Maybe you’re just not meant to have children: Infertility-specific unsupportive social interactions, resilience, and distress

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Maybe you’re just not meant to have children: Infertility-specific unsupportive social interactions, resilience, and distress

Abstract
The relationship between resilience, unsupportive social interactions (USIs), and distress was examined among 100 women (ages 21 to 48) with current fertility problems using a cross-sectional quasi-experimental study design. Contrary to expectation, resilience was not significantly correlated with unsupportive social interactions ($p = .263$) or distress ($p = .052$). USIs accounted for 23% of the variance in predicting distress ($p < .0005$) and duration of fertility problems accounted for an additional 4.3% of the variance ($p < .0005$) when added to the model. USIs were also found to have less of an impact on distress for participants with longer histories of fertility problems. Results provide support for assessing for USIs when working with women with fertility problems, as helping them learn to better manage USIs could alleviate distress, particularly for women in the earlier stages of coping with fertility problems.

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MAYBE YOU’RE JUST NOT MEANT TO HAVE CHILDREN: INFERTILITY-SPECIFIC UNSUPPORTIVE SOCIAL INTERACTIONS, RESILIENCE, AND DISTRESS

A DISSERTATION

SUBMITTED TO THE FACULTY

OF

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Abstract

The relationship between resilience, unsupportive social interactions (USIs), and distress was examined among 100 women (ages 21 to 48) with current fertility problems using a cross-sectional quasi-experimental study design. Contrary to expectation, resilience was not significantly correlated with unsupportive social interactions ($p = .263$) or distress ($p = .052$). USIs accounted for 23% of the variance in predicting distress ($p < .0005$) and duration of fertility problems accounted for an additional 4.3% of the variance ($p < .0005$) when added to the model. USIs were also found to have less of an impact on distress for participants with longer histories of fertility problems. Results provide support for assessing for USIs when working with women with fertility problems, as helping them learn to better manage USIs could alleviate distress, particularly for women in the earlier stages of coping with fertility problems.

*Keywords:* fertility problems, infertility, resilience, unsupportive social interactions, distress, women
Introduction

There is a growing body of evidence suggesting that the experience of having fertility problems is significantly associated with increased psychological distress and decreased resilience, but there is conflicting information regarding how best to support these individuals and at what point during the process additional support is most beneficial. The researchers conducting this study aimed to look more closely at individuals currently experiencing fertility problems and clarify the role that social interactions play in adjustment.

The Problem of Infertility: Prevalence and Associated Distress

Prevalence. The term *infertility* generally refers to a medical condition whereby a couple that has not used contraception has been unable to get pregnant after 12 months or more. According to the 2006-2010 National Survey of Family Growth (NSFG), 6% of married women were infertile (Chandra, Copen, and Stephen, 2013). *Impaired fecundity* is a term used to describe those who are not surgically sterile who may have a physical barrier to getting pregnant or carrying a baby to term. The 2006-2010 NSFG estimated that 11% of all women (and 12% of married women) aged 15-44 met criteria for impaired fecundity. Slightly less than half of all women (and one-third of married women) endorsed having primary impaired fecundity (i.e., childless/nulliparous; Chandra et al., 2013). Although the number of married women with 12-month infertility decreased by half since 1965, the proportion experiencing difficulties having their first child increased significantly among married infertile women, from 17% in 1965 to 41-46% in 1982-2010, which is consistent with trends in delayed childbearing. Rates of impaired fecundity increase with age for nulliparous women, from 11% of those aged 15-29 to
47% of those aged 40-44. Of note, roughly 60% of women with primary fertility problems endorsed that they intended to have a child, compared to 40-50% of women with secondary fertility problems. A review of 25 population surveys revealed similar rates of infertility in developed and less-developed nations (3.5-16.7% and 6.9-9.3%, respectively), with an overall median prevalence of 9% (Boivin, Bunting, Collins, & Nygren, 2007). Rates of seeking medical care were also similar (56.1% and 51.2%), but the proportion actually receiving care was only 22.4%.

While the problem of infertility has been labeled by some as a quality-of-life issue, others view it as something more serious, with the American Society for Reproductive Medicine (ASRM) regarding infertility as a *disease* and the U.S. Supreme Court ruling that infertility should be considered a *disability* because it interferes with reproduction, which is “a major life activity” (Macaluso et al., 2010, p. 16.e2). Macaluso et al. (2010) further argue that infertility should be regarded as a public health issue, citing that individuals with infertility likely encounter a number of stressors, including difficulty obtaining services that often are not covered by health insurance, physically demanding and expensive medical procedures, and unexpected adverse effects on health and quality of life. Macaluso et al. (2010) also emphasize the complex nature of infertility, stating that, “each step of this journey is characterized by interactions among the physical and social environment, the biological background and behavior of individuals, and the health care system” (p. 16.e1).

Macaluso et al. (2010) also reported that, although data from the NSFG do not show large disparities in infertility, it might be that the etiology of infertility varies for different subgroups. For example, they stated that the less privileged are likely
disproportionately affected by preventable causes of infertility due to social and racial disparities in health status and frequency of certain risk factors like sexually transmitted diseases. This could help explain why African American women were found in one study to be twice as likely to report a history of infertility. Additionally, the authors noted that limited access to diagnosis, evaluation, and treatment due to financial barriers may lead to an underestimation of the frequency of infertility among the less privileged. However, the authors noted that for professionals and other higher-income groups, delaying childbearing may be more common, which would make these groups more vulnerable to the cumulative effect of causes of infertility, including the effect of aging (Macaluso et al., 2010). The authors thus propose that ongoing data collection systems are needed in order to measure the true burden of infertility in women and men and better understand the relevant socio-demographic, environmental, and behavioral factors, as this could help provide a more accurate picture of infertility in the United States (Macaluso et al., 2010).

**Psychosocial Distress.** As one might expect, the experience of infertility is very distressing and research largely supports this notion. For example, among women awaiting IVF treatment, depression was four times the level found in a control group and scores on measures of self-assessed attractiveness, anxiety, and memory/concentration were also poorer (Oddens, den Tonkelaar & Nieuwenhuyse, 1999). Other researchers found in one study that women with infertility had twice the level of depression compared to a control group (Domar, Broome, Zuttenmeister, Seibel, & Friedman, 1992). However, evidence also suggests that distress does not typically reach a clinical level and there are varying reports regarding the typical trajectory of distress. Researchers of one
study found that the levels of anxiety and depression found among women with infertility was comparable to women with cancer or congestive heart failure, but less than levels found among women with HIV or chronic pain syndromes (Domar, Zuttermeister, & Friedman, 1993). Hirsch and Hirsch (1995) followed a group of subjects for three years and found that they either remained in the study for the full 3-years or dropped out because of pregnancy (4%), adoption (17%), resolution of childlessness (7.4%), or unexplained reasons, with those who resolved their infertility in some way reporting fewer negative effects. Interestingly, the authors found that couples who resolved their infertility by accepting their childlessness were least affected, which they proposed might be due to adoption and pregnancy being accompanied by new stresses. The authors reported that even couples who had not resolved the infertility crisis managed to avoid deterioration of their relationships and self-esteem with counseling and use of social support systems (Hirsch & Hirsch, 1995).

There are several theories and explanations for why the experience of infertility is distressing. Crisis Theory proposes that it is not the objective difficulty of any specific situation that determines the situation’s impact, but more subjective factors, such as the importance of the situation to the person (in this case, parenthood), the amount of threat felt, the expected duration of the crisis, and the individual’s perceived ability to cope with the crisis, that need to be assessed (Harowitz et al., 2010).

Family Systems Theory (Harowitz et al., 2010) identifies a number of factors that likely contribute to the level of distress an individual suffers. This can include factors that affect the person’s identity, such as no longer feeling feminine or masculine, sexually attractive, or worthy. Losses associated with the prospect of being unable to experience
pregnancy and childbirth or the loss of genetic continuity can also cause significant sadness and distress. Additionally, problems can occur within their social network (e.g., family members, friends, or colleagues), especially when others give insensitive suggestions or make unsupportive comments. The authors suggested that, for many infertile individuals, their worlds may become smaller and smaller as they avoid situations that remind them of their own childlessness (e.g., church, family functions, malls), which may negatively impact their relationship with their spouse or other family members (Harowitz et al., 2010).

Stigma Theory (Harowitz et al., 2010) proposes that, because the physical aspects of infertility make it a concealed stigma, infertile individuals might be hypervigilant when interacting with non-stigmatized people as they look for signs to determine if others know they are infertile. The authors noted that those unable to conceive often feel punished, wonder what they ever did to deserve infertility, question whether God thinks they are unworthy of being parents, express feelings of failure, inadequacy, and persecution, and begin to see themselves as exclusively defined by their infertility (Harowitz et al., 2010). The authors suggest that individuals begin the process of reorganization and use effective coping strategies as they more fully understand the physical, emotional, and financial issues associated with infertility. Additionally, those who possess behavioral and cognitive flexibility, resilience, and intact social support systems are thought to likely get through the crisis and might actually grow stronger (Harowitz et al., 2010).

Others have framed infertility as a trauma that occurs when an individual’s plan to have children does not go as planned, resulting in multiple losses that can be viewed by
clinicians through a biopsychosocial lens (Jaffe & Diamond, 2010). From this perspective, biology is placed at the heart of the issue because the physical demands of medical tests and procedures can be painful and often require numerous invasive surgeries. It is suggested that, psychologically, the loss of the reproductive story has profound effects because individuals may lose a sense of themselves and feel fearful when they do not readily bounce back to normal (Jaffe & Diamond, 2010). The authors suggest that individuals may also suffer socially when their reproductive story does not go as planned as a result of being alienated from their peers, feeling disappointment from their parents, or experiencing tension with their spouse. It is suggested that identifying these losses makes it clear how reproductive loss and infertility affect every aspect of a person’s life, as it is both physical and emotional and represents the loss of opportunity to work through important developmental tasks of adulthood. The authors suggest that mental health professionals can help validate the importance of these losses and their extensive effects (Jaffe & Diamond, 2010).

There is also evidence that those who pursue infertility treatment are at risk of experiencing greater fertility-specific distress than those who do not pursue treatment. Greil, McQuillan, Lowry, and Shreffler (2011) found that women who did not receive treatment reported lower levels of distress than women who had received treatment, regardless of whether a live birth was achieved, both at the initial contact (Wave 1) and three years later (Wave 2). Furthermore, fertility-specific distress only increased over time for those women who pursued treatment and the highest increase in distress was for those who were in treatment at both waves and still did not have a baby, suggesting that infertility treatment results in greater levels of distress than does infertility in and of itself.
and that distress is higher for those who do not eventually have a live birth. Another study found that half of the women undergoing fertility treatment rated infertility as the most stressful experience of their life, making it hard to know if it was the infertility itself or the treatment (or both) contributing to this assessment (Freeman, Boxer, Rickels, Tureck, & Mastoinni, 1985).

**Stages of infertility distress.** Several researchers have attempted to determine if there are certain phases of the infertility experience that are more distressing than others (i.e., times when psychosocial intervention might be most helpful). However, results of these studies have been inconsistent and sometimes contradictory. For example, in one study, researchers found a trend of decreasing psychological distress with infertility duration where women in the intermediate and final stages reported less symptomology than women in the first stage, whereas researchers conducting another study found that women were most distressed on their third medical visit before having a pregnancy test (Kee, Jung, & Lee, 2000; Yong, Martin, & Thong, 2000). In another study, researchers found that women with a two to three year history of infertility had the highest level of depression compared to those with problems lasting either less than one year or more than six years, creating a U-shaped pattern of distress (Domar et al., 1992). The authors hypothesized that this may reflect a tendency for people to be protected by the early and later stages by their initial hope for positive results and later getting accustomed to their condition. In another study, researchers also found a U-shaped pattern of distress but in the opposite direction, with distress being greater in the first and third stages of infertility (stage one included those in their first year of infertility treatment, stage two in their second year, and stage three in their third year), though the greatest distress (including
problems with depressive symptoms, interpersonal strain, and paranoid ideation) was during the third stage (Berg & Wilson, 1991). The authors hypothesized that their findings could reflect that participants experienced distress acutely as they processed the shock and disappointment of receiving the diagnosis of infertility, a decrease in distress as they adjusted to their condition and/or treatment, and an increase in distress as treatments failed. Interestingly, researchers found within one study that distress (measured by the GHQ) increased following treatment failure (33 to 43%) but depression stayed the same (8%) and severity of depression after treatment failure was positively associated with duration of infertility, suggesting a dose-response effect that conflicts with all the patterns mentioned thus far (Lok, Lee, Cheung, Chung, Lo, & Haines, 2002).

Even for studies that found consistent results (e.g., decreased distress over time), there were varying explanations for why this might occur – for example, individuals may experience less distress as a result of either adjusting to their condition or becoming desensitized to the stress over time (Domar et al., 1992; Kee, Jung, & Lee, 2000). Other explanations offered by researchers for why they might have gotten conflicting results included having used different instruments to measure distress, cultural differences, inaccurate self-reporting of infertility duration, and various study limitations (Berg & Wilson, 1991; Domar et al., 1992; Kee, Jung, & Lee, 2000; Lok, Lee, Cheung, Chung, Lo, & Haines, 2002; Yong, Martin, & Thong, 2000). The fact that each of the studies defined the stages or phases of infertility differently most certainly played a role in producing such inconsistent results regarding which stage is most distressing. It is also likely that this could reflect the complex nature of the infertility experience and the idiosyncratic ways that individuals react to and cope with this particular stressor.
Although researchers have been unable to clearly define the stages of infertility distress, there is still evidence that stress can impact general well-being and possibly fertility itself.

**Effect of Stress/Distress on General Health and Fertility.** There is some evidence to suggest that stress can impact both fertility and general health. Miller, Rohleder, and Cole (2009) examined the impact of chronic interpersonal stress on health, testing the hypothesis that social relationships marked by conflict, mistrust, and instability lead to low-grade systemic inflammation, which then contributes to the development of various psychiatric, infectious, metabolic, and coronary diseases. To do so, the authors measured the degree of chronic interpersonal stress at baseline and drew blood to measure two major markers of systemic inflammation at both baseline and six months later for a sample of 103 health young women (mean age = 17 years).

Results indicated that for young healthy women with chronic interpersonal stress, there were greater increases of systemic inflammation over time following exposure to a model bacterial stimulus (Miller et al., 2009). This was said to suggest that any negative health consequences that chronic interpersonal stress may have requires an interactions between individual and situational factors, where interpersonal difficulties amplify the effects of a pathogenic insult to affect inflammation-related disease pathogenesis (Miller et al., 2009). The authors hypothesized that cortisol may help explain this effect based on previous research that has shown that individuals who do not have consistent warm social contacts tend to have unstable rhythms of cortisol output and people exposed to high doses of cortisol can eventually become immune to the hormone’s effect (Miller et al.,
This perhaps points to the importance of social support during times of stress, which will be discussed later.

Barzilei-Pesach, Sheiner, Sheiner, Potashnik, and Shoham-Vardi (2006) found that, in a sample of 75 women with female fertility problems, those who perceived their jobs as more demanding were less likely to conceive and those with higher actual workload (measured by full-time versus part-time job) were less likely to successfully complete a pregnancy after fertility treatment. The authors noted that these results were consistent with previous research showing that job strain had an impact on fertility only for the person responsible for the couple’s infertility. The authors also ruled out age and frequency of sexual intercourse as confounders.

In another study, researchers examined the effect of psychological distress on time to first pregnancy for a sample of 430 Danish couples planning their first pregnancy who had no previous reproductive experience (Hjollund et al., 1999). The authors followed the couples for six menstrual cycles and measured psychological distress using the General Health Questionnaire (GHQ). The authors found that fertility was substantially reduced only among highly distressed women with long menstrual cycles (i.e., distress did not affect women with normal menstrual cycles). The authors reported that their findings could be partially explained by taking into consideration past animal research and what we know about the physiological impact of stress, which would suggest that psychological distress could impact the female reproductive system at various levels, including the autonomic nervous system, the endocrine system, and the immune system. The authors ruled out stress-induced changes in sexual behavior as a primary explanation of their results given that frequency of intercourse was only weakly
associated with distress and had no effect on the relationship between distress and fertility. The authors reported that there is some evidence supporting the fact that moderate stress levels can increase the probability of having long menstrual cycles for susceptible individuals, suggesting that menstrual cycle length potentially could be viewed as a marker of susceptibility to distress (Hjollund et al., 1999). The authors note that there is some evidence suggesting that long menstrual cycles could be a reflection of early embryonal loss, with animal studies showing that exposure to stressors was associated with increased rates of reabsorption, but cautious interpretation of these findings was suggested given the limited amount of research.

Catherino (2011) commented on the need for further research to clarify the relationship between stress and fertility. The author points to a number of studies that have produced inconsistent findings, some that support an association and some that refute one. Catherino (2011) indicated that it is difficult to tease out the impact of stress on fertility when there is ample evidence that the diagnosis and treatment of fertility itself can be very stressful experiences. The author thus emphasizes the importance of not assuming a negative impact of stress on reproductive outcomes before there is clear evidence, as it is possible that both patient and clinical staff could infer that a fertility intervention failure should be blamed on the patient’s inability to control her stress response, which ultimately would just add to the distress patients are already experiencing (Catherino, 2011). The author also reported that there is currently limited research regarding the impact of intervention and whether it improves fertility outcomes and that, while it does not appear that counseling improves fertility outcomes, it has been shown to reduce stress, which he proposes is valuable in and of itself.
Given this evidence that stress can negatively impact both general wellbeing and fertility, it can be argued that interventions aimed at removing some of this emotional burden to improve the quality of life for individuals coping with infertility (regardless of whether it improves fertility outcomes) is worthwhile. Thus, it is helpful to identify factors that increase distress so that interventions can be initiated to reduce the negative impact.

**Factors That Influence Distress**

As noted earlier, the distress associated with infertility is multifaceted and complex and the factors that contribute to distress may vary somewhat from person to person. Two areas of research that have been found to be closely related to distress in this population include resilience and social interactions (Sexton, Byrd, & von Kluge, 2010; Mindes, Ingram, Kliewer, & James, 2003).

**Resilience.** It is no surprise that the experience of infertility and other reproductive problems is a very stressful one. Individuals who encounter this are faced with the possibility of never being able to have a biological child and the grief associated with that. In addition to that stress, pursuing treatment has its own set of stresses that include financial, emotional, and physical repercussions. It is not hard to imagine that the resources these individuals typically utilize to deal with everyday stresses may either be inadequate or become depleted over time, thus affecting how they perceive their ability to “bounce back easily” from the stress of infertility (which is one definition of resilience).

Many studies help clarify the role that resilience plays in how well individuals adjust to medical conditions. Karoly and Ruehlman (2006) surveyed a community sample to examine the relationship between resilience and chronic pain. The authors
defined resilience as a response pattern consisting of high pain severity in the context of low interference and low emotional burden, and found that the resilient sample tended to report less guarding, more positive self-talk, greater task persistence, and higher levels of perceived control compared to their non-resilient peers. The authors argue that these findings clearly show that resilience covaries with positive attitudes regarding one’s present and future status. Farber et al. (2000) found that resilience was associated with lower psychological distress, higher perceived quality of life, and more positive core personal beliefs among people with symptomatic HIV disease and AIDS. The authors concluded that screening for resilience during mental health evaluations of HIV/AIDS patients could be useful in predicting which individuals may be more susceptible to high psychological distress and suggested that a person’s adaptation to HIV could be enhanced by psychotherapies that focus on identifying the value, purposefulness, and meaningfulness of life activities.

In another study examining the influence of resilience in a medical population, Yi-Frazier et al. (2010) investigated whether varying resilience resource levels were associated with particular coping patterns in patients with diabetes. A resilience factor score was derived from four scales, each measuring variables commonly used to define resilience: optimism, self-esteem, self-efficacy, and self-mastery. Yi-Frazier et al.’s (2010) results showed that participants in the low-resilience group were more likely to engage in maladaptive coping patterns than those in the high-resilience group. Although participants in the high-resilience group were not shown to use adaptive coping strategies significantly more frequently than those in the lower-resilience groups, the authors believed this may reflect the fact that use of coping strategies becomes less critical when
patients have ample resilience resources. The results were said to support the use of resilience screening with diabetic patients so that those with low resources could be identified and interventions designed to decrease maladaptive coping patterns could be offered.

Finally, Sexton, Byrd, and von Kluge (2010) conducted a study to investigate associations between resilience, distress level, and coping styles among women experiencing infertility. A total of 40 women completed a set of questionnaires regarding demographics, resilience, depression, general distress, infertility-specific distress, and utilization of coping strategies. As predicted, resilience was lower in the sample of women with fertility problems than in the general population and was negatively associated with both infertility-specific and general distress and positively correlated with increased engagement in adaptive coping skills. The authors concluded that these results have implications for clinicians in that resilience levels could be assessed as a means of identifying patients who may be protected against some of the negative psychological sequelae associated with infertility. Overall, these studies support the idea that resilience is associated with how well patients are able to adapt to their illness and/or treatment.

Other research helps to clarify this relationship between resilience and fertility problems. Resilience has been found to be associated with other factors, such as a person’s ability to express their emotional reactions and whether their world-view changed as a result of the stressor (Butler et al., 2009). Secondly, Butler et al. (2009) also found that individuals with lower levels of resilience had suffered a change in their world-view following the onset of the stressor. Given that many adults possess the desire to have children and presumably assume this will occur without difficulty, individuals
faced with fertility problems are confronted with the difficult task of trying to change their expectations in this area and adjusting to the possibility of a future either without children or with non-biological children. It might be that individuals facing fertility problems could suffer a damaged world-view if they previously viewed their life as fairly predictable and safe and the unexpected occurrence of fertility problems challenged such a world-view drastically.

Perceived personal control has also been suggested to be a possible resilience factor. Diehl and Hay (2010) reported that greater personal control was associated with lower reactivity to stress. The authors indicated that participants reported more negative affect both on days when they experienced more stress than usual and when they reported less control than usual. Additionally, a stronger association was found between daily stress and negative emotion on days when individuals reported low control compared to high control. It can be hypothesized that the specific stressor of infertility might be one over which individuals feel low personal control, which in turn results in these individuals reacting to daily stresses with more negative emotions (i.e., lower resilience). Given that fertility problems and their treatment are often chronic and ongoing, it may be that individuals’ perceived level of personal control decreases as a function of time as treatments fail and/or fewer options are available to them. With this decrease in perceived personal control, negative emotion might increase and resilience level goes down.

**Social Environment.** Just as there are many factors that play a role in how resilient someone is (or perceives themselves to be) in the face of infertility, there are many aspects of a person’s social environment that can influence how much distress they
experience as a result of their infertility. The type, quality, frequency, and nature of social interactions (and how they are perceived) vary from individual to individual, some resulting in a supportive outcome and others adding (perhaps unintentionally) more stress. Given that families and communities help define the infertility experience, it is very possible for families’ and friends’ supportive efforts to actually make the situation more stressful (Ridenour, Yorgason, & Peterson, 2009). For example, a friend’s method of being supportive may involve being positive and encouraging the person dealing with the fertility problem to do the same. If this results in the person feeling unable to express their negative emotional reactions to the experience, this could have a negative impact. Butler et al. (2009) found that resilient individuals tended to be those who allowed themselves, and were allowed by others in their environment, to express their emotional reactions openly. It could be that infertility and fertility problems in particular is one topic that many people either feel uncomfortable talking about or unsure how to provide support, especially if they have not experienced it themselves. This is not to say, however, that social support does not play a key role in how well individuals cope with the stress of infertility.

*Social support.* Hirsch and Hirsch (1995) examined the psychosocial impact of infertility over a 3-year period and found that “time and the assumed increase in pressure to conceive do not lead automatically to either a degeneration of interpersonal relationships of a permanent alteration of self-concept,” suggesting that, over time, “support systems are mobilized or expanded and pressures, both internal and external, are ameliorated” (p. 520). The authors reported that their findings could reflect a number of factors, including a biased sample (i.e., RESOLVE.org is a national association that
offers online support, which could reduce the distress of participants recruited from this site), subject mortality (i.e., 59% did not complete the study, which may have resulted in a biased sample that was not in crisis), or actual evidence that infertile couples “do not fall apart over time but find ways to cope with infertility.” Further, although women were more affected by the infertility crisis than men, they were able to cope with this through the use of social supports. Social support was also found to be positively associated with all dependent variables (self-esteem, general contentment, marital satisfaction, and sexual satisfaction).

Grange, Matsuyama, Ingram, Lyckholm, and Smith (2008) found that African American and Caucasian cancer patients valued similar forms of social support, including “practical assistance, sharing housing, listening, demonstrating positive attitudes, and praying for and with patients” regardless of ethnic background. However, African American patients were more likely to move in with family after being diagnosed and were more explicit about their value of having support networks pray for and with them.

Although it is clear that social support plays an important role in successful adjustment to stress, there is also evidence suggesting that unsupportive interactions “are more strongly related to psychological distress than supportive behaviors are to psychological well-being” (Norton et al., 2005, p. 144). Though it is important to examine those factors that protect people from distress, it is critical that researchers focus on those factors that put people at risk so that at-risk individuals can be identified and offered support.

**Unsupportive social interactions.** As noted earlier, the influence of an individual’s social environment on one’s efforts to cope with infertility is a complicated
factor. Some interactions with people in one’s social network might provide support whereas others might be stress inducing or harmful (Butler et al., 2009; Ridenour et al., 2009). Unsupportive responses from others have been found to be associated with decreased psychological adjustment for individuals with chronic health conditions such as cancer, HIV/AIDS, and rheumatoid arthritis (Manne & Glassman, 2000; Majerovitz, & Gibofsky, 1991; Revenson, Schiaffino, Song & Ingram, 2002). In fact, there is evidence suggesting that social support and unsupportive social interactions are “relatively independence constructs, rather than opposite ends of a single continuum…thus, unsupportive social interactions may have a detrimental impact on adjustment, independent of the positive effects of social support” (Mindes et al., 2003, p. 2166).

Unsupportive social interactions (USIs) are commonly described as taking the form of criticism, blaming, avoidance, distancing, blundering, and failed attempts to be supportive.

Because few studies have examined how USIs might specifically contribute to the distress experienced by individuals with fertility problems, it will be helpful to examine how it impacts distress levels in individuals with other types of medical or chronic health conditions. Several researchers have examined the impact of USIs on the wellbeing of individuals with cancer and HIV. For example, Figueiredo, Fries and Ingram (2004) examined disclosure patterns and USIs in the wellbeing of breast cancer patients because one of the ways that breast cancer patients might cope with the disease is by disclosing their concerns to someone. The authors found that close family and friends were most frequently cited as confidants but a majority also confided in the medical staff (e.g., nurses, oncologists) and almost half talked to a religious figure, while only a minority
confided in a mental health worker or cancer support group. Failure to disclose was
found to be negatively associated with emotional well-being (but not with physical
functioning), negatively related to social support, and positively associated with receiving
USIs from other people, though the direction of causality could not be determined.
Negative responses reported by participants were behaviors of either minimizing or
distancing. However, it was a minority of cancer patients who reported experiencing
USIs with others, which the authors note was a lower rate than found in patients with
HIV, possibly due to HIV/AIDS being a more stigmatized condition. It was
recommended that mental health professionals, health care providers, family, friends, or
other caregivers could be taught about the characteristics of USI.

Grange et al. (2008) examined similarities and differences in perceived supportive
and unsupportive social responses between African American and Caucasian cancer
patients. Similarities in the unsupportive responses between groups suggest that patients,
family, and friends need to be educated about behaviors that may inhibit patients or cause
distress, even if well-intentioned. For example, well-intentioned instrumental support
can undermine self-efficacy and it may be that empathetic forms of support may be more
helpful. Grange et al. (2008) suggested that mental health workers can work with
patients’ social networks to learn alternative behaviors and/or provide them with
information about the tasks that patients are able to manage given the stage of their
cancer, type of cancer, and treatment side effects. African Americans reported greater
incidence of losing friends after sharing their diagnosis, possibly due to a higher stigma
associated with the disease.
Ingram, Jones, Fass, Neidig, and Song (1999) looked at the relationship that social support (SS) and USIs have with depression among people living with HIV. The authors found that more HIV-related USIs were positively associated with depression, even after controlling for the influence of trait negative affectivity, with USIs accounting for “a significant amount of the variance in depression beyond the variance explained by physical functioning and social support” (p. 325). There was little relationship found between USIs and SS, with only a moderate negative association between the Blaming subscale (of the Unsupportive Social Interactions Inventory) and social support satisfaction, which is consistent with other research suggesting that SS and USIs represent separate factors rather than opposite ends of a spectrum. Further, there was no evidence found suggesting an interactive effect between SS and USIs; in other words, the individual’s level of social support did not impact the extent to which USIs predicted depression. Again, no conclusions could be drawn regarding causality so it is impossible to know whether depression contributes to an increase in USIs from others or if greater frequency of USIs contributes to depression. The authors recommended that formal and informal caregivers be taught how to avoid making unsupportive responses and how to react in a helpful way. This suggests that it is important to separately assess for positive SS and negative/unsupportive social interactions.

Norton et al. (2005) examined the role of physical impairment, perceived unsupportive family and friend behaviors (i.e., USIs), perceived control, and self-esteem in the psychological distress of ovarian cancer patients. The authors argue that, “a potential reason that unsupportive behaviors may evoke psychological distress reactions among people dealing with cancer or any serious illness is the threat that such responses
may pose to self-esteem” (p. 144). The researchers who conducted this cross-sectional study found that higher levels of unsupportive behaviors from family and friends (e.g., perceived as being critical of patients’ responses to their illness or conveying discomfort or disinterest when patients talk about their illness) were associated with lower levels of self-esteem and with greater psychological distress. The authors argued that interventions may be more effective if they “find other ways to bolster patients’ self-esteem in the face of criticism and avoidance by family and friends” or assist patients in “finding methods to increase the responsiveness of friends and family members to patient needs” (p. 150).

Manne, Ostroff, Winkel, Grana, and Fox (2005) examined the influence of partner unsupportive responses and avoidant coping on distress among women with early stage breast cancer. Specifically, the authors conducted a longitudinal study focused on two dimensions of unsupportive behavior - overtly critical responses and avoidant responses. The authors noted that cognitive processing theories of adjustment to stressful life events provide possible explanations for how unsupportive reactions may interfere with adaptive cognitive processing by “causing the individual to prematurely attempt to ‘move on’ by avoiding cognitive processing of the stressful event” (p. 636). Partners’ ratings of unsupportive behavior were strongly associated with patients’ ratings of partners’ behavior and also associated with both distress and avoidance coping. The authors also found that the perception of criticism played a more important role in determining distress in that partner unsupportive behavior only had detrimental effects if they were perceived as unsupportive by the patient. The authors argue that their findings provide evidence for the partial mediational role of avoidant coping, suggesting that,
“unsupportive reactions may lead the individual to push aversive thoughts or feelings away, thereby contributing to distress” (p. 640). The authors recommend that, for women who perceive their partners as being unsupportive, couple-focused intervention that specifically educates couples about adaptive relationship communication may be beneficial.

Schrimshaw (2003) examined relationship-specific USIs and depressive symptoms among women living with HIV/AIDS. The authors reported that, because illnesses such as HIV can be stigmatizing, “many individuals may feel uncomfortable and not know what to say or how to act with someone living with an illness” which could “lead friends and family to engage in social interactions which, although not explicitly negative, may be perceived by the patient as such” (p. 299). The authors indicated that USIs may result from either failed attempts to be supportive or failure to provide support and it was hypothesized that the source of social interaction could influence the degree to which psychological adjustment is impaired (i.e., interactions perceived as unsupportive when from one source but supportive when from another source). The authors specifically hypothesized that social interactions with a lover/spouse may impact adjustment more because this relationship might hold more importance than others or the spouse or partner may be more likely to engage in unsupportive interactions because he/she is more regularly involved in stressful caregiving, which may result in tension, avoidance, and other actions that could be interpreted as unsupportive. The study was an examination of the differential effects of USIs from spouses, family members, and friends, and results indicated that all three relationship types were found to negatively affect depressive symptoms. USIs from family members were found to have a direct
negative effect on depressive symptoms, regardless of the presence of USIs from other sources. USIs from a lover/spouse and from friends were found to interact, where “the presence of high levels of USIs from either single source or both sources was detrimental” but “only in the absence of high levels of USIs from both a lover/spouse and friends were lower levels of depressive symptoms predicted” (p. 309). The presence of high rates from both sources did not result in an appreciable increase in depressive symptoms.

There has been one study that has specifically looked the role of USIs among individuals with fertility problems. Mindes et al. (2003) conducted a longitudinal study examining the effect of USIs on the psychological adjustment of women with infertility. The Unsupportive Social Interactions Inventory (USII; Ingram, Betz, Mindes, Schmitt, & Smith, 2001) was used to assess stressor-specific unsupportive social interactions, defined as the unsupportive or upsetting responses that an individual receives from other people concerning a stressful event in his or her life, which categorized unsupportive responses into four types (distracting, bumbling, minimizing, and blaming). Because the USII distancing subscale has been found to be the strongest predictor of decreased adjustment, Mindes et al. (2003) chose to use this subscale in addition to the Total scale in their study. The authors were also interested in examining whether threat appraisal (i.e., the extent to which a person’s fertility problem has the potential to threaten career and life goals, relationships, financial security, and health) and avoidance coping might act as mediating factors in the relationship between unsupportive social interactions and adjustment given that both have been found to be associated with decreased adjustment among individuals with chronic health conditions (Mindes et al., 2003). The authors
hypothesized that infertility-specific unsupportive social interactions would be significantly associated with adjustment and, more specifically, that women who reported greater levels of distancing from other people would also report “more depressive symptoms, greater overall psychological distress, and lower levels of self-esteem” (Mindes et al., 2003, p. 2168). Their secondary hypothesis was that threat appraisals and avoidance coping would mediate the relationship between unsupportive social interactions and adjustment (Mindes et al., 2003).

Participants in the Mindes et al. (2003) study who completed questionnaires at Time 1 included 123 women recruited from infertility clinics and through a chapter of RESOLVE (a national infertility organization). Of these, 67 completed follow-up questionnaires at Time 2, which occurred between six and 12 months following Time 1. A majority of the participants at Time 1 were Caucasian (92%), married (96%), college graduates (68%) who were employed full-time (86%). The mean amount of time participants had been attempting conception was 49 months and a majority were currently being treated by an infertility physician (98%), with a mean duration of treatment reported to be 27 months. At Time 2, twenty-six participants were still infertile, 14 were pregnant, and 27 had given birth.

Cross-sectional analysis of participants at Time 1 supported the hypothesis that women who reported more infertility-specific unsupportive social interactions had higher rates of depressive symptoms and overall psychological distress, and lower self-esteem. Results also showed that distancing unsupportive social interactions appeared to be a strong predictor of depressive symptoms and overall psychological distress. Mindes et al. (2003) reported that these findings can be understood within the context of the infertility
experience in that infertile women have reported that their fertility problems created a sense of alienation and estrangement due to constrained social interactions. Distancing unsupportive social interactions indicate that “an attempt was made to communicate cognitively and/or affectively about one’s fertility problem and the effort to communicate was, in essence rebuffed…which may intensify the sense of stigma associated with infertility and corresponding psychological sequelae” (Mindes et al., 2003, p. 2175).

Researchers also found that avoidance coping and threat appraisals mediated the relationship between unsupportive social interactions and adjustment. The authors stated that this could explain why a comment, viewed by one person as unsupportive, can be perceived as a sign of support by another person. For example, if an individual does not appraise a negative life event as threatening, and he or she uses coping strategies that are more effective, then that person may not perceive a particular social exchange as negative. Longitudinal analysis of data at Time 1 and Time 2 partially supported the authors’ hypotheses, but only for women who remained infertile at Time 2 and only for the outcome measures of depressive symptoms and overall psychological distress (not self-esteem). For women who were pregnant or had given birth at Time 2, unsupportive social interactions reported previously were no longer associated with current depressive symptoms and psychological distress. Given that a significant relationship remained between unsupportive social interactions reported at Time 1 and self-esteem reported at Time 2, Mindes et al. (2003) said this might suggest that “the nature of social interactions regarding a fertility problem may continue to influence a woman’s self-concept, even after pregnancy and birth are achieved” (p. 2176).

The authors suggested that these findings have implications for the health care
professionals who work with infertile women. For example, medical providers could be taught how to react in a helpful way after becoming aware that a patient has received an unsupportive response from another person and, if they learn the associated risk factors associated with greater levels of unsupportive social interactions (e.g., depression), they may become better aware of when it is appropriate to refer patients to a mental health counselor (Mindes et al., 2003). It was also suggested by the authors that mental health practitioners working with infertile individuals thoroughly assess the level and nature of unsupportive responses so that the clinician can work with the client on how best to respond to them (e.g., helping clients determine how much information to disclose about their infertility and to whom; assisting clients to develop responses to common insensitive comments they receive). For clients for whom threat appraisals and avoidance coping strategies might be playing a role in their difficulty adjusting to their infertility, Mindes et al. (2003) suggest that clinicians can work with clients to “examine the meaning of negative social interactions and help them restructure their appraisals of their fertility problem, for example, by placing a greater emphasis on the benefits, versus the threats, associated with infertility” (p. 2177).

In sum, infertility can be a devastating experience that affects all aspects of a person’s life. The fact that it has been defined as a “disease” or “disability” is a reflection of the widespread impact it can have on an individual’s life and the need for services to address it. There is considerable of evidence suggesting that the experience is distressing, though it is likely that the distress can come in many forms, for varying reasons, and at different levels of severity. For example, distress has been described as being related to the degree to which infertility poses a threat to achieving the things they
want, the expected duration of the crisis itself, no longer feeling masculine/feminine or
sexually attractive, feelings of loss or trauma, the stress of treatment, the meaning
attributed to their fertility status (e.g., being punished), and feeling defined by their
infertility (Harowitz et al., 2010; Jaffe & Diamond, 2010). There is also some evidence
that infertility is a more stressful experience for women than for men, with infertile
women (compared with infertile men) reporting lower self-esteem, more depression, a
greater tendency to blame themselves for their infertility, and lower life satisfaction
regardless of which partner was diagnosed with the reproductive problem (Griel, 1997).
Two other areas that have been found to be related to distress are a person’s perceived
ability to cope with the stressor and “bounce back” (i.e., resilience) and disruptions or
conflict interpersonally, which may be related to becoming isolated due to avoidance of
places with children or receiving unsupportive/insensitive comments from friends,
family, and/or spouse (i.e., social interactions). There is also some evidence suggesting
that distress can negatively impact both fertility and general well-being. Though it is
unknown whether psychological intervention improves fertility outcomes, the benefit of
easing the distress of patients with infertility and increasing their quality of life has its
own value. Based on this, although it is obviously very important to assess what is
specifically distressing for each individual about the experience of infertility, in a clinical
setting it can also be useful to identify factors that might protect patients from or put them
at risk for distress so that these can be used as screening measures. Two such factors are
resilience (protective) and unsupportive social interactions (risk), which have been
studied more extensively among populations with other health conditions, including
cancer, HIV, chronic pain, and diabetes. However, few studies have examined how these
are related to the experience of infertility (Mindes et al., 2003; Sexton et al., 2010). As such, it is important to clarify how these constructs may influence and interact with one another, how they influence distress, and at which point in the process (i.e., at what stage) distress is most prevalent.

This quasi-experimental study utilized a cross-sectional design to compare the relationship between perceived resilience, unsupportive social interactions, and distress among a community sample of women with current fertility problems. Although men and women both experience infertility, this study focuses on the experiences of women. Resilience, unsupportive social interactions, and psychological distress were measured using the Brief Resilience Scale (BRS), Unsupportive Social Interactions Inventory (USII), and General Health Questionnaire (GHQ-12), respectively (Goldberg et al., 1997; Ingram, Betz, Mindes, Schmitt, & Smith, 2001; Smith et al., 2008).

**Primary Hypotheses**

Several hypotheses were proposed regarding how resilience, USIs, and distress might be related to one another based on what has already been found in the literature. First, given that resilience generally tends to be negatively associated with distress and USIs are positively associated with distress, it was hypothesized that resilience would be negatively associated with USIs. Second, it seemed reasonable to hypothesize that resilience could influence how USIs and distress interact with one another; for example, would distress be lower for those with high resilience compared to those with low resilience, even when similar levels of USIs are endorsed? In other words, does a woman’s perception of her own ability to “bounce back” or recover from a particular stressor (i.e., their perceived resilience) influence how much she is impacted by USIs?
H₁: It was expected that participants with higher resilience would endorse fewer unsupportive social interactions than participants with lower resilience and, alternatively, participants who endorse more unsupportive social interactions would tend to have lower levels of resilience than participants with fewer unsupportive social interactions. Confirmation of the first hypothesis would be evidenced by a statistically significant negative relationship between resilience and unsupportive social interactions, as measured by the Brief Resilience Scale (BRS) and the Unsupportive Social Interactions Inventory (USII). We expected to find that high scores on the BRS would be consistent with lower USI scores and low BRS scores to be consistent with higher USII scores. Post-hoc analyses were conducted to examine the relationship between resilience and distress in this sample, as well as to compare this sample’s mean resilience and distress scores to those of a previous study (Kvamme, 2011).

H₂: The second hypothesis was that resilience might contribute to the degree to which unsupportive social interactions are associated with distress. It was first assumed that unsupportive social interactions (as measured by the USII) would account for a significant amount of the variance in psychiatric distress (as measured by the GHQ-12). In addition, this hypothesis would be further supported if, by factoring in participants’ resilience levels (as measured by the BRS), a greater portion of the variance was accounted for than when just considering the relationship between unsupportive social interactions and distress alone. This would be indicated by a significant $R^2$ change between a regression model with USII predicting GHQ-12 and a second regression model with BRS and USII as joint predictor variables. A post-hoc multiple regression analysis was also conducted using USII subscales as predictor variables.
Exploratory Hypotheses

Given the inconsistent findings regarding the trajectory of distress for individuals with infertility, it is difficult to make hypotheses regarding the role that infertility duration may play in how these other variables are related. However, current research does suggest that the amount of distress experienced by someone is influenced in some way by how long they have been dealing with their fertility problem. As such, it is important to examine whether the duration of infertility affects the relationship between resilience, USIs, and distress. In other words, does controlling for infertility duration affect the degree to which these other variables interact?

EH1: If the relationships between resilience, USIs, and distress remain the same after controlling for infertility duration, it can be hypothesized that duration of infertility does not play a significant role in how the three primary variables interact. However, if controlling for how long someone has been dealing with the infertility stressor changes the relationship between resilience, USIs, and distress, or causes the relationship to disappear, this could provide evidence that duration contributes significantly to how and why these other variables interact.
Method

Participants

A community sample of adult women was asked to participate via online recruitment methods (N=100, \(M_{\text{age}} = 33.57\), age range = 21-48 years; original sample consisted of 131 participants, but 31 were removed from the final analysis due to incomplete data).

Women over the age of 18 who endorsed current fertility problems (versus those who have resolved their infertility in some way) were eligible to complete the survey, as it was our hope that this would allow us to get a more accurate picture of how women are impacted during the experience itself (i.e., when they may benefit most from psychosocial support). For the purposes of this study, “fertility problems” included medically defined infertility (e.g., at least 12 months of having unprotected sex without achieving pregnancy or having sought medical help to conceive) as well as other fertility problems (e.g., doctor recommendation not to get pregnant, partner sterilized), as one study did (McQuillan, Griel, White, & Jacob, 2003). Individuals endorsing a history of miscarriages were also included as this experience is also associated with significant distress and has the same physical outcome as infertility (i.e., absence of a biological child).

Procedure

Participants were recruited using online advertising on infertility support blogs and websites (e.g., RESOLVE.org), social networking sites (e.g., Facebook.com), and via email. Online advertisements provided a brief description of the study and the eligibility criteria, as well as a link to the study questionnaire. The online advertisements informed
participants that the survey would be anonymous and the investigators of the study would not collect information regarding the computer being used, or any identifying information that may be available on the computer. Further, participants were informed that completion of the study was completely voluntary and investigators would not have any access to names or other identifying information connected to any of the participants’ responses. Upon visiting the website, participants were provided with a brief description of the purpose of the study, an estimate of how long the survey would take to complete, and the recommendation that the survey be completed in a private and quiet place of their choosing. After participants provided their informed consent to participate in the study (Appendix A), they completed the online questionnaire (Appendices B-E). When data collection was complete, the data was downloaded into Excel, at which point any incomplete data was examined for patterns and removed and the remaining data was imported into SPSS 17 for statistical analysis. A description of the measures utilized follows.

**Measure(s)**

**Demographic and Fertility Status (Appendix B).** Demographic items assessed the participants’ age, state of residence, gender, sexual orientation, race, household yearly income, education level, and relationship status. Fertility status items were included to gather information related to the type and duration of fertility problems and whether treatments were pursued.

**Unsupportive Social Interactions (Appendix C).** Participant reports of unsupportive social interactions with others were assessed using the Unsupportive Social Interactions Inventory (USII; Ingram, Betz, Mindes, Schmitt, & Smith, 2001). A factor
analysis of the USII revealed four types of stressor-specific unsupportive responses, which were grouped into four subscales: 1) *Distancing*, or emotional and behavioral disengagement, 2) *Bumbling*, or behaviors that are awkward, uncomfortable, intrusive, or inappropriately focused on fixing the individual’s problems, 3) *Minimizing*, or attempts to force or to downplay the importance of the person’s concerns, and 4) *Blaming*, or criticism and faultfinding. Scoring of the USII produces a Total score and four subscale scores. For the purposes of this study, the instructions described the stressor as “your fertility problem” rather than “your illness” as does the original measure. The USII was found to have adequate internal consistency and reliability (Cronbach’s α for Total=.86; Distancing=.78; Bumbling=.73; Minimizing=.76; Blaming=.85). Further, stressor-specific unsupportive social interactions were found to account for a significant amount of the variance in psychological and physical symptoms, beyond the variance explained by stress and social support. The *distancing* subscale was found to be a significant predictor of overall psychological distress ($\beta = .20$, $sr = .18$, $p < .001$). Women were found to report more *bumbling* responses and more *minimizing* responses than men, but no gender differences were observed on the *distancing* or *blaming* subscales or on the USII Total score. Ingram et al. (2001) also found evidence supporting the construct validity of the USII in that the observed relationships between the USII and symptoms were not just a result of individual differences in trait negative affectivity, and evidence was found suggesting that stressor-specific unsupportive social interactions and general negative social interactions are conceptually different and separate predictors of symptoms.
**Resilience (Appendix D).** The Brief Resilience Scale (BRS), a measure that assesses a person’s perceived ability to “bounce back” from stress, was used to assess participants’ level of resilience (Smith et al., 2008). The BRS is a 6-item measurement tool that has been found to have good internal consistency (Cronbach’s alpha = .80-.91) and test-retest reliability (.62-.69), as well as adequate convergent and discriminant validity. The BRS was also found to represent one factor, to be related to resilience resources and health-outcomes, and to predict health outcomes beyond resilience resources.

**Distress (Appendix E).** The General Health Questionnaire-12 (GHQ-12), a 12-item measure of psychological distress, was used to assess participants’ current level of general distress (Goldberg et al., 1997). Items are comprised of a four-point Likert scale (0-1-2-3). A total psychological distress score is obtained by summing all 12 items, resulting in a possible score range of 0-36. Validity data for the GHQ-12 has been reported to be good and was reported to be as good as the longer 28-item version.
Results

Participants ($N = 100$) ranged in age from 21 to 48, with a mean age of 33.57. Participants on average had 17 years of education (SD = 2.81) and an income of $81,257 (SD = 46,176). Participants on average had a mean unsupportive social interactions (USII) score of 1.86 (SD = .91), a mean resilience (BRS) score of 2.96 (SD = .29), and mean distress (GHQ) score of 20.14 (SD = 7.27). Table 1 includes demographic data for sexual orientation, race, and relationship status.

Table 1

<table>
<thead>
<tr>
<th>Participant Demographics</th>
<th>Percent of Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sexual Orientation</strong></td>
<td></td>
</tr>
<tr>
<td>Heterosexual/Straight</td>
<td>93.0</td>
</tr>
<tr>
<td>Homosexual/Gay/Lesbian</td>
<td>0</td>
</tr>
<tr>
<td>Bisexual</td>
<td>7.0</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>0</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>0</td>
</tr>
<tr>
<td>Asian</td>
<td>2.0</td>
</tr>
<tr>
<td>Black or African American</td>
<td>3.0</td>
</tr>
<tr>
<td>Native Hawaiian or Other Pacific Islander</td>
<td>0</td>
</tr>
<tr>
<td>Caucasian</td>
<td>83.0</td>
</tr>
<tr>
<td>Latino or Hispanic</td>
<td>1.0</td>
</tr>
<tr>
<td>Two or more races</td>
<td>9.0</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Relationship Status</strong></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>3.0</td>
</tr>
<tr>
<td>In a relationship, but not living together</td>
<td>3.0</td>
</tr>
<tr>
<td>Cohabitating</td>
<td>7.0</td>
</tr>
<tr>
<td>Married</td>
<td>86.0</td>
</tr>
<tr>
<td>Separated/Divorced</td>
<td>1.0</td>
</tr>
<tr>
<td>Widowed</td>
<td>0</td>
</tr>
</tbody>
</table>
On average, participants indicated that they had been experiencing fertility problems for 54 months (4.5 years). Fifty-one percent of participants indicated that the fertility problem was attributed to the female partner and 31% indicated that the cause of the fertility problems was unknown. Additionally, 30% of participants indicated that they were currently in the process of deciding whether to pursue treatment and, in the last six weeks, 26% had started fertility treatment and 10% had received confirmation of a fertility problem. See Table 2 for details regarding the cause/origin and current status of participants’ fertility problems.

Table 2
*Cause/Origin and Current Status of Participants’ Fertility Problems (by percentage)*

<table>
<thead>
<tr>
<th>Origin of Fertility Problem</th>
<th>Problem Attributed to self (female-factor)</th>
<th>51.0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Problem attributed to partner (male- or female-factor)</td>
<td>9.0</td>
</tr>
<tr>
<td></td>
<td>Problem attributed to both partners</td>
<td>19.0</td>
</tr>
<tr>
<td></td>
<td>Other pregnancy problems (e.g., miscarriages)</td>
<td>22.0</td>
</tr>
<tr>
<td></td>
<td>Unknown origin</td>
<td>24.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cause of Fertility Problem</th>
<th>Cause Unknown</th>
<th>31.0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Difficulty Getting Pregnant</td>
<td>56.0</td>
</tr>
<tr>
<td></td>
<td>Difficulty Staying Pregnant</td>
<td>28.0</td>
</tr>
<tr>
<td></td>
<td>Sperm Disorder</td>
<td>23.0</td>
</tr>
<tr>
<td></td>
<td>Male Anatomical Abnormality</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Health/Lifestyle</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Cancer and its treatment</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>16.0</td>
</tr>
</tbody>
</table>
### Cause/Origin and Current Status of Participants’ Fertility Problems (by percentage) cont’d

<table>
<thead>
<tr>
<th>Cause of Fertility Problem (cont’d)</th>
<th>Abnormal AMH or FSH levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fallopian tube damage, blockage, or removal</td>
<td>16.0</td>
</tr>
<tr>
<td>Endometriosis</td>
<td>16.0</td>
</tr>
<tr>
<td>Ovulation disorder</td>
<td>17.0</td>
</tr>
<tr>
<td>PCOS</td>
<td>19.0</td>
</tr>
<tr>
<td>Premature Ovarian Failure</td>
<td>8.0</td>
</tr>
<tr>
<td>Early Menopause</td>
<td>1.0</td>
</tr>
<tr>
<td>Uterine fibroids</td>
<td>3.0</td>
</tr>
<tr>
<td>Uterine structural abnormalities</td>
<td>3.0</td>
</tr>
<tr>
<td>Pelvic Adhesions</td>
<td>2.0</td>
</tr>
<tr>
<td>Delayed Puberty or Amenorrhea Disease</td>
<td>1.0</td>
</tr>
<tr>
<td>Current Fertility Status</td>
<td></td>
</tr>
<tr>
<td>Currently being evaluated / no infertility diagnosis yet</td>
<td>3.0</td>
</tr>
<tr>
<td>Deciding whether to pursue treatment</td>
<td>30.0</td>
</tr>
<tr>
<td>Waiting to see if a treatment effort was successful</td>
<td>17.0</td>
</tr>
<tr>
<td>Within the last six weeks:</td>
<td></td>
</tr>
<tr>
<td>I had a miscarriage</td>
<td>7.0</td>
</tr>
<tr>
<td>I had an ectopic pregnancy</td>
<td>1.0</td>
</tr>
<tr>
<td>I received confirmation of a fertility problem</td>
<td>10.0</td>
</tr>
<tr>
<td>I had some form of fertility treatment</td>
<td>26.0</td>
</tr>
<tr>
<td>I learned that a treatment effort was unsuccessful</td>
<td>21.0</td>
</tr>
</tbody>
</table>
Fifty-seven percent of participants indicated that they were currently pursuing some form of fertility treatments. The most common types of fertility treatment included: intrauterine insemination (IUI; 38%), fertility hormones (FH; 36%), acupuncture (34%), in-vitro fertilization (IVF; 32%), and dietary changes (32%). Other endorsed treatments included: intracytoplasmic sperm injection (ICSI; 22%), stress reduction counseling (22%), self-use stress reduction strategies (22%), audio-guided stress-reduction techniques (20%), Chinese herbs (16%), endometriosis treatment (15%), homeopathic methods (15%), stress reduction massage (13%), PCOS treatment (9%), surgical removal of uterine scar tissue (8%), embryo adoption (3%), donated egg/sperm (4%), and micro epididymal sperm aspiration (1%).

**Hypothesis One**

Given that resilience and unsupportive social interactions were predicted to be negatively correlated based on previous literature, a 1-tailed Pearson product-moment correlation was used to examine this relationship. Contrary to the hypothesis, resilience was not found to be significantly correlated with unsupportive social interactions, \( r(100) = .064, p = .263 \). Additionally, a 1-tailed Pearson product-moment correlation was conducted to examine the relationship between resilience and distress, which did not produce a significant result, \( r(100) = .163, p = .052 \).

Additional analyses compared this sample’s mean resilience and distress scores to those of a previous study (Kvamme, 2011). The current study’s sample was found to have lower levels of resilience (mean = 2.95) and higher levels of distress (mean = 20.14) than the previous study’s sample (resilience mean = 3.18; distress mean = 14.67). An independent samples t-test showed a significant difference between samples for the
overall resilience mean (t = 2.77, df = 306, p = .006, two-tailed), representing a small to medium effect size (d = .32). Further analyses of the data showed the resilience data in the current study to be significantly kurtotic (kurtosis = 3.11), indicating that more of the variance is the result of frequent modest endorsements due to infrequent extreme endorsements (e.g., very high in resilience, very low in resilience). Similarly, an independent t-test showed a significant difference between samples for the overall distress mean (t = 6.45, df = 299, p < .0001, two-tailed), representing a medium to large effect size (d = .75).

**Hypothesis Two**

Consistent with the first assumption proposed in the second hypothesis, a stepwise multiple regression method showed unsupportive social interactions (USII) to significantly predict distress (GHQ-12), F (1, 98) = 31.243, p < .0005. This model explained 23% of the variance (Adjusted $R^2 = .234$). Contrary to the hypothesis, however, when unsupportive social interactions and resilience were used as joint predictors, resilience was excluded from the model ($p = .133$). Table 3 gives information for the predictor variables that are included in this model.

Table 3
*The unstandardized and standardized regression coefficients for the variables included in the model.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsupportive Social Interactions</td>
<td>3.91</td>
<td>.70</td>
<td>0.49*</td>
</tr>
</tbody>
</table>

*p < .0005

A secondary analysis was conducted to examine change in $R^2$ with the USII subscales (Distancing, Minimizing, Bumbling, and Blaming) as joint predictor variables.
for distress (GHQ). Using this method, a significant model emerged for the *minimizing* subscale only, $F(1, 98) = 29.79$, $p < .0005$, demonstrating that the *minimizing* subscale alone significantly accounts for variance in scores on the USII scale ($\text{Adjusted } R^2 = .233$).

**Exploratory Hypotheses**

Duration of infertility was added as a covariate to examine whether this contributes significantly to the relationships examined in the first two hypotheses. For the first hypothesis, a partial correlation was used to determine if duration of infertility affected the relationship between resilience (BRS) and unsupportive social interactions (USII). Adding duration as a covariate did not have a significant result, $r(97) = .076$, $p = .454$.

For the second hypothesis, a stepwise regression model was again used with unsupportive social interactions, resilience, and duration of infertility (measured as total months) as joint predictor variables for distress (GHQ-12). Using this method, unsupportive social interactions and duration of infertility significantly predicted distress, $F(2, 97) = 19.96$, $p < .0005$, explaining 27.7% of the variance ($\text{Adjusted } R^2 = .277$). The inclusion of duration of infertility in the second model resulted in an additional 4.3% of the variance being explained ($\text{Adjusted } R^2 = .043$). The predictor variable resilience was excluded from the stepwise analysis as it did not significantly strengthen the model. Table 4 gives information for the predictor variables that are included in the model.
Table 4

*The unstandardized and standardized regression coefficients for the variables included in the model.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>13.844</td>
<td>1.46</td>
<td></td>
</tr>
<tr>
<td>Unsupportive Social Interactions</td>
<td>4.26</td>
<td>.69</td>
<td>0.54**</td>
</tr>
<tr>
<td>Duration of Fertility Problem</td>
<td>-0.031</td>
<td>.01</td>
<td>-0.23*</td>
</tr>
</tbody>
</table>

*p = .01. **p <.0005
Discussion

The purpose of this study was to examine and clarify how resilience and unsupportive social interactions (USIs) interact with one another, how they influence distress, and whether duration of fertility problems affects these relationships, with a primary goal being to identify factors that might put women with current fertility problems at risk for distress so these can be used as screening measures. The present quasi-experimental study utilized a cross-sectional design to compare the relationship between perceived resilience, unsupportive social interactions, and distress among a community sample of women with current fertility problems using the Brief Resilience Scale (BRS), Unsupportive Social Interactions Inventory (USII), and General Health Questionnaire (GHQ-12), respectively. One hundred women self-selected to complete a brief online questionnaire.

Hypothesis One

The first hypothesis was that resilience would be negatively associated with USIs. Contrary to this hypothesis, resilience was not significantly correlated with USIs or distress and the relationship was also not negative. Although no previous studies have specifically looked at the relationship between USIs and resilience, this result is surprising given that other research examining female infertility has shown resilience to be negatively correlated with distress and USIs to be positively correlated with distress (Mindes et al., 2003; Sexton et al., 2010); however, this difference might be partially due to the fact that previous studies used different resilience and distress measures than those used in the current study.

In further considering the results, the current study’s hypotheses were partially
based on a previous study, which found resilience to be significantly correlated with
distress ($r = -.394, p < .008$) (Kvamme, 2011). Because results for the current study
showed that resilience was not significantly correlated with distress, secondary analyses
were performed to explore differences between the populations of the current study ($N = 100$) and previous study ($N = 316$). Interestingly, these analyses demonstrated
significantly different means for the resilience and distress measures, with the current
study’s sample demonstrating lower levels of resilience and higher levels of distress than
the previous study’s sample. This analysis also showed the resilience data in the current
study to be highly kurtotic, indicating that more of the variance was the result of frequent
modest endorsements due to infrequent extreme endorsements. When considering the
significant mean differences between the two studies and also kurtosis of the resilience
data, these findings could indicate that a larger sample size was needed to capture those
participants that have very low or very high resilience that might have been needed to
obtain similar results to the previous study. Alternatively, this may show that very few
women with current fertility problems view themselves as either highly resilient or low in
resilience, which should be considered as a potential area of psychological intervention
with this population.

In addition, there are other differences between the previous study sample and the
current study sample that should be considered. First, for example, the previous study
found resilience and distress to be significantly correlated among a mixed sample of men
and women, some with a history of fertility problems and some without, whereas the
current study sample was only comprised of women with current fertility problems. That
said, analysis of the data obtained in the previous study demonstrated that resilience and
distress remained significantly correlated when just those participants with a history of fertility problems were analyzed, $r = -.348, p < .01$, though this still refers to a sample of both men and women. Second, 40% of those with a history of fertility problems in the previous study sample endorsed having children, which is significant because Chandra and colleagues (2013) found that 50-60% of women with fertility problems who have had one or more children (i.e., secondary fertility problems) do not intend to have another child. Although the current study did not specifically ask if participants have children, one of the eligibility requirements stated that fertility problems had to be current. It is possible that most participants in the current study did not have children, in which case it could be argued that current childlessness contributed to lower levels of resilience and higher levels of distress. This would also be consistent with the notion that the threat posed by a particular stressor impacts whether it is perceived as distressing (Mindes et al., 2003). For example, Mindes and colleagues (2003) examined unsupportive social interactions and distress among women with fertility problems and found that threat appraisal accounted for 26% of the variance in overall psychological distress, 14% of the variance in depressive symptoms, and 17% of the variance in self-esteem (Mindes et al., 2003). It can thus be argued that if someone does not intend to have a child, they likely would not perceive the presence of a fertility problem to be as threatening or distressing. If women with primary fertility problems (i.e., current childlessness) perceive themselves to be less resilient while coping with infertility, it makes sense that it would be less likely for a significant relationship to emerge between these variables because there are fewer women endorsing higher levels of resilience and lower levels of distress.

When considering limitations, one limitation is related to the sample size of the
current study. It is possible that a larger sample size is required in order to capture those participants that have very low or very high resilience. Another limitation is that the current study did not clarify whether participants had primary versus secondary fertility problems, nor did it specifically inquire about current intention to have a child. While it can be hypothesized that most participants were distressed by their fertility problem to some degree given that a majority were recruited from the RESOLVE website, an infertility support network, this can not be known for certain. In retrospect, current childlessness (i.e., nulliparity) and intention to have a child appear to be very important distinctions that future researchers should consider due to their role in whether a woman perceives her fertility problem to be distressing. A future study could recruit women with current fertility problems and divide them into four groups: 1) primary fertility problems with intent to have a child; 2) primary fertility problems without intention to have a child; 3) secondary fertility with intent to have a child; 4) secondary fertility problems without intent to have a child. Groups could be compared based on a number of contributing factors for distress (e.g., resilience, unsupportive social interactions, self-esteem, threat appraisal) to further identify those women who would benefit most from additional support through psychosocial intervention.

**Hypothesis Two**

The second hypothesis was that resilience might contribute to the degree to which unsupportive social interactions are associated with distress. It was proposed in this hypothesis that unsupportive social interactions would account for a significant amount of the variance in psychiatric distress. Further, the second hypothesis included an assumption that a greater portion of the variance would be accounted for when
participants’ resilience levels were also factored in. Consistent with previous research in the literature, USIs were positively correlated with psychiatric distress ($r = .492$) and multiple regression analysis showed that USIs accounted for 23% of the variance in predicting distress (Manne & Glassman, 2000; Mindes et al., 2003; Revenson, Schiaffino, Majerovitz, & Gibofsky, 1991; Song & Ingram, 2002). These findings are particularly important given that there has only been one other study examining this relationship among women with fertility problems, further verifying that unsupportive comments or interactions with others are not only significantly correlated with increased psychiatric distress, but a significant amount of variance in predicting distress can be explained by USIs (Mindes et al., 2003). However, one cannot conclude that USIs necessarily cause distress. Although it is possible that unsupportive social interactions lead to increased distress, it is also possible that individuals with high levels of distress are more likely to encounter unsupportive social interactions (or the relationship could be bidirectional). That said, there is compelling evidence suggesting that unsupportive social interactions can increase someone’s risk for developing depression or psychological distress later.

One recent study surveyed nearly 5,000 men and women over a 10-year time period (Teo, Choi, & Valenstein, 2013). For this study, measures were administered at baseline and at ten-year follow-up. Quality of relationships was assessed with non-overlapping scales of social support and social strain and a summary measure of relationship quality. The primary outcome for the study was the endorsement of a major depressive episode in the last year at ten-year follow-up. Results indicated that risk of depression was significantly greater among those with baseline social strain, lack of social support, and poor overall relationship quality. Additionally, those with the lowest
overall quality of social relationships had more than double the risk of depression than those with the highest quality, and poor quality of relationship with spouse/partner and family each independently increased risk of depression. Interestingly, social isolation did not predict future depression, perhaps suggesting that a lack of social support is less harmful that the presence of unsupportive or strained social relationships.

Longitudinal data gathered by Mindes and colleagues (2003) demonstrated that unsupportive social interactions reported previously were associated with current depressive symptoms and psychological distress for women who were not pregnant or had not given birth at 6-12 month follow-up. Additionally, Norton and colleagues (2005) found that higher levels of unsupportive behaviors from family and friends were associated with lower levels of self-esteem and with greater psychological distress. The authors argued that interventions may be more effective if they “find other ways to bolster patients’ self-esteem in the face of criticism and avoidance by family and friends” or assist patients in “finding methods to increase the responsiveness of friends and family members to patient needs” (p. 150). These findings, as well as the current study’s findings, provide compelling evidence that USIs can increase people’s risk for psychological distress, further emphasizing the importance of gathering information about USIs when screening for distress among women with fertility problems. It could be that identifying USIs and targeting them with psychosocial interventions could prevent some distress from developing. It would be helpful for future researchers to examine the effectiveness of interventions that specifically target USIs to see if distress is ameliorated. One such study might compare women with fertility problems who are exposed to a treatment intervention with a control group who do not receive the treatment intervention
to see if those in the treatment group have significantly lower distress levels post-treatment. Such a study would further validate the utility of a USI screening tool in psychological assessment when working with women with fertility problems.

Another interesting finding in the current study was that the USII minimizing subscale was the only subscale to significantly predict distress in this sample, whereas the other three types of unsupportive responses measured by the USII (distancing, bumbling, and blaming) did not significantly predict distress. Minimizing has been defined as “attempts to force optimism or to downplay the importance of individual’s concerns” (Mindes et al., 2003, p. 2166). This is particularly interesting because previous studies have found the distancing subscale, defined as “behavioral or emotional disengagement,” to be the strongest predictor of decreased adjustment (Ingram et al., 2001a; Ingram et al., 2001b). This includes the one other study in the literature that examined USIs among women with fertility problems, which found distancing unsupportive social interactions to be a strong predictor of depressive symptoms and overall psychological distress (Mindes et al., 2003). Mindes and colleagues (2003) discussed that the importance of distancing can be understood within the context of the infertility experience because infertile women describe their fertility problems as creating a sense of alienation and estrangement due to constrained social interactions. Since Mindes and colleagues (2003) only used the USII total score and the distancing subscale in their study, results of the current study provide support for the importance of other types of unsupportive relationships (e.g., minimizing). More specifically, since only minimizing was a significant predictor of distress it could be the case that minimizing unsupportive social interactions could be more harmful than a lack of support (e.g.,
distancing/disengagement) for women currently coping with fertility problems.

The second prediction associated with the second hypothesis was not verified in that, when predicting distress, adding resilience to the model did not result in a greater percentage of the variance being accounted for above and beyond what was accounted for by USIs. Given that resilience was not significantly correlated with USIs or distress in this sample, it is not surprising that it would not provide any predictive power for distress.

While USIs accounted for 23% of the variance in predicting distress, it is possible that there are other factors that better explain this relationship. Future studies would benefit from examining a number of variables that could help explain the relationship between USIs and distress (e.g., USIs effect on self-esteem; alienation), as well as identifying other factors that contribute to distress (e.g., coping style; threat appraisal; perceived control), thus providing important information about those psychosocial issues that are most relevant to address when working with women with current fertility problems.

**Exploratory Hypotheses**

It was proposed that the duration of participants’ fertility problems could affect the relationships between resilience, USIs, and distress. In other words, if the relationships remained the same after controlling for infertility duration, it could be assumed that duration of infertility does not play a role in how the three primary variables interact, but if controlling for how long someone has been dealing with the infertility stressor changes the relationship between resilience, USIs, and distress, this could provide evidence that duration contributes significantly to how and why these other
Regarding the first hypothesis, duration of fertility problems was not found to influence the relationship between resilience and USIs, suggesting that these variables did not become significantly correlated based on how many months participants had been coping with fertility problems. However, regarding the second hypothesis, duration of fertility problems was found to affect the relationship between USIs and distress in that participants who endorsed longer histories of fertility problems had lower levels of distress. In other words, if two participants scored equally on the USI scale but differed in terms of their duration of fertility problems, the participant with a longer history of fertility problems would have a lower distress score than the participant with a shorter history of fertility problems. This is particularly important given that, as noted above, previous research has varied significantly regarding the trajectory of distress for individuals with fertility problems.

One previous study provides evidence supporting a trajectory of decreased distress over time (Kee et al., 2000). This study divided infertility into three stages (<3 years; 3-5 years; >5 years) and found that those participants in the third stage endorsed the least amount of distress (as measured by the State Trait Anxiety Inventory and Beck Depression Inventory). Other studies have found evidence supporting increased distress over time, as well as non-linear (u-shaped) trajectories of distress (Berg & Wilson, 1991; Domar et al., 1992). Other research has demonstrated that infertility treatment itself, as well as events specific to infertility or infertility treatment (e.g., failed treatment, negative pregnancy test), are associated with increased distress (Lok et al., 2002). There are also varying explanations for why particular trajectories of distress were found – for example,
individuals may experience less distress over time as a result of either adjusting to their condition or becoming desensitized to the stress. Also, conflicting results could be the result of having used different instruments to measure distress, cultural differences, inaccurate self-reporting of infertility duration, and various study limitations (e.g., small sample sizes, cross-sectional designs, homogeneous samples). The fact that each of the studies defined the stages or phases of infertility differently most certainly played a role in producing such inconsistent results regarding which stage is most distressing.

The results of the current study do not necessarily provide evidence supporting a decreased trajectory of distress, nor do they suggest that people experience fewer USIs over time. Rather, what the results do suggest is that USIs appear to have less of an impact on distress as time passes and it is important to explore why this might be. It is possible that unsupportive social interactions are more hurtful in the early stages of coping with fertility problems because individuals have not had adequate time to adjust to the stressor itself. From a strength-based/resilience perspective, it is possible that women adjust over time and learn how to cope more effectively with these situations (e.g., knowing what to say in response to unsupportive or insensitive comments; letting go of self-blame). It is also possible that they become desensitized to these comments over time. Another explanation is that, as time passes, unsupportive interactions are more likely to occur with acquaintances rather than with a spouse or friends/family, which might take less of an emotional toll or feel less harmful. Another factor to consider is the changing social environment as it relates to age in that, while younger women with fertility problems are likely surrounded by many women in their cohort who are successfully starting families, older women coping with fertility problems likely do not
experience this additional stressor to the same degree among their peers.

The cross-sectional study design utilized for the present study presents one possible limitation because it is more difficult to make conclusions that are related to the passage of time. The above-mentioned exploratory hypotheses were examining whether duration of fertility problems impacts the relationships between resilience, USIs, and distress. With a cross-sectional design, we essentially are comparing participants who report being in the early stage of infertility (e.g., newly diagnosed) with those who have been coping with fertility problems for several years, but it would be preferable to conduct a longitudinal study where participants are followed over time (ideally starting pre-diagnosis) so as to avoid the influence of confounding variables associated with a cross-sectional design (e.g. cohort effects). Cohort effects could be a particularly important factor when studying infertility and its treatment given the fact that many treatment options are fairly new and were not available to people experiencing infertility even ten years ago.

When examining the current study as a whole, one major limitation is related to the homogeneity of the sample, as this limits our ability to generalize the results. Participants were largely Caucasian (83%) with middle-to-high socioeconomic status (based on income and education). According to the 2013 US Census, the United States’ population is 63% non-Hispanic white, 17% Hispanic or Latino, 13% non-Hispanic black, 5% Asian, and 2% two or more races (United States Census Bureau, 2013). When this study’s sample is compared to the US census data, it is clear that Caucasians are over-represented and, although 9% endorsed being two or more races, other races are significantly underrepresented; for example, only 1% of respondents endorsed being
Hispanic or Latino, 3% endorsed being Black, 2% endorsed being Asian, and there were no respondents who endorsed being American Indian/Alaska Native or Native Hawaiian/Pacific Islander. Given the high response rate of Caucasians in the current study, one might suggest that fertility problems are more prevalent among or more distressing for this particularly racial group. However, researchers have found that roughly equal percentages of Hispanic, non-Hispanic white, and non-Hispanic black women had fertility problems (10-12%), while Asian women had a lower percentage (6.7%; Chandra et al., 2013). In addition, these researchers found no significant variation in percentages of fertility problems by education or poverty level. This suggests that fertility problems affect women roughly equally across racial, educational, and socio-economic status. As such, it is very important for researchers examining the experiences of women coping with fertility problems to make efforts to gather data that is representative of the population. This is particularly important because, although fertility problems appear to affect women almost equally across racial and socio-economic status in terms of prevalence, one cannot assume that the stressor itself is experienced the same way psychologically, emotionally, socially, or financially. Important to note is that African American, Hispanic, American Indian/Alaska Native, Pacific Islander, and Native Hawaiian families are more likely than Caucasian families to live in poverty (Costello, Keeler, & Angold, 2001; National Center for Education Statistics, 2007). Additionally, Latinos, African Americans, and American Indians/Alaska Natives were found to have the highest high school drop out rates (National Center for Education Statistics, 2007). These statistics are particularly important when considering how ethnic and racial minority women and/or women of low socio-economic status might respond
differently to fertility problems compared to Caucasians. For example, it can be assumed
that a woman of low socio-economic status likely would not be able to afford fertility
treatment or adoption, which could significantly affect her perception of the stressor and
how she feels she is able to cope with it. This likely is one reason why these women are
under-represented in research thus far, as many studies have been conducted with women
who were recruited through fertility treatment centers. Going forward, it will be
important for researchers to actively recruit participants who are representative of the
population, which will require recruitment to take place in communities that are racially
and socio-economically diverse.

Despite these limitations, the current study does raise questions that would be
valuable to address in future research endeavors. This study was primarily concerned
with examining within group differences in terms of resilience, USIs, and distress. As
noted above, past research has generated inconclusive findings regarding the typical
trajectory of distress and, although this study provides evidence that USIs might have a
decreasing impact on distress over time, further analysis regarding this relationship is
needed. It seems important for researchers conducting such research to make the
distinction between duration of the fertility problem versus duration of medical treatment,
as there is evidence suggesting that infertility treatment is a stressor separate from
infertility itself. It is possible that different trajectories exist for those who pursue
treatment and those who do not and, moreover, it is important to acknowledge the fact
that distress does not start and stop when treatment begins and ends. For example, do
USIs vary as a function of whether individuals pursued fertility treatment? As noted
above, one could also examine whether the relationship between resilience, USIs, and
distress differed between those with primary fertility problems versus those with secondary fertility problems.

Another limitation is related to the fact that we only obtained data for the individual rather than data related to the couple. Previous research has indicated that marital adjustment and communication can have a significant impact on overall distress level and adjustment to (or recovery from) the stressor (Berg & Wilson, 1995; Ridenour et al., 2009). Given that evidence suggests that USIs and social strain are significantly associated with poor adjustment, it seems important to clarify the nature of participants’ significant relationships and whether USIs are coming from spouses, friends, family members, or acquaintances.

Summary

In summary, the authors of current study set out to examine and clarify how resilience and unsupportive social interactions (USIs) interact with one another, how they influence distress, and whether duration of fertility problems affects these relationships in a sample of women with current fertility problems. The fact that resilience was not significantly correlated with USIs or distress, counter to what was expected, raised interesting questions that would be important to explore in future research endeavors. This result appears to be at least partially explained by the fact that the current study captured a sample of women who did not endorse extremely high or low resilience and, although it is possible that a larger sample size was needed to capture a significant relationship between these variables, it is also plausible that resilience is less predictive of distress in women with current fertility problems who do not have children. However, a
limitation of this study was that participants were not asked to indicate whether they had primary versus secondary fertility problems.

This study also found that USIs accounted for a significant amount of the variance in predicting distress, which is consistent with previous research and provides further support for assessing for USIs when working with patients with fertility problems, as helping patients learn to better manage unsupportive social interactions could alleviate distress. The current study also demonstrated that USIs had less of an impact on distress for those participants with longer histories of fertility problems. Further research is needed to explain why this would occur, but it is possible that people have learned how to cope more effectively with these situations (e.g., knowing what to say in response to unsupportive or insensitive comments) or become desensitized to these comments. Given these results, psychosocial interventions targeting USIs might be most beneficial for women who are in the earlier stages of coping with fertility problems.
References


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Appendix A: Informed Consent to Participation

I am 18 years of age or over. Yes ☐ No ☐
I am biologically female. Yes ☐ No ☐
I am currently experiencing fertility problems. Yes ☐ No ☐
I can read and understand English. Yes ☐ No ☐
All my questions have been answered. Yes ☐ No ☐
I have read and understand the description of my participation duties. Yes ☐ No ☐
I have been offered a copy of this form to keep for my records. Yes ☐ No ☐

By continuing with and eventually submitting this survey, I am consenting to participate; I understand I can withdraw by closing the browser window, but that once submitted withdrawing is impossible due to the anonymous methods used to gather these responses. Yes ☐ No ☐
Appendix B: Demographic and Fertility Status

<table>
<thead>
<tr>
<th>Current age: _______</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>State of Residence: ___________ [dropdown]</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Sex:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Female to Male Transgender</td>
</tr>
<tr>
<td>Unsure/questioning</td>
</tr>
<tr>
<td>Prefer not to answer</td>
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</table>

<table>
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<tbody>
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<td>Heterosexual/ Straight</td>
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<tr>
<td>Homosexual/Gay/Lesbian</td>
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<tr>
<td>Bisexual</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Race:</th>
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<tbody>
<tr>
<td>American Indian or Alaska Native</td>
</tr>
<tr>
<td>Asian</td>
</tr>
<tr>
<td>Black or African American</td>
</tr>
<tr>
<td>Native Hawaiian or Other Pacific Islander</td>
</tr>
<tr>
<td>Caucasian</td>
</tr>
<tr>
<td>Latino or Hispanic</td>
</tr>
<tr>
<td>Two or more races</td>
</tr>
<tr>
<td>Prefer not to answer</td>
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</table>

<table>
<thead>
<tr>
<th>What is your after-tax household income?</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Please indicate your total number of years of education</th>
</tr>
</thead>
</table>
**Relationship Status:**
Single
In a relationship, but not living together
Cohabitating
Married
Separated/Divorced
Widowed

**Please indicate the origin of your fertility problem:**
Problem attributed to self (female-factor infertility)
Problem attributed to partner (male- or female-factor infertility)
Problem attributed to both partners
Other pregnancy problems (e.g., miscarriages)
Unknown cause
**What is the nature/cause of your fertility and/or pregnancy problem? (Please select all that apply)**

- Nature/cause unexplained
- Difficulty *getting* pregnant
- Difficulty *staying* pregnant
- Abnormal sperm production, function, or morphology
- Problems with the delivery of sperm
- General health and lifestyle issues
- Overexposure to certain environmental factors
- Damage related to cancer and its treatment
- Age
- Abnormal Anti-Mullerian Hormone (AMH) or Follicle-Stimulating Hormone (FSH) levels
- Fallopian tube damage, blockage, or removal
- Endometriosis
- Ovulation disorders
- Elevated prolactin (hyperprolactinemia)
- Polycystic ovary syndrome (PCOS)
- Premature Ovarian Failure (either in addition to or alongside early menopause)
- Early menopause
- Uterine fibroids
- Uterine structural abnormalities
- Pelvic adhesions
- Cancer and its treatment
- Medical conditions associated with delayed puberty or amenorrhea, such as Cushing's disease, sickle cell disease, kidney disease and diabetes
- One or both partner has known carrier status for certain type of disease/disorder
- Medications

**What is the total duration of your fertility problem?**

Please indicate how many total months you have been dealing with your fertility problem (please include the time before you initiated fertility treatment, if applicable)
Are you currently receiving fertility treatment?
Yes
No

What is the duration of your current fertility treatment?
Please indicate approximately how many months your current treatment cycle has lasted (from time you sought consultation to now):
N/A – I am not currently receiving fertility treatment

Other than your current fertility treatment, or if you are not currently receiving fertility treatment, have you pursued treatment in the past?
Yes
No

What is the total duration of your fertility treatment?
Please indicate how many total months you have been receiving some kind of medical treatment for your fertility problem (include current and past fertility treatments):
N/A – I have not pursued fertility treatment

What was the duration of total past treatment?
Please indicate approximately how many months you received fertility treatment prior to your current treatment:
N/A – I have not pursued fertility treatment in the past
What type(s) of treatment/intervention have you pursued? (Please select all that apply)
Fertility hormones (FH)
In-vitro fertilization (IVF)
Intrauterine insemination (IUI)
Intracytoplasmic sperm injection (ICSI)
Testicular sperm extraction (TSE)
Embryo adoption
Donated egg/sperm
Gestational carrier
Micro epididymal sperm aspiration (MESA)
Endometriosis treatment
Polycystic ovarian syndrome (PCOS) treatment
Surgical removal of uterine scar tissue
Diet
Homeopathic methods
Acupuncture
Chinese herbs
Stress reduction counseling (group or individual)
Self-use of specific stress reduction techniques
Use of audio guided specific stress reduction techniques (e.g., focused breathing, meditation, guided imagery, mindfulness, etc.)
Stress reduction massage
Current Status of Fertility Problem (please select all that apply)
Please indicate which fertility status best describes your status right now:

Within the past 6 weeks, I had my first miscarriage.

Within the past 6 weeks, I had my second miscarriage.

Within the past 6 weeks, I had my third miscarriage.

Within the past 6 weeks, I had my fourth miscarriage.

Within the past 6 weeks, I had my fifth+ miscarriage.

I am currently being medically evaluated but have not yet received an infertility diagnosis.

Within the past 6 weeks, I received confirmation of a fertility problem (either self, partner, or both).

I currently am deciding whether to pursue treatment.

Within the past 6 weeks, I began some form of fertility treatment. If marked, please indicate which treatment: ________________________.

I am waiting to see if my first treatment effort was successful.

I am waiting to see if my second treatment effort was successful.

I am waiting to see if my third treatment effort was successful.

I am waiting to see if my fourth treatment effort was successful.

I am waiting to see if my fifth+ treatment effort was successful.

Within the past 6 weeks, I learned that my first treatment effort was unsuccessful.

Within the past 6 weeks, I learned that my second treatment effort was unsuccessful.

Within the past 6 weeks, I learned that my third treatment effort was unsuccessful.

Within the past 6 weeks, I learned that my fourth treatment effort was unsuccessful.

Within the past 6 weeks, I learned that my fifth treatment effort was unsuccessful.
Appendix C: Unsupportive Social Interactions Inventory (USII)

Listed below are a number of responses that you may or may not have received from other people about your fertility problems. For each statement, please indicate how much of that type of response you received from other people.

<table>
<thead>
<tr>
<th>Statement</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>(A LOT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Someone felt that I was over-reacting to my fertility problem.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I was talking with someone about my fertility problem, the person did not give me enough of his or her time, or made me feel like I should hurry.</td>
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<td></td>
</tr>
<tr>
<td>Someone made “should/shouldn’t have” comments about my fertility problem, such as, “You should/shouldn’t have ________.”</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Someone didn’t seem to know what to say, or seemed afraid of saying/doing the “wrong” thing.</td>
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<td></td>
</tr>
<tr>
<td>Someone refused to provide the type of help or support I was looking for.</td>
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<td></td>
</tr>
<tr>
<td>After becoming aware of my fertility problem, someone responded to me with uninvited physical touching, such as hugging.</td>
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<td></td>
</tr>
<tr>
<td>Someone said I should look on the bright side.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 (NONE)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4 (A LOT)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
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<td>---</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Someone said, “I told you so,” or made some similar comment to me about my fertility problem.

<table>
<thead>
<tr>
<th>0 (NONE)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4 (A LOT)</th>
</tr>
</thead>
</table>

Someone seemed to be telling me what he or she thought I wanted to hear.

<table>
<thead>
<tr>
<th>0 (NONE)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4 (A LOT)</th>
</tr>
</thead>
</table>

In responding to me about my fertility problem, someone seemed disappointed in me.

<table>
<thead>
<tr>
<th>0 (NONE)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4 (A LOT)</th>
</tr>
</thead>
</table>

When I was talking to someone about my fertility problem, the person changed the subject before I wanted to.

<table>
<thead>
<tr>
<th>0 (NONE)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4 (A LOT)</th>
</tr>
</thead>
</table>

Someone felt that I should stop worrying about my fertility problem and just forget about it.

<table>
<thead>
<tr>
<th>0 (NONE)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4 (A LOT)</th>
</tr>
</thead>
</table>

Someone asked me “why” questions about my role in my fertility problem, such as, “Why did/didn’t you ______________?”

<table>
<thead>
<tr>
<th>0 (NONE)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4 (A LOT)</th>
</tr>
</thead>
</table>

Someone felt that I should focus on the present and/or the future, and that I should get on with my life.
Someone tried to cheer me up when I was not ready to cheer up about my fertility problem.

In responding to me about my fertility problem, someone refused to take me seriously.

Someone told me to be strong, to keep my chin up, or that I shouldn't let it bother me.

When I was talking to someone about my illness, he or she did not seem to want to hear about it.

Someone told me that I had gotten myself into the situation in the first place, and that I now much deal with the consequences.

Someone did some things for me that I wanted to do and could have done myself.

Someone discouraged me from expressing feelings about my fertility problem, such as anger, hurt, or sadness.
<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>(NONE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Someone felt that it could have been worse or that it was not as bad as I thought.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>(NONE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the person’s tone of voice, expression, or body language, I got the feeling that he or she was uncomfortable talking with me about my fertility problem.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>(NONE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Someone made comments that blamed me or tried to make me feel responsible for my fertility problem.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>(NONE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix D: Brief Resilience Scale (BRS)

*Please indicate how much you disagree or agree with each of the following statements:*

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I tend to bounce back quickly after hard times.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have a hard time making it through stressful events</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It does not take me long to recover from a stressful event.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is hard for me to snap back when something bad happens.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I usually come through difficult times with little trouble.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I tend to take a long time to get over set-backs in my life.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E: General Health Questionnaire (GHQ-12)

We would like to know how your health has been in general over the past few weeks. Please select the answer that most closely applies to you. Remember that we want to know about present and recent complaints, not those you had in the past.

<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you recently been able to concentrate on whatever you are doing?</td>
<td>Better than usual</td>
</tr>
<tr>
<td>Have you recently lost much sleep over worry?</td>
<td>Not at all</td>
</tr>
<tr>
<td>Have you recently felt that you are playing a useful part in things?</td>
<td>More so than usual</td>
</tr>
<tr>
<td>Have you recently felt capable of making decisions about things?</td>
<td>More so than usual</td>
</tr>
<tr>
<td>Have you recently felt constantly under strain?</td>
<td>Not at all</td>
</tr>
<tr>
<td>Have you recently felt you couldn’t overcome your difficulties?</td>
<td>Not at all</td>
</tr>
<tr>
<td>Have you recently been able to enjoy your normal day-to-day activities?</td>
<td>More so than usual</td>
</tr>
<tr>
<td>Have you recently been able to face up to your problems?</td>
<td>More so than usual</td>
</tr>
</tbody>
</table>
### Have you recently been feeling unhappy and depressed?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>No more than usual</th>
<th>Somewhat more than usual</th>
<th>Much more than usual</th>
</tr>
</thead>
</table>

### Have you recently been losing confidence in yourself?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>No more than usual</th>
<th>Somewhat more than usual</th>
<th>Much more than usual</th>
</tr>
</thead>
</table>

### Have you recently been thinking of yourself as a worthless person?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>No more than usual</th>
<th>Somewhat more than usual</th>
<th>Much more than usual</th>
</tr>
</thead>
</table>

### Have you recently been feeling reasonably happy, all things considered?

<table>
<thead>
<tr>
<th>More so than usual</th>
<th>About the same as usual</th>
<th>Less so than usual</th>
<th>Much less than usual</th>
</tr>
</thead>
</table>