



Using Acceptance and Commitment Therapy to Treat Infertility Stress

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Women and men diagnosed with infertility experience a variety of infertility-related stressors, including changes to their family and social networks, strain on their sexual relationship, and difficulties and unexpected challenges in their relationship. Infertility stress is linked with depression and psychological distress, and can lead to premature dropout from medical treatments and unresolved feelings of loss and grief. The current study examined the effectiveness of treating infertility stress using Acceptance and Commitment Therapy (ACT), a promising new behavior therapy that targets experiential avoidance through mindfulness, acceptance strategies, and value-directed action. This single-case study followed a couple experiencing infertility-related stress following a failed in vitro fertilization (IVF) procedure. The couple completed 6 self-report measures at 7 time points, including a second failed IVF attempt and a 1-year follow-up. Measures included both distress-focused instruments and therapy process-related questionnaires. The female participant reported higher pretreatment stress and depression scores compared to her partner. She reported significant decreases in global infertility stress, social infertility stress, sexual infertility stress, psychological distress, and depression from pretherapy to 1-year follow-up. She also reported a decrease in infertility stress following her second failed in vitro fertilization (IVF) attempt. The male participant reported significant decreases in sexual infertility stress. The study suggests that acceptance-based therapy shows promise in treating infertility stress in patients experiencing infertility who undergo medical treatments. The data from this preliminary case study also suggest that ACT may be helpful for couples following IVF treatment failure. Treatment gains were maintained 1-year posttherapy, indicating that an ACT approach to treating infertility has the potential to produce lasting change.

APPROXIMATELY 4.3 million married couples in the United States (15%) have been diagnosed with infertility, or the inability to conceive or give birth to a child after 1 year of regular sexual relations without the use of contraceptives (Chandra, Martinez, Mosher, Abma, & Jones, 2005). Upon discovering that they are incapable of having biological children, couples unexpectedly experience infertility stress (Newton, Sherrard, & Glavac, 1999; Peterson, Newton, & Rosen, 2003). Infertility-related stressors include, but are not limited to, changes in a couple's social and family networks, alterations in the endurance and quality of their interpersonal relationships, and decreased spontaneity and satisfaction in their sexual relationship (Newton et al., 1999; Peterson, Gold, & Feingold, 2007). These stresses often contribute to grief, depression, and anxiety in both men and women (Daniluk, 2001; Fassino, Piero, Boggio, Piccioni, & Garzaro, 2002).

The majority of couples diagnosed with infertility will pursue some form of medical treatment (Boivin, Bunting,

Collins, & Nygren, 2007). For these couples, the emotional, physical, and financial burdens of treatment can be overwhelming and they often increase a couple's infertility stress (Eugster & Vingerhoets, 1999; Van Voorhis, 2007). In addition, infertility-related stress is exacerbated when treatments such as in vitro fertilization (IVF) fail (Newton, Hearn, & Yuzpe, 1990; Verhaak, Smeenk, Nahuis, Kremer, & Bratt, 2007). The psychological burden of enduring treatment failure is one of the main reasons for premature patient dropout, even when treatments are paid for by governments and insurance companies (Domar, 2004).

There is a growing body of literature addressing the psychological reactions that men and women experience in response to the stress of infertility. This knowledge has helped mental health professionals understand the unique stresses and challenges that infertile couples face, and has provided guides for effective interventions that support couples through the varying aspects of the infertility experience (Hammer-Burns & Covington, 2006). The growing literature base has examined a range of topics including the link between infertility and depression, gender differences in stress and coping, and treatment strategies for mental health professionals working with infertile couples

(Hammer-Burns & Covington, 2006; Peterson, Newton, Rosen, & Skaggs, 2006).

Although significant advances have been made in the literature base, there remain a lack of studies examining the effectiveness of psychosocial interventions used to treat infertility-related distress (Boivin, 2003). There is a significant gap between the number of treatment outcome studies (6%) and the number of studies that provide general treatment recommendations (94%; Boivin, 2006). Because of this stark disparity, there have been calls for additional research examining the effectiveness of psychological interventions to treat infertility stress.

A review of the current treatment outcome studies reveals that psychotherapy is effective in treating infertility stress. A meta-analysis using 22 outcome studies concluded that therapy is effective in reducing infertility stress, depression, and anxiety symptoms with individuals and couples (de Liz & Strauss, 2005). In a study that randomly assigned 184 infertile women to a cognitive-behavioral therapy (CBT) group, a support group, or a control group, women in the CBT group experienced decreased anxiety, depression, and marital distress at 6-month follow-up. In addition, participants in the CBT group had continued improvement at 1-year follow-up and showed the greatest positive change when compared to participants in the other two groups (Domar et al., 2000). A randomized control trial comparing CBT and pharmacotherapy found that although both treatments were efficacious, CBT was superior to pharmacotherapy in reducing depression and anxiety in women diagnosed with infertility (Faramarzi et al., 2008).

While these studies show that therapy is effective in treating infertility stress, there are no studies to date that examine the effectiveness of using mindfulness and acceptance-based therapies. Such studies are becoming more plentiful in the health psychology and general treatment outcome literature (Hayes et al., 2006). Mindfulness-based therapies have demonstrated efficacy in reducing stress and depression in patients diagnosed with physical disorders such as cancer and arthritis (Foley et al., 2010; Zutra et al., 2008). A randomized control trial found that mindfulness-based cognitive therapy was effective in reducing depression, anxiety, and distress in patients diagnosed with cancer when compared with wait-list controls (Foley et al., 2010). Because patients diagnosed with infertility report similar levels of depression and anxiety when compared to patients diagnosed with cancer, the usefulness of testing mindfulness-based therapies with infertile patients would also be valuable (Domar, 2002). Furthermore, although there are anecdotal recommendations in the infertility literature that mindfulness is an effective coping strategy for reducing infertility stress (Domar,

2002), empirical studies testing the actual effectiveness of mindfulness-based therapies have not been conducted. To the authors' knowledge, the current study is the first of its kind to examine the effectiveness of an acceptance-based therapy to treat infertility stress.

Acceptance and Commitment Therapy

Acceptance and Commitment Therapy (ACT) is an experiential acceptance-based behavior therapy that targets psychological inflexibility, experiential avoidance, and efforts to reduce and/or manage unwanted aversive experiences (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). These authors define experiential avoidance as a tendency to engage in behaviors to alter the frequency, duration, or form of unwanted internal experiences (i.e., thoughts, feelings, physiological events, memories) and to avoid the situations that trigger such thoughts and feelings. This is one of the main reasons why ACT could be potentially useful for couples experiencing infertility distress. ACT could help couples accept and come to terms with feelings of disappointment, failure, and inadequacy rather than continuing to engage in behavior designed to get rid of such emotional experiences. Likewise, ACT could help clients end their struggle with their judgmental thoughts and evaluations about their inability to conceive by learning to simply observe such evaluative thoughts, thus decreasing their believability. At the same time, ACT could help couples commit to and progress toward value-directed behavior.

Specifically, when a couple experiences infertility stress, their lives can become dominated by avoiding the negative thoughts associated with prolonged infertility. Avoidance coping, which is defined as avoiding situations or thoughts related to infertility, is consistent with the principle of experiential avoidance, and is a coping pattern frequently used by women to manage their infertility stress (Peterson, Newton, Rosen, & Skaggs, 2006a). Indeed, the use of avoidance coping is strongly correlated with increased amounts of infertility stress, marital dissatisfaction, and depression (Peterson, Newton, Rosen, & Skaggs, 2006a; Peterson, Newton, Rosen, & Skaggs, 2006b). Family events and social activities associated with young children now become painful situations to be avoided at all costs, and these avoidance efforts contribute to feelings of social isolation (Domar, 1997). Additionally, prolonged periods of infertility stress can strain a couple's interpersonal relationship (Berg & Wilson, 1991). Sexual relations that were once passionate and spontaneous are often replaced with timed intercourse and a lack of privacy (Peterson, Gold, et al., 2007). Thus, activities that once provided the couple with intimacy and security now become the catalyst for increased stress and anxiety (Peterson, Newton, &

Feingold, 2007). Overall, a couple's sense of vitality is greatly reduced and ultimately replaced by a narrow set of behaviors that couples find isolating.

From an ACT perspective, the development and maintenance of infertility stress stems from an unwillingness to accept one's internal reactions to infertility while engaging in emotional control and avoidance strategies of infertility-related thoughts and situations. These avoidance strategies take up a great deal of time and energy and ultimately result in couples feeling helpless and not in control of their lives (Daniluk, 2001). According to ACT, avoidance strategies are related to and fueled by cognitive fusion (Hayes, Strosahl, & Wilson, 1999), which can be described as "buying into" one's thoughts and feelings about infertility. This process of taking thoughts literally and acting on them to change them or make them go away contributes to personal suffering and increased infertility distress. ACT uses acceptance strategies and cognitive defusion techniques (e.g., metaphors, mindfulness exercises) to teach clients to respond more flexibly and less literally to infertility-related thoughts and create a healthy distance between themselves and their internal experiences. Instead of trying to dispute or otherwise change thoughts such as "It's unfair that we can't have a baby" or "We must have done something wrong for this to happen to us," clients learn to acknowledge these thoughts as mere thoughts that can simply be observed that don't need to be acted upon.

ACT has shown considerable promise in treating a variety of psychological disorders including anxiety (e.g., Eifert et al., 2009), depression, chronic pain, eating disorders, and substance abuse (for a complete review, see Hayes et al., 2006). We hypothesized that couples experiencing severe levels of infertility stress could benefit from ACT based on ACT's ultimate goal of helping men and women live lives consistent with their values and goals. Infertile couples experience a significant inconsistency between what is important to them and their actual life situation because living out their key value of becoming and being a parent has been thwarted. This creates a great challenge for these couples. It should therefore be helpful for couples to learn to become more mindful of their cognitive and emotional responses to infertility stress and related situations by practicing compassionate acceptance toward their experience, responding less literally to their thoughts and feelings regarding infertility, and ultimately learning to approach infertility-related thoughts, feelings, and situations they previously avoided.

Method

Participants

One couple participated in the study. Brooke (35) and Aaron (36) had been married for 7 years and had been

experiencing infertility for 5 years. In her early 20s, Brooke had a laparotomy and her right fallopian tube removed. The doctors attributed her infertility to scar tissue that blocked the remaining left fallopian tube. Testing for Aaron excluded the possibility of male-factor infertility. The couple had attempted eight cycles of Clomid medication treatment (with only 1 month of suspected ovulation), one IUI treatment, and one IVF treatment. The couple was referred to therapy by their reproductive endocrinologist (RE) 6 weeks following the first failed IVF attempt after Brooke reported heightened infertility-related stress levels and depression. At the beginning of therapy, the couple had no plans to complete additional IVF cycles. However, midway through the therapy, the couple informed the therapist they would be making a second IVF attempt (6 months following the first). Unfortunately, this attempt was ultimately unsuccessful.

Both Brooke and Aaron were college graduates, employed in successful jobs, and were earning stable incomes. They reported a strong marital relationship that served as the foundation for coping with the multiple years of infertility. They had previously qualified for infertility insurance coverage for a portion of their treatment, but it was removed after Brooke's employer changed plans. Aaron's employer knew of the couple's infertility diagnosis and subsidized their IVF attempt.

For the first 4 years, Brooke coped with the infertility challenges as they arose. However, the last year had been particularly difficult for her. In addition to the failed IUI and IVF attempts, her husband's sister had a child and Brooke found she could neither hold her nephew nor spend time with her sister-in-law. Additionally, this put a strain on Brooke and Aaron's relationship as Aaron felt torn between his wife and his sister. Brooke also found it impossible to be in the presence of friends and their children, and her stress and anger about her infertility began to escalate. Brooke and Aaron decided to pursue counseling to provide Brooke a place to discuss the difficulties of her experience. Brooke acknowledged that the therapy was primarily aimed at helping her cope with infertility stress, but Aaron wanted to be present at each session, primarily as a support to Brooke.

Measures

The Fertility Problem Inventory (FPI) is a 46-item questionnaire that measures an individual's level of infertility stress (Newton et al., 1999). The instrument is scored using a 6-point Likert scale and produces a global infertility stress score in addition to five subscores on scales measuring social infertility stress, sexual infertility stress, relationship infertility stress, an individual's need for parenthood, and an individual's feelings about living a

child-free lifestyle. The FPI demonstrates good reliability and discriminant and convergent validity (Newton et al.). Scores are interpreted by percentile ranks based on standardized norms (98% extremely high infertility stress, 84% high infertility stress, 50% average infertility stress, 16% low infertility stress).

The Beck Depression Inventory–II (BDI-II) was used to assess the severity of depression among study participants (Beck, Steer, & Brown, 1996). The coefficient alpha estimates of reliability for outpatient samples was .92 and test-retest reliability coefficient over a 1-week period was .93 (Arbisi, 2001). The BDI-II is widely used in research studies to measure depression, and it demonstrates high reliability and good convergent, content, and discriminant validity (Beck et al., 1996). Higher scores on the BDI indicate the presence of depressive symptoms: scores from 0–13 indicate minimal depression, 14–19 mild depression, 20–28 moderate depression, and 29–63 severe depressive symptoms.

The Outcome Questionnaire 45.2 (OQ-45.2) was used to measure changes in couple psychological distress over the course of treatment. The OQ-45.2 can be administered multiple times during therapy to measure client progress and outcome (Lambert et al., 1996). The OQ-45.2 demonstrates internal consistency (.93), test-retest reliability (.84), and concurrent validity with measures of depression, anxiety, and psychological distress (Lambert et al.). The OQ-45.2 contains 45 total items and includes a global scale and three subscales measuring symptomatic distress, interpersonal distress, and social roles. Scores of 63 or higher on the global scale indicate clinically significant psychological distress.

The 15-item Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003) assesses mindfulness across cognitive, emotional, physical, interpersonal, and general domains. Respondents indicate how frequently they have experienced statements (e.g., “I find it difficult to focus on what's happening in the present”) using a 6-point Likert scale (anchored from 1 = *almost always* to 6 = *almost never*), with higher scores reflecting more mindfulness. The MAAS is scored by calculating the average of the 15-item responses. Brown and Ryan (2003) have demonstrated that (a) the MAAS has good psychometric properties, (b) the scale differentiates individuals who are mindful from those who are not, (c) higher scores are associated with enhanced self-awareness, and (d) following a clinical intervention, increases in mindfulness over time were related to declines in mood disturbance and stress. Within student and adult samples, psychometric properties include good internal consistency ($\alpha = .82$ to $.87$), good test-retest reliability (.81, assessed in a student sample only), and strong convergent and divergent validity (Brown & Ryan). Brown and Ryan reported a mean score of 3.9 ($SD = 0.6$) for a nonclinical sample

compared to 4.3 ($SD = 0.6$) for a group of Zen meditation practitioners.

The White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994) is a 15-item measure of the tendency to suppress and struggle with unwanted thoughts and feelings. This measure has been used extensively in laboratory and clinical settings to demonstrate the negative effects of experiential avoidance (e.g., Feldner, Zvolensky, Eifert, & Spira, 2003; Kashdan, Barrios, Forsyth, & Steger, 2006). Clinical studies (e.g., Smari & Holmsteinsson, 2001) have shown that the WBSI is sensitive to and reflects the effects of treatment. The WBSI is scored by summing all individual responses, with lower scores indicating lower thought suppression. In a large, diverse student sample for periods ranging from 3 weeks to 3 months, test-retest reliability was reasonable ($r = .69$), internal reliability was strong ($\alpha = .87$ to $.89$), and the measure demonstrated good convergent, divergent, and incremental validity (Wegner & Zanakos, 1994). Depending on sample characteristics, Wegner and Zanakos found that average scores for nonclinical samples vary from 43 to 50.

The Dyadic Adjustment Scale (DAS) is a 32-item scale developed to measure the quality of adjustment to marriage and similar dyadic relationships (Spanier, 1976; Spanier & Filsinger, 1983). The DAS produces a global adjustment score in addition to scores on four subscales: satisfaction, cohesion, consensus, and affectional expression. The DAS demonstrates concurrent and predictive validity with lower scores relating to increased probability for domestic violence, higher depression, and poor communication (Stuart, 1992). The DAS also shows good reliability with high internal consistency for the total measure and scores as high as .90 and above (Stuart). Global scores greater than 100 indicate well-adjusted relationships, while scores below 100 indicate significant clinical distress.

Procedure

Treatments were conducted by the first author who is a Ph.D. licensed marriage and family therapist trained in ACT. The couple received a total of 20 sessions and terminated therapy when they felt able to manage the infertility stressors on their own. The couple completed the study measures at seven time points: pretherapy, midtherapy, prior to embryo transfer (ET), post-IVF failure (second attempt), posttherapy, 3 months posttherapy, and 1 year posttherapy. The couple was mailed a \$25 gift card for their participation at each follow-up.

Treatment Goals

At the beginning of therapy, the couple wanted to provide strategies to help Brooke reduce her levels of

infertility stress. The couple also wanted to clarify and determine the next steps they should take with their lives in relation to future infertility treatments. To accomplish these goals, the therapist used core ACT interventions (Eifert & Forsyth, 2005; Hayes, Strosahl, et al., 1999) to help each member of the couple become more mindful of their thoughts and feelings related to the infertility, accept and embrace the discomfort they once avoided, defuse from thoughts and feelings about infertility, clarify their life values, and act in ways consistent with these value directions—particularly as they related to parenthood, family, and friends.

Creative Hopelessness

One of the first interventions was to let Brooke and Aaron experience the futility and high personal costs (“unworkability”) of their previous attempts to resolve infertility stress. From an ACT perspective, infertility stress is heightened as one tries to control emotional and cognitive reactions to infertility and actively avoids infertility-related thoughts and feelings that result in avoidant behavior. The Chinese finger trap metaphor, a standard ACT intervention, was adapted for infertility to illustrate that efforts to control uncontrollable events (such as thoughts and feelings) are unhelpful and ultimately counterproductive to coping with infertility (see Hayes, Strosahl, et al., 1999). The therapist gave Brooke and Aaron a Chinese finger trap, asked them to put one finger in each end of the trap, and then attempt to remove their fingers. The more they struggled to get their fingers out, the tighter and more restrictive the finger trap became. To get out of the trap, they had to push their fingers in. This counterintuitive movement provided a basis for approaching infertility stress in a different manner than in the past. By resisting infertility stress and pulling away from it, they had eliminated much of the flexibility and space in their lives and thereby increased their distress. Thus, in order for new solutions to emerge, both Brooke and Aaron had to experience the effects of “moving into” the stress of infertility, rather than avoiding or pulling away from it.

Mindfulness and Compassionate Acceptance

The concepts of mindfulness and compassionate acceptance were introduced to Brooke and Aaron early in therapy and were a key focus throughout treatment. Basic centering exercises were conducted at the beginning of each session. In addition, advanced mindfulness exercises aimed at accepting aversive thoughts and feelings were adapted from published ACT protocols (Eifert & Forsyth, 2005) and made applicable to the treatment of infertility stress. These techniques, conducted in-session and practiced by Brooke and Aaron at

home, helped the couple observe and become aware of their thoughts, feelings, and sensations about the infertility, without struggling with or otherwise trying to move away from these thoughts as they had done in the past. Initially, acceptance exercises were difficult for Brooke and she would cry through them, saying, “I cannot accept the pain of infertility because that would mean accepting we would never have a baby of our own.” However, over time, she learned that acceptance of infertility stress did not imply giving up on her journey toward parenthood, but was rather a way to create space for her to think and feel her infertility-related thoughts and emotions without having to resist and avoid them. Eventually, she realized that accepting her reactions to infertility and her desire to be a parent were two different issues.

Value Clarification

After Aaron and Brooke completed a “Valued Directions” worksheet that assessed the importance of and satisfaction with the 10 value domains of family, intimate relationships, parenting, friends, work, education, recreation, spirituality, citizenship, and health (Eifert & Forsyth, 2005), parenting emerged as the dominant value in their lives. Ironically, it was the couple's intense desire to become parents, and the dominance this value had in their lives, that ultimately contributed to their high levels of infertility stress. Thus, the more they moved in that direction by pursuing infertility treatments, the more stress they experienced when a treatment attempt failed. As a result, clarifying all aspects of the value of parenthood allowed Brooke and Aaron to explore the many ways to build a family (e.g., continued treatments, adoption, third-party reproduction using donor eggs, donor sperm, or a gestational carrier). Although they valued biological parenthood more than any other family building option, the act of clarifying their values in this area gave Brooke and Aaron more room to consider other alternatives and examine their reproductive decision making with more flexibility.

Cognitive Defusion

For individuals experiencing infertility, cognitive defusion techniques can play a major role in decreasing the believability of unwanted thoughts and thereby reduce their impact on behavior and feelings of self-worth. Defusion begins when an individual recognizes a thought as just a thought, and not as something that must be believed in and acted upon. The “watching thoughts on leaves” exercise (see Eifert & Forsyth, 2005) was an intervention aimed at helping Brooke and Aaron defuse from their thoughts by becoming mindful of them as they watched their thoughts drift by like leaves floating down a

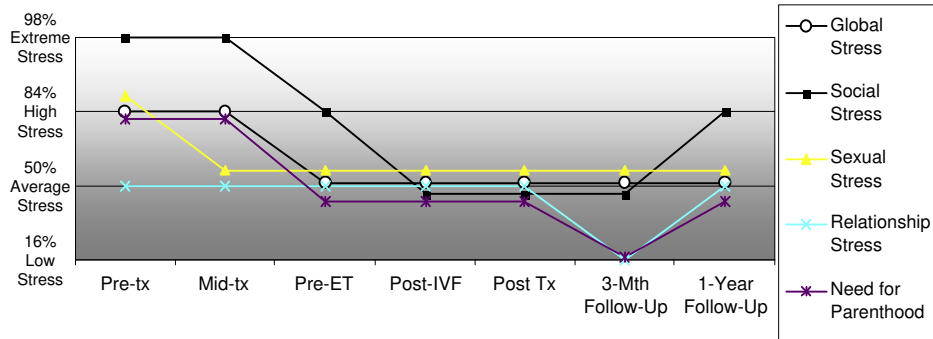


Figure 1. Percentile rank for female infertility stress over the course of therapy.

stream. Rather than getting fused with the content of these thoughts, the couple learned to view the thoughts as products of their minds and themselves as mere observers of the thoughts. Brooke reported that this exercise was perhaps the most helpful to her in all of the therapy and she routinely practiced it at home and at work.

Exposure Exercises

Brooke and Aaron were asked to participate in a series of value-guided exposure exercises (see Eifert & Forsyth, 2005). The purpose of in-session exposure exercises was to help the clients approach infertility-related stress from a nonjudgmental, compassionate perspective, choosing to be open to their experience and respond nondefensively. During these exercises Brooke and Aaron imagined being in previously avoided situations such as attending a family gathering with young children. When infertility-related thoughts and feelings showed up, they were encouraged to observe, accept, and make space for them rather than struggle with or try to avoid them. For outside practice, Brooke and Aaron engaged in activities that were linked to critical life values they had previously avoided because of infertility stress. These activities included attending family gatherings with young children pres-

ent, attending an award ceremony for their friend's daughter, and attending the dance recital of their friend's children. The couple completed records for these situations, rating the intensity of sensations, infertility stress levels, willingness to experience the stress, and degree of struggle with and avoidance of the experience.

Maintenance

To enhance maintenance of treatment gains, the therapist recorded a personalized audio file for the couple consisting of a summary of the therapy as well as the in-session mindfulness exercises. A copy of the CD was given to each member of the couple. They were encouraged to listen to the exercises between sessions and following therapy.

Treatment Outcomes

Infertility Stress

Figures 1 and 2 present Brooke and Aaron's levels of five types of infertility stress over the course of treatment and follow-up. At pretherapy, Brooke reported higher amounts of infertility stress when compared to Aaron on each of the FPI scales, ranking in the 84th or 98th percentile rank on four of the five scales. Aaron reported

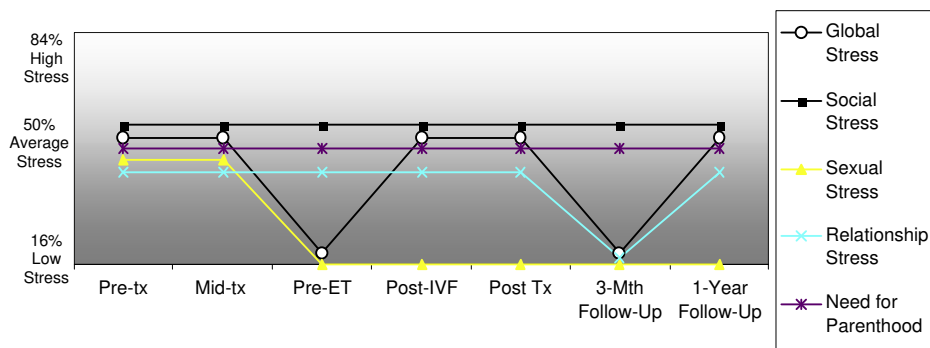


Figure 2. Percentile ranks for male infertility stress over the course of therapy.

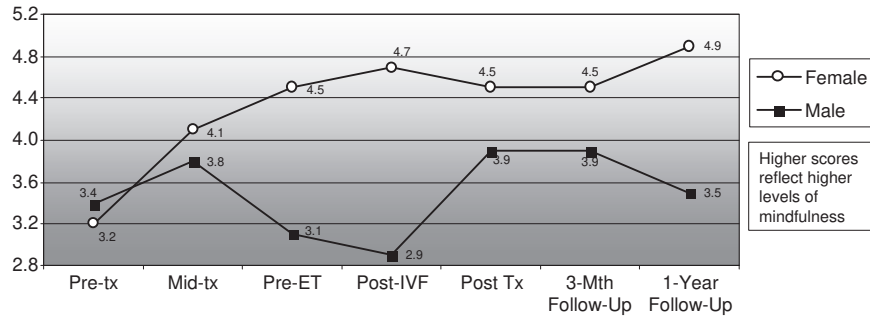


Figure 3. Levels of mindfulness over the course of therapy.

significantly lower stress in all areas, beginning therapy in the 50th percentile scale on all five scales. At posttherapy and follow-up, Brooke reported significant declines in infertility stress for each category, dropping at least one percentile rank, and in some cases two.

Brooke reported a reduction in global infertility stress from the 84th percentile at pretherapy to the 50th percentile at pre-embryo transfer, which was maintained at the 1-year follow-up (see Figure 1). Brooke also reported significant pre-embryo transfer drops in social infertility stress and the need for parenthood. Both social stress and the need for parenthood increased from the 3-month to 1-year follow-up. Brooke and Aaron reported significant declines in their levels of sexual infertility stress from pretherapy to 1-year follow-up. Brooke and Aaron's relationship infertility stress remained in the average range from pretherapy to posttreatment, with both experiencing a decrease to low stress at 3-month follow-up and an increase back to average stress at 1-year follow-up.

Mindful Acceptance, Thought Suppression, and Exposure Exercises

Figures 3 and 4 present the scores for Brooke and Aaron for mindfulness and thought suppression. For mindfulness, Brooke's scores moved from 3.2 at pretherapy to 4.9 at 1-year follow-up (see Figure 3). Aaron's

mindfulness began and ended at the same level (3.4 vs. 3.5, respectively), and included a drop following IVF treatment failure. Thought suppression scores dropped dramatically for Brooke from 58 at pretherapy to 28 at 1-year posttreatment. Aaron moved from 39 at pretherapy to 18 at 1-year follow-up, although he reported a spike in thought suppression immediately following IVF failure (see Figure 4). In response to the couple's exposure exercises (measured informally by examining their responses to take-home worksheets), the intensity and stress related to being in difficult situations decreased as their levels of openness to their experience increased. Once the couple accepted their initial reactions and practiced compassionate acceptance, infertility-related stress became more manageable for them in these situations.

Psychological Distress, Depression, and Marital Adjustment

Table 1 presents Brooke and Aaron's reports of psychological distress and depression, as measured by the OQ-45.2 and BDI-II. Brooke made significant improvements in her psychological distress, beginning therapy in the distressed range and ending treatment in the nondistressed range where she remained at follow-up (see Table 1). Aaron did not begin treatment in the distressed range. However, his scores dropped 18 points

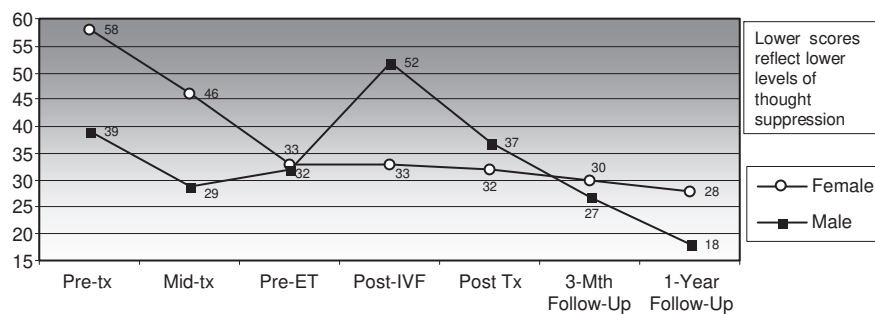


Figure 4. Levels of thought suppression over the course of therapy.

Table 1
Psychological Distress and Depression Levels at Seven Time Points

	Female	Male
OQ-45^a		
Pre-Treatment	65 ^a	41
Mid-Treatment	43	35
Pre-Embryo Transfer	14	56
Post-IVF Failure	23	64 ^a
Post-Treatment	21	41
3 Month Follow-Up	10	23
1 Year Follow-Up	17	22
BDI-II^b		
Pre-Treatment	32 ^b	1
Mid-Treatment	12	0
Pre-Embryo Transfer	3	3
Post-IVF Failure	5	5
Post-Treatment	6	1
3 Month Follow-Up	4	1
1 Year Follow-Up	4	1

^a Scores ≥ 63 indicate significant clinical distress.

^b Scores >29 indicate severe depression. Scores between 0-13 indicate minimal depression.

from pretherapy to posttherapy, indicating “client improvement” according to the OQ-45.2 scoring criteria. While Aaron never reported any symptoms of depression, Brooke began therapy in the severely depressed range of the BDI-II (scores over 29) and ended treatment in the nondepressed range, where she remained at each follow-up (see Table 1). Both Brooke and Aaron maintained a strong marital relationship, beginning therapy at 136 and 126 respectively (scores above 100 represent well-adjusted marriages). Their levels of adjustment stayed high throughout therapy and were higher at the 1-year follow-up than they were at pretherapy (137 and 132 1-year follow-up, respectively).

Discussion

The purpose of this study was to examine the effectiveness of using ACT to treat infertility stress in a couple experiencing infertility. Prior to therapy, Brooke reported higher levels of infertility stress on all five domains compared to Aaron—a finding consistent with a wide body of studies demonstrating that women report higher levels of infertility stress than men (Greil, 1997). Brooke reported significant decreases in all five types of infertility stress from pretherapy to 1-year follow-up. These findings are encouraging and provide initial preliminary support that ACT may be effective in treating infertility stress.

An examination of the data from this case study shows that ACT may work to reduce a woman's global infertility stress, social infertility stress, sexual infertility stress, and need for parenthood. While examining the details of each

type of stress would be valuable, the discussion for all of them is beyond the scope of this paper. We would, however, like to discuss the impact of the treatment on social infertility stress, which provided some of the most intriguing findings of this study.

Social infertility stress is one of the most common aspects of infertility stress and occurs when couples experience significant changes to their family and social networks, are embarrassed about questions from others regarding infertility, and negatively compare themselves to others with children (Newton et al., 1999). At the onset of therapy, Brooke experienced extreme amounts of infertility stress—greater than 98% of infertile women. We hypothesized that her normal and expected pain of social infertility stress turned into unnecessary suffering as a result of her attempts to avoid it at all costs (see Hayes, Strosahl, et al., 1999). As Brooke increased her acceptance of infertility-related stress over the course of therapy, the level of distress she experienced in social and private situations decreased. Brooke's improvement in this area is reflected by a reduction from the 98th percentile rank at pretreatment to the 50th percentile following her IVF treatment failure. This is a critical and encouraging finding because individuals typically experience increased infertility stress and depression after IVF treatment failure (Eugster & Vingerhoets, 1999; Newton et al., 1990; Olivius, Friden, Borg, & Bergh, 2004; Verhaak et al., 2007). Following IVF treatment failure, Brooke reported increases in mindful acceptance, from 3.2 at pretherapy to 4.7 post-IVF failure—a level that is comparable to Zen practitioners (Brown & Ryan, 2003), and her levels of thought suppression decreased from a pretherapy level of 58 (above average) to 33 (below average; Wegner & Zanakos, 1994). Brooke also indicated to the therapist that learning to become more mindful, accepting of, and defusing from previously avoided thoughts and emotions contributed to a reduction of her social infertility stress.

This study also found an unexpected gender difference regarding Brooke and Aaron's response to the failed IVF attempt. Following the second IVF failure, Aaron's psychological distress and global infertility stress increased. Aaron's levels of mindful acceptance also decreased to its lowest levels (2.9 post-IVF failure compared to 3.4 pretherapy) and his levels of thought suppression spiked from 32 to 52. It is possible that Aaron may have been less engaged in the treatment because he viewed himself in a more supportive role rather than as a client. Following the IVF failure, however, Aaron reported that the infertility stress was also taking a toll on him and he became more engaged in the therapy. Following this new commitment to treatment, Aaron reported increased mindful acceptance and decreased thought suppression—a trend that

continued to be evident at follow-up. This is an important finding as infertility is a couple's issue and should be conceptualized as such. Although men may not report as much infertility-related stress as women, mental health professionals and physicians should be aware that men do suffer distress related to infertility (Peronace, Boivin, & Schmidt, 2007). Furthermore, while both men and women use a variety of strategies to cope with infertility distress, it is important to understand that the coping patterns of one partner have a direct and immediate impact on the stress of their partner and that both men and women's coping strategies can directly impact their partner's levels of infertility stress (Peterson et al., 2009; Peterson, Newton, Rosen, & Schulman, 2006; Peterson, Pirritano, Christensen, & Schmidt, 2008; Peterson et al., 2003; Schmidt, Christensen, & Holstein, 2005).

It is worth noting that prior to therapy, Brooke reported severe depressive symptoms; by midtreatment, her scores were in the nondepressed range. These gains were maintained throughout the remainder of therapy and at both the 3-month and 1-year follow-up. Previous studies have found that undergoing infertility treatment contributes to depression and psychological distress, particularly if treatments fail (Eugster & Vingerhoets, 1999). The fact that Brooke's depression did not increase following her second IVF treatment failure is significant, as it has been shown that 66% of women reported depression immediately following an IVF treatment failure, with one-third remaining depressed 18 months later (Baram, Tourtelot, Muechler, & Huang, 1988). It is encouraging that Brooke's depression scores mirrored her decreasing levels of psychological distress, as she showed significant clinical improvement over the course of therapy and at both follow-ups.

In light of this study, we recommend that therapists working with couples experiencing infertility stress design treatment plans that integrate mindful acceptance, cognitive defusion, and the pursuit of value-directed behavior to alleviate the unnecessary suffering these couples experience. Qualitative interviews with 65 couples whose medical treatments for infertility ultimately failed reveal that, in hindsight, most couples believed that there were tremendous costs associated with infertility (Daniluk, 2001). These costs were not limited to the substantial financial costs they incurred, but also extended to emotional suffering and the costs of putting important relationships with others on hold. Couples reported that their lives became so dominated by the infertility experience that they stopped making choices consistent with their life values and goals. One woman reflected, "How much longer did I want to live my life excluding everything I value about it . . . at the expense of my marriage and my relationship with my

family, my schooling, my career, friends?" (Daniluk, p. 128.) Another woman reflected, "Before you realize it, you've put your life on hold for five or six years . . . I could have had a fuller life during that time" (Daniluk, p. 128).

Clinicians who are aware of the complexity of the infertility experience can make a significant difference in the lives of couples by helping them understand the cost of experiential avoidance in light of the couples' values. By helping couples confront experiential avoidance when they are immersed in the infertility journey, clinicians can not only assist couples in reducing the immediate symptoms of infertility stress, but also help couples regain control of their lives by making choices that are more consistent with their deeply held values.

In addition to these clinical recommendations, researchers and mental health professionals should continue to work closely with physicians to help educate patients regarding the impact of using acceptance and mindfulness techniques in dealing with infertility stress. Furthermore, supportive and collaborative relationships between physicians and mental health professionals should continue to be developed so that patients may benefit from both the medical and the psychological treatments available to infertile couples.

The findings from this study should be viewed in the context of the study's limitations. Because the current study is based on a single observation and there was no control group, the generalizability of findings is limited, and there are a number of threats to internal and external validity. For example, we cannot unequivocally attribute the change in this couple to the treatment because we could not control for factors like coincidental events that occurred during the treatment, the process of maturation, which may mimic change, and repeated completion of the assessment measures (Hayes, Barlow, & Nelson-Gray, 1999). As such, the replication of these study findings will be important. Single-case studies using multiple subjects (Hayes, Barlow, et al., 1999) should be conducted with other couples undergoing infertility counseling to document if similar patterns of change occur over time. In addition, more rigorous research designs using an experimental group and a control group would be valuable, particularly since these types of studies are largely lacking in the infertility literature (Boivin, 2006). However, the use of the single-case study design does provide a more in-depth examination of the experience of being infertile and undergoing IVF treatment, thereby helping to fill a void in the realm of practice-based studies examining this issue (Boivin).

In conclusion, the findings from this preliminary case study provide initial support that an acceptance-based treatment may help couples respond more flexibly to

infertility issues and thereby reduce stress and unnecessary suffering. In addition to significant reductions in all types of infertility stress, increased levels of mindful acceptance and decreased levels of thought suppression were related to significant reductions in depression and psychological distress. Although future studies are needed to test these findings with larger samples of couples, the results from this case study are encouraging and provide promise for mental health providers, physicians, and ultimately the women and men who experience infertility-related stress.

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