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Psychological Reactions to Infertility

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PSYCHOLOGICAL REACTIONS TO INFERTILITY

Like many other life stresses, infertility is not a discrete event but an unfolding process. The beginning of the process is frequently marked by the passing of a year attempting to conceive without success, and by entry into medical treatment, although many couples begin to worry and seek treatment sooner. For some, a medical condition necessitates treatment such as the surgical removal of reproductive organs that suddenly impairs fertility. Thus, many events may signify the beginning of the infertility process, a process that often continues over a long period of time as individuals contend with the prospect of being unable to conceive. Indeed, in most cases, it is the possibility rather than the reality of infertility that is at issue, because there is some degree of ambiguity about the outcome. This situation initially involves a threat rather than a loss (Lazarus, 1966; Lazarus & Launier, 1978; Lazarus & Folkman, 1984). As time passes without conception, the situation is gradually transformed into one of loss.

What are the reactions of women and men who learn that they are unable to have children biologically? How do individual reactions vary? Do they change over time? Are there gender differences? Our goal in this chapter is to summarize what is known about these issues by providing an

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overview of the available research on psychological reactions to infertility. We draw from both the published descriptive work and the empirical research in doing so. Although there are methodological limitations of the research, a clear picture on the psychological response to infertility is beginning to emerge.

METHOD OF OUR REVIEW

Our literature search on this topic uncovered 6 review articles, more than 30 descriptive or anecdotal articles, and 25 empirical research articles. We distinguished a source as empirical versus descriptive on the basis of whether any data were collected and whether quantitative results were presented. The descriptive literature provides a rich source of information about clinically observed reactions to infertility. The empirical research literature provides a scientific basis for evaluating these observations and themes. In the sections below, we consider each literature to assess the prevalence of specific psychological reactions to infertility. Review articles are also cited where they mention the themes discussed (e.g., Cook, 1987; Edelmann & Connolly, 1986; Pantesco, 1986).

OBSERVED EFFECTS OF INFERTILITY

The effects of infertility mentioned most frequently in the descriptive literature are emotional reactions, feelings of loss of control, effects on self-esteem, identity, and beliefs, and effects on social relationships.[1] These can be further differentiated and elaborated as illustrated in Table 1. For example, social effects include effects on social network interactions, on marital satisfaction, and on sexual functioning. The available descriptive articles were reviewed to determine the proportion that report each of the categories of reactions to infertility listed in Table 1.

Emotional Effects

Five emotional responses are recurrent themes: (1) Grief and depression; (2) anger; (3) guilt; (4) shock or denial; and (5) anxiety. The order in

[1]A small number of descriptive articles refer to what might be labeled cognitive effects of infertility, including ruminations and obsessive thought, inability to concentrate, and feelings of confusion and disorganization. Inasmuch as these were mentioned rarely and seemed to be confounded with other constructs such as emotions and coping, we did not treat them separately in this review.

Table 1. Observed Psychological Effects of Infertility

A. *Emotional effects*
   1. Grieving/depression
   2. Anger/frustration
   3. Guilt
   4. Shock/denial
   5. Anxiety

B. *Loss of control*
   1. Loss of control over activities, body, emotions
   2. Inability to predict and plan future according to life goals

C. *Effects on self-esteem, identity, beliefs*
   1. Loss of self-esteem, feelings of inadequacy
   2. Identity problems or shifts
   3. Changes in worldviews

D. *Social effects*
   1. Effects on marital interactions and satisfaction (positive and negative)
   2. Effects on sexual functioning
   3. Difficult social network interactions, changes in relationships with network members, loneliness, embarrassment

which these emotional responses are listed in Table 1 corresponds to the frequency with which they appear in the anecdotal literature. Grief and depression are the most frequently cited emotional responses, reported in 77% of the articles, whereas anxiety, reported in 40% of the articles, is mentioned least often.

Authors use a variety of terms to describe the grief and depression experienced by infertile individuals. They describe mourning, sadness, disappointment, loss, disillusionment, and hopelessness. Consider the following description by an infertile women:

> A lot of people don't understand that infertility is very much like having a child die. You grieve for the baby who wasn't conceived this month, and for all the babies you'll never have. (Lasker & Borg, 1987, p. 20)

Several authors, including Menning (1980) and Mahlstedt (1985), comment that depression and grief are the most common reactions they observe in individuals after a diagnosis of infertility. Mahlstedt (1985) suggests that depression is caused both by the loss that infertile individuals feel as well as the chronic strains that are experienced during infertility diagnosis and treatment.

In addition to grief, the majority of studies mention anger and guilt, suggesting that these may also be common emotional responses to infertility (Cook, 1987). The intensity of anger or frustration, cited in 73% of

the anecdotal articles, ranges from reports of unfairness or resentment (e.g., Mahlstedt, 1985; Sawatzky, 1981) to more intense embitterment or rage (e.g., Kraft, Palombo, Mitchell, Dean, Meyers, & Schmidt, 1980). Infertile individuals may direct anger toward their spouses, themselves, other family members or their friends, couples with children, their doctors, or toward society (e.g., Daniels, Gunby, Legge, Williams, & Wynn-Williams, 1984; Mazor, 1978, 1984; Spencer, 1987). One woman said:

> I find myself *hating* the pregnant women I see at school, in the grocery store, and even in church. I have never had such intense negative feelings toward others, and I despise myself for having them. (Mahlstedt, 1985, p. 339)

Feelings of guilt, self-blame, or personal responsibility are mentioned in 68% of the articles (e.g., Daniels *et al.*, 1984; Domar & Seibel, 1990; Fleming & Burry, 1988; McCormick, 1980; Rosenfeld & Mitchell, 1979; West, 1983). According to these authors, some individuals feel guilty because of prior sexual practices, contraceptive methods, or life-styles that they believe helped produce their infertility, or because they delayed trying to have children. Others feel guilt that has no specific source, or feel guilt over a previous transgression for which infertility is seen as the punishment. Kraft *et al.* (1980), for example, describe a woman who "felt that if she had just been a better person this would not have happened" (p. 622).

Although shock and denial are mentioned less frequently, 45% of the descriptive studies cite these as emotional responses to infertility (e.g., Kraft *et al.*, 1980; Mazor, 1978; Spencer, 1987; Wilson, 1979). As illustration, one woman described her state of mind while waiting for her appointment with an infertility specialist:

> I sat in the corner away from the other patients, who were probably infertile. In my mind, I was *not* one of them. (Mahlstedt, 1985, p. 338)

Denial such as this, and shock or surprise, tend to be cited as initial responses to the diagnosis of infertility. Thus, shock and denial are probably underreported in the literature because individuals may no longer be experiencing them by the time they are in treatment or counseling.

Anxiety, worry, anguish, or desperation are reported in 40% of the anecdotal articles (e.g., Sawatzky, 1981; Spencer, 1987; Valentine, 1986; Walker, 1978). As West (1983) describes:

> Infertile people do feel anxious. Watching others crack the jackpot, often unintentionally, while their libidos revolve unsuccessfully around the bedroom thermometer, is apt to cause concern that something is amiss. (p. 40)

Infertile men and women may be anxious about the treatments they are

undergoing, and particularly about whether or not they will be successful in becoming parents. Several authors observe that infertile people are also anxious about their body image, their sexual adequacy, or about the status of their marital relationship (e.g., Kraft *et al.*, 1980; Mazor, 1978; Woollett, 1985). Some report monthly cycles of anxiety or anticipation surrounding ovulation, followed by disappointment and depression when pregnancy is not achieved (e.g., Honea-Fleming, 1986; Kraft *et al.*, 1980; Mahlstedt, 1985; Valentine, 1986). These changes have been referred to by some (e.g., Honea-Fleming, 1986) as the "roller coaster" of hope and despair.

Several of the descriptive accounts and reviews on infertility mention a sequence or stages of emotional reactions that are observed among infertile individuals over time (e.g., Clapp, 1985; Griffin, 1983; Menning, 1980; Matthews & Matthews, 1986a; Williams & Power, 1977). The stages are typically surprise/shock, denial, anger, isolation, guilt, grief/depression, and acceptance or resolution. Because these stages of emotional response are often an assumption underlying the descriptive research, they are important to note.

Loss of Control

> We can't conceive; my wife is depressed; I'm sick with disappointment; and I can't do a thing about any of it. Nothing I have said or done has made a difference. (Mahlstedt, 1985, p. 343)

There are two responses to infertility which involve loss of control. One concerns control over events that are current, including a loss of control over one's daily activities, bodily functions, and emotions. The second concerns control of the future, specifically the ability to predict or plan the future, and to meet life goals. Although some articles mention a loss of both types of control, the two types appear to be distinguishable.

Fifty-four percent of the authors observe that infertility is accompanied by a real or perceived loss of control over the present (e.g., Daniels *et al.*, 1984; Griffin, 1983; Mahlstedt, 1985; McCormick, 1980; Valentine, 1986; Williams & Power, 1977). For example, because of the chronic stress associated with infertility, some individuals feel that they are unable to control their emotions and some complain of mood lability (McCormick, 1980; Mazor, 1978; Spencer, 1987). Infertility treatment may dictate the scheduling of work-related or social activities and thereby individuals may feel they have surrendered control over these domains as well (Mahlstedt, 1985; Spencer, 1987). Couples in treatment may also feel that they lose control over their sexual relationship and privacy because they must report many details to their physician and because treatment typically in-

volves "assignments," such as when and how often to have intercourse (e.g., Daniels *et al.*, 1984; Kraft *et al.*, 1980; Mahlstedt, 1985, Matthews & Matthews, 1986b). One woman said:

> I bring my charts to the doctor like a child bringing home a report card. Tell me, did I do well? Did I ovulate? Did I have sex at all the right times as you instructed me? (Menning, 1980, p. 315)

In addition to losing control over these aspects of the present, 40% of the anecdotal articles report that infertile people experience a profound sense that they have lost control over their future (e.g., Griffin, 1983; Honea-Fleming, 1986; Kraft *et al.*, 1980; Mazor, 1978; Mazor, 1984; Sandelowski, 1987; Spencer, 1987; Woollett, 1985). Infertility eliminates the ability to initiate pregnancy and parenthood, which are often central to one's life goals (see Clark, Henry, & Taylor, this volume). Infertility treatment alone may disrupt career progress, by delaying relocations or promotions, for example. Because primary life decisions about marriage and career are often tied to having a child, the loss of control experienced due to infertility may be particularly distressing. Infertility for some couples brings about a radical change in their perspective of the future and in their perception that life goals are under individual control.

> It is the end of the Bowes family and the Bowes family name. It dies with us because of me. My husband is the last of the male children in his family . . . it is the death of a dream . . . (Menning, 1980, p. 317)

Effects on Self-Esteem, Identity, and Beliefs

Nearly 60% of the anecdotal articles suggest that the diagnosis of infertility threatens self-esteem or engenders feelings of failure and inadequacy (e.g., Fleming & Burry, 1988; Mahlstedt, 1985; Matthews & Matthews, 1986b; Rosenfeld & Mitchell, 1979; Spencer, 1987; Williams & Power, 1977; Wilson, 1979; Woollett, 1985). Many of these articles add that feelings of low self-worth are not limited to reproductive function, but they extend to "sexual function and desirability, physical attractiveness, performance, and productivity in other spheres as well" (Mazor, 1984, p. 27). One woman explained:

> [W]hen I discovered I was infertile, I felt damaged. Why couldn't I accomplish something as "natural" as conceiving a baby? Suddenly my sense of self-worth was shaken. I felt defective and very much a failure. Infertility was more than a medical problem. It was an attack on my self-esteem. (Mahlstedt, 1985, p. 338)

In addition to reduction in self-esteem, extended infertility produces identity changes or changes in the self-concept. Nearly 70% of the descrip-

tive articles include reports of individuals questioning their gender identity (e.g., Daniels *et al.*, 1984; Honea-Fleming, 1986; Kraft *et al.*, 1980; Mazor, 1984), their role performance and role expectations (e.g., Valentine, 1986), or their specific identity as spouses or parents (e.g., Mahlstedt, 1985; Rosenfeld & Mitchell, 1979). Some infertile people also mention difficulty incorporating infertility into their self-view (e.g., Sandelowski, 1987), and some articles report negative body images held by individuals who are infertile. These persons say their body is defective, unfamiliar, or ugly (e.g., Mazor, 1978; Spencer, 1987; Williams & Power, 1977), as the following quotations demonstrate:

> "I feel empty. It's like within me, where a uterus ought to be, there is a "black hole" of space. I feel mutilated." (Mazor, 1978, p. 148)

> "It is more than I can bear to think of myself as barren. It's like having leprosy. I feel "unclean" and defective." (Mazor, 1978, p. 148)

By comparison to the number of reporting effects on self-esteem and identity, fewer articles (32%) mention changes in worldviews following infertility (e.g., Honea-Fleming, 1986; Matthews & Matthews, 1986b; Sandelowski, 1987; Woollett, 1985). For example, Matthews and Matthews (1986b) as well as Clark, Henry, and Taylor, this volume, describe a major "reconstruction of reality" that takes place following infertility. This reconstruction can involve the meaning of marriage, parenthood, and existence itself. Some articles report that by examining their motives for pregnancy and parenthood, infertile individuals are led to question societal views of children, particularly the presumed idealization of parenting. According to one article (Woollett, 1985), some persons search for the reasons that infertility exists in our world at all.

Social and Relationship Effects

There are several ways in which infertility is reported anecdotally to have social and relationship effects. Effects on marital interaction and satisfaction are reported in 50% of the descriptive articles, effects on sexual functioning appear in 65% of the articles, and effects on social network interactions or feelings toward network members arise in more than 80% of the articles. Effects on marital interaction and satisfaction appear to be of four varieties. First, some people report increased anger, hostility, or resentment toward their spouse which may result from blaming a partner or feeling blamed, from feeling lack of spouse understanding or emotional support, or feeling that one's spouse is not equally committed to having children (Mahlstedt, 1985; Mazor, 1978; Spencer, 1987; Wilson, 1979; Woollett, 1985). One woman explained:

> When we start to talk to each other we end up yelling. We resolved that by talking only very briefly... I know he feels terribly guilty because it is his infertility problem. Lasker & Borg, 1987, p. 141

Second, some spouses are anxious about the status of their relationship and they occasionally report fears of abandonment or breakup (Mahlstedt, 1985; Mazor, 1978; Mazor, 1984; Williams & Power, 1977). Third, some articles report that individuals feel unable to disclose their feelings to a spouse, increasing a sense of isolation from their partner (e.g., Mahlstedt, 1985; West, 1983).

The fourth type of effect on marriages is positive as opposed to negative. Several articles describe individuals who feel increased closeness, love, and support from their partners (Fleming & Burry, 1988; Honea-Fleming, 1986; Mazor, 1984; Menning, 1980; Woollett, 1985). For some couples, the crisis of infertility has brought them closer together, and led to mutual support during a period of strain or an opportunity to reflect on the attachment to their partner.

> It's very difficult for me to imagine that anything else could happen that would require more of us than what we've been through over these last five years. We found out just how much we need each other. We are a team. Our marriage is strong... (Lasker & Borg, 1987, p. 138)

In contrast to there being both positive and negative effects of infertility on marital relationships, virtually all of the anecdotal articles which discuss infertility's sexual ramifications describe these as negative (e.g., Elstein, 1975; Kaufman, 1969). Many individuals report a loss of sexual desire, pleasure, or spontaneity (e.g., Kraft *et al.*, 1980; Rosenfeld & Mitchell, 1979; Valentine, 1986; Williams & Power, 1977; Woollett, 1985). Some report sexual dysfunction (e.g., Spencer, 1987; Walker, 1978; West, 1983). Individuals sometimes attribute these effects to their fears of sexual inadequacy and to the fact that infertility treatment results in a loss of privacy, control, and the reduction of intercourse to a clinical act of reproduction. Consider the following description:

> My wife was scheduled to have a postcoital test late one afternoon. Because of our work schedules and a 30-mile distance between our home and the doctor's office, we met at a motel close to the doctor's office to have sexual intercourse. At first, I could not maintain an erection, and when I finally achieved that, I could not ejaculate. We tried everything we knew, and after no success, we dressed, checked out, and went home... where we tried unsuccessfully again. This whole charade was so humiliating and painful for me that I could not imagine attempting such a thing again. (Mahlstedt, 1985, p. 337)

Most of the anecdotal articles report difficulties in social interactions and relationships within the social network (82%). One type of difficulty

involves feeling socially unworthy or isolated (e.g., Cook, 1987; Daniels *et al.*, 1984; Domar & Seibel, 1990; Fleming & Burry, 1988; Mahlstedt, 1985; Mazor, 1978; West, 1983; Woollett, 1985). Said one woman:

> I do believe it lessens you in some people's eyes, makes you different and possibly even morally suspect like God is punishing you or something. Somehow infertility lessens your accomplishments for some people. (Miall, 1985, p. 395)

According to the descriptive literature, some men and women who are infertile report feeling unaccepted or scorned by others and feeling pressured by the expectations of their family, friends, or society in general. Many do not feel understood by their friends or family and therefore express an inability to disclose their feelings to others. Some withdraw from these relationships completely.

A second difficulty in social interactions involves feelings of jealousy, rivalry, resentment, and envy of people with children (e.g., Honea-Fleming, 1986; Mazor, 1984; Rosenfeld & Mitchell, 1979; Spencer, 1987; Valentine, 1986; Wilson, 1979). According to the descriptive literature, such feelings are often directed toward other family members. That may be true because family members are biologically similar and yet able to have children. Spending time around people with children may be uncomfortable because infertile people are probably making comparisons during these interactions (Taylor & Lobel, 1989).

> I feel like I don't belong, like a second-class citizen with no place to go. Without a child, I don't belong in the group with kids who play in the park. Without a child, my husband and I don't fit in with our friends. (Mahlstedt, 1985, p. 338

Conclusions from the Descriptive Reports

As the foregoing summary and quotes demonstrate, individuals are described as responding to infertility with a range of responses. Grief and depression, and difficulty in social interactions are the responses reported most frequently, but other reactions such as loss of control and sexual difficulties are commonly cited as well. Overall, there is greater focus on the emotional effects of infertility than on loss of control, changes in identity or esteem, or social effects. This may indicate that emotional effects are more common, or it may reflect greater clinical interest in the topic of emotional responses to infertility. The descriptive literature characterizes infertile people as a group in substantial distress. However, it is important to note that the individuals portrayed in the descriptive articles are a select sample; they represent mainly those who have decided to pursue infertility treatment or who are receiving counseling.

Although the psychological effects of infertility are separable into the

categories used in this review, there are probably some relationships between these effects. Depression, for example, may be a function of the loss of control that is experienced by many. Sexual difficulties may strain marital relationships. Lowered self-esteem may contribute to feelings of jealousy toward others with children. It may therefore be useful for future research or clinical intervention to consider the psychological effects of infertility as a web of interrelated reactions, rather than as distinct or independent responses.

EMPIRICAL RESEARCH ON EFFECTS OF INFERTILITY

Characteristics of the Studies

Twenty-five empirical articles were located on the psychological effects of infertility, all published between 1963 and 1988. Fewer than 25 investigations are involved because, in some cases, more than one article was published based on a particular study. The studies vary widely in research design and quality, as well as in their results. Most investigators sampled couples (sample sizes range from 20 to 300), although a sizable number studied only women, and a few involved male and female subjects who were not couples (18 to 150 individuals). As some reviews point out (Domar & Seibel, 1990; Pantesco, 1986), infertile men have been understudied relative to infertile women.

The empirical articles were evaluated first based on two features of their research designs. First, we were interested in whether the study used a control group for comparison with the infertile group. This feature is important in addressing whether the psychological conditions studied are truly associated with infertility or whether they exist in fertile people to a similar degree. Even with a control group, it is impossible to determine whether the observed conditions are caused by infertility, but stronger inferences are possible than when no comparison groups exist.

The second feature we considered in examining research designs was whether the investigators employed standardized tests or scales, which have multiple advantages. Because standard scales have established reliability and validity, such measures more powerfully and accurately test the questions and hypotheses of interest. Also, standard scales usually have published norms available for comparing infertile subjects to other distressed and nondistressed groups.

The 25 articles were sorted into four categories on the basis of these two design features: (1) Designs with a control group and standard measures (7 articles); (2) designs with standard measures but no control group (11 articles); (3) designs with a control group but no standard measures (5

articles); and (4) designs with neither a control group nor standard measures (2 articles). Articles in the last two categories (lacking standard measures) are similar to the descriptive articles discussed earlier, except that they contain quantitative data on the prevalence of various patterns of behavior, rather than general impressions and descriptions. The 25 empirical articles are reviewed within the four categories of design below, after which general conclusions are drawn.[2]

Studies with Control Groups and Standard Measures

The studies with this design are outlined in Table 2 in approximate order from strongest to weakest. Two of the articles pertaining to the same study are reviewed together, that is, there is a total of six investigations of this type. Most of the studies have relatively large sample sizes (up to 150 subjects), although two use fairly small samples (15 to 25 subjects). Of the six investigations outlined, two report no significant differences between infertile and control groups, one reports very few differences, two report mixed results, and one reports mostly significant differences between infertile and control groups.

Paulson, Haarmann, Salerno, and Asmar (1988) found no differences between 150 women in infertility treatment and 50 control women on measures of anxiety, personality, depression, self-concept, and locus of control. This study utilized the largest sample in this group of studies. Similarly, no differences between two samples of infertile women (153 total) and 141 controls were found on several measures of emotional distress or personality in the study by Freeman, Garcia, and Rickels (1983). Nor were there differences between 103 infertile men and women and 61 fertile men and women on marital adjustment, self-esteem, psychiatric symptoms, body image, or sex roles in the study by Adler and Boxley (1985).

Of studies reporting differences, 53 infertile women in IVF treatment had significantly lower satisfaction with some aspects of life, such as self and life-style, but higher satisfaction with other aspects, such as their friendships and time for relaxation than did control groups (Callan, 1987; Callan & Hennessey, 1988). O'Moore, O'Moore, Harrison, Murphy, and Carruthers (1983) found 15 infertile women were more anxious than 10 control women on three of four anxiety measures, but their partners did

[2]Articles with samples of less than 20 in control and/or infertile groups and weaker measures were dropped from the review (e.g., Brand, 1982; James & Hughes, 1982; Slade, 1981). It should be noted that results of these studies are consistent in general with the conclusions of this review. For example, James and Hughes (1982) found that infertile women were equally happy on various measures regardless of whether clomiphene treatment had been successful or not.

Table 2. Designs with Control Groups and Standard Measures

Authors	Sample/control groups	Standard measures	Results
Paulson *et al.* (1988)	150 women referred for infertility treatment 50 matched controls	16 Personality Factor Scales (16 PF) IPAT Anxiety & Depression Subscales Tennessee Self-Concept Scale I-E Locus of Control	No between-group differences.
Freeman *et al.* (1983)	49 women starting treatment for anovulation 104 women in treatment for infertility from other causes 141 fertile women	Hopkins Symptom Checklist (HSCL-90) Eysenck Personality Inventory (EPI) Langner Psychiatric Symptoms Mood Analog Scale MMPI Semantic Differential procedure	No differences between the two infertile groups and the fertile controls on standard measures, except infertile women rated selves as less potent than partner, mother, or father. All group means in normal range.
Callan (1987) Callan & Hennessey (1988)	53 infertile women in IVF treatment 32 voluntary childless women 50 mothers 24 mothers with secondary infertility	Andrews Quality of Life Scale Bradburn Morale Scale Spanier Dyadic Adjustment Scale	Infertile women in IVF reported significantly lower life satisfaction on some dimensions (e.g., with self, life-style) and well-being than control groups, but also reported greater marital satisfaction and greater satisfaction in other areas of life (relaxation, friendship) than controls. No differences in affect between groups.

Adler & Boxley (1985)	46 infertile men 57 infertile women 20 fertile individuals 41 formerly infertile individuals	Locke-Wallace Marital Adjustment Scale Rosenberg Self-Esteem Scale Langner Psychiatric Symptoms Behavior Check List Body Cathexis Scale Personal Attributes Questionnaire	No differences between infertile and fertile groups detected.
O'Moore *et al.* (1983)	15 infertile couples undergoing autogenic stress reduction training 10 control couples	Spielberger State & Trait Anxiety inventories (STA) Taylor Manifest Anxiety Inventory (MAS) Eysenck Personality Questionnaire (EPQ) 16 Personality Factor Scales (16 PF)	Women in infertile couples had higher trait anxiety, manifest anxiety, and EPQ anxiety scores than control women. No differences between female groups found in state anxiety or 16 PF. Men in infertile couples higher on EPQ lie scale and 16 PF distortion scales than male controls, but not on other variables.
Platt *et al.* (1973)	25 infertile couples seeking treatment as private patients 15 control couples (11 with children, 4 using contraception)	I-E Locus of Control Semantic Differential procedure Group Personality Projective Test (GPPT)	Infertile couples viewed events in their lives as more externally caused, felt present selves were less similar to ideal selves and to same-sex parent compared to controls. Also, infertile women had significantly greater disturbance on the GPPT than control women.

not differ in anxiety as a function of fertility status. In a third study, 25 infertile couples viewed their lives as more externally controlled and felt their "present selves" were less similar to their ideals on the Semantic Differential procedure than 15 control couples (Platt, Ficher, & Silver, 1973). This study also found infertile women more emotionally disturbed than controls but there were no differences between male groups. Freeman *et al.* (1983) also found differences on the Semantic Differential procedure between infertile women and fertile controls. Infertile women rated themselves as less potent than partner, mother, or father.

The dominant pattern across investigations is of no difference between fertile and infertile groups on most dimensions, with the possible exception of anxiety and emotional distress for women. Results on these variables are more equivocal. Two studies found infertile women more anxious or disturbed than fertile women, and four did not. Furthermore, the studies reporting significant differences for women are generally weaker in design, whereas those showing no differences are stronger methodologically. In addition, two studies report consistent differences between infertile and fertile women in perceptions of self relative to others, with infertile women showing less favorable self-perceptions.

Studies with Standard Measures But No Control Groups

The eleven studies are outlined in Table 3, beginning with the strongest and most relevant, and ending with the least relevant and weakest. These studies are quite diverse in design characteristics and quality. Four of them examine individuals undergoing IVF treatment. Two studies involve assessments of variables on more than one occasion, which is desirable for inferring changes over time, but there are other methodological weaknesses of this group of studies. Sample sizes vary from two investigations having samples of over 200 couples to three studies with samples of less than 25 couples. Measures are generally strong in these studies, although a few of them employed very few measures, and some use a combination of unvalidated and validated measures. Two studies were not conducted for purposes of examining the psychological effects of infertility, as indicated below, although they include some information on this.

Of the eleven studies, six report normative or predominantly normative patterns in infertile samples. In a few of the six, results suggest infertile samples were functioning more (rather than less) favorably than normative estimates on some dimensions. Three studies report poorer functioning than normative levels on some measures, and in two studies, the results are unclear or difficult to interpret.

Hearn, Yuzpe, Brown, and Casper (1987) report normative levels of

Table 3. Designs with Standard Measures But No Control Group

Authors	Sample	Standard measures	Results
Hearn *et al.* (1987)	300 married couples awaiting IVF treatment	Family Environment Scale (FE) Personality Research Form-E Quality of Life Questionnaire Life Satisfaction Questionnaire Life Appraisal Inventory Inventory of Socially Supportive Behaviors (ISSB) Ways of Coping Checklist Spielberger State and Trait Anxiety Inventories (STAI) Beck Depression Inventory (BDI)	Normative levels of life satisfaction, affect, well-being, coping, social support, and anxiety.
Freeman *et al.* (1985)	200 couples entering IVF treatment	MMPI	Scores were in the normal range.
Fagan *et al.* (1986)	45 couples undergoing IVF treatment	Derogatis Sexual Functioning Inventory (DSFI) Brief Symptoms Inventory (BSI)	Scores in the normal range.
Dennerstein & Morse (1985)	30 couples before starting IVF treatment (half with unknown cause and half with known causes)	Eysenck Personality Inventory (EPI) Spielberger State and Trait Anxiety Inventories (STAI) Rosenberg Self-Esteem Scale Spanier Dyadic Adjustment Scale Bem's Sex-Role Identity Scale	Scores on anxiety, self-esteem, and identification with female role were higher than norms. Organic-cause cases lower than norms in neuroticism; unknown-cause cases higher than norms.

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Table 3. *Continued*

Authors	Sample	Standard measures	Results
Daniluk (1988)	63 couples in infertility treatment in a clinic	Measured at 4 timepoints (before treatment, 4 weeks later during treatment, within a week of diagnosis, 6 weeks post-diagnosis): SCL-90-R Index of Sexual Satisfaction from Clinical Measurement Package (CMP) Locke-Wallace Marital Adjustment Scale Relationship Change Scale	Mean distress, sexual satisfaction, and marital adjustment scores in the normal range at all timepoints. Distress highest at intake. Women more significantly distressed than men at diagnosis. Relationship changes either positive or nonexistent.
Link & Darling (1986)	43 couples 17 women recruited from private physicians and ads	Clinical Measurement Package (CMP) measures of general contentment and depression, marital satisfaction, sexual satisfaction	Norms not provided. Percentages of men and women above clinically significant cutoffs on all three scales described as "notable."
Lalos *et al.* (1985a)	24 couples undergoing female tubal microsurgery for infertility	Measured at 2 timepoints (1 month before and 2 years after sugery): Eysenck Personality Inventory	Women and men did not differ from norms at either time.
McEwan *et al.* (1987)	Clinic samples of: –45 infertile men –65 infertile women Both groups sampled from clinics	General Health Questionnaire (GHQ) Social Adjustment Scale (SAS-SR) Derogatis Sexual Function Inventory (DSFI) Quantity-Frequency Alcohol Use (Q-FAU)	Purpose of study was to predict adjustment, and norms on scales given only for GHQ. 40% women and 13% men experienced severe distress on the GHC (scores above norms).

Garcia *et al.* (1985)	49 anovulatory infertile women in a clinical drug trial	SCL-90 MMPI Eysenck Personality Inventory Langner Psychiatric Symptoms Mood Analog Scale Semantic Differential procedure Social Adjustment Scale Derogatis Sexual Functioning Mooney Problem Checklist	Nonpathological levels of anxiety, depression, and changes in marital and sexual function.
Bell (1981)	10 infertile couples starting treatment 10 couples in treatment	Sexual Experiences Scale Delusions-Symptoms-States Inventory (DSSI) measures state anxiety and depression Social Adjustment Scale (revised SAS-SR) Work, Leisure, & Family Life Questionnaire	Slightly higher than normative rates of emotional disturbance were observed. Marital, sexual, and social adjustment scores are not compared to norms, but appear slightly low.
Wiehe (1976)	22 couples applying for adoption	Adjective Checklist (ADL)	No means presented.

life satisfaction, affect, well-being, coping, social support, anxiety, and depression in 300 married couples awaiting IVF treatment. They also report more favorable family functioning in the couples, and they observed some atypical personality patterns in women such as higher-than-average need for harm-avoidance and nurturance. Freeman, Boxer, Rickels, Tureck, and Mastroianni (1985) found scores on the MMPI and Taylor Manifest Anxiety Scale to be in the normal range for 200 couples entering IVF treatment. Likewise, Fagan, Schmidt, Rock, Damewood, Halle, and Wise (1986) found normal sexual functioning and normal levels of distress in 45 couples currently in IVF treatment. Distress, sexual satisfaction, and marital satisfaction scores were in the normal range among 63 couples in infertility treatment in a fourth study by Daniluk (1988). Relationship changes, such as changes in trust, communication, or intimacy were either nonexistent or positive in this study. Also, women were significantly more distressed than men at the time of diagnosis. Fifth, Garcia, Freeman, Rickels, Wu, Scholl, Galle, & Boxer (1985) found nonpathological levels of anxiety and depression, and changes in marital and sexual functioning among 49 anovulatory infertile women in a clinical drug trial. Scores on the Eysenck Personality Inventory were normal for 24 couples undergoing female tubal microsurgery for infertility in the final study (Lalos, Lalos, Jacobsson, & von Schoultz, 1985a).

Forty percent of infertile women (n = 65) and 13% of infertile men (n = 45) experienced severe distress using normative cutoffs on the General Health Questionnaire in a study on predictors or adjustment to infertility (McEwan, Costello, & Taylor, 1987). In a study by Dennerstein and Morse (1985), scores on anxiety, self-esteem, and identification with the female role were higher than norms among 30 couples ready to start IVF treatment. Slightly higher than normative rates of emotional disturbance were observed by Bell (1981) among 10 infertile couples starting treatment and 10 couples in treatment. Twenty-three percent in the sample were distressed versus 5% in the general population. There were also some indications of sexual dysfunction and social maladjustment in the sample but these results are less interpretable. Link and Darling (1986) report notable percentages of infertile individuals (43 couples and 17 women) above clinically significant cutoffs on scales measuring depression, marital satisfaction, and sexual satisfaction, but norms are not provided for interpretation. In the final study of the eleven, Wiehe (1976) does not present sample means for 22 couples applying for adoption on the Adjective Check List which was used to assess defensiveness, self-confidence, lability, personal adjustment, and intraception.

In summary, the large majority of studies of this type do not find abnormally high levels of emotional distress or problems in esteem, marital, or sexual function among infertile individuals. Studies which do re-

port variations from normative levels on standard measures tend to involve smaller samples and less established measures. As in the previous section, there are indications in this group of studies that women experience more distress than men (McEwan *et al.*, 1987), and that infertility can improve marital or family functioning (Daniluk, 1988; Hearn *et al.*, 1987). Furthermore, several studies indicate wide variability in psychological functioning; many individuals are described as experiencing some degree of distress, even if the sample as a whole is not above clinically derived cutoffs (e.g., Daniluk, 1988).

Studies with Control Groups But No Standard Measures

The five studies of this type are outlined in Table 4. Two of the five report no differences between infertile groups and control groups, and one reports clear differences. The other two report a few differences, but predominantly find none. For example, Mai, Munday, and Rump (1972) conducted psychiatric interviews with matched groups of 50 infertile and 50 fertile couples. The infertile men and women did not exhibit significantly more neuroticism, psychoticism, or sexual difficulties, and the marital relationship was rated as good or very good for about 80% of both groups. However, infertile wives exhibited significantly more hysterical and aggressive personality disorders than the fertile wives, and showed some evidence of ambivalence and difficulties concerning sexual relationships.

Nesbitt, Hollender, Fisher, and Osofsky (1968) studied 18 infertile women and 18 fertile control women through psychiatric interview and projective tests. The authors report that infertile women displayed somewhat more anxiety about sibling rivalry and more guilt than control women, and less anxiety about oral eroticism. Also, control subjects perceived nurturant tachistoscope pictures more rapidly than did infertile patients. No differences on other dimensions including anxiety about heterosexual relations were observed.

McGrade and Tolor (1981) conducted a retrospective study of 126 couples who had been in infertility treatment, 82 of whom had become pregnant and 44 of whom had not. A 30-item original questionnaire was used to assess the impact of infertility on husbands and wives. No significant differences between the two groups were found in self-worth, self-image, sexuality, sexual function, marital or emotional impact, although there were differences by gender in both the successful and unsuccessful groups. For example, women in both groups reported more emotional distress, self-image damage, and questions about their sexuality than their husbands.

Lalos, Lalos, Jacobsson, and von Schoultz (1985b) interviewed 30

Table 4. Designs with Control Groups But No Standard Measures

Authors	Sample/control groups	Method and measures	Results
Mai *et al.* (1972)	50 infertile couples 50 fertile couples	Psychiatric interview	No differences between groups in neuroticism, psychoticism, or sexual difficulties. Infertile wives exhibited significantly more hysterical and aggressive personality disorders than fertile wives and showed some evidence of ambivalence in sexual relationships.
McGrade & Tolor (1981)	126 couples previously in infertility treatment (82 now pregnant and 44 still infertile)	30 Item mailed questionnaire	No significant differences between groups in self-worth, self-image, sexuality, sexual function, marital impact, or emotional impact.
Nesbitt *et al.* (1968)	18 infertile women 18 fertile control women	Psychiatric interview & projective tests	Infertile women displayed somewhat more guilt and anxiety about sibling rivalry than control women, and less anxiety about oral eroticism. Control women perceived nurturant tachistoscope pictures more rapidly. No differences on other dimensions including anxiety about heterosexual relations observed.
Lalos *et al.* (1985b)	30 women undergoing tubal microsurgery 30 pregnant women 101 pregnant women 459 women planning abortion	Interviewed before and two years after surgery. Report about one open-ended item on reasons for wish to have child.	No differences between groups observed in motivations for childbearing.
Eisner (1963)	20 infertile women in treatment in private practice 20 fertile women	Rorschach	Infertile women were significantly more distressed.

women just before and two years after they underwent microsurgery for tubal infertility. These women were compared to two samples of pregnant women ($n = 30, n = 101$) and to 459 women planning an abortion in their answers to an open-ended question about reasons for wanting to have a child. In general, the motives of infertile women did not differ from those of women in the control groups.

Eisner (1963) administered the Rorschach to 20 infertile women under treatment in a private practice and to 20 fertile women under treatment in private obstetrics and gynecology practices. Blind ratings of the protocols by five experts showed infertility patients to be significantly more emotionally disturbed than matched controls.

In sum, the majority of results across the four studies indicate no difference between infertile groups and fertile control groups. Where there are indications of difference, they tend to reflect the focus of studies on psychodynamic or psychopathologic theoretical premises (e.g., anxiety about sibling rivalry, hysterical personality tendencies). One problem with these results is the lack of information about the reliability of the data. That is, it is not often apparent whether more than one judge independently rated interview material. Lack of reliable coding of data limits the usefulness of some results in drawing conclusions about the effects of infertility.

Studies Without Control Groups or Standard Measures

Both of the studies that use neither control groups nor standard measures document adverse sexual effects of infertility (Berger, 1980; Keye, 1980). Keye (1980) interviewed 91 infertile women about the effects of infertility on their sexual functioning. Subjects also completed questionnaires. Rates of sexual dysfunction were about the same as for fertile women in the population. However, 58% reported altered self-image, emotional distress, physical problems related to infertility, or decreased enjoyment of sex as a result of the need for scheduled coitus. Berger (1980), who conducted unstructured interviews with 16 couples in which the husband had been diagnosed as infertile, reports that nearly three-quarters of the men experienced impotency. Also, 14 of 16 wives were angry with their husbands or experienced psychiatric symptoms or conflicted dreams.

Some of the studies reviewed earlier included results with nonstandard measures that are consistent with the results of these two studies (Lalos *et al.*, 1985a). For example, Freeman *et al.* (1983) found women in treatment for anovulation reported more inhibited sexual attitudes than comparison women. The authors suggest that this finding can be attributed to the effects of infertility treatment on sexual attitudes.

In general, the studies in this group suggest that sexual difficulties may be common in infertile couples, although it is difficult to draw conclusions, given the lack of standard measures and control groups in research designs. Existing standard measures of sexual functioning have been used very rarely in infertility research to date, with the exception of Fagan *et al.* (1986) who found normal sexual functioning in couples in IVF treatment. This area is one deserving further methodologically rigorous investigation.

Conclusions from the Empirical Research

In summary, the empirical evidence does not clearly indicate that negative effects accompany infertility, although there is some evidence of adverse effects in a few studies. If the investigations are weighted according to quality, as reflected in sample size and measures, the picture focuses much more clearly. Empirical evidence from scientifically rigorous research on the psychological effects of infertility does not support contentions that specific reactions are common. On the contrary, it appears that there are few or no well-established divergences from normal levels among infertile people who have been studied thus far. Although individual studies find abnormally high levels of depression (McEwan *et al.*, 1987) or low levels of self-esteem (Freeman *et al.*, 1983), several others have failed to replicate these findings. Thus, it is difficult to conclude that these reactions are common among people experiencing infertility. With further research, it is possible that the picture would change, but currently available, methodologically rigorous research suggests that the majority of people with infertility do not experience clinically significant emotional reactions, loss of self-esteem, or adverse marital and sexual consequences. If anything, the effects of infertility on the marriage appear to be positive as often as negative, as measured by self-report. On the other hand, there are indications that infertility affects views of one's self as potent and also, the discrepancy between present and ideal selves (Freeman *et al.*, 1983; Platt *et al.*, 1973). Finally, effects on sexual functioning appear to be prevalent and are worthy of further attention (Seibel & Taymor, 1982).

INTEGRATING THE DESCRIPTIVE AND EMPIRICAL RESEARCH

The conclusions of the anecdotal-descriptive work on infertility and the empirical research literature on infertility are somewhat discrepant. The former concludes that a variety of psychological reactions are common in infertile individuals. The latter reports little or no consistent, strong evidence of these effects of infertility. What are some explanations

for this discrepancy? One possibility is that the empirical research to date has not adequately tested the issues. Another possibility is that the descriptive literature exaggerates or misrepresents the experience of infertile people. Both of these are discussed below.

Regarding the research literature, either samples or measures could be the cause of underreporting psychologically significant effects of infertility. The samples studied to date have usually been individuals in treatment, often in IVF treatment, and typically just beginning treatment. This is a time of hope and possibly of more adaptive coping for many couples who are infertile; couples may not be as distressed at this time, or as likely to express problems. Would couples who are not in treatment show the same effects, such as couples seeking adoption, for example? Similarly, would couples at the end of treatments, such as *in vitro* fertilization, exhibit low levels of clinically significant dysfunction? These questions have also been raised in a review paper by Edelmann and Connolly (1986). One study that examined the psychological state of 44 couples who had not become pregnant after treatment found no differences compared to couples who became pregnant after treatment on many variables such as self-esteem, sexual function, and emotions (McGrade & Tolor, 1981). However, this study should be replicated with a larger sample and standard measures before concluding that couples with different infertility experiences are similar in their psychological responses.

Regarding assessment, one possibility is that most standard measures are too global and not sufficiently sensitive to the distress and personal changes that accompany infertility. Infertile individuals may not be clinically depressed or anxious, but they seem to be experiencing high levels of stress that are subjectively worse than anything they have previously experienced. The one exception is the use of the Semantic Differential to assess infertility effects; two studies using this procedure found effects of infertility on self-views (Freeman *et al.*, 1983; Platt *et al.*, 1973). It should be noted, however, that these are not necessarily clinically significant effects.

Another concern with assessment is that self-report measures may be susceptible to social desirability bias. It is understandable that infertile couples would want to present their emotional state in a positive light, especially if they are beginning treatment. Being accepted for treatment is often difficult, and the cheerful, well-adjusted couple may be seen as a better candidate emotionally, especially for highly selective treatments such as IVF. In this regard, Spencer's (1987) comments may be typical of some practitioners' beliefs:

> Only after they have worked through their feelings of anger, guilt, and depression and have successfully isolated their sense of themselves and their sexuality from their infertility can couples tackle the new challenge of pursuing alternatives to infertility (i.e., artificial insemination, adoption, in vitro fertilization, child-free living). (p. 226)

Such remarks demonstrate the pressures on infertile couples to present themselves as well adjusted. In addition, a method of coping with infertility and its treatment may involve perceiving the situation more favorably than it objectively warrants. Maintaining hope and an optimistic view may enable the couple to persevere in the quest for a child, and many people believe that a positive attitude will improve the chances of conception.

There are some indications that men in couples experiencing infertility are higher in socially desirable response bias than fertile men (O'Moore *et al.*, 1983). This may help explain why women appear more distressed by infertility than men in many of the studies. On the other hand, gender differences in distress may be due to the fact that women are often more involved in treatment. Or, women and men may cope with infertility in different ways resulting in different levels of distress. Finally, true differences in the extent of emotional response to infertility may exist between men and women. Problems of self-report assessment methods and of confounded variables must be addressed for us to draw firm conclusions about the effects of infertility, and about gender differences in these effects.

Although there are flaws in the research literature, such as those just noted, we must also entertain seriously that the descriptive literature exaggerates the plight of the infertile individual. The mental health professionals who write these articles typically observe a select subset of the infertile population, the individuals who are having the most difficulty adjusting. Individuals who adjust quickly and successfully are not likely to be observed in clinical settings, particularly if they do not persist in seeking treatment. Thus, the descriptive literature may exaggerate the negative effects of infertility.

The most likely explanation for the discrepancy between the descriptive and research literatures, in our view, is that there is enormous variability in reactions to infertility. Variability in psychological responses has also been noted in other populations experiencing undesirable life events. A careful review by Silver and Wortman (1980) suggests that responses to loss of a loved one, diagnosis of illness, sexual assault, and other negative life events are characterized by large individual differences in the extent to which particular emotions such as depression, anger, and anxiety are experienced. Some individuals experience these responses and others never do. This point appears to be applicable to infertility, as well. Infertility is many different medical conditions, as described in an earlier chapter (Davajan & Israel). Thus, it is likely to be a different psychological experience for individuals with different circumstances and the experience may change over time. From this perspective, it is not surprising that the empirical research on infertility finds few or no normative negative reactions.

Another discrepancy between the descriptive and empirical work on

infertility concerns the sequencing of emotional reactions or stages. Several of the descriptive reports assume that stages of emotional response exist, although the empirical research has not addressed this issue yet. Appropriate longitudinal studies have not been conducted and are necessary to test stage theories. Silver and Wortman's (1980) review on reactions to undesirable life events indicate that, in general, people do not experience similar reactions at the same point in time or in the same sequence in response to loss (see also Wortman & Silver, 1987). For example, some individuals experience anger early on whereas others do not experience anger until months or years later, or not at all. An individual may also vacillate between emotional states, experiencing anger or depression repeatedly rather than in stages. These facts about emotional responses to loss and life events may help further to account for the absence of clear patterns of adverse reactions across empirical studies.

It appears that generalizing about the psychological consequences for all infertile people may be misleading. If generalizations are necessary, better population-based studies are needed that randomly sample a large number of men and women in the community and administer a large set of standard psychological measures tailored to infertility. Such studies would need to control for the large variability existing in diagnosis and treatment variables. Ideally, future studies would be longitudinal and would be based in past research on similar types of loss and stress.

In conclusion, on the basis of what is known at present, it appears that the average infertile individual does not experience severe or clinically significant distress, marital problems, sexual problems, or other psychological difficulties, nor is there a set sequence of emotional reactions. Thus, the psychopathological approach to the study of infertility that underlies the descriptive literature appears to be inaccurate as a general model. However, a minority of infertile people seems to experience these effects, and many individuals experience stress. A more appropriate approach to the study of psychological responses to infertility, in our view, is the stress and coping perspective adopted in this book.

INFERTILITY AS LIFE STRESS

As stated at the outset of this chapter, infertility is not a single event, but a stressful process. The process initially involves threat, and for many couples, this threat is transformed over time into circumstances of loss. The extended nature of infertility, the fact that it is a threat that gradually becomes a loss for many, and the constant ambiguity regarding its ultimate outcome are important features of this form of life stress that influence psychological reactions and have implications for adjustment.

Virtually all individuals who desire to have children will experience infertility as stressful, although the degree of stress may vary greatly from mild to severe. One of the greatest sources of stress identified in the literature is medical treatments (Cook, 1987; Domar & Seibel, 1990; Seibel & Taymor, 1982). Stress may increase as time passes without success in treatment (Edelmann & Connolly, 1986). Although stress may be experienced by the vast majority of infertile individuals, variations as a function of time, treatments, prognosis, gender, and other factors are to be expected (Edelmann & Connolly, 1986).

PLAN FOR THE NEXT SECTION OF THE BOOK

If we conclude that there is considerable variation in reactions to infertility, the next steps are to identify who is at greatest risk for adverse reactions, and to learn how we can target individuals at risk. One contribution of the chapters in the next section is that they provide information about these issues. Each chapter applies a set of theoretical constructs from the stress and coping literature to the study of infertility. The first chapter concerns social relationships and social support (Abbey, Andrews, & Halman, 1990). The second chapter is on coping and cognitive appraisal (Stanton, 1990). The third chapter focuses on causal explanations or attributions (Tennen, Affleck, & Mendola, 1990). The next is on perceptions of control (Campbell, Dunkel-Schetter, & Peplau, 1990), and the last is on cognitive processes following stress and loss (Clark *et al.*, 1990). Most of these chapters contain results from new studies of infertile individuals. Altogether, the following chapters offer theoretically and empirically based knowledge about adjustment to the stress of infertility and ideas for future research.

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