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A longitudinal investigation of the impact of IVF treatment on marital satisfaction

being a Dissertation submitted in partial fulfilment of the requirements for the Degree of Doctor of Clinical Psychology.

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By

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ABSTRACT.

This longitudinal study aimed to investigate into the impact of IVF treatment on marital satisfaction. The study was based upon the psychological sequelae model of infertility and encompasses the framework of the family systems theory.

The study consisted of two groups, an IVF group (10 couples) and a comparison group (16 couples). Measures of marital satisfaction (Golombok-Rust Inventory of Marital State, Rust, Bennun, Crowe & Golombok, 1988) and marital happiness (Marital Happiness Scale, Azrin, Naster & Jones, 1973), as well as measures of mood and emotional state (Hospital Anxiety and Depression Scale, Zigmond & Snaith, 1983) were obtained before starting treatment, after the completion of treatment and at a one-month follow up.

The results of the study found no significant differences between the two groups or between the sexes in each group on measures of marital satisfaction, happiness, depression or anxiety at the pre, post and follow up stages.

Responses to additional questions given to the IVF group at the post treatment stage, suggested that undergoing IVF treatment had a positive effect on individuals' marriages and a sense that it had brought them closer together.

The implications of these results and possible further experimental work is discussed.

CONTENTS

INTRODUCTION

Infertility

Infertility is medically defined as the inability of a couple to conceive after 12 months of regular intercourse without contraception (Office of Technology Assessment [OTA], 1988.) However, the definition of infertility is used more in reference to screening couples for treatment, and not as a measure of sterility, which is a more permanent condition (Pasch & Christensen, 2000.)

It is estimated that around one in six or seven couples experience difficulties conceiving a child and need specialist help at some time in their lives (Chambers, 1999.) It has been suggested that as many as half of couples who have met the medical definition of being infertile are eventually successful in bearing a child, either through medical intervention or simply with the passage of time (OTA, 1988.)

When the need of producing an offspring is frustrated, as experienced by couples diagnosed with infertility, many look for assistance to aid them in their pursuit to reproduce. With the advancement of medical technology, there are many treatment options available to infertile couples. One such treatment and the main focus of this study is that of *In Vitro Fertilisation (IVF),* this procedure is now discussed in more detail.

In Vitro Fertilisation (IVF)

There is a huge spectrum of causes of infertility and a range of treatment options available to both males and females (Chambers, 1999.) One treatment used and the main focus of this study is that of IVF.

IVF is an assisted form of conception, whereby, the female egg and partner or donor sperm are collected and placed together, with fertilisation occurring outside the body in laboratory conditions, and the embryo being transferred to the uterus up to 48 hours later (Chambers, 1999.)

For many couples, whether they have female factor infertility or combined male-female factor infertility, IVF represents the last reproductive opportunity in the quest for a biological child (Leiblum et al, 1998.)

The perception of IVF in recent years has changed, from being a controversial experimental procedure, to now, a more generally accepted treatment for infertile couples. However, concern has been expressed that the rate of development of the technology has outpaced efforts to document the anticipated and unexplored social consequences (Braverman & English, 1992.) This has led to work on the legal, ethical and moral issues raised by the development and use of reproductive technology; with concerns about the physical and psychological well-being of the parents experiencing IVF and their children who are its product only recently being researched and addressed (McMahon et al, 1995.)

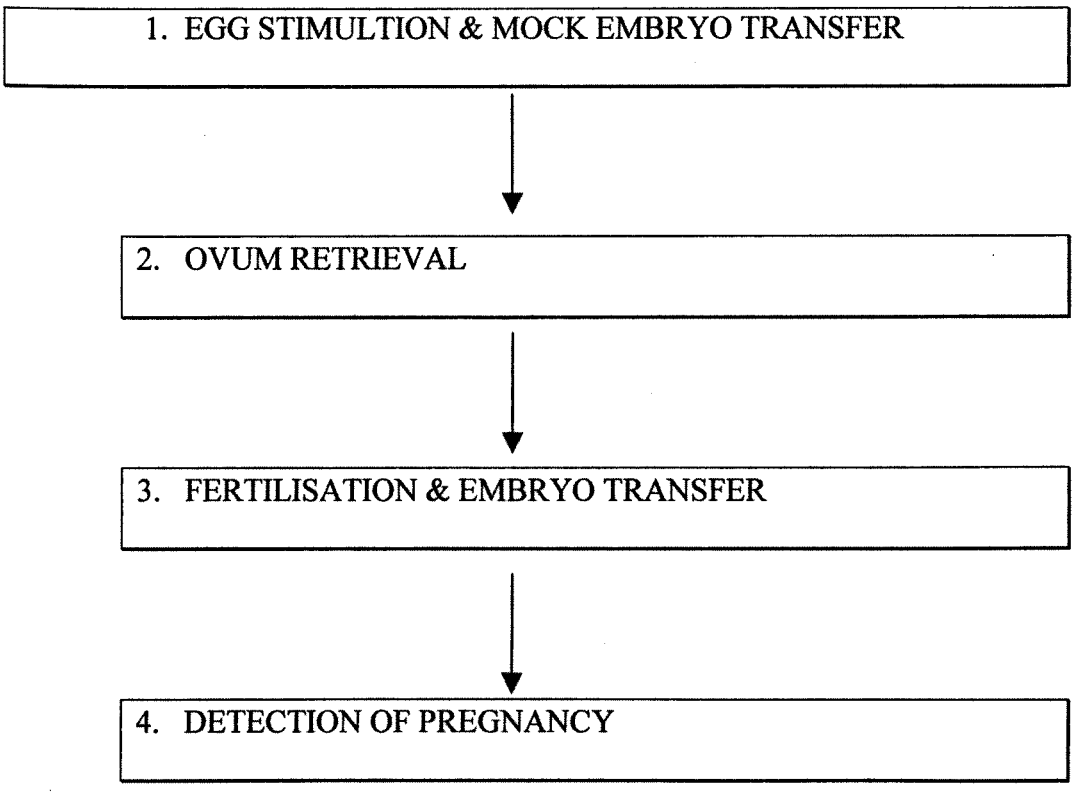
Selection criteria for IVF treatment:

The success rates are poor once a woman is aged 40 years or over. Therefore, IVF treatment is generally only offered to those under 40. Treatment is only offered to woman over 40 years of age following counselling and tests to ensure the ovaries are functioning properly. A couple have to be married or in a long term, stable relationship of at least 2 years, and due to legal obligations to the welfare of existing children and any child born as a result of any treatment, checks have to be made regarding this with the G.P. Treatment can be refused if any doubt about such welfare exists. Funding is also a major issue facing a couple looking to undertake IVF treatment. Couples either have to fund themselves or can apply to see if they are eligible for funding, from their local health authorities.

The IVF Procedure

There are several stages to IVF treatment, with each stage being carefully monitored. However, problems can occur which mean the treatment cycle has to be abandoned. This doesn't necessarily mean however, that a couple can't attempt another cycle. The treatment procedure will now be outlined in more detail.

Figure 1: The stages in an IVF treatment cycle.



1.Stimulation of egg production & mock embryo transfer:

The treatment cycle starts with the dampening down of the reproductive hormone (Follicle Stimulating Hormone, FSH) release from the women's pituitary gland. This is referred to as 'down regulation' of the pituitary. It is the hormone FSH that stimulates the follicles that contain the egg cells. Better IVF pregnancy results are achieved by temporarily suppressing the release of reproductive hormones from the pituitary gland. The women achieves this by taking specific drugs either in the form of a nasal spray or as an injection on day 21 of her

menstrual cycle (e.g. 7 days before the start of a period), then the only FSH stimulating the ovaries is from the drugs. If it is the first treatment cycle, a mock embryo transfer may be required, this helps then plan what is required for the individual when it comes to putting the embryos back later in the cycle. Treatment with FSH can then commence when a scan has confirmed that the woman has responded to the drugs and her ovaries appear inactive. The day of the first injection of FSH will be referred to as day 1 of the treatment (usually around day 28 of the menstrual cycle). Daily injections continue and scans repeated until the follicles have grown large enough for ovum retrieval (18-20 mm in diameter).

2. Ovum retrieval:

The semen sample is collected and taken to the laboratory where it is prepared and stored in an incubator until required. The eggs are then collected from the women by one of two methods, laparoscopy or ultrasound-directed recovery.

A laparoscope is like a slim telescope and is a fibre optic instrument and can be inserted through an incision made normally just below or through the navel and relays pictures of the inside of the body for direct observation. Two more incisions are made, one for small forceps to search and hold the ovaries and the other for a needle through which the eggs are sucked out.

The ultrasound-directed recovery was the method of ovum retrieval favoured by the IVF Unit used in this study. Ultrasound–directed recovery involves a needle

being passed through the vaginal wall into each ovary separately, the ultrasound pictures helps the doctor to identify the right location. The needle tip is inserted into each ripe follicle and the fluid containing the egg is aspirated. The partner is invited to be present during the procedure, as he can be there for support as well as to share in the experience. Pain relief is given prior to the procedure by mouth to provide long acting pain relief. A cannula is also sited in an arm vein to allow injection of sedative and a stronger painkiller, for rapid pain relief during the retrieval. There is a whole separate literature that exists on the pain experienced during IVF treatment (e.g. Cooper et al, 2000), but this will not be discussed here. Every effort is made to find an egg in each follicle, but this is not always possible. The procedure will be repeated on the other side for the other ovary. This procedure can be carried out on an outpatient basis and the extraction can possibly yield around 20 eggs (Dyson, 1995).

3. Fertilisation and embryo transfer:

Once collected the eggs are kept in the incubator until later in the day. The sperm and egg are placed together and then returned to the incubator for approximately 18 hours. A check is made to see if fertilisation has occurred, fertilisation may occur over the next 2-3 days. Embryo transfer then takes place 2-3 days after the egg recovery. The maximum number of embryos that can be transferred back inside the women is 3. The more embryos transferred then the chance of pregnancy is increased, however, the couple is at risk of multiple pregnancy. If pregnancy occurs after 3 embryos are replaced there is approximately 25% chance of having twins and 5% chance of triplets. The age of the woman and the grade of the embryos influence the risk of multiple

pregnancy. The best quality embryos are chosen and loaded into an ultra fine plastic catheter or cannula, which is then passed via the vagina up through the cervix and the embryos are flushed into the uterus. No anaesthetic or sedation is usually required. The cervix is usually dilated for this procedure and the natural hormone progesterone is sometimes administered, as it prepares the inner lining of the womb for implantation (Dyson, 1995).

4. Detection of pregnancy:

If treatment is unsuccessful, a period should be expected approximately 2-3 weeks after ovum retrieval, although this has been known to be as early as 1 week and as late as 3 weeks afterwards. If a period has not occurred 3 weeks from the date of ovum retrieval, there is a possibility of pregnancy, and a test can be carried out. Waiting for the outcome can be one of the most stressful times of the entire treatment.

It is rare that a cycle of IVF is abandoned, and the specialist IVF units make every effort to ensure all investigations are complete and within normal limits before starting treatment. However, sometimes there is no option but to abandon treatment during the cycle. Some reasons for it being abandoned or delayed include, lack of ovarian activity due to cysts, poor response to drugs by the ovaries, no eggs may be retrieved at ovum retrieval, fertilisation may not take place despite good quality sperm and eggs or ovarian hyperstimulation syndrome, this occurs when ovaries overreact to the drugs. This experience of having a treatment cycle abandoned must also be very stressful and upsetting for

the couples involved and they then have to decide whether to attempt such infertility treatment again in the future.

Therefore, the IVF procedure as outlined above appears quite an intensive procedure, which could potentially be considered quite stressful for the couples, as well as involving a lot of uncertainty and unpredictability. Having focused on the IVF procedure itself, the next section focuses on the empirical research that has been conducted into the possible emotional and psychological impact of undergoing IVF treatment.

The emotional and psychological impact of IVF treatment.

IVF treatment is widely reported to be emotionally demanding and highly stressful (Mazure & Greenfeld, 1989). Eugster et al (1999) carried out a review of psychological research on IVF. It would appear that both men and women experience waiting for the outcome of IVF treatment and a subsequent unsuccessful IVF as most stressful. Common reactions during the IVF process include anxiety and depression, while after an unsuccessful IVF, feelings of sadness, depression and anger prevail. Eugster et al (1999) also suggest psychosocial factors, like ineffective coping strategies, anxiety or depression are associated with a lower pregnancy rate following IVF procedures.

A study was conducted by Csemiczky et al (2000) into the influence of stress and state anxiety on the outcome of IVF treatment. Comparisons were made using state anxiety, personality profile and stress hormone measures in women entering IVF treatment with those of fertile controls and then relating these to the

subsequent outcome. The main conclusions drawn were that infertile women have a different personality profile, in terms of more suspicion, guilt and hostility as compared to the fertile controls, perhaps as a response to their infertility. Psychological stress may also affect the outcome of IVF treatment, as state anxiety levels among those who did not achieve pregnancy were slightly higher than among those who became pregnant. However, only small numbers were used in each group, so caution must be exercised when generalising these results to the female population as a whole.

Depression also appears frequently in the literature as being a possible factor influencing IVF treatment. Demyttenaere et al (1998) examined the influence of depression levels and coping on IVF outcome in women, taking into account the cause of infertility. Using a sample of 98 women undergoing IVF treatment they found those who did not achieve pregnancy reported increased expression of negative emotions. When the cause of infertility was indicated to be due to the female there was an increased depressive symptomology, which was associated with lower pregnancy rates as opposed to when there was a male indication for IVF.

However, Milad et al (1998) report that the association between stress and reproductive outcome is still unclear. In their study, 40 patients undergoing IVF treatment underwent psychological and hormonal testing on 3 separate occasions early in pregnancy and were subsequently followed to delivery. High levels of stress were evident in all patients and no difference in hormonal markers between patients who had successful pregnancy or experienced an adverse outcome e.g.

miscarriage, was found. Therefore concluding that high levels of anxiety and stress do not necessarily result in adverse pregnancy outcome.

Boivin et al (1996) examined the stress associated with the IVF process concurrently with other physical and relational variables and compared these with reports given by the same women, during a menstrual cycle without IVF treatment. Twenty women completed daily record sheets, keeping a record of negative emotions, physical reactions and items related to marital and social relationships. They completed these daily and posted them to the researchers each day. Records were kept during an IVF cycle and then during a menstrual cycle without any IVF treatment. The results found that although the daily ratings given during IVF treatment was associated with more stress, optimism, physical discomfort and greater changes to marital and social relationships in general; they propose that the stress associated with the actual IVF treatment itself, is less noticeable when examined in the context of the reactions in these other areas of functioning. Boivin et al (1996) suggest that the emotional impact of IVF might be less pronounced during the actual treatment process than is generally assumed from studies focusing on the impact of treatment failure. However, only a small sample size was used in this study, so generalisations of their conclusions can only be made with caution. The small numbers may have been due to the intensity of the work involved for the participants, as they were required to submit a daily record every day for a number of months.

Overall, it would appear that although the IVF procedure is recognised as a potentially emotional and psychologically demanding procedure, the direct effect of these factors and their association with the success of IVF still remains

uncertain. Due to the nature of the IVF population many of the studies in this area have only used small samples. Another important consideration is that the results of previous studies may be confounded and less comparable, with regards to which stage of treatment measures were recorded at and the cause of the infertility of couples within a sample.

Research has also been conducted into whether specific individual characteristics can have an influence on IVF treatment and it's success, some of the studies that have been conducted in this field are described in the next section.

The influence of individual characteristics on IVF treatment.

Is it possible that the characteristics of an individual and the type of person that decides to enter an IVF programme can have some bearing on success rates? It was identified by Beutel et al (1999) that being of a low socio-economic status, of foreign nationality and women who have lack of partner support put couples at a higher risk of depression during IVF treatment. An acknowledgement of such characteristics, could potentially guide the clinician to be more aware of those couples more likely to require psychological support.

It has been suggested that coping mechanisms used by patients presenting for IVF have the capacity to influence the procedure. Different patterns of coping have been associated with factors such as gender, education, other stressors, depression, anxiety and overall psychopathology. If efforts are made to recognise and recruit the coping mechanisms of infertile individuals, this may

enhance their ability to participate effectively in treatment (Sonawalla et al, 1999).

Research in this area can be viewed as having the potential for offering vital information to those working within infertility services. If clear, precise, measurable individual characteristics or personality types are conclusively identified, psychological services in an infertility clinic can be of help, by identifying those individuals who are more likely to be vulnerable and this would then enable psychological interventions to be targeted towards those in greatest need (Guerra et al, 1998).

Research into infertility and in particular IVF treatment, has predominantly centred around women and their experiences. But of course, infertility and its treatment is an issue for both women and men, as a couple. Therefore, it has been of interest to examine different characteristics or responses between the genders to infertility and the IVF procedure.

Penngelly et al (1995) carried out a study of 28 couples using semi-structured interviews with partners being encouraged to place their own emphasis and meanings on their experience of infertility. It was found that couples experiencing infertility had a 'psychological division of labour,' with the woman tending to be viewed as the patient and carrying feelings of longing and distress, whereas the man appears to support and organise, and each relies on the other to do this.

Differences in daily emotional, physical and social reactions among husbands and wives, during IVF, were investigated by Boivin et al (1998). Results showed that both had similar response patterns to oocyte retrieval, fertilisation, embryo transfer and the pregnancy test. These stages were associated with the most significant changes in reactions for both spouses. The most important psychological determinant of reactions during IVF was uncertainty of treatment procedures. Spouses were equally sensitive to this uncertainty and both responded to it with ambivalent feelings, involving emotional distress and positive feelings of hope and intimacy (Boivin et al, 1998).

Beaurepaire et al (1994) evaluated gender differences in psychosocial adjustment to infertility and to IVF in a cross-sectional sample of 330 couples. 30% of husbands and wives experienced clinically elevated anxiety regardless of the stage of treatment. However, women having to undergo repeat cycles of IVF or embryo transfer were at further risk of developing clinically severe depressive symptoms. Interventions intended to reduce anxiety and depression, should also facilitate ongoing psychosocial functioning and could be implemented for couples at different stages of treatment (Beaurepaire et al, 1994).

Infertile women entering IVF treatment do not necessarily show signs of psychological maladjustment. The level of state-anxiety can be considered a situational response to the treatment stress. Infertility and its treatment are most effectively dealt with by women with a good personality disposition, a high level of self-esteem, who are satisfied with both their job and relationship with their husband and who are willing to adopt as a last solution to meet their maternal need (Bringhenti et al, 1997).

Edelmann et al (1994), claim that couples presenting for IVF are, in general well adjusted and appear not to be affected by past fertility history. They suggest this stability may partly be due to a process of self-selection, whereby only those who feel able to meet the emotional demands, reach this stage of infertility treatment.

However, despite indication in the literature that most couples presenting for IVF treatment are well adjusted, it is compulsory for some form of counselling to be offered to all entering IVF programmes, although not all couples accept this service. If treatment involves the use of donated eggs or sperm then counselling is mandatory. The counselling is there to help couples understand the implications of their treatment for themselves, their extended family and for any child born as the result of treatment.

Poehl et al (1999) reviewed the acceptance of psychotherapeutic counselling and its influence on pregnancy rates in Austria. By looking at the cumulative pregnancy rate, patients who accepted or underwent counselling had a higher pregnancy rate than those who did not. However, correlation does not imply causation and this may have been due to a self-selection effect. However, this finding can still only help to further encourage the use of psychological therapy as an essential aspect of the IVF procedure (Poehl et al, 1999).

Having outlined the IVF procedure itself and reviewed some of the research that has been carried out into the possible emotional and psychological impact of undergoing IVF treatment and the individual characteristics that may influence

treatment, the next section will now move on to looking at the diagnosis of infertility from a psychological perspective.

Models of infertility

There are two main theoretical approaches to infertility, the psychogenic infertility model and the psychological sequelae model, both of these are outlined in more detail.

Psychogenic infertility model

The psychogenic infertility model as termed by Berg and Wilson (1990), was originally proposed in the 1930s and became particularly popular during the 1950s and 60s. This model was based upon psychoanalytic theory and assumed that infertility was the result of psychopathology. If infertility had no organic cause, it was considered to be a defence against the dangers inherent in the procreative function. During the psychogenic infertility model's time of popularity, up to 50% of infertility problems could not be medically diagnosed or treated. Therefore, psychological explanations of reproductive problems in terms of causation or treatment were considered useful. However, the majority of the theories focused on the psychological disturbances in women, suggesting that neurotic conflicted feelings about motherhood or their own mothers prevented conception and the assumption of an adult role.

Due to the increased ability of medicine to diagnose and treat infertility, the psychogenic infertility model is no longer a favourable approach to explaining infertility. It is estimated that infertility of unknown etiology is now around 5% or less, eliminating the need or feasibility of psychological causes of infertility (Hammer Burns & Covington, 1999).

Psychological sequelae model

This model was developed in the 1970s and was based upon the work of Menning. The psychological sequelae model assumes that psychological difficulties are the consequence of infertility and not the cause. It was the psychological sequelae model that introduced the idea that infertility was an emotionally difficult experience and that it has an impact on all aspects of an individual's and a couple's life. This model includes the importance of the interrelationships that exist between the individual, couple, family, society and reproductive medicine, as well as an integration of a number of theoretical frameworks to provide an overview of the psychological aspects involved in infertility and the treatment approaches. The model includes the theory of ego and self psychology, developmental and crisis theory, grief and loss theory, cognitive-behavioural theory, family systems theory and gender-based theories (Menning, 1980). The nature of this study is based upon the psychological sequelae model and specifically encompasses the framework of the family systems theory. The family systems theory is described in more detail overleaf.

Family Systems Theory

The family systems theory is a systemic approach and focuses on the family system, structures and relationship interactions between the individual members and view any disturbances present within that context, as opposed to just looking at an individual's difficulties in isolation.

In relation to infertility, the family systems theory includes the impact of infertility on marriages, the couple, their families of origin, or the individual within the context of these relationship systems (Hammer Burns & Covington, 1999).

According to the family life stage model, there are a number of life stages that we are expected to pass through over the family's life cycle. Parenthood is one of the expected family life stages, however, infertility represents the inability to accomplish and proceed through this stage in the way expected. As a result, couples get stuck in the couple stage of the family life cycle and can often have difficulties adapting to the ambiguity that infertility and uncertain parenthood entails (Carter & McGoldrick, 1989). Therefore, for a couple, infertility can result in confused life tasks, uncertain roles and blurred boundaries in their relationship and also between their relationship and their family of origin (Matthews & Matthews, 1986).

The family life stage model can be considered to be similar to the developmental life stage model described by Erickson (1950), in that there are certain tasks we

have to achieve and stages to pass through in life. For example, Erickson (1950) describes the stage of intimacy versus isolation in early adulthood, this is characterised by our ability to form lasting and intimate relationships. This is followed by the stage of generativity versus self-absorption in middle adulthood, which is concerned with producing and guiding the next generation. Infertility can be viewed as blocking the ability to achieve intimacy and generativity. This can result in isolation and stagnation with individuals failing to mature, achieve developmental tasks, follow societal expectations and causing feelings of despair and abnormality (Menning, 1980). Therefore, these difficulties outlined above, could all potentially lead and contribute to problems developing within a couple's relationship.

It is the effects of infertility and its treatment on a couple's relationship that is the significant interest of this study, however, it is important to understand the psychology of intimate relationships, particularly marriage and what makes it satisfactory first. This is discussed in more detail in the following.

Marriage, relationships and satisfaction.

Most of the work and research carried out in the area of marriage and relationships can be predominantly found in the social psychology literature.

Marriage has been defined as one of life's great satisfactions and is associated with both physical and psychological well-being. Married people seem to have fewer physical problems and survive longer once diagnosed with serious physical disorders, than people who were never married or who were divorced (Sabini, 1995).

It can be stated that some relationships will become happy, satisfying and stable, while others will be filled with conflicts and problems and are likely to end sooner or later. One prominent feature that distinguishes happy couples from distressed appears to be the way they communicate with each other. Interactions between happier couples are characterised by problem-solving and open communication. The more they disclose their thoughts, express their feelings, show affection, understanding, empathise with the other's feelings and see their perspective the happier they are. Distressed couples show more conflict-avoidance, destructive communication and negative reciprocity (Buunk, 1996). Hirsch & Hirsch (1989) in their work with infertile couples found that couples who did not communicate with one another, were found to be at greatest risk for marital dissatisfaction.

Pasch et al (2002) have undertaken work looking into marital communication and adjustment among infertile couples. Through the use of interviews with 48 infertile couples they found that positive marital communication and adjustment is associated with husbands being involved and invested in fertility treatment. This result seeks to suggest that increased interest and involvement of the husband in treatment may lead to positive changes in couple communication about infertility, and to a more positive effect of infertility on the marriage. However, it should be remembered that correlation does not necessarily mean causation.

Happy and unhappy couples also differ in the way they attribute their marital problems. In accordance with attribution theory, couples low in satisfaction tend

to engage in maladaptive attributions, blaming their relationship problems on their partner and seeing the problems as global and stable (Buunk, 1996).

Traditionally, marital satisfaction was considered to be present if the members of the couple each fulfil their assigned sex roles. However, now it is felt not to be the degree to which couples see themselves as being complementary in role and personality that predicts marital satisfaction, but the degree to which they see themselves as similar. Some authors suggest that satisfaction in modern marriages is more a matter of emotional expression and companionship (e.g. Sabini, 1995).

One theory stated in the social psychology literature with regards to what makes a relationship satisfactory, is the Social exchange theory, this theory is explained in more detail below.

The Social exchange theory.

The social exchange theory (Thibaut & Kelley, 1959) states that the satisfaction of individuals in a relationship is dependent upon the comparison level, that is, the level of outcomes they believe they deserve from the relationship. An important determinant of the comparison level is relational comparisons, that is the comparisons with the partner.

Equity theory predicts that individuals will become distressed when the proportion of inputs and outcomes is not the same for both partners. The over-benefited will become distressed as they feel they receive more than they deserve

and the under-benefited feel distress because they receive less than they believe they deserve (Deaux et al, 1993). However, Clark and Mills (1979) would argue that relationships are not exchange relationships with an expectation of reciprocation of things done to each other, but are communal relationships in which partners respond to each other's needs. It is more important to feel that our partner is rewarding us by providing love, status, information and sexual satisfaction than to perceive perfect equity in the exchange of rewards.

Research has indicated that the effect of equity upon relational satisfaction is mainly found for individuals high in exchange orientation, that is, those that are strongly oriented to direct reciprocity, expecting immediate and comparable rewards when they have provided rewards for others. Satisfaction is not only related to what you see your partner as getting, but also to the outcome of comparisons with other individuals in one's reference group (Buunk, 1996). This may be an issue for infertile couples, in that their friends and peer group may be having children and starting a family and as they are struggling to achieve this in comparison to their reference group, satisfaction may be lower for them.

It is also claimed from a number of studies that egalitarian marriages where power is fairly evenly divided are the happiest. However, some authors suggest that perfect symmetry with regard to power has not yet been achieved and consider marriages in which the husband is dominant as happier than when the wife is dominant. They also suggest that coercion on the part of either partner is not associated with happy marriages (e.g. Sabini, 1995).

Another theory of relationships and what makes them work is that of the Investment model, this theory is described in the next section.

The Investment model.

Rusbult (1983) proposed the investment model to explain what makes people motivated to maintain their relationships and be committed to them. It is considered that the higher the satisfaction then the higher the commitment. However, as with social exchange theory, the investment model supposes that the perceived level of alternatives also affects commitment. How committed an individual is to a relationship, depends on the attractiveness of the alternative options to being in that relationship.

When developing a relationship, individuals will gradually close themselves off, behaviourally and cognitively from attractive alternatives. Even when a relationship suffers an unhappy period, and the alternatives are attractive, this does not necessarily mean the relationship will fall apart. One reason for this is due to the investment size, that is, the way the couple have become linked and invested time and energy, made sacrifices and engaged in things together that are important to them.

Therefore, this could be why despite the difficulties infertile couples experience, and the attractiveness of potential alternatives, they stick together and are committed to each other and their quest for a child, despite it being a difficult period in their marriage. Hirsch & Hirsch (1989) measured investment (amount of time and effort an infertile couple had invested in their infertility work) and

pressure (amount of perceived pressure, both internal and external to conceive) and found them to be related to marital and sexual satisfaction.

The next section looks at the possible relationship between the amount of marital satisfaction and the length of time that a couple has been married.

Marital satisfaction and length of marriage.

Research has suggested that the relation of marital satisfaction to how long the marriage has lasted is shaped like a U, with satisfaction first falling and then rising again. It has been suggested by many authors that marital satisfaction begins a sharp decline with the birth of the first child and begins to rise again after the last-born leaves home, indicating that children put a strain on marriages (e.g. Sabini, 1995). This finding is interesting when considered in the context of infertile couples. These couples are desperately seeking to have children, so their marriages may already be stressed. The whole procedure they endure to achieve a child, could also potentially be adding to the strain on their relationship and if the research is to be believed, actually having a child will in itself decrease their sense of marital satisfaction. Therefore, suggesting a potentially higher risk of feelings of marital dissatisfaction among infertile couples that go on to successfully have children through treatment.

From a social learning theory-cognitive approach it is considered that skills are required to maintain a satisfactory relationship over an extended period of time. Love and attraction are assumed not to be enough to sustain a relationship in the face of various obstacles in life's path. This seems particularly appropriate with respect to infertility, in which couples often need to learn a variety of new skills

in order to cope with the sometimes unique demands placed on their relationship (Newton, 1999).

Overall, humans are social animals, and we need relationships with others. We need these relationships in order to ward off anxiety, to obtain support, to survive, to evaluate responses and to raise our offspring. When these needs are frustrated, the consequences can be serious, including, depression, anxiety, despair, loneliness and other health complaints (Buunk, 1996).

Following the above discussion about the psychology of relationships and previous sections on infertility, the next section seeks to incorporate the two areas and really highlight the idea that infertility is a couple's issue.

Couples and Infertility

The experience of infertility can be considered a true couples issue and however it is examined this makes it unique and different from any other medical condition (Pasch & Christensen, 2000.) It is a couple's issue because, from a medical point of view, the diagnosis and treatment of infertility requires active participation of both members of the couple. In the past, infertility was viewed more as a women's problem, but it is now considered that the biological problem could equally be due to the male as to the female and more probably to be as a result of both partners (OTA, 1988.) Infertility treatment is one of the only medical treatments that invades the private aspects of couple relationships. At the end of the day, regardless of whom the biological difficulty lies with, both partners find themselves unable to have a child. As Pasch and Christensen

(2000) state; '...because infertility affects the couple as a unit, it presents unique challenges for the couple relationship.' (pg 246)

Having now considered IVF treatment itself and the research conducted into the psychological impact and individual characteristics influencing it, and discussed the psychological perspectives of infertility, marriage and relationships, and the impact of infertility on couples. The next section outlines some of the previous research that has looked specifically at infertility, IVF treatment and the effects of these on a couple's relationship, this being the main focus of this study.

Infertility, IVF and the effects on a couple's relationship and marital satisfaction.

The literature suggests a number of negative effects of the experience of infertility on a couple's relationship. Dunkel-Schetter & Lobel (1991) reviewed the descriptive literature and found negative effects on marital interaction and satisfaction are reported in 50 percent of the articles. Effects on marital interaction and satisfaction appear to consist of anger, hostility, resentment toward their spouse which may result in blaming a partner or feeling blamed, dissatisfaction with a lack of partner understanding and emotional support, feeling that their spouse is not equally committed to having children, anxiety about the status of their relationship (particularly by the partner with the biological problem), isolation from each other and a high likelihood of separation. However, the descriptive literature does suggest some positive

effects as well, including increased closeness and feelings of support from their partner (Pasch & Christensen, 2000). 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 (Dunkel-Schetter & Lobel, 1991). However, the effects on the sexual relationship are uniformly negative (Pasch & Christensen, 2000). Therefore, the literature suggests a mixture of both negative and positive feelings experienced by couples undergoing infertility difficulties.

The quantitative research using control groups, standardised measures and adequate sampling methods and size have been reviewed by Dunkel-Schetter & Lobel (1991) and Stanton & DanoffBurg (1995) and they concluded that the evidence consistently revealed no impairment in relationship or sexual functioning as a result of infertility (Pasch & Christensen, 2000). Studies conducted by Callan & Hennessey (1989) and Downey & McKinney (1992) of couples seeking treatment for fertility problems found that relationship satisfaction was higher in infertile couples than in controls who had no fertility problem.

Callan & Hennessey (1989) investigated the psychological adjustment to infertility of women with explained (52 women) and unexplained infertility (25 women) who where currently on an IVF program and compared these to mothers 54 women) and married women who were childless by choice (36 women) on measures of psychological and marital adjustment. Through the use of the Spanier (1976) dyadic adjustment scale, which provides a total score of marital quality, Callan & Hennessey (1989) found that both groups of infertile women

generally disagreed that infertility had negatively affected their marriages. On the scale of marital quality, infertile women had better marriages than mothers. The voluntary childless did not significantly differ from mothers or the infertile. The theory that marital satisfaction is shaped like a 'U,' with a decline after the birth of the first child could be used to explain why the mothers in this study by Callan & Hennessey (1989) where found to have more marital dissatisfaction.

Downey & McKinney (1992) carried out work primarily to investigate the psychiatric status of women presenting for infertility evaluation. Within this study they used The Partner Relationship Satisfaction Scale, which was adapted from Stuart & Stuart's (19730 Marital Pre-Counseling Inventory, which elicits information about the subject's satisfaction with a variety of aspects of their life with their partner, general optimism about their relationship, and an assessment of their partner's optimism about it. From a sample of 118 infertility patients and a control group of 83, the infertility patients reported being happier in their current relationships than did the controls and more optimistic about the future of these relationships. They also reported that their partners were happier and more optimistic about the relationships. When these findings were broken down by marital status, the married infertility patients were more satisfied than either the married or unmarried controls. Downey & McKinney (1992) also found that infertility patients differed from the controls on three indices of specific areas of the relationship. These were "trust in each other," "social interactions with relatives" and "management of children." No differences in the groups were found for past or current major depressive episodes, psychiatric symptoms, self-esteem and sexual satisfaction.

It is considered that any significant relationship and sexual problems are more likely to develop after extended periods of failure to conceive, but there have been few studies to date that have followed couples for long enough to adequately address this issue (Pasch & Christensen, 2000). Therefore, the quantitative research carried out appears more consistent in suggesting that there is no impairment to a couple's relationship as a result of infertility.

Leiblum et al (1987) studied 59 couples before and after a failed cycle of IVF. They found both women and men reported symptoms of depression, but that they reported high levels of relationship satisfaction compared with norms. Over 50 percent of couples reported improved communication, increased sensitivity to their partner's feelings and an increased sense of closeness as a result of infertility (Pasch & Christensen, 2000). These are all factors that have been identified in the social psychology literature, discussed previously, as contributing to marital satisfaction. Leiblum er al (1987) found only 2-4 percent reported decreases in these aspects of relationship quality and the remainder reported no changes (Pasch & Christensen, 2000).

In a study by Ravel et al (1987) it was found, after using retrospective assessments, more than half of the women in a sample of 47 couples undergoing infertility investigations reported some marital and sexual problems after the diagnosis of infertility, but that these problems subsided after the initiation of infertility treatment, but no control group was used in this investigation. The study by Ravel et al (1987) assessed the state of the marital relationship by using the Dyadic Adjustment Scale (Spanier, 1976) and sexual adjustment using the Golombok-Rust Inventory of Sexual Satisfaction (GRISS). However, compared

to the women, the males reported only minor increases in marital problems during the same period, the rise in frequency of sexual problems was more substantial, but it was still only a small proportion of that reported by the females. These findings suggest that women perceive their relationship as more adversely affected and that for men the effect is noted more in the sexual aspect of the relationship.

However, Benazon et al (1992) found that marital distress increased as treatment investigations were undertaken, as opposed to the suggestion by Ravel et al (1987) that this is the time when distress declines; also greater levels of marital dissatisfaction were observed in couples who had undergone extensive infertility treatment and did not conceive (Leiblum et al ,1998).

It has been suggested that treatment for infertility may produce both short and long term symptoms of psychological and marital strain. Berg and Wilson (1991) propose a stage model to infertility, which would include an acute phase in which the events involved with diagnosis and early treatment cause moderate stress that subsides rapidly, and a chronic phase in which repetitive unsuccessful treatment regimens gradually erode personal and marital coping resources. Therefore, overall distress would be expected to be comparatively higher at early and later phases of treatment.

Berg and Wilson (1991) carried out an investigation, which compared functioning of a cross section of 104 infertile couples from three stages of the medical investigation. The first stage was considered representative of adjustment during diagnostic procedures, coping with the diagnosis and initial

treatment regimens. Stage two reflected functioning when individuals have become adjusted to some aspects of the medical investigation, while current treatment regimens hold positive expectations of success. The final stage represented individuals who have not responded to previous treatment approaches and are consequently viewing the investigations as a protracted process, which might not result in successful pregnancy. On measures of marital adjustment, in this instance the Locke-Wallace Marital Adjustment Test, couples experienced normal levels of marital adjustment. However, analysis of the scores by the stage showed a downward trend such that couples in advanced stages of the investigation had borderline adjustment scores. Differences in functioning across the stages appeared more significant for women. Adjustment did not vary between stages one and two, but increased by stage three. This finding further supports the notion that impairment in marital satisfaction is more likely after repeated treatment attempts.

Abbey et al (1994) carried out one of the few longitudinal studies of infertility, they found that infertile couples who had a child over the 2 year course of the study on average reported more positive life quality but lower relationship satisfaction than couples who remained childless. It did not appear that the continued experience of failure to conceive resulted in significant relationship problems, and that any negative effect was less than that associated with becoming parents (Pasch & Christensen, 2000). This finding fits in with the theory that marriage length is shaped like a U, with marital satisfaction declining with the birth of the first child, as discussed previously.

In a study carried out be Leiblum et al (1998) marital strain was associated with the active phase of treatment particularly if extended, and was greater for couples who were unsuccessful in their parenthood quest. However, once treatment was abandoned and life had a chance to return to 'normal,' the marital satisfaction of childless women appeared quite similar to that of adoptive and biological mothers. It has been suggested that without a long-term prospective study to investigate the transition to parenthood of couples and marital satisfaction both pre and post parenthood, it is impossible to determine the long-term impact of children on marital satisfaction (Leiblum et al ,1998).

Lee et al (2001) carried out a study to compare the differences in distress, marital and sexual satisfaction in husbands and wives based on an infertility diagnosis. Their work was based on a sample of couples in Taiwan and their responses to 3 structured questionnaires given. Lee et al (2001) found females in couples where both were infertile expressed less marital and sexual satisfaction than their husbands. No difference in marital and sexual satisfaction was found between wives and husbands with unexplained infertility. Only wives with diagnosed female infertility expressed higher distress to infertility than husbands. No difference in psychosocial responses were found among husbands regardless of the diagnosis. Wives with a diagnosed female infertility experienced higher distress in self-esteem and less satisfaction in acceptance by in-laws than wives experiencing a diagnosed male infertility. Therefore, these findings suggest that the diagnosis of infertility is an important factor in assessing the differences in infertility distress and marital and sexual satisfaction between husbands and wives (Lee et al, 2001).

Therefore, there appears to be some difficulty in coming to a firm conclusion about the impact of infertility on marital satisfaction. This was highlighted by Cook et al (1989), in this research the authors used interviews and questionnaires to assess marital (Golombok-Rust Inventory of Marital State, GRIMS) and sexual functioning (GRISS), as well as anxiety and depression levels. The sample consisted of 59 women attending an infertility clinic in London and measures were taken retrospectively, 34 of their partners also completed questionnaires. They found 71 percent of women undergoing either IVF or artificial insemination using donor spermatozoa reported the experience had affected their marital relationship, they found a similar proportion of women indicated positive, as reported negative effects on their relationship. The remaining 36 percent stated both positive and negative effects. The data from the inventory completed by the men were coded in a similar way, 53 percent reported that infertility had affected their marital relationship. As with the women, a similar proportion felt that the effect had been negative as felt it had been positive.

Reports of the positive effects of infertility given in the interviews with the women on marital relationships, included responses such as, 'it's been like grief: we've shared it together' and 'We've always been close but it seems to have brought us closer.' Reports of the negative effects included responses such as, 'I went through a stage where I was really obsessed about it and we separated for about eight months' and 'we don't really make love any more – he says there's no point in it' (Cook et al, 1989).

Dunkel-Schetter and Lobel conclude that one reason for the discrepancy in the literature is due to the fact that there is substantial variability between infertile couples in how they are affected. Some couples experience serious relationship problems, whereas others emerge closer and more satisfied with their relationship than before. Therefore, maybe it is not that surprising that the quantitative research has not found any more distress in infertile couples, than others (Pasch & Christensen, 2000).

Other explanations have also been offered for the conflicting research findings about the impact of infertility on marital satisfaction. For example as reported in Leiblum (1997), Reading (1993) suggests that, "the methodologies used in many research studies may mask the subtle issues under study" (pg 151). He hypothesises that infertility adversely stresses couples who are already in conflicted relationships, but has a neutral or even positive impact on couples who are already in solid relationships. He also notes that the measures used in assessing marital adjustment and satisfaction are insufficiently sensitive to detect dissatisfaction or that couples deny problems for fear of being disqualified from treatment. Finally, the stage at which assessments are made may influence research findings. Couples tend to report few problems at the start of infertility treatment when optimism is high, but then, after months or years of unsuccessful reproductive attempts, acknowledge that the multiple stresses of dealing with infertility has eroded marital satisfaction.

The previous research carried out in the field of infertility, IVF treatment and the effects on a couple's relationship has now been reviewed and discussed, and as a

result, the research aims for this study have emerged and are given in the next section.

Research aims.

Therefore, the aim of this study is to try and clarify and add any further evidence to the inconclusive findings of previous work on the impact of undergoing IVF treatment on a couple's marriage and their marital satisfaction. The aim is to investigate this phenomenon prospectively and over a period of time, as opposed to retrospectively, which some of the previous studies conducted in this field have been.

The study is based on the psychological sequelae model of infertility, specifically encompassing the family systems theory and seeks to use the theoretical models of relationships and identified factors that contribute to marital satisfaction, as suggested in the social psychology literature, to see how these are affected in infertile couples undergoing IVF treatment, at different stages in the process. The study aims to compare infertile couples to fertile couples over the same period of time to see if embarking on infertility treatment leads to any changes in overall marital satisfaction, as well as changes in individual moods and emotional states.

The hypotheses for this study can be seen in the next section.

HYPOTHESES.

H1: There will be a difference in ratings of overall marital satisfaction at the different measurement points between couples in an IVF group but not in couples in a non-IVF comparison group.

Null: There will be no difference found in ratings of overall marital satisfaction at the different measurement points between couples in an IVF group nor in couples in a non-IVF comparison group.

H2: There will be a difference in ratings of overall marital satisfaction at the different measurement points between the females and males in the couples in an IVF group but not in the females and males in the couples in a non-IVF comparison group.

Null: There will be no difference found in ratings of overall marital satisfaction at the different measurement points between the females and males in the couples in an IVF group nor in the females and males in the couples in a non-IVF comparison group.

H3: There will be a difference in ratings of depression and anxiety at the different measurement points between couples in an IVF group but not in couples in a non-IVF comparison group.

Null: There will be no difference found in ratings of depression and anxiety at the different measurement points between couples in an IVF group nor in the couples in a non-IVF comparison group.

H4: There will be a difference in ratings of depression and anxiety at the different measurement points between the females and males in the couples in an IVF group but not in the females and males in the couples in a non-IVF comparison group.

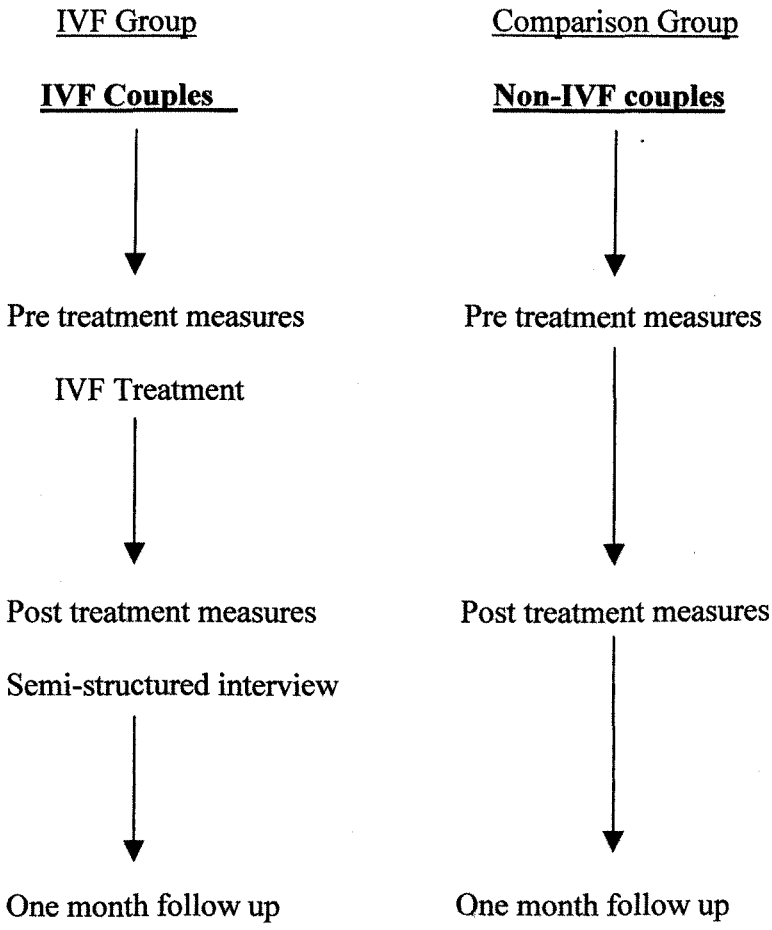
Null: There will be no difference found in ratings of depression and anxiety at the different measurement points between females and males in the couples in an IVF group nor in the females and males in the couples in a non-IVF comparison group.

METHOD

DESIGN

The study used a repeated measures group comparison design. The independent variables in this quasi-experiment were whether or not couples were undergoing IVF treatment and the point at which measurements were taken e.g. before treatment, after treatment and after a one month follow up.

Figure 2. Design.



Assuming a moderate effect size of 0.25, 52 participants in each group would yield a power for the study of 80% (Cohen, 1996, pg 314).

It was also considered that couples in each group could, where possible, be matched for age, social class, length of marriage and whether they have any children.

PARTICIPANTS

Although it was planned to recruit at least 26 couples in each group (as above), in practice difficulties were encountered (see procedure).

The participants within the IVF group at the pre treatment stage consisted of 10 couples (20 individuals) undergoing IVF treatment at the IVF unit. The post treatment stage consisted of 6 couples (12 individuals), and at the one-month follow up 4 couples (8 individuals). Unfortunately, only 2 couples consented to take part in a semi-structured interview, but these couples then withdrew from participation at the post treatment stage.

The only criteria that the couples in the IVF group had to meet was that they were married or living together in a stable, long term relationship of no less than 2 years and about to embark on a cycle of IVF treatment at the above establishment.

The comparison group at the pre treatment stage consisted of 16 couples (32 individuals) not undergoing IVF treatment. The post treatment stage consisted of 13 couples (26 individuals) and measures were obtained for 12 couples (24

individuals) for the one-month follow up. These couples were obtained through the use of a snowball sampling technique. The comparison group were recruited by advertising for participants or by colleagues and friends contacting couples they knew on the researchers behalf and asking them if they would consider taking part. It did not seem appropriate for the researcher to contact directly couples known to her due to the nature of the topic, as couples known to the researcher may be less likely to give information about their marriage and satisfaction with it.

It was planned that couples from each group would be matched for age, social class, length of time they have been married and the number of children they already had. However, due to the practical difficulties in recruiting for both groups, formal matching did not occur.

The inclusion criteria of couples in the comparison group were that they had to be married or living together in a stable, long term relationship of no less than 2 years, and with no known infertility problems. They also had to be between the ages of 23 and 40 years of age, as it was felt this would correspond to the likely ages of couples embarking on IVF treatment.

MEASURES

The dependent variables used in the study were the measures of marital satisfaction, depression and anxiety, which are summarised below, as well as the collection of demographic information for each group in the study.

1. Demographic questionnaire:

A demographic questionnaire was devised by the researcher. This questionnaire was designed in order to gain more information about the couples e.g. age, occupation, length of marriage, current child and medical status. For the comparison group, the questionnaire also enquired about any known infertility problems (see appendix 1).

2. The Golombok-Rust Inventory of Marital State (GRIMS), Rust, Bennun, Crowe & Golombok, 1988.

This is a 28 item questionnaire intended to assess the overall quality of the relationship between a man and a woman who are married or living together. It uses items known to be important to a good relationship and concentrates on aspects other than the sexual in a dyadic relationship e.g satisfaction, communication, shared interests, trust and respect. Each of the 28 items is rated on a four- point scale, from 'strongly disagree' to 'strongly agree.' The higher the score the more severe the relationship problem (Milne, 1992). Scores range from 0-84 with a score of 34 or more indicating marital dissatisfaction (Golombok & Murray, 1999).

From the raw score on the GRIMS, a transformed score can be obtained and this provides the interpretation of the score, with males and females being treated the same. The interpretations that can be given are very severe problem, severe problems, bad, poor, average, above average, good, very good and undefined.

Undefined is the interpretation given to an extremely good score and the best interpretation an individual can receive (Milne, 1992).

The GRIMS was standardised with 78 adult attenders at a GP clinic and 80 couples presenting as clients at marriage guidance clinics throughout the UK, and led to a scale giving a good indication of the existence and severity of any relationship problems (Rust et al, 1990).

The reliability of the GRIMS was ascertained through the use of two internal consistency methods. The methods used were split-half and alpha coefficients, both of these indicating a high degree of consistency within the GRIMS items (n=360; coefficients ranged from 0.81 to 0.94) (Rust et al, 1990).

The validity of the GRIMS has also been assessed, with both content and face validity regarded as high. Diagnostic methods were used to assess validity by relating therapists' ratings with GRIM scores, which yielded a statistically significant degree of agreement. Empirical methods employed to assess validity involved administering the GRIMS to 24 couples who had undergone marital therapy. It was found that both male and female scores reduced by a statistically significant amount following therapy. The amount of improvement also correlated highly significantly with therapist ratings of change (Rust et al, 1990).

Overall, the GRIMS is a reliable and valid instrument, providing a good estimate of problem severity. It can also afford a sensitive measurement of outcome, if administered before and after therapy (Milne, 1992).

It was felt that this measure was also simple and easy for individuals to understand and complete. It was hoped that it would also tap into the main areas that are important and contribute to making a good and satisfying relationship, e.g. communication, trust, affection, and commitment; as well as being able to detect any substantial change in these over time. This measure aims to obtain an absolute measure of satisfaction of how an individual feels about their relationship and not just a relative measure reflecting how that individual felt on that day. It is also a measure that has been used widely and successfully in previous research (e.g. Cook et al, 1989; Hammerberg et al, 2001; Golombok & Murray, 1999). (see appendix 2).

3. The Marital Happiness Scale (MHS), Azrin, Naster & Jones, 1973.

The Marital Happiness Scale was specifically designed by the authors for their own research study in order to provide measures of reported marital happiness in each of the areas of marital interaction that were considered inherent in most marriages (See Azrin, Naster & Jones, 1973).

This is a scale intended to estimate a person's current happiness with their marriage. A rating (1-10) is given for ten identified dimension or areas of marriage, a lower score indicating some degree of unhappiness and a higher score indicating more happiness, with ratings intended to reflect how that person feels exactly at that time. The ten dimensions included, household responsibilities, rearing children, social activities, money, communication, sex, academic or occupation progress, personal independence, spouse independence

and general happiness, which is a statement of overall marital happiness. The individual ratings for each of the nine areas of marital interaction can be observed, and any discrepancies in specific areas can be highlighted, as well as the tenth item of general happiness giving a rating of how an individual feels about their marriage as a whole. The ratings on all ten areas combined gives an overall score out of 100 for marital happiness.

This measure was considered to be simple and easy for individuals to understand and complete, and without being too time consuming. It was hoped that it would tap into how an individual feels about the key, main areas in a marriage that are crucial to their satisfaction and contentment with it, as well as giving the respondent opportunity to give an overall general rating of happiness (see appendix 3).

4. The Hospital Anxiety and Depression Scale (HADS) Zigmond & Snaith, 1983.

The HADS is a 14 item questionnaire designed to detect anxiety and depression in general medical outpatient populations and also intended to measure the severity of any emotional disorder. The HADS consists of seven depression and seven anxiety items and has been designed in order to distinguish between the effects of physical illness from mood disorders. The cut off scores are considered to be between 8 and 10 for mildly disturbed cases and scores between 11 and 21 indicating definite cases of anxiety and depression (Zigmond & Snaith, 1983).

The validity of the HADS has been assessed and found to be good. Face validity has been claimed, with clients finding it acceptable and easy to complete . Content validity was based on the use of items found to be important in other instruments (The Present State Examination, Wing et al, 1974) and further research carried out by Zigmond and Snaith. Concurrent validity was assessed with the authors conducting a twenty minute interview of clients, blind to HADS results. This yielded significant correlations (0.54 for anxiety and 0.79 for depression). Criterion validity was obtained by taking a subsample of clients judged by interview to be presenting with either anxiety or depression (n=17). There were no significant associations found between the client's anxiety and depression scores as measured by the HADS (Zigmond & Snaith, 1983).

The reliability of the HADS was assessed with a measure of its' internal consistency. Item-subscale correlation on the replies of 50 clients was carried out and significant associations of between 0.76 and 0.41 for the anxiety items was found and between 0.60 and 0.30 for the depression items (Zigmond & Snaith, 1983).

It was hoped that this measure would tap into any emotions experienced by the individuals, specifically detecting levels of anxiety and depression and whether these change at all over the course of time of the IVF treatment cycle and whether there are any differences between the two groups in the study. The scale is considered to be a useful device for assessing change in a patient's emotional state as well as for assessing presence or absence of clinically significant degrees of anxiety and depression. The scale was also found to be acceptable to patients

who had no difficulty in understanding its purpose and completing it (Zigmond & Snaith,1983) (see appendix 4).

PROCEDURE

Following ethical approval from the Local Research and Ethics Committee, the following procedure was carried out.

The IVF Group:

The IVF unit holds a regular monthly meeting for couples about to undergo IVF treatment. This meeting seeks to explain to the couples about IVF and what the procedure involves and what to expect. It is also a chance for them to familiarise themselves with the unit and its staff and gives them an opportunity to ask any questions. It is at this meeting that couples are told that research is carried out within the unit and that they may be approached to take part. This study was introduced to the couples attending these monthly meetings, by the researcher, its content was briefly explained and couples were forewarned that they would be receiving information regarding the study and if they would kindly consider participating. Information was also given about confidentiality and right of withdrawal, and it was made clear that whether they consented to take part or not, the treatment and care they received from the IVF unit would not be affected.

Once couples completed all the medical and physical checks required before they can begin treatment, the nurses at the IVF unit sent out packs to the couples regarding their first appointment. Included within this pack, information and the measures for this study were also given. The packs sent to couples included an instruction sheet, an information sheet (see appendix 5), explaining the study and it's content and a demographic questionnaire designed in order to gain more information about the couples e.g. age, occupation, length of marriage and child status. The packs also contained two sets of the questionnaires, one set for each partner to complete. Attached to the questionnaires was a consent form (see appendix 6) for each partner to complete, to say they agreed to take part in the study and also a small envelope. The small envelope was given for each individual to place the completed questionnaires so they were kept confidential from their partner, as they were asked to complete their set of questionnaires independently and without discussion. The couples were then asked to bring back the forms to the nurse at their first appointment at the IVF unit for the researcher to then collect. A notebook was kept by the nurses to record those couples who wished to take part and those who did not. If couples did not wish to take part, the nurses, where possible, made a note of their comments as to why they had declined to participate.

The packs sent to couples also contained a consent form for the semi-structured interviews (see appendix 7). Here couples were asked if they would consent to being contacted to take part in an interview after they have finished their IVF treatment; if not, they were given the option to just continue with the questionnaire part of the study.

The date on which each couple was due to complete their treatment cycle was identified by the nurse at the IVF unit. If a couple had consented to give an interview they were then contacted by the researcher to arrange this at their home, after their treatment was complete, but before knowing the end result. If couples did not consent to an interview, but were willing to participate with the questionnaire part of the study, the measures were posted to them by the researcher, to be completed in the same manner as before, after their treatment had ended, but before knowing the end result.

It was considered it would produce less biased results if couples were to complete the post treatment measures before knowing the final outcome, so that their perception of their marriage and experience would not be clouded by whether they were successful or not. Couples then were asked to return them in the stamped addressed envelope provided.

A set of additional questions was also sent with the questionnaires at the post measurement point, due to the lack of response to the request to participate in the semi-structured interviews. The additional questions took the form of two open-ended questions, which were asked in order to obtain more information from the individuals about their experience of IVF treatment and how they felt it had affected their marriage (see appendix 8).

The same set of measures were sent out by post again, a month later, as a follow up, and couples were asked to complete and return them in the same way as they had previously.

Comparison Group:

Packs containing the measures were sent by post to the identified couples at the corresponding time intervals as the IVF group.

The first pack sent contained an instruction sheet, an information sheet (see appendix 5) a demographic questionnaire and two sets of questionnaires for each couple to complete. Attached to the questionnaires was a consent form for each partner and a small envelope for the completed forms to be placed and kept discrete from their partner. They were then asked to return all completed forms in the large stamped addressed envelope provided.

Packs containing just the questionnaires and envelopes were then sent out again to correspond with the after treatment point of measurement and again for the one month follow up. These measures were completed and returned in the same way as before.

STATISTICAL ANALYSIS

A repeated measures ANOVA was used to analyse the results of the measures obtained for the quantitative part of the study.

Interpretative Phenomenological Analysis (IPA) was planned to be used to analyse the content of the interview transcripts and the qualitative aspect of the study.

IPA is based on a phenomenological approach and is concerned with the individual's subjective account of reality rather than objective 'reality' itself. It

aims to explore the participants experience from their perspective, but recognises that such an exploration must necessarily implicate the researcher's own view of the world as well as the nature of the interaction between researcher and participant. Phenomenological analysis is always an interpretation of the participant's experience. It attempts to unravel meanings contained in accounts through a process of interpretative engagement with the texts and transcripts (Smith, 1997).

RESULTS .

The results and analysis section begins by providing an overview of the demographic information for the whole sample of participants in the study, this is shown in table form so it is easier to make comparisons between the groups.

A description is then given about the IVF group, outlining the infertility problem, funding status and number of previous IVF cycles for each couple in the group.

Next will follow an account of the means for each measure used at the pre and post treatment stages and the one month follow up, with a descriptive summary of group and individual scores. This information is presented in tables and some in graph form to clearly display the results found. This data is then used in statistical analysis that is displayed later on in the Results section.

A comparison is then made between the results found at the pre, post and follow up stages. The data was found to be normally distributed, using the kolmogorov-smirnov z test, therefore, a repeated measures ANOVA was carried out in an attempt to provide answers to the hypotheses stated previously. The results of these are given and graphs are used to clearly display the means obtained at each stage on each measure, for both groups and for the females and males in each group.

Comments given by individuals to the additional questions asked at the post treatment stage are then analysed. The use of IPA was intended for the analysis of this, but due to limited data an approach along a similar line was adopted and the main themes from this are highlighted.

The information collected by the IVF nurses as to why individuals chose not to participate in this study is then given, and seeks to provide some idea as to why difficulty in recruiting couples was such a major issue for this study.

The Whole Sample.

The mean ages of the two groups in the sample appear quite similar, as demonstrated in Table 1, with the mean age of the IVF group being 33 years (range = 26-41) and the comparison group being 29 years (range = 23-40). However, the comparison group are slightly younger, and a significant difference was found between the two groups for age using a Mann-Whitney U test ($U=170.50$ $p=<0.005$). The ages between the females and males within each group appear quite similar, but between the groups, again the comparison group were slightly younger, particularly the females. A significant difference was found using a Mann-Whitney U test between the females in the IVF group and the females in the comparison group ($U=35.50$, $p=<0.018$), but not between the males in each group ($U=56.50$, NS). A Mann-Whitney U test was used due to the data for age not being normally distributed.

The two groups were also similar in terms of the length of time they had been married, as shown in Table 1, the average length of marriage in the IVF group was 4 years (range 2-12) and for the comparison group it was 5 years (range 2-21). An independent samples t-test was carried out and no significant difference was found between the groups and the length of time they had been married ($t=0.777$, NS).

The information given in Table 2 indicates that the majority of the sample were in social classes II and III, as based on their occupations. However, the comparison group did have some individuals in social class I, where as the IVF group did not.

Some couples within the sample did have children, one couple in the IVF group had 2 children from a previous relationship and one couple had 1 child, but not through IVF treatment. One couple in the comparison group had 2 children and three couples had 1 child.

It was originally planned to match couples for the above variables, but due to recruitment difficulties, no matching was possible.

Table 1: Means (s.d) for age and length of marriage for the whole sample.

	Total Sample N=52 Means (s.d.)		**IVF Group N=20 Means (s.d.)**		**Comparison Group N=32 Means (s.d.)**	
	Female	Male	Female	Male	Female	Male
Age	30.54 (4.56)	31.77 (3.99)	33.40 (4.12)	32.90 (3.35)	28.75 (3.96)	31.06 (4.30)
	Total 31.15 (4.29)		Total 33.15 (3.66)		Total 29.91 (4.23)	
Length of marriage	4.49 yrs (4.46)		5.10 yrs (3.74)		4.11 yrs (4.87)	

Table 2: Frequency of social class for the whole sample.

Social Class	IVF Group Females (N=10)	IVF Group Males (N=10)	Comparison Group Females (N=16)	Comparison Group Males N=16)
I	0	0	1	5
II	5	9	10	8
III	4	1	4	2
IV	0	0	1	1
V	1	0	0	0

The IVF Group.

As displayed in Table 3, four out of the ten couples were funded by the local health authority and, the remaining six had to provide the funds for their treatment cycle. Five out of the ten couples had male factor infertility, two had female factor, two had joint fertility problems and one couple had unexplained subfertility. All but one couple were embarking upon their first cycle of IVF treatment.

Table 3: Description of the IVF group.

IVF couple	Length of marriage.	Number of children already.	Years trying to conceive	Funded/ Self funded.	Female/male infertility problem.	No. previous IVF cycles.
Couple 1	2 years	0	Not known	Funded	Male	0
Couple 2	2 years	0	1	Funded	Male	0
Couple 3	2 years	0	3	Self funded	Unexplained subfertility	0
Couple 4	2 years	2 (from previous relationship)	Not known	Self funded	Male	0
Couple 5	11 years	1	7	Self funded	Joint	0
Couple 6	2 years	0	8	Funded	Female	0
Couple 7	12 years	0	6	Self funded	Female	0
Couple 8	6 years	0	4	Self funded	Joint	0
Couple 9	6 years	0	8	Self funded	Male	0
Couple 10	6 years	0	Not known	Funded	Male	2

The Pre Treatment stage.

Marital Relationships.

Marital Satisfaction:

Marital satisfaction, as measured by the GRIMS, appeared to be reasonably good in both groups. The mean total raw scores as shown in Table 4, show that the mean for both groups and both sexes are considered in the very good or undefined range, with the females in the comparison group showing the most satisfaction. The total raw scores for individuals showed the majority scored

within the good, very good and undefined range. The frequency of individuals scoring in the different classifications of satisfaction on the GRIMS can be seen in Tables 5 and 6.

On individual total raw scores for the GRIMS, in the IVF group, no one scored above 34, which would have indicated marital dissatisfaction. On individual total raw scores on the GRIMS, in the comparison group, one couple (both the female and male) and one female on their own scored above 34, indicating marital dissatisfaction.

Table 4: Means (s.d) for total raw scores from the GRIMS:

IVF Group (N=10)	**IVF Group (N=10)**	**Comparison Group (N=16)**	**Comparison Group (N=16)**
Female	**Male**	**Female**	**Male**
18.10	18.80	16.63	18.44
(7.23)	(5.77)	(12.78)	(10.66)

Table 5: Frequency of individuals scoring within each classification of satisfaction on the GRIMS for the IVF group.

Classification	**Numbers of females (N=10)**	**Numbers of males (N=10)**
Poor	0	0
Average	1	0
Above average	0	1
Good	1	3
Very Good	4	2
Undefined	4	4

Table 6: Frequency of individuals scoring within each classification of satisfaction on the GRIMS for the comparison group.

Classification	Numbers of female (N=16)	Numbers of males (N=16)
Poor	2	1
Average	0	0
Above average	1	2
Good	0	3
Very good	2	2
Undefined	11	8

Marital Happiness:

Marital happiness, as measured by the MHS, appeared to be rated quite highly for both groups, with the mean rating for the comparison group being slightly higher. The means for both groups and each sex can be seen in Table 7. However, not all individuals answered question 2 on the MHS, which asked them to rate their satisfaction about rearing children. 8 individuals out of 20 in the IVF group did not answer and 14 out of the 32 in the comparison group did not give a rating for this area. Therefore ratings for this question were excluded for everyone when calculating the overall score on the MHS, therefore allowing a maximum score of 90, as opposed to 100. The mean rating for question 2 for those that did answer have been included in Graph 1, which shows the mean ratings for each of the areas of marital interaction.

The mean ratings given for all the areas of marital interaction on the MHS is shown in Graph 1. This graph indicates that all areas of marital interaction were

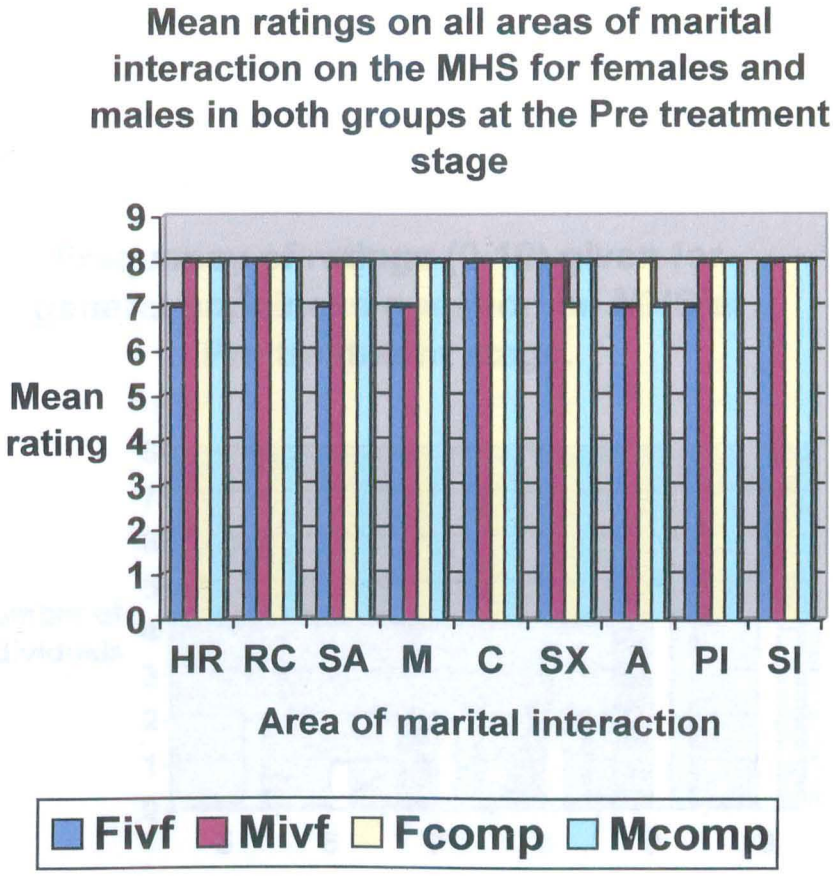
rated highly by all individuals in each group, with all areas being rated above 6. The ratings given by both group and sex appear to be similar for each area.

The frequency of ratings given for the general happiness question on the MHS is displayed in Graph 2. This shows that the majority of females and males in each group rated their general happiness with their marriage highly, with most giving a 8, 9 or 10.

Table 7: Means (s.d.) for the total scores from the MHS.

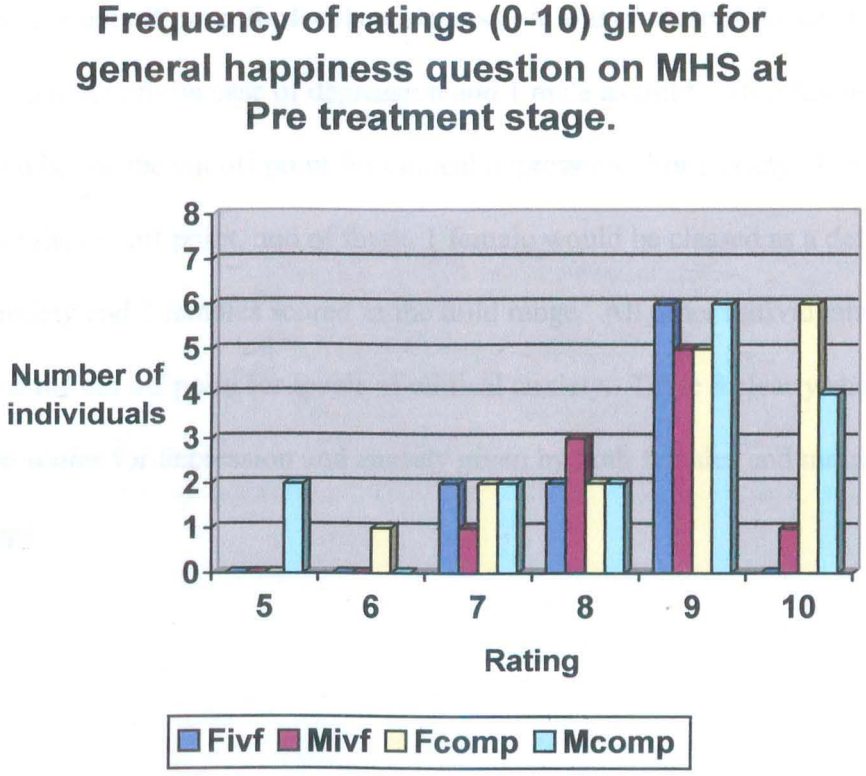
IVF Group (N=10)	**IVF Group (N=10)**	**Comparison Group (N=16)**	**Comparison Group (N=16)**
Female	**Male**	**Female**	**Male**
67.10	69.30	72.00	72.31
(9.33)	(4.00)	(10.73)	(14.19)

Graph 1:



(Key: HR = Household responsibilities. RC = Rearing Children. SA= Social Activity. M = Money. C = Communication. SX = Sex. A = Academic. PI = Personal Independence. SI = Spouse Independence.)

Graph 2:



Mood and Emotional State.

Depression and Anxiety:

On individual ratings of depression in the IVF group one male scored 8 which would be classed as mild or just at the clinical cut off point. All other individuals scored below the cut off point for clinical depression. For anxiety in the IVF group, 3 people scored above the cut off point for levels of clinical anxiety, of

these, 1 male and 1 female would be classed as definite cases of anxiety and 1 female classed as having moderate levels . All other individuals in the IVF group scored well below the cut off point for clinical anxiety.

On individual ratings of depression in the comparison group 2 people scored above the cut off point for levels of depression, and of these, 1 female would be classed as a definite case of depression and 1 male as mild. All other individuals scored below the cut off point for clinical depression. For anxiety, 3 scored above the cut off point, and of these, 1 female would be classed as a definite case of anxiety and 2 females scored in the mild range. All other individuals were below the cut off point for levels of clinical anxiety. Table 8 clearly shows the mean scores for depression and anxiety given by both females and males in both groups.

Table 8: Means (s.d.) for the results from the HADS.

	IVF Group (N=10)	**IVF Group (N=10)**	**Comparison Group (N=16)**	**Comparison Group (N=16)**
	Female	**Male**	**Female**	**Male**
Depression	2.90	2.70	2.44	1.88
	(1.85)	(2.50)	(3.16)	(2.36)
Anxiety	7.50	6.30	5.88	4.81
	(4.88)	(2.58)	(3.12)	(2.37)

The Post Treament stage.

Marital Relationships.

Marital Satisfaction:

Marital satisfaction, as measured by the GRIMS, appeared again to be good for both groups. The mean total raw scores, as displayed in Table 9, show that both groups scored either in the good, very good or undefined range.

For individual total raw scores the majority scored within the good, very good and undefined range. The frequency of individuals scoring in each classification of satisfaction on the GRIMS, for the IVF group and the comparison group, is shown in tables 10 and 11 respectively.

On individual total raw scores on the GRIMS for the IVF group no one scored above 34, would have indicated marital dissatisfaction. On individual total raw scores for the GRIMS in the comparison group no one scored above 34, which would indicate marital dissatisfaction.

Table 9: Means (s.d.) for the total raw scores from the GRIMS:

IVF Group (N=6)	IVF Group (N=6)	Comparison Group (N=13)	Comparison Group (N=13)
Female	**Male**	**Female**	**Male**
24.00	16.33	15.85	18.77
(4.10)	(5.99)	(8.66)	(8.60)

Table 10: Frequency of individuals scoring in each classification of satisfaction on the GRIMS for the IVF group:

Classification	Female	Male
Poor	0	0
Average	1	0
Above average	0	0
Good	2	2
Very good	2	0
Undefined	1	4

Table 11: Frequency of individuals scoring in each classification of satisfaction on the GRIMS for the Comparison group.

Classification	Female	Male
Poor	0	0
Average	1	0
Above average	1	3
Good	1	2
Very good	2	2
Undefined	10	4

Marital Happiness:

Marital happiness, as measured by the MHS, appeared again to be rated highly by both groups. Table 12 shows the mean total scores for both groups and each sex.

Not all individuals answered question 2 on the MHS, which asked about rearing children, 4 out of the 12 individuals in the IVF group and 14 out of the 26 individuals in the comparison group did not give a response for this question. Therefore, ratings for question 2 were excluded for all individuals, and so the maximum total score that could be obtained was 90. Ratings for question 2 for those individuals that did answer it have been included in Graph 3, which shows mean ratings for all the areas of marital interaction on the MHS.

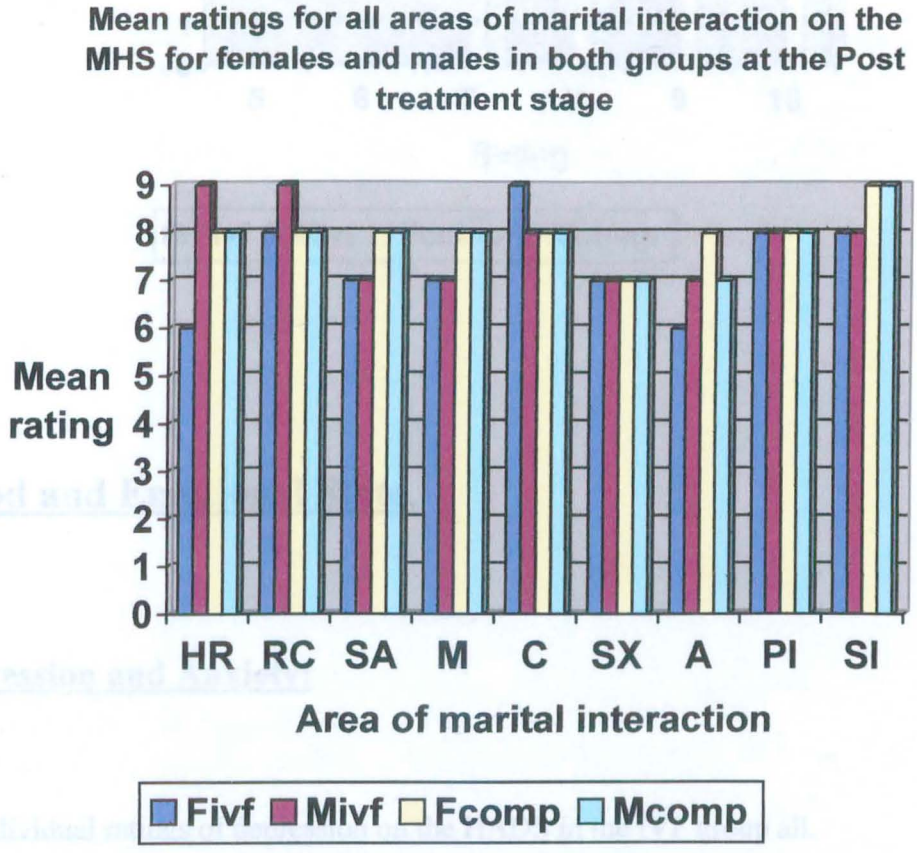
Mean ratings for all areas of marital interaction, as demonstrated in Graph 3, were rated at 6 or above. Ratings given for the areas of marital interaction were similar for both groups.

For the general happiness question on the MHS, as shown in Graph 4, the majority of females and males rated their general happiness with their marriage highly, giving ratings of 7 and above.

Table 12: Means (s.d.) for the total scores from the MHS.

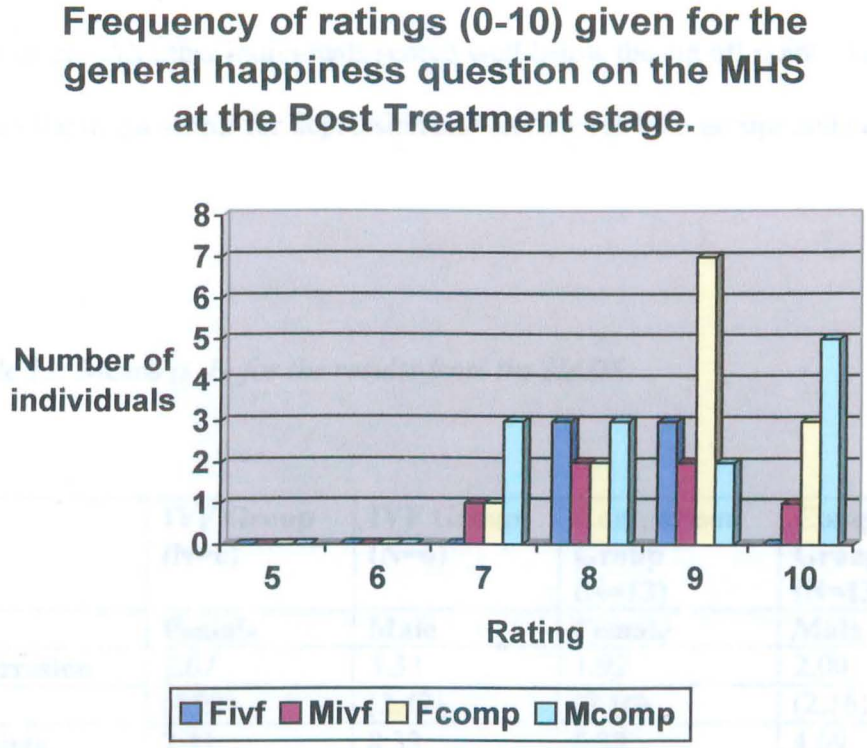
IVF Group (N=6)	IVF Group(N=6)	Comparison Group (N=13)	Comparison Group (N=13)
Female	**Male**	**Female**	**Male**
66.50	73.83	79.08	78.92
(8.46)	(6.34)	(8.43)	(10.47)

Graph 3:



(Key: HR = Household Responsibilities. RC = Rearing Children. SA = Social Activities. M = Money. C = Communication. SX = Sex. A = Academic. PI = Personal Independence. SI = Social Independence.)

Graph 4:



Mood and Emotional State.

Depression and Anxiety:

On individual ratings of depression on the HADS in the IVF group all individuals scored well below the cut off point for clinical depression. For anxiety, 3 males and 1 female scored in the mild range, with all others scoring below the cut off point for levels of clinical anxiety.

On individual ratings of depression in the comparison group all individuals scored below the cut off point for depression. For anxiety, 3 individuals scored above the cut off point for levels of clinical anxiety, 1 female score would be classed as a definite case of anxiety and 1 female and 1 male would be classed as mild cases. All other individuals scored well below the cut off point. Table 13 shows the mean scores for depression and anxiety for both groups and each sex.

Table 13: Means *(s.d.) for the results from the HADS:*

	IVF Group (N=6)	**IVF Group (N=6)**	**Comparison Group (N=13)**	**Comparison Group (N=13)**
	Female	**Male**	**Female**	**Male**
Depression	2.67	3.33	1.92	2.00
	(1.21)	(2.42)	(2.10)	(2.16)
Anxiety	7.33	8.33	5.38	4.69
	(1.63)	(2.94)	(3.78)	(2.46)

The One-Month Follow Up.

Marital Relationships.

Marital satisfaction:

Marital satisfaction, as measured by the GRIMS, appeared to be still very good for both groups. The mean total raw scores, as displayed in Table 14, show that both groups scored either within the very good or undefined range.

For individual total raw scores the majority scored within the good, very good and undefined range. The frequency of individuals scoring in each classification of satisfaction on the GRIMS, for the IVF group, is shown in tables 15 and 16 respectively.

On individual total raw scores on the GRIMS for the IVF group no one scored above 34, which would have indicated marital dissatisfaction. On individual total raw scores for the GRIMS in the comparison group no one scored above 34, which would have indicated marital dissatisfaction.

Table 14: Means (s.d.) for the total raw scores from the GRIMS:

IVF Group (N=4)	**IVF Group (N=4)**	**Comparison Group (N=12)**	**Comparison Group (N=12)**
Female	**Male**	**Female**	**Male**
21.00	19.00	15.50	20.00
(4.24)	(7.39)	(9.31)	(8.20)

Table 15: Frequency of individuals scoring in each classification of satisfaction on the GRIMS for the IVF group.

Classification	**Female**	**Male**
Poor	0	0
Average	0	0
Above average	1	1
Good	0	0
Very good	3	2
Undefined	0	1

Table 16: Frequency of individuals scoring in each classification of satisfaction on the GRIMS for the Comparison group.

Classification	**Female**	**Male**
Poor	0	0
Average	1	1
Above average	1	2
Good	1	3
Very good	1	3
Undefined	8	3

Marital Happiness:

Marital happiness, as measured by the MHS, appeared again to be rated highly by each group. Table 17 shows the mean total scores for both groups and each sex.

Again, not all individuals answered question 2 on the MHS, which asked about rearing children, 2 of the males out of the 8 individuals in the IVF group and 12 out of the 24 individuals in the comparison group did not give a response for this question. Therefore, ratings for question 2 were excluded for all individuals, and so the maximum total score that could be obtained was 90. Mean ratings for question 2 for those individuals that did answer it have been included in Graph 5, which shows mean ratings for all areas of marital interaction on the MHS.

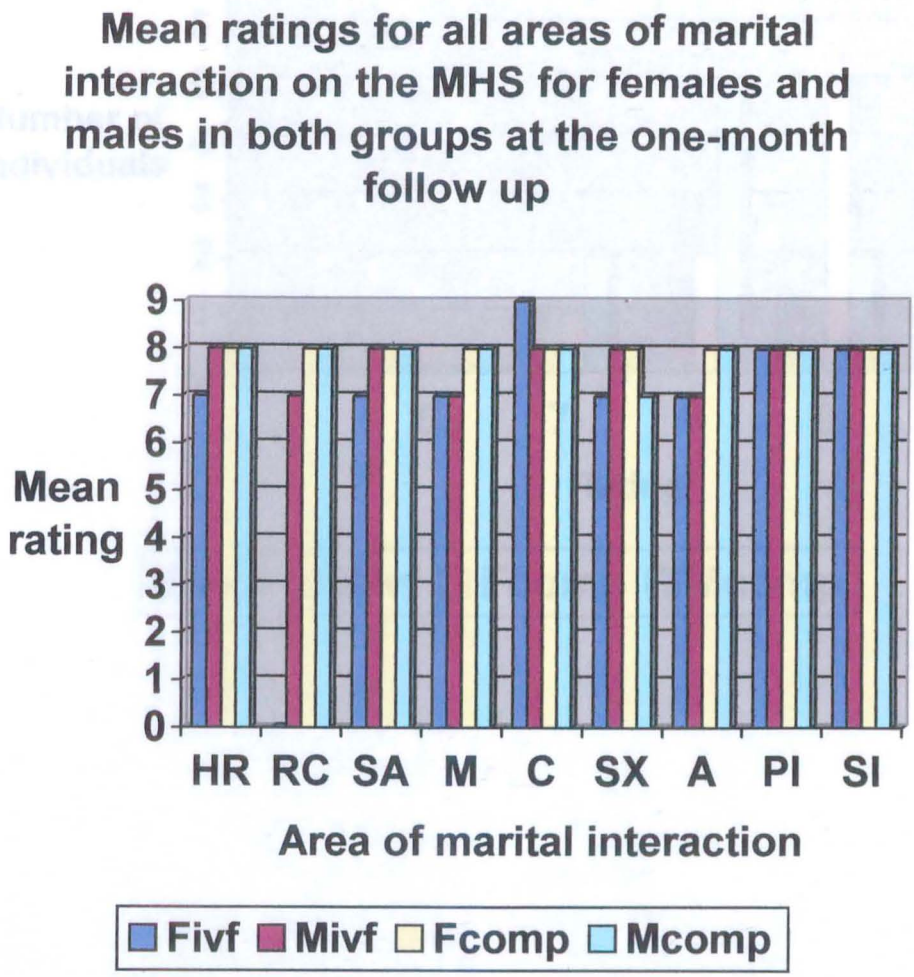
Mean ratings for all areas of marital interaction, as demonstrated in Graph 5, were rated at 6 or above. There appears to be no great discrepancies between the two groups on any of the areas of marital interaction.

For the general happiness question on the MHS, as shown in Graph 6, the individuals from both groups rated their general happiness with their marriage highly, giving ratings of 7 and above.

Table 17: Means (s.d.) for the total scores from the MHS.

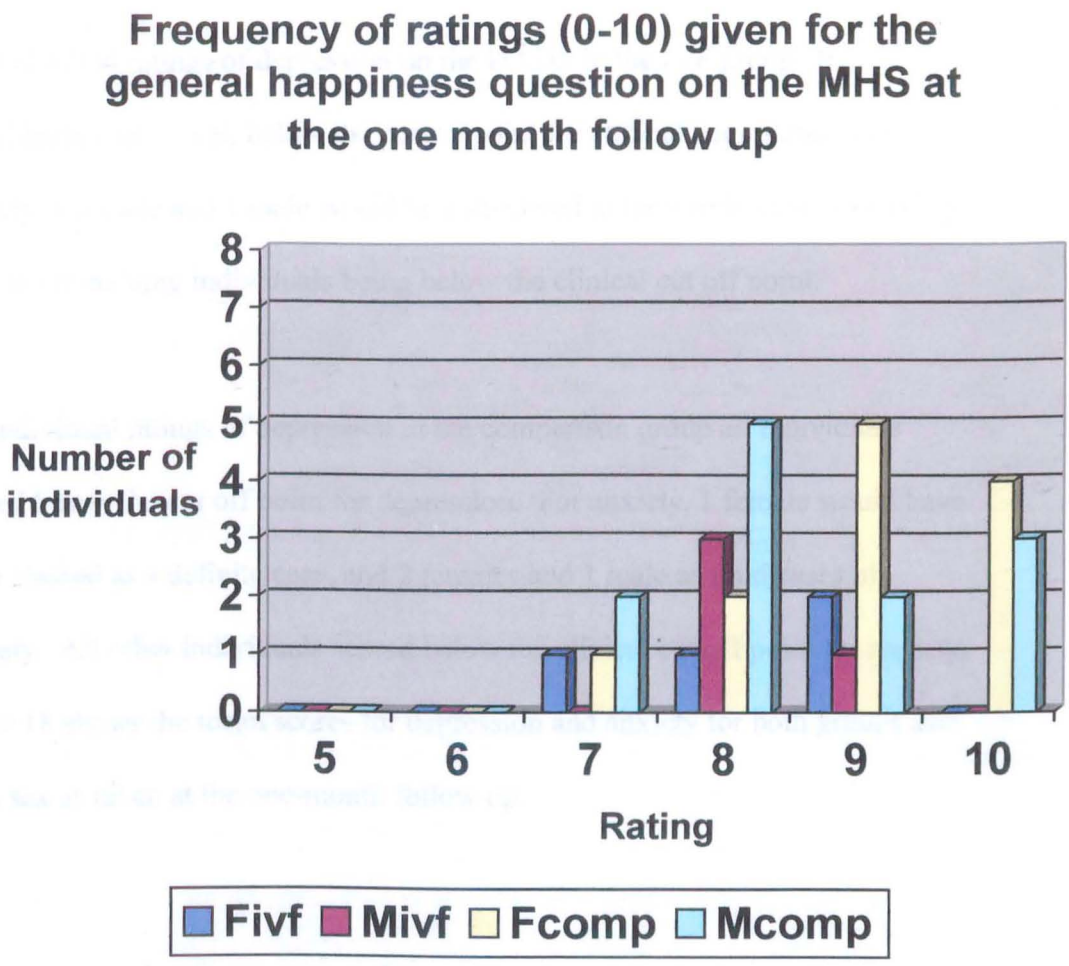
IVF Group (N=4)	IVF Group (N=4)	Comparison Group (N=12)	Comparison Group (N=12)
Female	**Male**	**Female**	**Male**
68.75	70.25	77.67	76.33
(7.04)	(7.89)	(12.02)	(12.40)

Graph 5:



(Key: HR=Household Responsibilities. RC = Rearing Children. SA = Social Activities. M = Money. C = Communication. SX = Sex. A = Academic. PI = Personal Independence. SI = Social Independence.)

Graph 6:


Frequency of ratings (0-10) given for the general happiness question on the MHS at the one month follow up
Number of individuals
0
1
2
3
4
5
6
7
8
5
6
7
8
9
10
Rating
Fivf
Mivf
Fcomp
Mcomp

Mood and emotional state.

Depression and Anxiety:

On individual ratings of depression on the HADS in the IVF group all individuals scored well below the cut off point for clinical depression. For anxiety, 1 female and 1 male would be considered to have mild cases of anxiety, with the remaining individuals being below the clinical cut off point.

On individual ratings of depression in the comparison group all individuals scored below the cut off point for depression. For anxiety, 1 female would have been classed as a definite case, and 2 females and 1 male as mild cases of anxiety. All other individuals scored below the clinical cut off point for anxiety. Table 18 shows the mean scores for depression and anxiety for both groups and each sex as taken at the one-month follow up.

Table 18: Means (s.d.) for the results of from the HADS:

	IVF Group (N=4)	**IVF Group (N=4)**	**Comparison Group (N=12)**	**Compaison Group (N=12)**
Depression	4.50	2.25	2.42	2.33
	(5.07)	(0.96)	(3.45)	(2.45)
Anxiety	6.50	4.50	5.92	4.67
	(2.52)	(3.11)	(4.21)	(2.64)

Comparison of mean scores between the Pre, Post and One-Month Follow up.

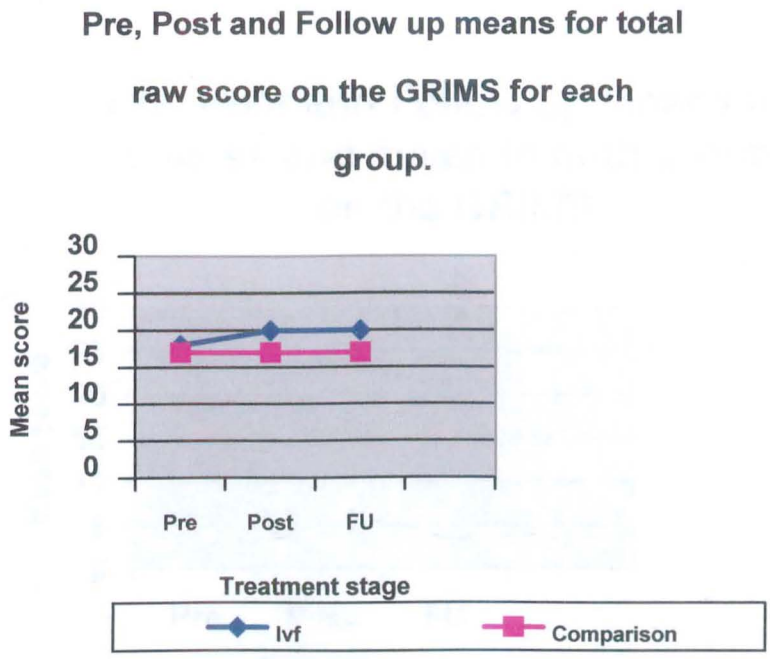
The results from all three questionnaires, for both groups and sexes at all three measurement points were analysed using a repeated measures ANOVA. However it must be remembered that all the results can only be viewed very tentatively and with some caution due to the very small sample size.

Marital Relationships.

Marital Satisfaction:

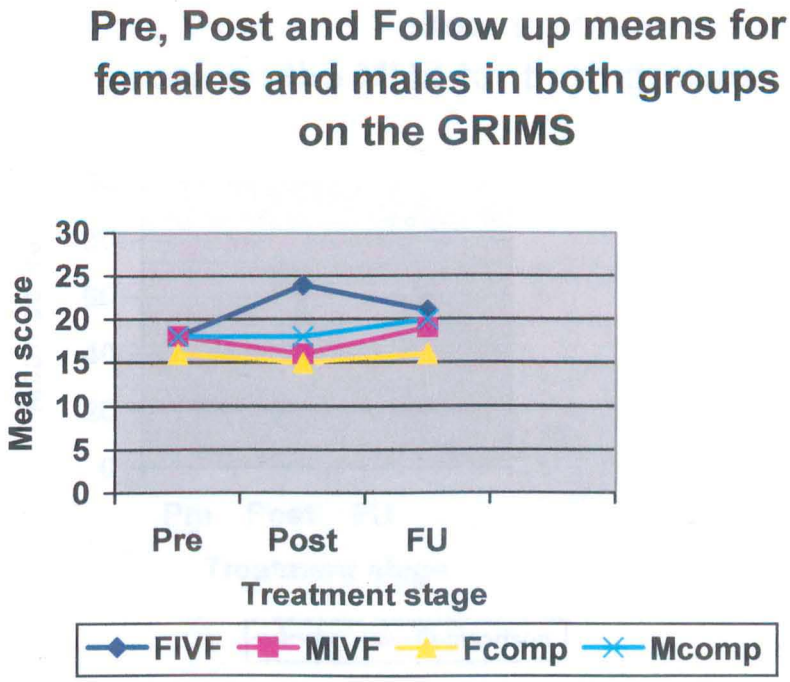
The mean total scores from the GRIMS, as shown in Graph 7, are slightly raised for the IVF group at the post treatment stage and this remains the same at the one-month follow up, whereas the mean scores for the comparison group have remained constant at each point of measurement. The results of a repeated measures ANOVA showed no significant difference between the pre, post and follow up measures on the GRIMS for the within groups interaction ($F=3.941$, NS) or the between groups interaction ($F=0.159$, NS).

Graph 7:



The mean total scores for the GRIMS at the pre, post and follow up stages appear to remain the same for the males in the IVF group, and both sexes in the comparison group. As indicated in Graph 8, the mean for the females in the IVF group appears to increase slightly at the post stage and declines again by the one-month follow up. The mean total score did increase for the females in the IVF group from 18 to 24, indicating less satisfaction, however this score still falls within the good range. The results of a repeated measures ANOVA showed no significant difference between the pre, post and one-month follow up measures on the GRIMS for females and males within groups interaction (F=0.058,NS), or the females and males between groups interaction (F=1.653, NS).

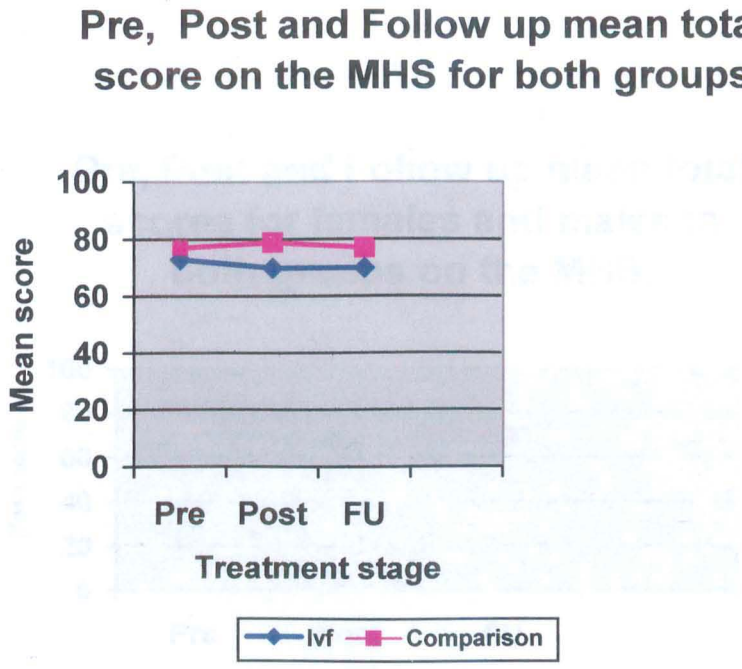
Graph 8:



Marital Happiness:

The mean total scores on the MHS, as shown in Graph 9, appear to remain about the same for the comparison group across the measurement points. For the IVF group there is a slight decline at the post stage but this level remains constant at the follow up. The results of a repeated measures ANOVA showed no significant difference between the pre, post and follow up measures on the MHS for the within group interaction (F=0.215, NS), or for the between group interaction (F=1.055, NS).

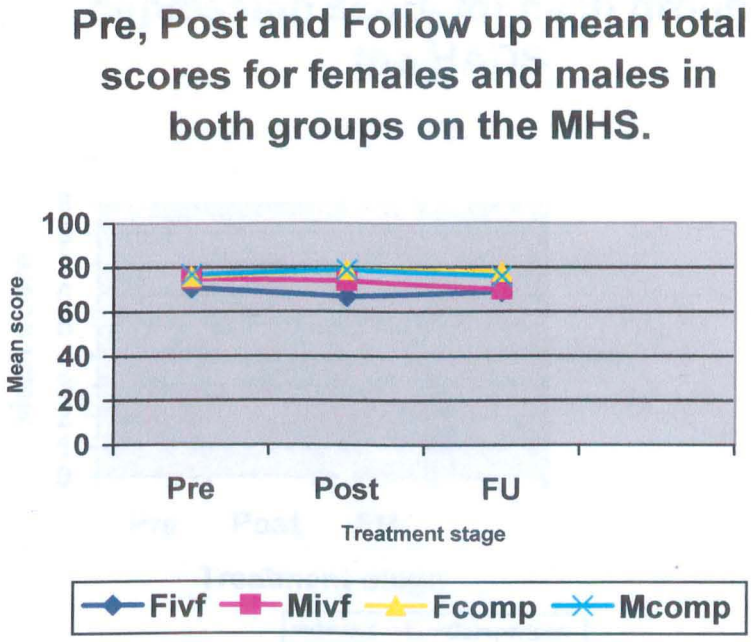
Graph 9:



The mean total scores on the MHS, as shown in Graph 10, appear to remain constant between the pre, post and follow up stages for the comparison group. For the males of the IVF group there appears to be a slight decline at the post and follow up stages. The females in the IVF group appear to decline at the post stage and increase again at the follow up, but these changes are only very small and it has to be remembered that the number of participants in each group also decreases at each measurement point. The results of a repeated measures ANOVA showed no significant difference between the pre, post and follow up measures on the MHS for the females and males within groups interaction

(F=0.502, NS) or for the females and males between groups interaction (F=0.178, NS).

Graph 10:

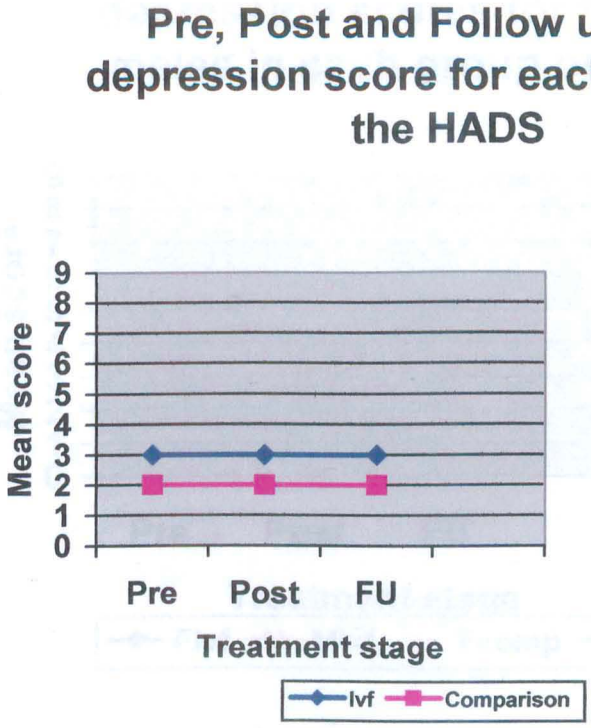


Mood and Emotional State.

Depression:

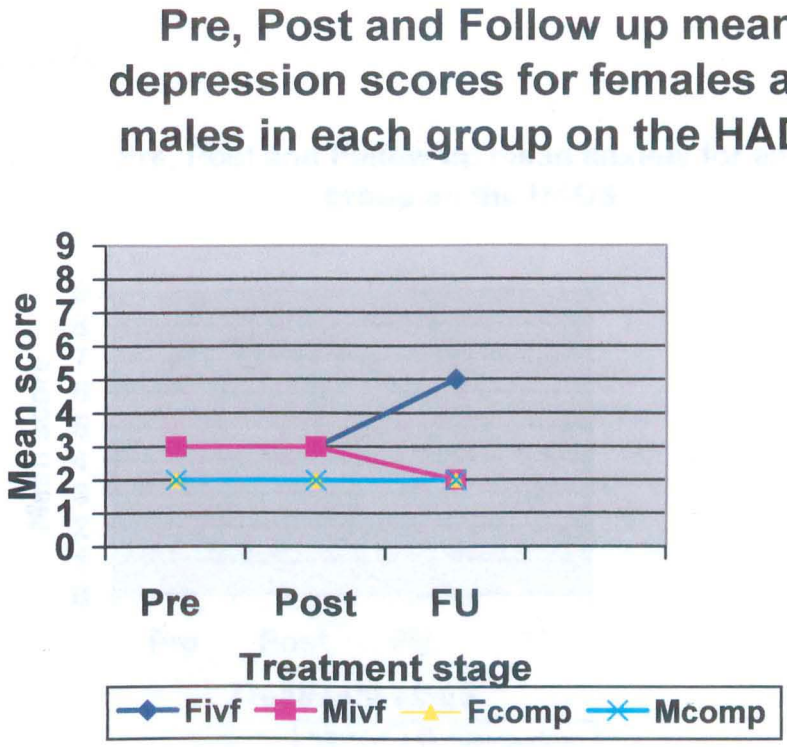
The mean score for depression appears to remain constant for both groups at all three measurement points, as demonstrated in Graph 11. The results of a repeated measures ANOVA showed no significant difference between the pre, post and follow up measures of depression for the within group interaction (F=0.985, NS) or the between group interaction (F=0.619, NS).

Graph 11:



The mean scores for the females in the IVF group appear to remain constant until a slight raise at the follow up (but not of clinical concern). The males in the IVF group remain constant and then decline slightly at the follow up. The females and males in the comparison group all remain constant over time, this is shown in Graph 12. The results of a repeated measures ANOVA showed no significant difference between the pre, post and follow up measures of depression for the females and males within group interaction (F=0.695, NS), or for the females and males between group interaction (F=0.105, NS).

Graph 12:

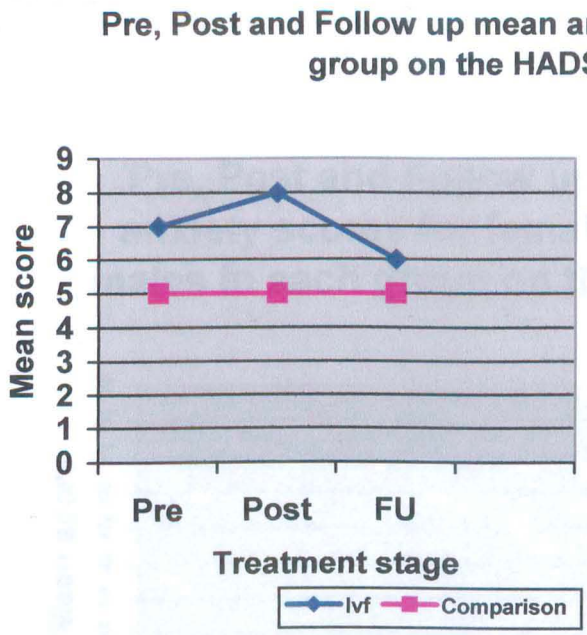


Anxiety:

The mean scores for anxiety appear to increase for the IVF group at the post treatment stage (but not of clinical concern), and go down again by the one-month follow up, as shown in Graph 13. Anxiety levels appear to remain constant for the comparison group. The results of a repeated measures ANOVA showed no significant difference between the pre, post and follow up measures

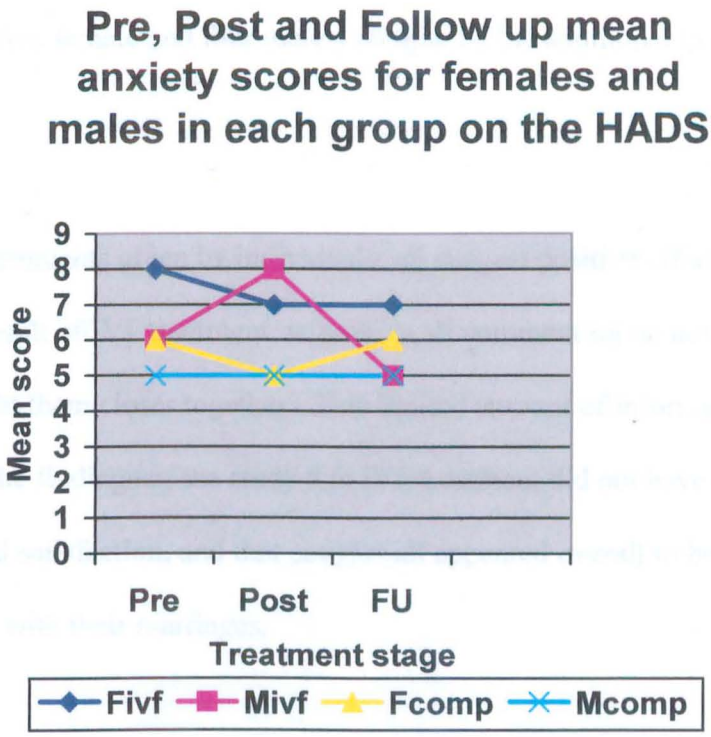
of anxiety for the within groups interaction (F=0.046, NS), or for the between groups interaction (F=1.016, NS).

Graph 13:



The mean scores for anxiety appear do drop slightly for the females in the IVF group and then remain constant. The males in the IVF group increase slightly at the post stage (but of no clinical concern) and then go back down again by the one-month follow up. The males and females in the comparison group remain relatively constant, this can be seen more clearly in Graph 14. The results of a repeated measures ANOVA showed no significant difference between the pre, post and follow up measures of anxiety for the females and males within groups interaction (F=1.658, NS) or for the females and males between groups interaction (F=0.208, NS).

Graph 14:


Pre, Post and Follow up mean anxiety scores for females and males in each group on the HADS
Mean score
9
8
7
6
5
4
3
2
1
0
Pre
Post
FU
Treatment stage
Fivf
Mivf
Fcomp
Mcomp

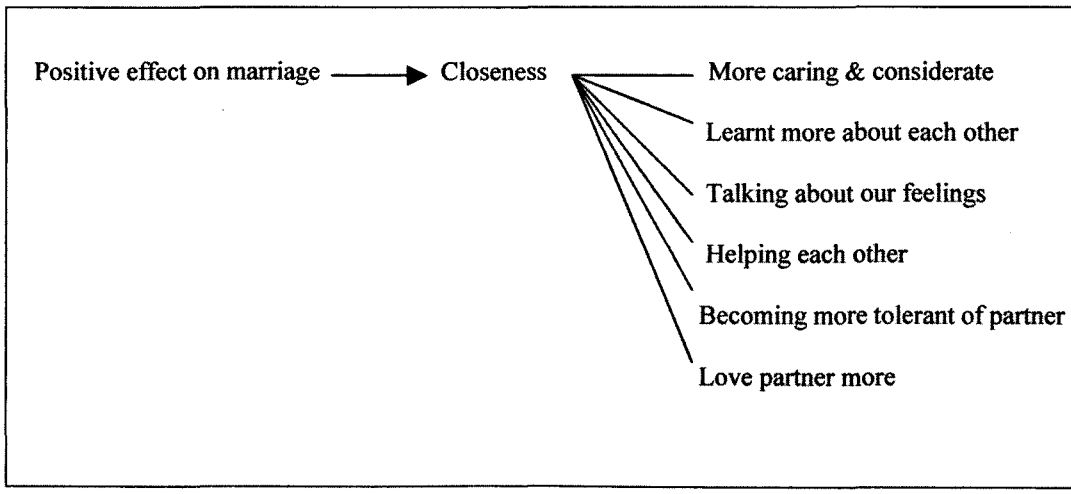
Responses to the additional questions at the post treatment stage.

The additional questions were attached to the measures for the IVF group at the post treatment stage, in an attempt to obtain more qualitative information from individuals about their experience of IVF treatment and the effects, if any, they felt it had on their marriage (see appendix 8). Of the twelve individuals, only nine (five female and four males) completed the additional questions sent to them.

The comments given by individuals, all suggest positive effects on their marriage as a result of IVF treatment, with them all commenting on how they feel it had brought them closer together. This limited amount of information does appear to back the findings of the study that IVF treatment did not have a large impact on marital satisfaction, and that couples all appeared overall to be satisfied and happy with their marriages.

If more qualitative data had been collected then IPA was the planned method of analysis. However, only a limited amount of information was gathered so an approach along a similar line was adopted to analyse the responses of the additional questions, to give an idea of how the analysis would have been carried out. All conclusions drawn are only very tentative, due to the small amount of data. The results of the analysis are demonstrated below.

Figure 3: An overview of the themes related to a positive effect on marriage.



The main theme to emerge from reading the comments given by individuals was that of IVF treatment having a positive effect on their marriages, as outline in figure 3 above.

'I feel it has had a positive effect on our marriage' (male,3).

A sub-theme from this was the notion of closeness and how couples felt the treatment had brought them closer together (see figure 3).

'I feel it has brought us a lot closer together...' (female,1)

'I feel the whole experience has actually brought us closer together.' (male,1)

'The treatment has brought us closer than ever.' (female,3)

'I feel it has made our relationship a lot closer...' (female, 4)

'I know since starting IVF treatment that my wife and I have become closer...' (male,2).

'The waiting, anticipation, inconvenience, sometimes pain can distance you slightly during stressful times, but helps to bond us closer in the longer term' (female,5).

'I would like to think it had brought us closer together' (male,4).

A number of individual components or clusters were identified and these appeared to relate to and come under the sub-theme of closeness (see figure 3). For example, feeling that they had become more caring and considerate of each other:

'My husband is more caring and considerate' (female,1).

Feeling that they had learnt more about each other and their relationship:

'...we have learnt a lot about each other' (male,1).

'...my husband seems to have matured and understands me more now' (female,2).

Communicating and talking about their feelings with each other:

'...we now talk about our true inner feelings more openly' (female,2).

Helping each other and working together:

'...we seem to be helping each other get through each stage of the treatment' (male,2).

'I have felt really supported by my husband' (female,2).

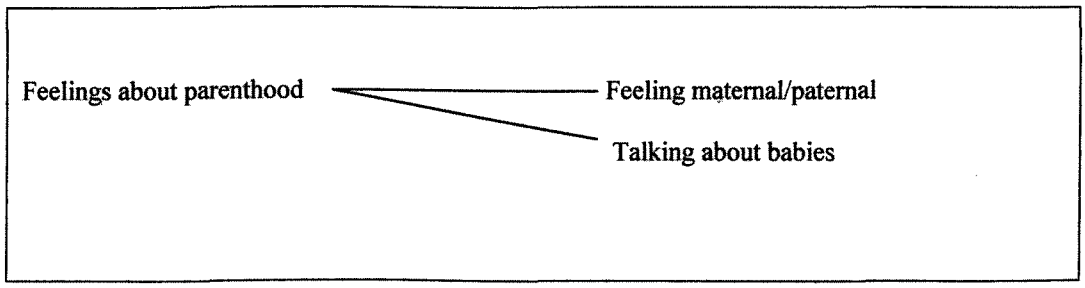
Becoming more tolerant of one another:

'...I am more tolerant with my husband' (female,2).

Feeling that their love has become stronger:

'I feel I love my husband more than before the IVF' (female,2).

Figure 4: An overview of the themes related to feelings about parenthood.



A second theme to be identified was that around feelings towards parenthood and their future, as outlined in figure 4 above. This theme was broken down into two components (see figure 4).

The first component was that of experiencing feelings of being maternal/paternal.

'We have both become very maternal/paternal after having the eggs taken' (female,2).

The second component was that of talking to each other about their future babies.

'We have spoken to each other about our babies – this felt real and good, but it has been hard work' (female,2).

Information collected on why individuals did not wish to participate in the study.

Notes were kept by the nurses at the IVF unit as to whom they approached to take part in the study and whether couples agreed to take part or not. A record was kept of any reasons people gave as to why they declined to participate. The comments recorded are outlined below.

'I thought the research was far too personal.'

'I am happy to take part and answer the questionnaires, but I am concerned about not having the time to give an interview.'

'I think the research is too personal and I do not wish to take part.'

'I have taken part in this sort of research previously, and I am not happy to take part again.'

'I think the project is too personal and too intense.'

'I think it is too intrusive.'

'I think it is too personal.'

Overall, it can be concluded that the main reasons for the recruitment difficulties encountered in this study, were due to people finding the idea of disclosing information about their relationships as too personal, intense and intrusive.

DISCUSSION.

The discussion section begins with an overview of the main results found in this study and are discussed in terms of the previously stated hypotheses. A comparison is made of the results with the literature previously outlined in the introduction. The interpretation of the results, methodology and the execution of the study is then subject to critical appraisal, possible alternative explanations are given for the findings of the study and limitations are identified and discussed. The section then ends with suggestions for further research in this field, followed by the final conclusions that can be drawn.

An overview of the results.

The IVF group and the comparison group used in this study were found to be significantly different in mean age, with the comparison group, particularly the females being younger. However, the whole sample can be considered to be within the age range that the family life stage model would associate with entering the phase of parenthood. No significant difference was found between the two groups in terms of the mean number of years they had been married and they appeared to be well matched for social class. However, due to the small numbers of couples recruited to the study they were not matched for any of the above criteria.

At the pre treatment stage both the IVF group and the comparison group scored highly on marital satisfaction, with only one couple in the comparison group

showing dissatisfaction. Both groups gave high ratings of marital happiness, including high ratings on individual areas of marital interaction, as well as overall general happiness.

Ravel et al (1987) reported that difficulties with marital and sexual functioning are more apparent at the beginning, after the recognition of infertility. Once treatment had begun levels returned back to baseline. This could explain why the IVF group in this study showed no marital dissatisfaction at the pre treatment stage, because they were just beginning treatment and the initial recognition of infertility had been dealt with.

At the post treatment stage both the IVF group and comparison group again scored highly on marital satisfaction and marital happiness, including high ratings on individual areas of marital interaction and overall general happiness. However, the females in the IVF group appear to show slightly more dissatisfaction and a lower rating of happiness compared to the others.

The additional questions asked at the post treatment stage allowed individuals a chance to give more information and express how they felt undergoing IVF treatment had affected their marriage. Interestingly, as shown in the Results section, the main theme identified was that of a positive effect on individuals' marriages, with a sub-theme of a sense that it had brought them closer together. The findings from the additional questions support the results found from the questionnaires. As stated by Dunkel-Schetter & Lobel (1991), for some the crisis of infertility brought them closer together and led to mutual support during a period of strain and an opportunity to reflect on the attachment to their partner.

However, it must be acknowledged that only a small amount of data was collected for the additional questions, with only 9 individuals giving any response, with individuals giving varying amounts of information. As mentioned in the results section, if more data had been collected IPA was to be used, but due to the limited data, analysis along the same lines was carried out, but conclusions can only be regarded very tentatively.

At the one-month follow up both the IVF group and comparison group again scored highly on marital satisfaction and marital happiness, including high ratings on individual areas of marital interaction and overall general happiness.

On comparing the results of the pre, post and follow up stages it was found that undergoing IVF treatment did not appear to have an effect on levels of marital satisfaction. Overall all the couples in the study had high levels of marital satisfaction at both the pre, post and follow up stages. No differences were found between the IVF group and the comparison group or between the sexes.

Therefore, the experimental hypothesis 1 stated previously can be rejected and the null hypotheses accepted. The experimental hypothesis 2 can be rejected and the null hypothesis accepted.

When accepting the null hypothesis, the possibility of a type II error must always be acknowledged. A type II error is a statistical term for the mistake of retaining the null hypothesis when it should have been rejected. In experimental studies, such as this one, this would mean concluding that the independent variable (the IVF treatment) had no effect on the dependent variable (ratings of marital

satisfaction and happiness), when in fact it did have some influence (Stratton & Hayes, 1993).

A type II error can sometimes happen because the size of the treatment effect is very small and hard to notice in the sample. The sample size is a factor that could contribute to a type II error being likely. If the sample size is small, this makes it even harder to detect a treatment effect that is also small and hard to notice (Breakwell et al , 1995).

However, despite these reservations the results of this study can be seen to be in line with previous quantitative research that has suggested no impairment to a couple's relationship as a result of infertility and its treatment. For example, Leiblum et al (1987), reported high levels of relationship satisfaction in their sample of 59 couples undergoing IVF treatment when measured before and after a failed IVF cycle, as compared with the norms. Over 50 percent reported improved communication, increased sensitivity to their partner's feelings and an increased sense of closeness.

Callan & Hennessey (1989) also found that infertile women undergoing IVF rated the quality of their marriage highly and didn't feel it negatively affected their marriages.

The interview data from the work conducted by Cook et al (1989) found the effects on the marital relationship to be unclear. From the quantitative side of their work, the mean scores from the GRIMS were compared to mean scores from a group of general practice attenders. No significant differences were

found for the women in each group, which was also found in this study. However, there was a significant difference found in the work by Cook et al (1989) for the men, with the males in the infertility group being lower. This finding was not reflected in this study.

In terms of the stage model proposed by Berg and Wilson (1991), the couples in this study could be considered to be at stages one or two. Stage one concerns adjustment during diagnostic procedures and the initial treatment regimens and stage two of this model reflects functioning when individuals have become adjusted to some aspects of the medical investigation, while current treatment regimens hold positive expectations of success. According to the research by Berg and Wilson (1991), these stages were not associated with any increased levels of marital adjustment and marital relationships. These findings were reflected in the results of this study.

The results of this study may also be explained in accordance with the investment model of relationships. The investment model as proposed by Rusbult (1983) seeks to explain what makes people motivated to maintain their relationships and to be committed to them. How committed an individual is to a relationship, depends on the attractiveness of the alternative options to being in that relationship. Even when a relationship suffers an unhappy period, and the alternatives are attractive, this does not mean the relationship will fall apart. One reason for this is the investment size, that is the way a couple have invested time, energy, made sacrifices and engaged in things together that are important to them (Buunk, 1996). This model would fit with the infertile couple undergoing infertility treatment. These couples have made a major investment in terms of

time and money, possibly having to make certain sacrifices and the treatment is something they have engaged in together. Having to make such a large investment in each other, their relationship and in potentially starting a family together, would all lead them to be more committed to their marriage. This could explain why the couples in the IVF group showed high levels of marital satisfaction and the comments made by individuals were all positive.

From the perspective of the social exchange and equity theory of relationships, the results of this study would suggest that most of the couples felt that the proportions of inputs and outcomes were the same for each partner, as their satisfaction was high. Clark & Mills (1979) would claim that that the couples had communal relationships in which the partners responded to each other's needs, rather than the equity in exchange of rewards and hence their high degree of marital satisfaction (Buunk,1996).

At the pre treatment stage, for levels of mood and emotional state, both groups had low mean scores on depression and anxiety, but with anxiety being slightly higher. These results were interesting; the IVF group were just about to embark on a stressful and uncertain procedure in which they had invested a lot of hope. They appeared to score surprisingly low on depression and anxiety when you compare this with their present life situation.

At the post treatment stage, again low mean scores were found for depression and anxiety in both groups, with anxiety being generally slightly higher. These findings are quite surprising when you consider the emotional and stressful process the IVF group had been through and that they were waiting for the end

result to be known. However, as suggested by Boivin et al (1996) the emotional impact of IVF might be less pronounced during the actual treatment process than is generally assumed.

At the one-month follow up, low mean scores for depression and anxiety were found again for both groups.

On comparison of the pre, post and follow up stages for mood and emotional state, the results of this study found that undergoing IVF treatment did not appear to have an effect on levels of depression. No significant differences were found between the IVF group and the comparison group and no differences occurred between the sexes. The results also found that undergoing IVF treatment did not have an effect on levels of anxiety, with no significant difference being found between the groups or the sexes.

These findings are similar to those reported in the work carried out by Cook et al (1989), in that no high levels of depression were found. However, Cook et al (1989) found that both men and women experience high levels of anxiety. It would appear from their findings, that anxiety could be considered to be more apparent in infertile couples undergoing treatment, than depression. In this study neither high levels of depression nor anxiety were found.

Therefore, the experimental hypothesis 3 can be rejected and the null hypothesis accepted. The experimental hypothesis 4 can be rejected and the null hypothesis accepted. Again, the possibility of a type II error occurring must always be

acknowledged when retaining the null hypothesis, particularly given the small sample size.

In terms of the stage model by Berg & Wilson (1991), levels of psychological functioning were borderline at stage one and fell into the normal range at stage two. This would fit with the couples in this sample, in that psychological health could be considered to be within the normal range. Berg & Wilson (1991) claim that psychological functioning does not enter the symptomatic range until the third stage, when infertility treatment and attempts to have a child have gone on for a long period of time.

The literature on the effects of IVF treatment and the stress it produces, and any association of this with mood and emotional state, can again be considered to be relatively unclear (Milad et al, 1998).

The results of this study found no significant effects on mood or emotional state, however, anxiety states appeared to rise slightly in the IVF group at the post treatment stage, particularly for the males. This finding makes sense when you consider this measurement was taken at a stage when individuals were awaiting the outcome of their treatment cycle. As highlighted by Eugster et al (1999), waiting for the outcome of treatment was the most stressful time for both husbands and wives.

Downey & McKinney (1992) found no differences in clinical depression between infertile couples and controls. They reported that the women felt emotionally distressed about their inability to bear children, but the distress was

not equivalent to psychological impairment. As measured by several mental health indices, infertility patients were as psychologically healthy as the controls. This would support the findings of this study, in that the IVF couples appeared to be as psychologically healthy as the couples in the comparison group.

However, Ravel et al (1987) found levels of depression and anxiety to be elevated in infertile couples when compared to normative data. They also reported a higher level in the women in their sample. Interestingly, the findings of this study showed slightly higher levels of anxiety in the males, particularly at the post treatment stage, although the difference was not significant. This may have been due in part to the fact that the majority of the sample had male factor infertility. The males may have been more inclined to feel anxious about the treatment being successful and wanting to be able to provide their partner with a child.

Bringhenti et al (1997) claim that infertile women entering IVF don't necessarily show signs of psychological maladjustment and that levels of state-anxiety can be considered to be a situational response to stress of treatment. Infertility and its treatment is most effectively dealt with by women satisfied with their relationship, and with their husband.

The sample of women in this study all appeared to rate to have high levels of satisfaction with their relationships, so this could account for the low levels of change in their moods and emotional state and lead them to deal well with infertility and the treatment they underwent.

Critique of the study.

The strengths of the study were that it investigated the impact of IVF treatment on marital relationships prospectively and over a course of time, therefore measuring levels of marital satisfaction, happiness, depression and anxiety as treatment was actually occurring and at more than one measurement point. The study used a comparison group of married fertile couples to compare the results to, hence contributing more strength to the study's design.
The study also used the psychological theories of relationships and marriage and applied these to infertile couples and used them as a model to help explain the results obtained.

However, some of the weaknesses of the study could be considered to involve some problems with the measures used. For example, the MHS (Azrin, Naster & Jones, 1973), provides only a relative measure of how an individual feels 'today' and not an absolute or global picture of marital satisfaction. The difficulty with individuals answering the question on rearing children, was not originally identified before beginning the study. It was felt appropriate to leave the question in as some individuals in either group could have had children, even those couples in the IVF group. As shown in Table 3 in the results section, in the IVF sample for this study, one couple had children from a partner's previous relationship and one couple had children prior to developing fertility problems, as in this case, due to complications of another medical condition e.g. treatment for cancer. It was also considered possible that couples could still have some idea of their view and their partner's view on rearing children and their

satisfaction with this, without actually having their own children. However, some individuals chose not to answer this question.

There was no adequate reliability and validity data available to the researcher for the MHS, and therefore it's effectiveness as a measure of marital happiness is questionable. If the study was to be carried out again, maybe an alternative measure of marital happiness would be more appropriate, so as to provide more confidence in the results found. However, the MHS was considered by the researcher to be a well- structured scale. It included the key areas of marital interaction that encompass overall marital satisfaction that were relevant to this study and which the study aimed to tap into e.g. sex, communication, and each could be directly rated by individuals.

Other measures, such as the GRIMS, asked about marital satisfaction in a more indirect and less precise way. For example, the GRIMS did not include any questions about sex, but only with regards to showing affection. The GRIMS was designed specifically not to include the sexual functioning of couples. Although, the study and research question was not directly looking at a couple's sexual satisfaction, it is still an important aspect that would contribute to overall marital satisfaction, so the MHS was considered useful to use in conjunction with the GRIMS as it included sex. However, the GRIMS provided a good global measure of marital satisfaction and included all other key areas important to a satisfying marriage, as well as having good reliability and validity. One advantage of the GRIMS over other marital or relationship questionnaires is its simplicity of administration (Rust et al, 1990). Although test-retest reliability

data were not available for this measure, the important characteristic for the purpose of this study is that it is sensitive to change.

The HADS has been reported to perform better than the General Health Questionnaire (GHQ) in identifying cases against the criterion of a psychiatric assessment and has been reported by others to be equal to the GHQ in it's ability to detect cases of minor psychiatric disorder. However, although the authors present the HADS as a reliable and valid instrument, it can be considered that far more work is required to be carried out before its performance as an indicator can be confidently judged (Bowling, 1997).

The execution of the study.

Pre Treatment Stage.

In terms of the procedure of the study, difficulties were initially encountered at the pre treatment stage. The researcher began by attending the monthly meeting at the IVF unit, with a view to handing out pre treatment measures there and then, and asking couples to complete these once they began treatment and then returning them by post. However, this initial procedure did not prove very successful, and it was decided to change the format of obtaining couples at the pre treatment stage. The researcher still attended the monthly meetings as a way of introducing the study, but pre treatment measures were then sent out by the nurses and the couples were asked to return them when they attended their first appointment at the IVF unit. This procedure proved to be a lot more successful, although still only low numbers were recruited.

Couples were asked to complete their ratings independently, but there was no way of verifying that they did, so, it is possible that the partners influenced each other's answers.

Post Treatment Stage.

At the post treatment stage difficulties were encountered with regards to the unpredictable nature of the IVF treatment cycle. Couples varied on how long their cycle lasted. An average cycle was estimated to be around 6/7 weeks. However, some of the couples encountered unforeseen complications e.g. the women not down regulating properly and this would then add another week or more to their cycle, hence changing the due treatment completion date, and delaying distribution of the post treatment measures. However, some couples went through the procedure very quickly, with no added complications.

As mentioned above, the unpredictable nature of the IVF treatment cycle made it difficult to predict accurately when to distribute post measures to the IVF couples, and constant contact with the IVF unit was necessary to keep informed of a couple's progress. Alternative ways of giving out the measures at the post treatment stage may have been more appropriate and efficient. A better return rate may have been achieved if the measures had been distributed in person or by the nurses on the researcher's behalf at the IVF unit at the point when a couple complete their treatment, or maybe finding some other way of accessing the couples directly at the IVF unit, rather than posting measures to them. However,

at the time of execution of the study, the postal system was considered to be the best method for sending measures at the post treatment stage. Couples were finishing treatment on different days and times, and due completion dates were not definite, therefore it was impossible for the researcher to be present at the end of every couples' treatment cycle. It was felt inappropriate to burden the nurses with extra work at a time when they are involved with procedures of the IVF treatment, and there would be no guarantee that they would always remember to give out the measures for this study.

Post measures were either sent on the day or a few days in advance of a couple's due completion date. Couples were again asked to complete their ratings independently, again there was no way of verifying this. Couples were also specifically asked to complete the measures on finishing their treatment and before knowing the final result, which would be roughly three weeks after the end of treatment, but there is always the possibility of this being sooner, for example, the women may begin her menstrual cycle after one or two weeks, indicating an unsuccessful treatment cycle. Therefore, there was no way of knowing for definite that couples completed the measures before knowing the end result, and so results obtained at the post treatment stage could have been influenced by this.

Hammerberg et al (2001) highlighted the above point, in their follow up study of women's experience of IVF treatment. They found having a baby positively influenced the recall of the IVF experience, women who did not have a baby were more critical and negative of their experience.

Of the couples in the IVF group for this study, six subsequently went on to be successful in becoming pregnant, two were unsuccessful and two had their cycles abandoned. Of the six couples that returned post treatment measures, five of these were successful in becoming pregnant and one was unsuccessful, it is not known for certain if measures were completed before knowing this or not. If they were not, the fact the majority of their treatment cycles were successful could have influenced the results given, particularly making them more positive of their experience and could also have been an influencing factor in making them more inclined to complete and return the post measures sent to them.

Whether a couple goes on to become pregnant may also have an influence on their psychological health, in terms of depression and anxiety. It has been found that there is more anxiety in those who did not become pregnant (Csemiczky et al, 2000) and increased negative emotions (Demyttenaere et al, 1998). This could be an explanation as to why there were no significantly elevated levels of depression or anxiety in the IVF group used in this sample, as the majority of those that completed measures at the post treatment stage, went on to be successful. However, whether they knew this before completing measures is not known for certain.

All these problems that have been discussed with regards to the unpredictable nature of the IVF treatment cycle highlights the difficulties in carrying out prospective research in this field and why some previous studies have focused more on retrospective work.

There were also other reasons for not obtaining post treatment and follow up measures for the couples in the IVF group. Two couples had their treatment cycles abandoned and no longer wished to participate. One couple encountered other medical problems, leading to the wife being admitted to hospital, so also did not wish to participate further in the study. Another couple wrote to the researcher to inform them that they no longer wished to take part in the study, as they felt unable to, due to the impact of events in their lives at that time.

Follow Up Stage

Only four couples completed and returned their measures at the one-month follow up, with the remaining two declining to continue participation in the study.

Longitudinal designs are useful for tracking changes over time and the psychological impact of life events etc. Unfortunately, it is inevitable that at each subsequent wave of questioning some people will drop out, leaving a reduced sample of people to provide usable data at all points in the study. The people who stay with the study may be a biased sample, for example, you may start with a fairly representative sample, but those who stay may be systematically different from those who leave (Breakwell et al ,1995). Therefore, unfortunately this study began with small numbers anyway and was then decreased even further due to the inevitable nature of a longitudinal design.

Alternative explanations for the results found.

There are many factors and variables that could have had an influence on the results found in this study. Within the IVF group, factors such as whether they were funded or not, how many previous treatment cycles they have had, the diagnosis and which partner that diagnosis relates to could all influence the couple's view of their IVF experience, these variables for the IVF group are demonstrated by Table 3 in the results section.

Funding for an IVF treatment cycle could potentially cause some strain for a couple. It can cost a couple about £1600 for a cycle of IVF and slightly more when the charges made for the drugs used are included, which is another £700. If a couple are self-funded, then they have the added worry that they are investing in something that has no guaranteed success, and could potentially lose a lot of money, and then have to possibly find more money for another cycle. Even for those couples that are funded, money could still be an issue, if their funded cycle is unsuccessful, there is no guarantee that they will get funding for subsequent cycles from the local health authorities.

All but one couple in the sample had no experience of previous IVF cycles, with this being their first attempt. This may be an explanation as to why no difference in martial satisfaction was found, as previous research suggests there tends to be more dissatisfaction with the more attempts a couple has. Any significant relationship and sex problems are more likely to develop after extended periods of failure to conceive (Pasch & Christensen, 2000).

For example as quoted by Reading (1993), in Leiblum (1997), '...the stage at which assessments are made may influence research findings. Couples tend to report fewer problems at the start of infertility treatment when optimism is high, but after months or years of unsuccessful reproductive attempts, acknowledge that the multiple stresses of dealing with infertility has eroded marital satisfaction' (pg151).

Although this was the first treatment cycle for most of the couples in this sample, many of the couples had been trying to conceive for a number of years before embarking on IVF treatment. Table 3 in the results section clearly demonstrates the number of years each couple had been attempting to conceive, the average being 5 years. Therefore, this suggests that the stress of possible infertility and repeated attempts at trying for a baby appear to be quite lengthy for most of the couples in the sample before their decision to seek medical help.

However, with this being the first treatment cycle for the majority of couples in this study, they may still have felt hopeful and optimistic and the prospect of an unsuccessful cycle and the need to go through treatment again less daunting or stressful, than it would be for couples who have been through the process before.

In terms of the family systems theory and the family life cycle, although infertility may represent an inability to accomplish the parenthood stage, it can still be considered early days for this sample of couples undergoing IVF treatment. There is still future hope and so they have not yet become stuck in the couple stage and their roles and relationship boundaries have not yet become blurred.

The diagnosis of infertility and which partner this relates to could influence the feelings within a couple. Previous research by Lee et al (2000) found that wives with female factor infertility expressed higher distress to infertility and higher distress in terms of self-esteem, compared to their husbands. Less marital and sexual satisfaction was found in females compared to their husbands, where there was joint infertility and no differences were found between partners when infertility was unexplained.

The findings of this study do not highlight any differences in the sexes in terms of marital satisfaction, this may be because the majority of the couples in the IVF group had male factor infertility, and as the recent work by Lee et al (2000) suggests, the biggest impact on marital and sexual satisfaction and levels of distress tend to be found in the females with female factor infertility. However, past research has found the opposite. Connolly, Edelmann & Cooke (1987) looked at emotional adjustment and marital difficulties experienced by a large sample of patients attending an infertility clinic over a ten year period. They found male infertility was clearly associated with an increase in marital problems. They report that women see a diagnosis of infertility in the man as causing more marital problems than if the cause lies with the woman, they hypothesise that this could well be due to the male's loss of self-esteem as a result of the infertility diagnosis. Therefore, the findings of Connolly et al (1987), suggest that a higher rate of marital dissatisfaction should have occurred in this investigation because more of the sample had male factor infertility.

The length of time a couple have been married may also be an important factor. The majority of the couples in the IVF group had only been married for a relatively short amount of time, and it could be hypothesised that they wouldn't have encountered as much stress or be as stressed as a couple that had been together for a very long time. As discussed in the introduction, research has suggested that the relation of marital satisfaction to how long the marriage has lasted is shaped like a U, with a sharp decline after the birth of the first child (Sabini, 1995). Therefore, in line with this theory, the majority of the couples in the IVF group can be considered to be at the top of the U, as they are in the early stages of their marriage and have not had any children yet, hence suggesting that there is a high level of marital satisfaction.

It should be recognised that other events separate to the IVF treatment could have been occurring in the couple's lives at the time of the study that could have influenced there feelings about marital satisfaction, as well as their mood and emotional state. No measure was taken of other events happening in the couple's lives and the impact of these, and may be something to consider if the study was to be replicated.

It is possible that the couples that did consent to take part in the study, may have been couples that were already in strong and solid relationships and therefore happy to take part in a study investigating into aspects of their marriage. In Leiblum (1997), Reading (1993) states '...infertility stresses those who are already in conflicted relationships, but has a neutral or positive impact on couples already in solid relationships' (pg 151). This factor could have subsequently biased results, with no marital dissatisfaction being found. Those

couples that were less satisfied with their marriage and potentially more likely to be affected by undergoing IVF treatment, could possibly be those that did not wish to take part. Edelmann et al (1994) claim that couples presenting for IVF are, in general, well adjusted and appear not to be affected by past fertility history. They suggest that this stability may partly be due to a process of self-selection, whereby only those who feel able to meet the emotional demands, reach this stage of infertility treatment.

There is the issue of couples giving answers expected of them and not wanting to show any marriage problems in case this went against their treatment, or others view as to whether they would be fit as parents or not. However, couples were assured at the beginning, that consenting to take part in this study would not jeopardise their treatment at the IVF unit in any way.

Limitations on generalising the conclusions of the study.

There are difficulties making generalisations from the results of this study, this is mainly due to the small numbers of couples obtained for the IVF group. Ten couples consented to take part out of thirty couples approached, giving a response rate of 33%. However, only six couples had completed post treatment measures (with four withdrawing from the study at this stage), and this was reduced to just 4 couples at the one-month follow up. Therefore, the comparison between measures at the pre, post and follow up stages were limited to even smaller numbers, therefore conclusions made should be regarded with caution when generalising to the IVF population as a whole.

Possible reasons to explain the small numbers, are that the IVF unit only have relatively small numbers of couples going through the unit at any one time, with an average of roughly ten a month. Therefore, this is not a population group that has a high turn over of people on a daily basis, this could have had an effect on accessing larger numbers to take part in research.

What appears to be the main reason for people being unwilling to take part in the study was because of the sensitive nature of IVF treatment, but more importantly that of people's marital relationships. Many individuals felt it was too intrusive and personal, as identified by the record kept of responses given as to why people did not wish to participate in the study and which are discussed in the Results section.

In order to try and make people feel more comfortable with talking about marriage and their feelings surrounding this, it may have been more appropriate for the researcher to have spent more time at the IVF unit, in an attempt to become a more familiar face to the patients and build more of a relationship with them throughout their treatment, with a view to this leading them to feel more comfortable in talking to the researcher about their marital relationships. However, the amount of time available to the researcher to spend at the IVF unit was limited, but is a consideration to bear in mind, if such a study was to be replicated.

Other research projects were being carried out by medical staff at the IVF unit at the same time as this study and so couples were often already involved in other research and did not wish to take part in any more. It seemed apparent that

couples appeared more willing to participate in the medical research e.g. allowing unused embryos, or tissue samples to be used for research purposes, as opposed to research that centred around their psychological health and involved more of their time and information about themselves as a person.

Further experimental work.

If further work were to be carried out on this study, then it would be useful to replicate it using a much larger sample. Using a larger sample would allow more confidence in the results produced. It would also have more potential to highlight any effects of IVF treatment on marital satisfaction than this study could provide. However, further experimental work may be difficult given the difficulties in recruiting that were encountered during this study and in light of the information collected as to why people did not wish to participate. It may be that marriage is too sensitive an issue to address within the field of IVF and that more indirect methods of measurement may have to be used. For example, it may work better to recruit staff at the IVF unit to make observations of a couple's marriage and interactions while they are present at the unit, and have them assess any changes. This may cause some ethical difficulties, as couples would be unaware of these observations. However, this type of work may be accepted by an ethics committee if there is evidence that previous approaches had not been successful.

It was felt that a quantitative approach would be less intrusive when addressing a sensitive topic such as marital satisfaction and specifically in an already

emotionally charged area as IVF treatment. The use of postal questionnaires allowed no specific face-to-face contact and as a result greater anonymity. This was felt particularly important due to the confidential nature of IVF treatment, with many couples not even telling other family members or friends that they are having treatment. However, it could be considered that a more qualitative approach would have yielded more information on exactly the effects, as considered by the individual, that undergoing IVF treatment had on their relationship that could not be obtained through the quantitative measures used. Specific reasons, or accounts of experiences at different stages of treatment, could be more easily ascertained through the use of interview techniques.

It was the intention of this study to carry out a semi-structured interview with each partner in each couple separately, at the post treatment stage. However, only two couples out of the ten consented to an interview and of these two couples, both went on to withdraw from participation at the post treatment stage, and no longer wished to give an interview. Therefore, no semi-structured interviews took place. A copy of the consent form and semi-structured interview that was planned to be used, can be seen in appendix 7.

It would be interesting to carry out further qualitative work, if this study was to be continued. However, the difficulties experienced in recruiting couples for this would prove hard and maybe says something about people's willingness to talk about their marriages and relationships.

It may be of more use to look at the development of psychological and/or marital measures that are infertility specific (Newton, 1999), so more productive

quantitative work could be conducted. As stated by Newton (1999), ' we have identified external risk factors, such as treatment experience, it is still unknown whether there are critical relationship factors that reliably differentiate distressed couples from non-distressed couples. Similarly, it is unknown whether there are aspects of a relationship that serve to buffer infertile couples from marital distress and increase the likelihood of successful long-term adjustment. Efforts to answer these would certainly be aided by the development of measures that are infertility specific.' (pg. 114).

Conclusions.

This study presented a longitudinal investigation of the impact of IVF treatment on marital satisfaction. Overall the results suggest that undergoing IVF treatment did not have an effect on marital satisfaction, marital happiness or on an individual's mood and emotional state. Responses to the additional questions given to the IVF group at the post treatment stage, suggested undergoing IVF treatment had a positive effect on individuals' marriages and a sense that it brought them closer together. Replication of these findings with a much larger sample, would aid in confirming these conclusions.

The clinical implications of this study for psychologists or counsellors working with infertile couples and specifically those undergoing IVF treatment are that there should be an awareness that although on the whole marital satisfaction appears not to be effected by infertility and it's treatment in most couples, it is still a factor to be conscious of and to monitor in couples they are working with

as it may be an issue for some couples, not all individuals are equally or consistently affected.

As treatment continues to be unsuccessful, the role for psychological input may be greater. Couples may require help in re-considering their perceptions of a childless lifestyle and their sex-role beliefs. Often an important step towards accepting infertility is to also see the benefits of a lifestyle without children. Related to this may be the need to redefine various sex-role beliefs or to meet the social-psychological satisfaction of having children through other roles (Callan & Hennessey, 1989). The important psychological task is for couples to accept themselves and each other with the 'flaw' of infertility even within a seemingly free yet subtly pronatalist society where parenting dominates the collective consciousness (Morse, 2000).

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APPENDIX 1.

DEMOGRAPHIC QUESTIONNAIRE

DEMOGRAPHIC QUESTIONNAIRE

I would be grateful if you would answer the following questions, they have been designed in order to find out more information about you and your partner.
Please answer the questions in relation to you both and state which answer relates to which partner where necessary.

1) Age: (both partners ages)

2) Occupation: (both partners jobs)

3) How long have you been married? (please state below)

4) Do you have any children? (please tick appropriately)

Yes ____ No ____

5) If so, how many children do you have? (please state below)

6) If you have children, how old are they? (please state below)

8) Do you or your partner have any current medical problems/illness?

Yes _____ No ____

9) If yes, what are these medical problems? (please state below)

Question to be answered by the comparison group (non-IVF patients) only:-

10) As a couple, are you suffering from, or have you ever suffered from infertility problems?

Yes ____ No _____

Thank you for taking the time to complete this questionnaire.

Lisa Upstone
Trainee Clinical Psychologist.

APPENDIX 2.

THE GOLOMBOK-RUST INVENTORY OF MARITAL STATE.

The Golombok Rust Inventory of Marital State (GRIMS) Questionnaire

NFER-NELSON
Health & Social Care
INFORMING YOUR DECISIONS

Before beginning the questionnaire, please complete this section in block capitals

NAME: ..... SEX: .....

DATE: ..... AGE (Years): ..... LENGTH OF RELATIONSHIP: ..... Years ..... Months

NAME OF PARTNER: .....

Instructions

Each statement is followed by a series of possible responses: strongly disagree (SD), disagree (D), agree (A), strongly agree (SA). Read each statement carefully and decide which response best describes how you feel about your relationship with your partner; then circle the corresponding response.

Please respond to every statement: if none of the responses seem completely accurate, circle the one which you feel is most appropriate. Do not spend too long on each question.

Please answer this questionnaire without discussing any of the statements with your partner. In order for us to obtain valid information it is important for you to be as honest and as accurate as possible.

All information will be treated in the strictest confidence.

		Strongly disagree	Disagree	Agree	Strongly agree
1.	My partner is usually sensitive to and aware of my needs	SD	D	A	SA
2.	I really appreciate my partner's sense of humour	SD	D	A	SA
3.	My partner doesn't seem to listen to me any more	SD	D	A	SA
4.	My partner has never been disloyal to me	SD	D	A	SA
5.	I would be willing to give up my friends if it meant saving our relationship	SD	D	A	SA
6.	I am dissatisfied with our relationship	SD	D	A	SA
7.	I wish my partner was not so lazy and didn't keep putting things off	SD	D	A	SA
8.	I sometimes feel lonely even when I am with my partner	SD	D	A	SA
9.	If my partner left me life would not be worth living	SD	D	A	SA
10.	We can 'agree to disagree' with each other	SD	D	A	SA
11.	It is useless carrying on with a marriage beyond a certain point	SD	D	A	SA
12.	We both seem to like the same things	SD	D	A	SA
13.	I find it difficult to show my partner that I am feeling affectionate	SD	D	A	SA
14.	I never have second thoughts about our relationship	SD	D	A	SA
15.	I enjoy just sitting and talking with my partner	SD	D	A	SA
16.	I find the idea of spending the rest of my life with my partner rather boring	SD	D	A	SA
17.	There is always plenty of 'give and take' in our relationship	SD	D	A	SA
18.	We become competitive when we have to make decisions	SD	D	A	SA
19.	I no longer feel I can really trust my partner	SD	D	A	SA
20.	Our relationship is still full of joy and excitement	SD	D	A	SA
21.	One of us is continually talking and the other is usually silent	SD	D	A	SA
22.	Our relationship is continually evolving	SD	D	A	SA
23.	Marriage is really more about security and money than about love	SD	D	A	SA
24.	I wish there was more warmth and affection between us	SD	D	A	SA
25.	I am totally committed to my relationship with my partner	SD	D	A	SA
26.	Our relationship is sometimes strained because my partner is always correcting me	SD	D	A	SA
27.	I suspect we may be on the brink of separation	SD	D	A	SA
28.	We can always make up quickly after an argument	SD	D	A	SA

APPENDIX 3.

THE MARITAL HAPPINESS SCALE.

MARITAL HAPPINESS SCALE

(Azrin, Naster & Jones, 1973)

This scale is intended to estimate your current happiness with your marriage on each of the ten dimensions listed. You are to circle one of the numbers (1-10) beside each marriage area. Numbers towards the left end of the ten-unit scale reflect varying degrees of happiness. Ask yourself this question as you rate each marriage area: 'If my partner continues to act in the future as he/she is acting today with respect to this marriage area, how happy will I be with this area of our marriage?' In other words, state according to the numerical scale (1-10) exactly how you feel today. Try to exclude all feelings of yesterday and concentrate only on the feelings of today in each of the marital areas. Also, try not to allow one category to influence the results of the other categories.

	Completely unhappy									Completely happy
Household responsibilities	1	2	3	4	5	6	7	8	9	10
Rearing children	1	2	3	4	5	6	7	8	9	10
Social activities	1	2	3	4	5	6	7	8	9	10
Money	1	2	3	4	5	6	7	8	9	10
Communication	1	2	3	4	5	6	7	8	9	10
Sex	1	2	3	4	5	6	7	8	9	10
Academic (occupation progress)	1	2	3	4	5	6	7	8	9	10
Personal independence	1	2	3	4	5	6	7	8	9	10
Spouse independence	1	2	3	4	5	6	7	8	9	10
General happiness	1	2	3	4	5	6	7	8	9	10

Name _____

Date _____

APPENDIX 4.

THE HOSPITAL ANXIETY AND DEPRESSION SCALE .

The Hospital Anxiety and Depression Scale

Name ..... Date .....

Clinicians are aware that emotions play an important part in most illnesses. If your clinician knows about these feelings she or he will be able to help you more.

This questionnaire is designed to help your clinician to know how you feel. Ignore the numbers printed on the left of the questionnaire. Read each item and underline the reply which comes closest to how you have been feeling in the past week.

Don't take too long over your replies; your immediate reaction to each item will probably be more accurate than a long thought-out response.

fold along dashed line

A
I feel tense or 'wound up':

3 Most of the time

2 A lot of the time

1 From time to time, occasionally

0 Not at all

I still enjoy the things I used to enjoy:

0 Definitely as much

1 Not quite so much

2 Only a little

3 Hardly at all

A
I get a sort of frightened feeling as if something awful is about to happen:

3 Very definitely and quite badly

2 Yes, but not too badly

1 A little, but it doesn't worry me

0 Not at all

(continued overleaf)

THE HOSPITAL ANXIETY AND DEPRESSION SCALE

fold along dashed line

A 3 2 1 0

I can laugh and see the funny side of things:

As much as I always could

Not quite so much now

Definitely not so much now

Not at all

Worrying thoughts go through my mind:

A great deal of the time

A lot of the time

From time to time but not too often

Only occasionally

I feel cheerful:

Not at all

Not often

Sometimes

Most of the time

A 0 1 2 3

I can sit at ease and feel relaxed:

Definitely

Usually

Not often

Not at all

I feel as if I am slowed down:

Nearly all the time

Very often

Sometimes

Not at all

A 0 1 2 3

I get a sort of frightened feeling like 'butterflies' in the stomach:

Not at all

Occasionally

Quite often

Very often

(continued overleaf)

THE HOSPITAL ANXIETY AND DEPRESSION SCALE

fold along dashed line

I have lost interest in my appearance:

- Definitely
- I don't take as much care as I should
- I may not take quite as much care
- I take just as much care as ever

I feel restless as if I have to be on the move:

- Very much indeed
- Quite a lot
- Not very much
- Not at all

I look forward with enjoyment to things:

- As much as ever I did
- Rather less than I used to
- Definitely less than I used to
- Hardly at all

I get sudden feelings of panic:

- Very often indeed
- Quite often
- Not very often
- Not at all

I can enjoy a good book or radio or TV programme:

- Often
- Sometimes
- Not often
- Very seldom

Now check that you have answered all the questions

For office use only:

D : ☐ Borderline 8–10

A : ☐ Borderline 8–10

APPENDIX 5.

INFORMATION SHEET.

INFORMATION SHEET.

The effects of undergoing IVF treatment on marital relationships and marital satisfaction.

I am carrying out a research project into the psychological aspects of undergoing IVF treatment and their effect on the couples involved. I want to find out whether being involved in IVF has any impact on marital relationships and satisfaction, over the duration of the procedure and after it has been completed.

Once I know this, I hope this will provide useful information for future couples that may decide to undertake IVF and may be a useful area of focus for any counselling they may engage in.

I would like to invite you to take part in this study to find out the above, through the use of four questionnaires. This would involve you and your partner completing them before treatment starts, after it has been completed and then again one month later. I hope to get about 52 married couples about to undergo IVF to complete the questionnaires for me. I shall also be recruiting 52 married couples who are not having IVF treatment to complete the questionnaires at the same time, to use as a comparison.

The questionnaires will involve asking questions with regards to IVF, aspects of your marriage, including your overall marital happiness and satisfaction and some questions related to your mood and psychological wellbeing. The questionnaires should not take long to complete and can be returned in the addressed envelopes provided.

Helping with the research is **completely voluntary** and of course, if you don't want to take part, your treatment and care won't be affected in any way. If you agree to help and then don't want to carry on, **you can stop anytime you like.** All the questions you answer will be **completely confidential** and the doctors, nurses and other hospital staff who are looking after you will not be told or shown anything you might say. The results of the research will only be shown to other people in a **completely anonymous** form. Declining to participate or withdrawal from the research at any point will not affect your treatment.

If you have any further questions you can discuss them with Miss Lisa Upstone on any weekday evening on 01482 443438.

APPENDIX 6.

CONSENT FORM.

Study Number:

CONSENT FORM

An investigation into the effects of undergoing IVF treatment on marital relationships and marital satisfaction.

Lisa Upstone, Trainee Clinical Psychologist.

(Please tick appropriately.)

1. I confirm that I have read and understood the information sheet for the above study and have had the opportunity to ask questions.
   Yes ___ No ___

2. I understand that my participation is voluntary and that I am free to withdraw
   at any time, without giving reason, without my medical care or legal rights being affected.
   Yes ___ No ___

3. I understand that sections of any medical notes may be looked at by responsible individuals from The University of Hull or from regulatory authorities where it is relevant to my taking part in research. I give permission for these individuals to have access to my records.

   Yes ___ No ___

4. I agree to take part in the above study.

   Yes ___ No ___

Name of patient	Date	Signature
Name of person taking consent (if different from researcher)	Date	Signature
Researcher	Date	Signature

APPENDIX 7.

SEMI-STRUCTURED INTERVIEW.

CONSENT FORM FOR INTERVIEWS

I would also like the opportunity to interview couples after their treatment has finished, but before knowing the end result. This would help to expand on the information already gained from the questionnaires you have completed.

Consenting to take part in an interview would involve myself arranging an appointment to meet and interview you and your partner separately at a mutely agreeable time and place. These interviews would last no longer than one hour each, and would give you the opportunity to tell me in more detail about your IVF experience and any impact you feel it had on your marriage (negative/positive) at any stage of treatment.

All information given would be kept anonymous and confidential and you have the right to withdraw from participating at anytime.

Please tick the relevant box below and return the form to me with your questionnaires in the envelope provided.

We would be willing to take part in an interview after our treatment has finished and do not mind being contacted to arrange an appointment. ☐

We would prefer to only take part in the questionnaire part of the study and do not wish to be contacted to arrange an appointment for an interview. ☐

Names	Date	Signatures

Thank you for your time and help.

Lisa Upstone
Trainee Clinical Psychologist

Semi-Structured Interview Schedule.

a) Marriage.

1. Can you describe your marriage and your feelings about your marriage to me in your own words? (prompt: What things are you happy/unhappy with?
What are the good/bad things?
What things are equal/unequal?)

2. If you could make any changes to your marriage what would they be?

b) IVF treatment.

3. Can you tell me a brief history of you and your partner's fertility problems and what you know about the problem?

4. Can you describe what it was like for you undergoing IVF treatment? (prompt: Anything you'd like to have been different?
Best/worst points.)

5. Looking back, just over the time you were undergoing IVF treatment, how do you feel it has had an effect on your marriage?
(prompt: Any effect at all? Negative/positive aspects.)

c) Effect on marriage.

6. In what way do you feel your marriage and satisfaction with your marital relationship has changed during or since ending treatment?
(prompt: Changes for better/worse?)

7. If any changes occurred, how long do you think they will last?
(prompt: do you think they are temporary/permanent?)

8. How do you now see the future for your marriage?

9. Do you have any other points you would like to make with regards to any effect undergoing IVF treatment has had on your marriage and satisfaction with your marital relationship?

APPENDIX 8.

ADDITIONAL QUESTIONS.

ADDITIONAL QUESTIONS:

Below are some additional questions to give you an opportunity to say more about the effects (positive/negative), if any, you feel undergoing IVF treatment had on your marriage/relationship. Space is provided below each question for you to give your comments. Thank you for your participation.

1) In what way, if any, do you feel your marriage/relationship and your satisfaction with this changed during or since undergoing IVF treatment? (Please write below)

2) Do you have any other points you would like to make with regards to any effects undergoing IVF treatment has had on your marriage/relationship and your satisfaction with it? (Please write below)