliness and modesty, in addition to caring for children. Women could potentially feel distress due to the inability to fulfill their own and others’ desires for them to raise biological children, but they may not necessarily adhere to the full range of feminine gender norms identified in the CFNI.

Implications for Practice

Counseling psychologists can be of service to those dealing with infertility in a variety of ways. While individuals and couples are undergoing medical diagnosis and treatment, psychologists can be of service in assisting with the decision-making process, understanding the implications of choices, and using psychoeducation to increase knowledge of options (Daniluk & Fluker, 1995; Eunpu, 1995; Gross et al., 2004; Peterson, 2006; Read, 1995; Rosenthal & Goldfarb, 1997; Shapiro, 1993). Of couples undergoing medical treatment, about 40% stated they would have preferred having more support during the decision-making process (van den Akker, 2001b). Counseling psychologists can assist with decision-making by helping people to explore what options are available, the impact of these options on personal and work life, and how to determine when to end medical treatment (Shapiro). Acting in this role, psychologists must be well informed about infertility experiences, as some women experiencing
infertility state that they spend half of their time in therapy educating the therapist (Peterson).

This research supports the view that treatment should focus at least in part on assessing individuals’ primary and secondary coping styles to increase adjustment, sense of control, and optimism (Domar et al., 2000; Read, 1995). The results of the current study support the importance of one’s primary appraisals for one’s level of distress and well-being. Primary appraisals should be a part of any psychological treatment for women experiencing infertility. In particular, attention can be given to the use of techniques such as cognitive restructuring and narrative exploration to help identify the individual’s potential loss and threat appraisals. Given that primary appraisals are linked to individuals’ secondary appraisals, or coping style, in the stress and coping model, these also should be examined to determine whether individuals are engaging in positive coping to assist in decreasing distress due to infertility (Gerrity, 2001; Mahowold, 2000; Peterson, 2006). Individuals dealing with infertility may feel isolated from social networks, but also from partners due to different styles of coping (Markestad et al., 1998), and isolation can be decreased with social coping resources (Gibson & Myers, 2002).

The results of the current study also provide support for the connection between loss appraisals and infertility-specific distress and lower general well-being. Grief work, thus, appears to be indicated in the psychological treatment of infertility (Berk & Shapiro, 1984; Greenfield, 1997; Romeo et al., 1998; Rosenthal & Goldfarb, 1997). Women experiencing infertility may need to develop rituals to grieve the ‘fantasized child’ before
attempting to devote time and energy to adoption or adapting to childlessness (Eunpu, 1995; Leon, 1990). Counseling psychologists can be of assistance in helping individuals and couples to work through the stages of grief (Shapiro, 1993), which can include helping them to develop other life goals or to focus on increasing intimacy in the relationship (Brothers & Maddux, 2003; Shapiro).

Providing clients with psychoeducational materials can help to normalize thoughts and feelings related to infertility and medical treatment (Eunpu, 1995; Gerrity, 2001; Greenfield, 1997; Markestad et al., 1998; Rosenthal & Goldfarb, 1997; Shapiro, 1993). Results of the current study suggest that viewing infertility as a loss or threat is related to higher distress and lower well-being. Distress due to infertility may be reduced by helping clients to have more realistic expectations about outcomes, while focusing on matters over which they have control (Gerrity). Techniques such as cognitive restructuring, worry exposure, relaxation, and visualization may be useful in reducing loss and threat appraisals and therefore decreasing distress (Brothers & Maddux, 2003; Eunpu; Gerrity; Rosenthal & Goldfarb).

Finally, exploration of psychosocial and medical histories, consideration of treatment options, and examination of the medical context of treatment may be useful in understanding an individual’s distress and well-being (Daniluk & Fluker, 1995; Rosenthal & Goldfarb, 1997), as both were found to be related to demographic and medical variables in this study. The sense of helplessness that many feel in the long arduous process of medical treatment can be decreased in counseling by assisting clients with advocacy, assertiveness, and communication skills for working with the medical
team (Daniluk & Fluker; Eunpu, 1995; Romeo et al., 1998; Rosenthal & Goldfarb; Shapiro, 1993). As found in the current study, medical aspects of treatment, such as cost and time spent in treatment, are related to higher distress and an increased use of mental health services. As such, psychologists should be prepared to work with individuals who have undergone medical treatment and be aware of pertinent information regarding medical histories.

As the current study is the first to examine traditional gender ideologies among women with infertility and primary appraisals using a standardized measure, the study is an important step toward greater understanding of the sociocultural and individual differences that underlie distress and well-being in this population. Results supported the use of the stress and coping model (Lazarus & Folkman, 1984) and the motherhood mandate (Russo, 1976, 1979) in understanding women’s infertility-specific distress and general well-being.
REFERENCES


APPENDICES
APPENDIX A

STUDY QUESTIONNAIRES

Instructions for Participants and Informed Consent

Title of Study:

Infertility-specific distress and well-being

Introduction:

You are invited to participate in a research study conducted by Sara Rieder Bennett, M.A., a doctoral student in Counseling Psychology at The University of Akron. The research is being conducted under the supervision of Linda Subich, Ph.D. as part of the dissertation requirement for a Ph.D. in Counseling Psychology.

Purpose:

The purpose of this study is to assess variables related to your experience of infertility.

Procedures:

If you decide to participate in this study, you will be asked to fill out questionnaires about your gender role, view of infertility, current well-being, and demographic and reproductive information. The survey will ask personal information that may be difficult or sensitive to disclose. The amount of time required for your participation will be approximately 10 to 20 minutes.

Exclusion:

Individuals may participate only if they are women above the age of 18 who have experienced primary or secondary infertility.
Risks and Discomforts:

Participants may experience emotional discomfort due to the sensitive nature of the topic. Should this occur, participants are assured that they may discontinue participation at any time. If you do experience discomfort, you may seek help through contacting your regional HelpLine through RESOLVE, which may be located at http://www.resolve.org/site/PageServer?pagename=abt_HelpLine, or seeking professional counseling by searching the National Board for Certified Counselors CounselorFind at http://www nbcc.org/counselorfind2 or the American Psychological Association Psychologist Locator at http://locator.apa.org/.

Benefits:

You will receive no direct benefit from participation in this study, but your participation may help us better understand the experiences of women who deal with infertility. Information may be beneficial in developing prevention and treatment programs for women who experience distress due to infertility.

Incentives:

Two participants will be randomly chosen to receive a $25 gift card following completion of data collection. Should you wish to be entered into the drawing, you will be asked to provide your email address following submission of the completed surveys. Your email address will not be connected to your responses.

Right to Refuse of Withdraw:

Participation is voluntary and refusal to participate or withdraw from the study at any time will involve no penalty or loss of benefits to which are you otherwise entitled.

Confidential Data Collection:

Your responses to questionnaires will not be tied to identifying information and your responses will remain confidential. Any identifying information collected will be kept in a secure location and only the researchers will have access to the data. Participants will not be individually identified in any publication or presentation of the research results. Only aggregate data will be used.
Who to Contact with Questions:

If you have any questions about this study, you may contact Sara Rieder Bennett at slr45@uakron.edu or Dr. Linda Subich at (330) 972-8379. This project has been reviewed and approved by the University of Akron Institutional Review Board. If you have any questions about your rights as a research participant, you may call the IRB at (330) 972-7666 or 1-888-232-8790.

Acceptance:

I have read the information provided and all of my questions have been answered. I voluntarily agree to participate in this study. My completion and return of the surveys will serve as my consent. I may print a copy of this consent statement for future reference.
Note. This set of questionnaires does not contain the CFNI, which is a published test under copyright protection.

Infertility-Specific Distress Questionnaire

Please respond to each question by selecting the number that corresponds to your experience, with 1 = not at all, and 5 = extremely

1) How stressful is your infertility condition for you?
   not at all  1  2  3  4  5  extremely

2) To what extent has your infertility condition interfered with your ability to carry on with your life as usual?
   not at all  1  2  3  4  5  extremely

3) To what extent has your infertility condition interfered with your ability to work?
   not at all  1  2  3  4  5  extremely

4) To what extent has your infertility condition interfered with your social life?
   not at all  1  2  3  4  5  extremely

5) To what extent has your infertility condition interfered with your relationship with your partner or increased tensions or stresses between you?
   not at all  1  2  3  4  5  extremely

6) To what extent has your infertility condition interfered with your sexual relationship with your partner?
   not at all  1  2  3  4  5  extremely
ALE Scale

We would like you to rate your perceptions of your experience of infertility. That is your perception of dealing with infertility right now. Use the following six point scales (where 0 = not at all to 5 = very much so) to indicate the extent to which each of the adjectives best describes your perceptions now. Do this by selecting the appropriate point on the scales. Please respond as quickly as possible as first responses are usually more accurate. Please make a response to each adjective.

I FIND MY EXPERIENCE OF INFERTILITY:

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The Satisfaction with Life Scale

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by selecting the appropriate number from the list following the item. Please be open and honest in your responding.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disagree
- 3 - Slightly disagree
- 2 - Disagree
- 1 - Strongly disagree

Considering all aspects of life:

1) In most ways my life is close to my ideal.
   
   1  2  3  4  5  6  7

2) The conditions of my life are excellent.
   
   1  2  3  4  5  6  7

3) I am satisfied with my life.
   
   1  2  3  4  5  6  7

4) So far I have gotten the important things I want in life.
   
   1  2  3  4  5  6  7

5) If I could live my life over, I would change almost nothing.
   
   1  2  3  4  5  6  7
Demographic and Reproductive Questionnaire

1. Sex:  Female ☐  Male ☐

2. Age (in years): __________

3. Fertility Status:
   ☐ Fecund (no known reproductive concerns)
   ☐ Primary Infertility (inability to conceive after more than one year of attempts, with no known history of conception)
   ☐ Secondary Infertility (inability to conceive after more than one year of attempts, with known history of conception)
   ☐ Previous infertility but have since had biological child/children
   ☐ Other (please specify): ________________________________

4. Sexual Orientation:
   ☐ Bisexual
   ☐ Gay
   ☐ Heterosexual
   ☐ Lesbian

5. Race: ______________________
   ☐ African American/Black
   ☐ Arab American
   ☐ Asian American/Pacific Islander
   ☐ European American/White
   ☐ Hispanic/Latino(a)
   ☐ Native American
6. Relationship Status:

☐ Single
☐ Married or Partnered
☐ Engaged
☐ Divorced
☐ Widowed
☐ Other (please specify): ____________________

7. Length of Relationship (in years, if applicable): __________

8. Please rate your belief about the amount of support in your relationship on the following scale:

☐ Very Supportive
☐ Supportive
☐ Neutral
☐ Unsupportive
☐ Very Unsupportive

9. Highest Level of Education:

☐ Some High School
☐ High School Graduate
☐ Some College
☐ Associate’s Degree or equivalent 2-year degree
10. Total Household Income (in U.S. dollars): $ ____________

11. Employment Status (please check all that apply):

- Homemaker
- Part-time employment
- Full-time employment
- Part-time student
- Full-time student
- Not employed

12. Occupational Title:

________________________________________________________

13. Geographical Region:

- Northeastern U.S.
- Southeastern U.S.
- Midwestern U.S.
- Southwestern U.S.
- Northwestern U.S.
- Other (please specify):

________________________________________________________

14. Population Characteristics of Region:

- Urban
- Suburban
15. Religion/Spirituality (please specify): ____________________________

16. Current Use of Mental Health Treatment (check all that apply):
   - [ ] Not seeking treatment
   - [ ] Individual Counseling
   - [ ] Couples Counseling
   - [ ] Family Counseling
   - [ ] Group Counseling
   - [ ] Psychiatric Medication
   - [ ] Self-Help Group
   - [ ] Other (please specify): _____________________________

17. Duration of Infertility (in years, if applicable): ____________

18. Number of Children: ________

19. Number of Previous Known Pregnancies: ____________

20. Number of Miscarriages: ____________

21. Number of Abortions (including voluntary and medically necessary):
    ____________

22. Number of Stillbirths: ____________

23. Number of Live Births: ____________

24. Number of Adopted Children: ____________

25. Duration Medical Treatment for Infertility (in months): ____________

26. Estimated Cost of Medical Treatment for Infertility (in U.S. dollars):
    $ ____________
27. Estimated Amount of Infertility Treatment Covered by Insurance (in U.S. dollars): $ _____________

28. Source of Infertility:

☐ Self
☐ Partner
☐ Both
☐ Undetermined
☐ Other (please specify): ______________________________________

29. Please rate your agreement with the following statement: When thinking of my experience of infertility, I find myself feeling that I am facing a challenge to try to overcome.

☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

30. Medical Diagnoses Received for Infertility Status:
__________________________________________________________________
__________________________________________________________________

31. Medical Treatments Attempted (check all that apply):

☐ Monitoring of Basal Body Temperature
☐ Fertility medications (e.g. Clomid, Perganol, Metrodin, HCG, etc.)
☐ Hormone replacement therapy (e.g. Progesterone, etc.)
☐ Medications to treat fibroids, polyps, or ovarian cysts
☐ Ovustick kit or other home ovulation monitoring kit
☐ Ultrasound ovulation monitoring
☐ Artificial Insemination with partner’s sperm (AIH)
☐ Artificial Insemination with partner and donor sperm (AIH/D)
☐ Artificial Insemination with donor sperm (AID)
☐ Surgical removal of fibroids, polyps, or ovarian cysts
☐ Tubal surgery
☐ Surgical treatment of condyloma or cervical dysplasia
☐ Laser treatment of condyloma or cervical dysplasia
☐ In vitro fertilization (IVF)
☐ Gamete intrafallopian transfer (GIFT)
☐ Zygote intrafallopian transfer (ZIFT)
☐ Surrogacy
☐ Other (please specify):
________________________________________________________________________
________________________________________________________________________

32. How did you learn about the survey:

☐ Email through RESOLVE
☐ Forwarded from someone in RESOLVE
☐ Other (please specify): ___________________________________________________
APPENDIX B

PERMISSION FORM FOR CONFORMITY TO FEMININE NORMS INVENTORY

Permission Form for Use of the Conformity to Masculine Norms Inventory and/or
Conformity to Feminine Norms Inventory in Research

Name: Sara Rieder Bennett, M.A.
Mailing Address: 1703 Tanglewood Drive, Akron, OH 44313
E-mail Address: slr45@uakron.edu
Phone: 304-290-1980 Fax: N/A

1. Please briefly describe the research study:

The study is in fulfillment of the dissertation requirement for a Ph.D. in Counseling Psychology. The study is a self-report survey design and approximately 100-200 women who have or are experiencing infertility will complete the surveys online. The hypotheses and a conceptual model are below.

Hypotheses of the present research include:

1) Consistent with Lazarus and Folkman’s (1984) stress and coping model, it is expected that women’s primary appraisal of infertility is related to their experience of infertility-specific distress. Specifically,
   a. greater infertility-specific distress is associated with the appraisal of infertility as a loss or threat.
   b. lower infertility-specific distress is associated with the appraisal of infertility as a challenge.

2) Consistent with Lazarus and Folkman’s (1984) stress and coping model, it is expected that women’s primary appraisal of infertility is related to their experience of general well-being. Specifically,
   a. general well-being is higher when infertility is appraised as a challenge
   b. general well-being is lower when infertility is appraised as a loss or threat.
3) Consistent with the motherhood mandate (Russo, 1976), it is expected that women’s adherence to traditional gender ideologies is related to their experience of infertility-specific distress and general well-being. Specifically,
   a. higher infertility-specific distress is related to greater adherence to traditional gender ideologies
   b. higher general well-being is related to lower adherence to traditional gender ideologies.

4) The relationship of women’s adherence to traditional gender ideologies to their infertility-specific distress and general well-being is expected to be mediated by primary appraisal. Specifically,
   a. greater adherence to traditional gender ideologies is related to higher threat and loss primary appraisals of infertility, and these appraisals are related to lower well-being and higher infertility-specific distress
   b. Lower adherence to traditional gender ideologies is related to higher challenge primary appraisals of infertility, and these appraisals are related to higher general well-being and lower infertility-specific distress.

5) Greater infertility-specific distress is expected to be related to lower general well-being. Though this link has not been empirically tested, numerous studies and authors have included the implication that infertility-specific distress is related to general well-being (e.g., Edelmann, Connolly, & Robson, 1989; Greil, 1997).
2. Approximately how many participants will complete the CMNI and/or CFNI?: 100-200 (a power analysis will be undertaken prior to dissertation proposal to determine the necessary number of participants).

3. If this is a master’s thesis or doctoral dissertation, who is supervising the research (please provide faculty member’s name, address, e-mail, and phone number):

   Name: Dr. Linda Subich

   Address: The University of Akron, Arts & Sciences Building, 3rd Floor
            Akron, OH 44325-4301

   E-mail: subich@uakron.edu        Phone: 330-972-8379
Please read the following conditions, sign and return to Dr. Mahalik at the address, fax number, or e-mail below.

**Conditions of Use:** I agree to use the CMNI and/or CFNI for research purposes only. I agree that in exchange for permission to use/reproduce the CMNI and/or CFNI for research, I will provide Dr. James Mahalik with the CMNI and/or CFNI raw data and demographic data from respondents (e.g., age, race, sexual orientation) from my study on a SPSS, ASCII, or Excel file. The file will contain the raw scores - rather than scaled scores (i.e., 94 items for the CMNI and 84 items for the CFNI) and the demographic data collected for the study for each participant (i.e., race, age, etc.).

I agree not to change the inventories’ instructions, items, or scaling; and agree to provide a copy to Dr. Mahalik of any publications that may result from use of the CMNI and/or CFNI in my research.

I understand that the CMNI and CFNI are copyrighted materials. I understand that permission to use/reproduce the measures will only be granted for the project that I described herein and that if I wish to use/reproduce the measures for other projects, I must obtain additional approval. I understand that I may not provide the inventories to others for their use but will direct them to Dr. Mahalik.

I also agree that the CMNI and/or CFNI will not be appended to written materials (e.g., dissertations, theses, teaching/instructional handouts, workshop guides, manuscripts, etc.) that are circulated for general reading. The CMNI and/or CFNI may not be published in a journal or on-line, the CMNI and/or CFNI may not be posted on the internet, and any
internet surveys using the inventories must be secured such that the items’ security is maintained.

Please retain a copy of this form, and return one to James R. Mahalik by mail at Campion Hall 312, Boston College, Chestnut Hill, MA 02467; e-mail at Mahalik@bc.edu or fax at 617.552.1981.

Sara: attached is the full 84 item CFNI and scoring information. Please contact me if you have any questions. best wishes, Jim Mahalik

Dr. James R. Mahalik
Professor
Director of Training
Counseling Psychology Program
Campion Hall 312
Boston College
Chestnut Hill, MA 02467
Phone: 617.552.4077
Fax: 617.552.1981
E-mail: Mahalik@bc.edu
APPENDIX C

IRB APPROVAL FORM
NOTICE OF APPROVAL

Date: August 8, 2008

To: Sara Rieder Bennett
   424 Oakland St., Apt. 2
   Morgantown, WV 26505

From: Sharon McWhorter, IRB Administrator

Re: IRB Number 20080803
   “An Investigation of Sources of Women’s Infertility-Specific Distress and Well-Being”

Thank you for submitting your IRB Application for Review of Research Involving Human Subjects for the referenced project. Your application was approved on August 8, 2008. Your protocol represents minimal risk to subjects and matches the following federal category for exemption:

☐ Exemption 1 - Research conducted in established or commonly accepted educational settings, involving normal educational practices.

☒ Exemption 2 - Research involving the use of educational tests, survey procedures, interview procedures, or observation of public behavior.

☐ Exemption 3 - Research involving the use of educational tests, survey procedures, interview procedures, or observation of public behavior not exempt under category 2, but subjects are elected or appointed public officials or candidates for public office.

☐ Exemption 4 - Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens.

☐ Exemption 5 - Research and demonstration projects conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine public programs or benefits.

☐ Exemption 6 - Taste and food quality evaluation and consumer acceptance studies.

Annual continuation applications are not required for exempt projects. If you make changes to the study’s design or procedures that increase the risk to subjects or include activities that do not fall within the approved exemption category, please contact me to discuss whether or not a new application must be submitted. Any such changes or modifications must be reviewed and approved by the IRB prior to implementation.

Please retain this letter for your files. If the research is being conducted for a master’s thesis or doctoral dissertation, the student must file a copy of this letter with the thesis or dissertation.

Cc: Linda Subich - Advisor
Cc: Rosalie Hall - IRB Chair

☐ Approved consent form/s enclosed
Informed Consent

Instructions for Participants and Informed Consent

Title of Study:
Infertility-Specific Distress and Well-Being

Introduction:
You are invited to participate in a research study conducted by Sara Rieder Bennett, M.A., a doctoral student in Counseling Psychology at The University of Akron. The research is being conducted under the supervision of Linda Subich, Ph.D. as part of the dissertation requirement for a Ph.D. in Counseling Psychology.

Purposes:
The purpose of this study is to assess variables related to your experience of infertility.

Procedures:
If you decide to participate in this study, you will be asked to fill out questionnaires about your gender role, view of infertility, current well-being, and demographic and reproductive information. The survey will ask personal information that may be difficult or sensitive to disclose. The amount of time required for your participation will be approximately 10 to 20 minutes.

Exclusion:
Individuals may participate only if they are women above the age of 18 who have experienced primary or secondary infertility.

Risks and Discomforts:
Participants may experience emotional discomfort due to the sensitive nature of the topic. Should this occur, participants are assured that they may discontinue participation at any time. If you do experience discomfort, you may seek help through contacting your regional HelpLine through RESOLVE, which may be located at http://www.resolve.org/site/PageServer?pagename=ask_HelpLine, or seeking professional counseling by searching the National Board for Certified Counselors CounselorFinder at http://www.nbcc.org/counselorfinder or the American Psychological Association Psychologist Locator at http://locator.apa.org/.

Benefits:
You will receive no direct benefit from participation in this study, but your participation may help us better understand the experiences of women who deal with infertility. Information may be beneficial in developing prevention and treatment programs for women who experience distress due to infertility.

Incentives:
Two participants will be randomly chosen to receive a $25 gift card following completion of data collection. Should you wish to be entered into the drawing, you will be asked to provide your email address following submission of the completed surveys. Your email address will not be connected to your responses.

Right to Refuse or Withdraw:
Participation is voluntary and refusal to participate or withdraw from the study at any time will involve no penalty or loss of benefits to which you otherwise entitled.

Confidential Data Collection:
Your responses to questionnaires will not be tied to identifying information and your responses will remain confidential. Any identifying information collected will be kept in a secure location and only the researchers will have access to the data. Participants will...
APPENDIX D

STEPWISE REGRESSION RESULTS

Table 17. Summary of stepwise regression analyses to identify covariates (N = 185).

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>( \beta )</th>
<th>R</th>
<th>( R^2 )</th>
<th>( R^2 \Delta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Medical treatment</td>
<td>.73</td>
<td>.17</td>
<td>.32**</td>
<td>.32**</td>
<td>.10**</td>
<td></td>
</tr>
<tr>
<td>2 Medical treatment</td>
<td>.72</td>
<td>.17</td>
<td>.31**</td>
<td>.36**</td>
<td>.13**</td>
<td>.03</td>
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<tr>
<td>Age</td>
<td>-.16</td>
<td>.07</td>
<td>-.17*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Medical treatment</td>
<td>.58</td>
<td>.18</td>
<td>.25**</td>
<td>.40**</td>
<td>.16**</td>
<td>.03</td>
</tr>
<tr>
<td>Age</td>
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<td>.07</td>
<td>-.20*</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Medical cost</td>
<td>.00</td>
<td>.00</td>
<td>.19*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWLS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Mental health</td>
<td>-2.94</td>
<td>.71</td>
<td>-.33**</td>
<td>.33**</td>
<td>.11**</td>
<td></td>
</tr>
<tr>
<td>2 Mental health</td>
<td>-2.72</td>
<td>.69</td>
<td>-.31**</td>
<td>.41**</td>
<td>.17**</td>
<td>.06</td>
</tr>
<tr>
<td>Children</td>
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<td>.67</td>
<td>.24*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Mental health</td>
<td>-2.79</td>
<td>.68</td>
<td>-.31**</td>
<td>.45**</td>
<td>.20**</td>
<td>.03</td>
</tr>
<tr>
<td>Children</td>
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<td>.67</td>
<td>.20*</td>
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<tr>
<td>Income</td>
<td>.00</td>
<td>.00</td>
<td>.19*</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Note. * = p < .05, one tailed; ** = p < .001, one tailed. Infertility-Specific Distress scale (ISD), Appraisal of Life Events scale (ALE), Satisfaction with Life Scale (SWLS).
APPENDIX E

NONSIGNIFICANT MEDIATION ANALYSES

Table 18. Summary of regression analyses for mediation Hypothesis 4a (N=185).

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>SE $B$</th>
<th>$\beta$</th>
<th>R</th>
<th>$R^2$</th>
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<tbody>
<tr>
<td>Analysis 1 – CFNI on SWLS:</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>CFNI</td>
<td>.00</td>
<td>.03</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Analysis 2 – CFNI on ALE Threat:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI</td>
<td>.11</td>
<td>.03</td>
<td>.26**</td>
<td>.26**</td>
<td>.07**</td>
</tr>
<tr>
<td>Analysis 3 – ALE Threat on SWLS:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALE Threat</td>
<td>-.18</td>
<td>.06</td>
<td>-.22*</td>
<td>.22*</td>
<td>.05*</td>
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<tr>
<td>Analysis 4 – CFNI and ALE Threat on SWLS:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>CFNI</td>
<td>.02</td>
<td>.03</td>
<td>.06</td>
<td>.23*</td>
<td>.05*</td>
</tr>
<tr>
<td>ALE Threat</td>
<td>-.19</td>
<td>.06</td>
<td>-.24*</td>
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</table>

Note. * = p < .05, one tailed; ** = p < .001, one tailed. Df for Analyses 1, 2, and 3 = 1, 183. Df for Analysis 4 = 2, 182. Conformity to Feminine Norms Inventory (CFNI), Satisfaction with Life Scale (SWLS), and Threat subscale of the Appraisal of Life Events scale (ALE Threat).
Table 19. Summary of regression analyses for mediation Hypothesis 4c (N=185).

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>R</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis 1 – CFNI on SWLS:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI</td>
<td>.00</td>
<td>.03</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Analysis 2 – CFNI on ALE Loss:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFNI</td>
<td>.07</td>
<td>.02</td>
<td>.26**</td>
<td>.26**</td>
<td>.07**</td>
</tr>
<tr>
<td>Analysis 3 – ALE Loss on SWLS:</td>
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<td></td>
<td></td>
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<tr>
<td>ALE Loss</td>
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<td>.08</td>
<td>-.39**</td>
<td>.39**</td>
<td>.15**</td>
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<td>Analysis 4 – CFNI and ALE Loss on SWLS:</td>
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<tr>
<td>CFNI</td>
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<td>.03</td>
<td>.11</td>
<td>.41**</td>
<td>.17**</td>
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<td>ALE Loss</td>
<td>-.52</td>
<td>.09</td>
<td>-.42**</td>
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</table>

Note. * = p < .05, one tailed; ** = p < .001, one tailed. Df for Analyses 1, 2, and 3 = 1, 183. Df for Analysis 4 = 2, 182. Conformity to Feminine Norms Inventory (CFNI), Satisfaction with Life Scale (SWLS), and Loss subscale of the Appraisal of Life Events scale (ALE Loss).
Table 20. Summary of regression analyses for mediation Hypothesis 4e (N=185).

<table>
<thead>
<tr>
<th>Variable</th>
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<th>β</th>
<th>R</th>
<th>R²</th>
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</thead>
<tbody>
<tr>
<td><strong>Analysis 1 – CFNI on SWLS:</strong></td>
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<td></td>
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<tr>
<td>CFNI</td>
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<td>.03</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
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<td><strong>Analysis 2 – CFNI on ALE Challenge:</strong></td>
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<tr>
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<td><strong>Analysis 3 – ALE Challenge on SWLS:</strong></td>
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<tr>
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<td>.02</td>
<td>.00</td>
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<td><strong>Analysis 4 – CFNI and ALE Challenge on SWLS:</strong></td>
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<tr>
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<td>.00</td>
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<tr>
<td>ALE Challenge</td>
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<td>.02</td>
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</table>

Note. * = p < .05, one tailed; ** = p < .001, one tailed. Df for Analyses 1, 2, and 3 = 1, 183. Df for Analysis 4 = 2, 182. Conformity to Feminine Norms Inventory (CFNI), Satisfaction with Life Scale (SWLS), and Challenge subscale of the Appraisal of Life Events scale (ALE Challenge).
Table 21. Summary of regression analyses for mediation Hypothesis 4f (N=185).

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<th>Variable</th>
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<td>.03*</td>
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<tr>
<td>CFNI</td>
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<td>.01</td>
<td>.03</td>
<td>.03</td>
<td>.00</td>
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<td>.10</td>
<td>.10</td>
<td>.01</td>
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<td><strong>Analysis 4 – CFNI and ALE Challenge on SWLS:</strong></td>
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<tr>
<td>CFNI</td>
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<td>.02</td>
<td>.18*</td>
<td>.20*</td>
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<tr>
<td>ALE Challenge</td>
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</tr>
</tbody>
</table>

Note. * = p < .05, one tailed; ** = p < .001, one tailed. Df for Analyses 1, 2, and 3 = 1, 183. Df for Analysis 4 = 2, 182. Conformity to Feminine Norms Inventory (CFNI), Infertility-Specific Distress scale (ISD), and Challenge subscale of the Appraisal of Life Events scale (ALE Challenge).