Dr Thomas Stuttaford on multiple births, psychiatric disorders, stress, Alzheimer's and asthma.

Headline: Ghost of the Missing Twin; Body and Mind
Byline: Dr Thomas Stuttaford
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*Multiple Pregnancy, edited by Humphrey Ward and Martin Whittle, is published by the Royal College of Obstetricians and Gynaecologists, Pounds 48.

In a memorable interview, Enoch Powell described his sense of guilt and sorrow that he returned from the war while so many of his contemporaries were killed. How much more disturbing for a surviving twin who has lived with a brother or sister in the enclosed world of the womb, only for the sibling to die in the last weeks of pregnancy, during delivery or later in the nursery.

Surviving twins start life with a sometimes unbearable sense of guilt, for they blame themselves for their sibling's death and subconsciously, or even consciously, suspect that their parents also see them as murderers who have killed the other baby by taking more than their fair share of the nutrition, or of the available space, in the uterus.

Surprisingly, the emotional and psychological problems felt by the surviving twin, which are often expressed as depression and sometimes as behavioural disorders,are more intense if the child has no recollection of the death of the other twin. Sometimes surviving twins also have a sense of insecurity, for they reason that if the parents couldn't keep their brother or sister alive, are they likely to do any better with them?

Coupled with the feeling that he or she is guilty, the twin who lives may also sense that they have been deserted by the dead sibling, who has left them with an immense obligation to make it up to the parents for the family loss. Thereafter they believe that they have to do better, and be better, because of the death - emotions which can put a great burden on shoulders which are not always strong enough to carry them.

In a report in the journal Advances In Perinatal Medicine, the author describes the state of being a twin of a stillborn baby as a psychological catastrophe. This may be an overstatement, but several research projects have demonstrated that these children have an increased chance of suffering from depression in adult life.

The advice given to parents in the authoritative work on twins, Multiple Pregnancy, suggests that a surviving twin should be told about the dead baby from the start. Parents, other members of the family and teachers should not only talk about the lost twin, but should show that they are ready to listen to a confused young child's delusions, however bizarre, about their supposed murderous foetal life, and should be prepared to provide the necessary reassurance.

Not all women are equally liable to have twins. In the Western world, twins are conceived more often when the sun is shining, for the sun is thought to influence ovulation through its effect on

the pineal gland. Certainly there is a slight increase in the number of twins conceived during the summer months. The rate of twin pregnancies varies throughout the world - in some parts of West Africa it is four times greater than in Britain, which has a rate of 12.4 per thousand. Larger, taller women have twins more often than do those who are short and petite, and there is a strong familial tendency to produce twins.

When twins run in a family, the babies are usually not identical and it seems that inheritance comes down on the mother's side. There is also a very slight familial tendency to have identical twins, in which case either parent may transmit the appropriate genes.

It is difficult to be certain how many twins are actually conceived as opposed to being born, as twins are very vulnerable in the early days of a pregnancy. Many die during the first stages of development. Since the use of ultrasound has become standard, it is apparent that twins are conceived much more often than was hitherto supposed. It now seems likely that at least 3 percent of all pregnancies start as twins, but that, in nearly a quarter of cases, one twin disappears.

The loss of a twin at this very early stage of pregnancy does not have the same long-term psychological implications for the surviving twin as it would do if the death occurred later. The mother, too, is probably unaware that the second foetus ever existed.

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Cramping in twin pregnancy
by Peg Plumbo

My wife is 14 weeks pregnant with twins. She has had severe morning sickness and constant cramping that started five weeks ago. An ultrasound showed both hearts are beating strong. When can we stop worrying about miscarriage?

The actual statistics for miscarriage among twin pregnancies vary according to the type of twinning. If the babies share the same placenta and sac (monochorionic), the rate is twice that of the type which has separate placentas and separate sacs.

The frequencies of twin 'disappearance' or the loss of one baby but not the other, reportedly ranges from 15 to 70 per cent if an ultrasound is performed before 14 weeks. Generally, it is

considered to be about 20 per cent.

Like single pregnancies, the risk of miscarriage declines with ultrasound observation of the foetal hearts and goes down again after completion of the first trimester. It does appear as if those two landmarks have been reached in your case.

However, due to the inherent placental circulation demands of twins, the spontaneous loss rate is still high and does extend until the 20th week of pregnancy, after which it falls off. As the third trimester approaches, your wife will be watched closely due to an increased risk of preterm labour. In general, although carrying twins make it a high-risk pregnancy, many pregnancies progress uneventfully and without complication.

If your wife has no other health problems such as cervical incompetence, autoimmune problems or severe anaemia, which would increase her chances of pregnancy loss, she should be in a good position to have a healthy pregnancy.

Monoamniotic twins
by Peg Plumbo

My wife and I are having twins, and the doctor said they might be 'monoamniotic.' He also said there was only a 50 per cent chance of both of the twins making it. Please tell us more about this condition.

Twins are either monozygotic or dizygotic. In your case, monozygotic, a single fertilized ovum splits into two distinct individuals. These babies will be 'identical twins' – of same sex and genetically identical.

The incidence of this type of twinning is approximately four per 1,000 births. Unlike the fraternal type of twinning (dizygotic), this type does not seem to vary depending on mother's age or how many children she has.

Some twins share the same amniotic sac and the same placenta (monochorionic and monoamniotic – 1 in 25,000 to 1 in 60,000 pregnancies) and because of this, cord entanglement and compression become a very high risk. This can lead to an interruption in the blood flow to one or both babies where they may not receive enough nutrients or oxygen.

When there is no membrane between the babies – a monoamniotic twin pregnancy – there is a very high risk of cord entanglement and also twin to twin transfusion syndrome. This represents a very high-risk pregnancy and intensive monitoring and testing of the babies is required. At times, it is safer to deliver such babies early, some as early as they are viable (24 to 28 weeks). Thirty-four weeks is often considered 'full term' for monoamniotic twins because the cord risks outweigh the prematurity risks.

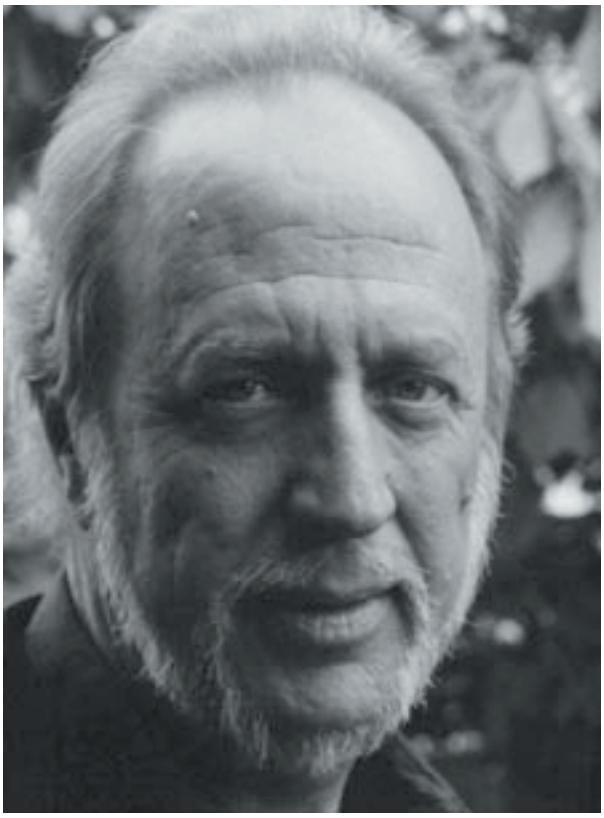
If you have been diagnosed with monoamniotic twins, you may find a support group helpful to

answer your questions and listen to the stories of others in a similar situation. You may want to visit the Monoamniotic Monochorionic Support Site

Another good resource is the Multiple Births Foundation based at the Institute of Obstretrics & Gynaecology, at Queen Charlotte's and Chelsea Hospital in London. The Foundation was established to support professionals working with multiple birth families, and runs specialist clinics for families. Their website is at www.multiplebirths.org.uk

Institute of Psychiatry

Social, Genetic and Developmental Psychiatry Research Centre
Professor Robert Plomin



Robert Plomin is Professor of Behavioral Genetics at the Institute of Psychiatry in London, where he is deputy director of the Social, Genetic and Developmental Psychiatry Centre at the Institute. The goal of the Research Centre is to bring together genetic and environmental research strategies to investigate behavioral development, a theme that characterizes his research. Plomin is currently conducting a study of all twins born in England during the period 1994-96, focusing on developmental delays in early childhood and their association with behavioral problems. After receiving his doctorate in psychology from the University of Texas, Austin, in 1974, he worked with John DeFries and Gerald McClearn at the Institute for Behavioral Genetics at the University of Colorado, Boulder. Together, they initiated several large longitudinal twin and adoption studies of behavioral development throughout the life span.

From 1986 until 1994, he worked with McClearn at Pennsylvania State University. They launched a study of elderly twins reared apart and twins reared together to study aging, and they developed models to identify genes in complex behavioral systems.

Plomin's current interest is in harnessing the power of molecular genetics to identify genes for psychological traits. He has been president of the Behavior Genetics Association.

Selected Publications

Dale, P.S., Dionne, G., Eley, T.C., & Plomin, R. (2000). Lexical and grammatical development: a behavioral genetic perspective. Journal of Child Language, 27, 619-642.

Eley, T.C., Bishop, D.V.M., Dale, P.S., Oliver, B., Petrill, S.A., Price, T.S., Purcell, S., Saudino, K., Simonoff, E., Stevenson, J., & Plomin, R. (1999). Genetic and Environmental Origins of Verbal and Performance Components of Cognitive Delay in Two-Year-Olds. Developmental Psychology, 35, 1122-1131.

Plomin, R. (1999). Genetics and general cognitive ability. Nature, 402, C25-C29

Plomin, R., & Crabbe, J.C. (2000). DNA. Psychological Bulletin, 126, 806-828.

Assisted Reproductive Technology: Psychological Effects on Offspring
Tara Maria A. Blasco, M.A.* and Thomas R. Verny, M.D.**

ABSTRACT: This paper will briefly describe the ART techniques used currently; study the psychological impact of ART on the offspring; and consider ways in which more consciousness can be brought to artificial conception.

INTRODUCTION

Today, a growing number of couples diagnosed with infertility make use of an array of technologies to help them overcome their difficulties in conceiving and pursuing their dreams of creating a family. Different studies show (Malin, 2001 and McMahon, 1999), that these technologies have an impact on the couple and more specifically on a woman's emotional and physical well being.

Clinical, anecdotal and experimental evidence in the field of prenatal and perinatal psychology shows that babies are conscious in the womb and that the child's physical, emotional and mental development is directly impacted by the psychology of the mother during the prenatal period (Verny, 1981, Chamberlain, 1988, Castellino, 1995). Based on this information one must ask the following question: What is the psychological impact on the babies conceived using

A.R.T. procedures

ABREVIATION	NAME OF PROCEDURE	EXPLANATION
I.V.F.	In vitro Fertilization	Involves fertilizing eggs with selected sperm in a sterile dish.
I.U.I.	IntraUterine Insemination	Previously called Artificial Insemination (A.I.)

G.I.F.T

Gamete Intra-Fallopian Transfer	Implants eggs and sperm in the fallopian tube.	
Z.I.F.T.	Zygote Intra-Fallopian Transfer	Transfer a zygote (the cell formed by two gametes) in the fallopian tube.
I.C.S.I.	IntraCytoplasmic Sperm Injection	Directly introduces an individual sperm into each of the eggs utilized in an IVF attempt

F.E.T.	Frozen Embryo Transfer	Involves transfer of previously fertilized and subsequently frozen embryos.

Artificial Reproductive Technologies (ART)?

CURRENT ARTIFICIAL REPRODUCTIVE TECHNOLOGY PROCEDURES

According to The Southern California Reproductive Medical Center (2001), a state of the art clinic in the western United States, the following procedures are most commonly used currently. In general, these treatments include the use of the egg and sperm of the couple fertilized outside of the womb to increase the chances of conception; the use of the egg or the sperm from a donor; or the use of a surrogate mother that offers her womb to carry the embryo (fertilized by one of the possible techniques available).

In vitro fertilization (IVF) combines eggs and sperm together in a dish (in-vitro) where the opportunities of fertilization are enhanced. The successfully fertilized eggs that develop into embryos over the next three days will be transferred to the womb or cryopreserved (frozen).

IVF involves inducing ovulation with fertility drugs for the first ten to twelve days of a woman's cycle and then, using the guidance of ultrasound, retrieving these eggs, fertilizing them with the chosen sperm in a sterile dish, incubating them under laboratory conditions for two to three days, and then transferring viable embryos back into the woman with the hope of a successful pregnancy and birth. Since not all embryos successfully implant, multiple embryos are transferred in the hopes of obtaining one live birth, with the consequence that multiple births are always a possibility. (London, 2001, chapter 4 on line)

Other techniques include Washed Intrauterine Insemination (IUI) or what was previously called Artificial Insemination (AI); Gamete Intra-Fallopian Transfer (GIFT), which involves the same procedure as IVF, but implants the egg and sperm in the woman's fallopian tube for natural fertilization; Zygote Intra-Fallopian Transfer (ZIFT) involves the transfer of a zygote, (the cell formed by the union of two gametes).

Intra-Cytoplasmic Sperm Injection (ICSI), which is a procedure that directly introduces an individual sperm into each of the eggs utilized in an IVF attempt; the Frozen Embryo Transfer (FET), which involves the transfer of previously fertilized and subsequently frozen embryos; the IVF donor-oocyte program, which follows the procedure for IVF but uses an egg donated by a younger woman; and the IVF surrogacy program that employs the use of a third party, "gestational surrogate", and is used when a woman cannot carry her own baby. In IVF surrogacy the child bears 100% genetic identity with the couple, as opposed to 50% genetic identity in conventional surrogacy. Finally, the Blastocyst Transfer Process (BTP) which is one the latest fertility advances and involves letting the embryo grow until the fifth day, when it reaches the blastocyst stage of development because the blastocyst has a higher chance of implantation, and for this reason the amount of blastocyst transferred is normally two, which decreases the possibilities of multiple pregnancies.

It is important to take into account that even with the use of this astonishing technology, a woman who chooses IVF has at best about a 20 percent chance of a successful pregnancy in a given cycle; that the cost per cycle is about $10,000, and that she may need to undergo treatment for several cycles. Another fact to take into account is that insurance coverage is poor or nonexistent. (London, 2001).

Psychological impact on the offspring

Being conceived by a couple making love or being conceived through one of the above-discussed procedures are drastically different ways of entering the world. This compels the authors to hypothesize that the use of ART might have an effect on the psychology of the offspring. Interestingly, the studies found for this topic suggest that babies born by ART do equally well or even better than children born naturally on many parameters like bonding and attachment, emotions, behavior, self-esteem, or perceptions of family relationship. Several of these studies are discussed below.

Golombok, MacCullum, Goodman and Rutter (2002) conducted a prospective study of the quality of parenting and psychological adjustment of Donor Insemination (DI) children at age 12 years old. The participants consisted of 37 DI families, 49 adoptive families, and 91 families with a naturally conceived child. Comparisons were made on standardized interview and questionnaire measures administered to mothers, fathers, children, and teachers. The differences between DI families and the other family types reflected greater expressive warmth of DI mothers toward their children and less involvement in the discipline of their children by DI fathers. The DI children were well adjusted in terms of their social and emotional development.

A review of the empirical literature published from 1980 through June 2000 on the psychosocial well-being of parents and their children born after assisted reproduction was conducted by Hahn and Chun-Shin (2001) of Johns Hopkins University. Several common findings appeared across the studies reviewed. With regard to quality of parenting and family functioning, mothers of children born using assisted reproduction reported less parenting stress and more positive mother- and father-child relationships than mothers of naturally conceived children. Overall, they found no statistically significant differences in child functioning in terms of emotions, behavior, self-esteem, or perceptions of family relationship.

In order to determine if stress associated with artificial pregnancy treatment might affect early communication between mother and child, Papaligoura and Zaira (2001) utilized video microanalysis to examine face-to-face play between infants and their mothers in the first 5 months. There were three groups of infants. The first group of infants was conceived using IVF, the second through other standard infertility treatments (INF), which did not include IVF, and a control group of naturally conceived children. The authors found no evidence of detrimental effects of infertility treatment on mother-infant communication, but there were “positive” differences in behavior in the pairs where the mother had been so treated. They found that the mothers of IVF children were more playful and exhibited more caretaking episodes with their children.

Hahn, and Chun-Shin (2001) examined associations between in vitro fertilization (IVF) and quality of parenting, family functioning, and emotional and behavioral adjustment of three to seven year old children. A cross-sectional survey was conducted in Taiwan with 54 IVF mother-child pairs and 59 mother-child pairs with children conceive naturally. IVF mothers reported a

greater level of protectiveness toward their children than control mothers did. Teachers, blind to condition, rated IVF mothers as displaying greater warmth but not overprotective or intrusive parenting behaviors toward their children. Teachers scored children of IVF as having fewer behavioral problems than control children.

Gibson, Ungerer, McMahon, Leslie and Saunders (2000) conducted a study in Australia to evaluate infant attachment and mother-child interaction in 65 primiparous women and their singleton infants conceived through in vitro fertilization (IVF) and a control group of 61 women and their infants conceived naturally. At 12 months postpartum, security of infant attachment was assessed using the Strange Situation (Ainsworth, M. D. S., 1978) procedure, and mother-child interaction was assessed in a free play context. IVF children demonstrated predominantly secure attachment relationships with their mothers (64.6% IVF, 55.9% control). There were no significant group differences on maternal (sensitivity, structuring, hostility) or child (responsivity, involving dimensions of interaction during play). The majority of IVF mothers (86%) were rated as sensitive and their infants responsive (91%).

The conclusions of Van Balen's study (1998) conducted in The Netherlands is that no serious problems have arisen concerning either the physical or the psychological development of IVF children. On the contrary, there are indications of superior parental competence and warmth.

All of these studies conducted in different parts of the world are showing us how the use of ART is not having a negative effect on the psychology of the offspring. Furthermore, the research presented suggests that these children do better on some parameters than children conceived naturally. This raises the question of what is present in ART that sometimes is not present in natural conception. The authors believe that the clear element present in the life of ART babies is the fact that they are so loved and wanted by their parents, and that their parents' intention is focused on bringing them to life. Because these families have struggled to conceive, they tend to clearly love and take care of their children. In the authors's opinion, all the previous studies are showing how love is an essential ingredient for our well-being as human beings, and do not necessarily demonstrate that Artificial Reproductive Technologies have no influence in the psychology of the offspring.

Verny (1981) writes about the importance of love for the child in order to establish intrauterine bonding:

In short, intrauterine bonding does not happen automatically: Love for the child and understanding of one's own feelings are needed to make it work. When these are present, they can more than offset the emotional disturbances we are all prone to in our daily lives (Verny, 1988, p. 78-79).

Potential psychological challenges of ART for the child

The fact that ART children are generally doing well does not mean that they do not face challenges. One common challenge for children being conceived by donor insemination (DI) is the fact that they do not have access to information on their genetic origins. Landau (1998) writes about the accumulated evidence concerning the detrimental effect of secrecy, anonymity and deception in donor insemination, and argues that these practices are not only psychologically and socially harmful but also ethically unacceptable.

Another liability of ART is the fact that many couples that use them are of an older age. Levy-Shiff, Vakil, Dimitrovsky, Abramovitz, Shahar, Har-Even, Gross, Lerman, Levy, Sirota and Fish (1998) conducted a study in Israel to assess long-term effects of assisted reproduction

technologies of in-vitro fertilization (IVF) and related techniques of embryo transfer (ET) on children's adjustment. Both the IVF and the ET children were scored lower by teachers on measures of socioemotional adjustment in school and on self-report measures of anxiety, aggression, and depression. Among IVF/ET children, the tendency to be at a greater risk for emotional disturbances was exacerbated among boys and among children whose parents were older.

These authors have not found other studies that point towards the possibility that there are other effects of ART in the psychology of the offspring, but would like to connect some of the discoveries in the field of pre- and perinatal psychology that might bring more light into this matter.

Thanks to the pioneers of pre- and perinatal psychology we now know that a child's conception (Farrant, 1998, Chamberlain, 1988, Castellino, 1995) gestation (Verny, 1981, Chamberlain, 1988, Castellino, 1995,) and birth experiences (Verny, 1981, Chamberlain, 1988,Castellino, 1995) create a template of the child's emotional, physical and mental health. Castellino (1996), based on his extensive clinical experience, writes about recapitulation cycles and how the experience of conception gets recapitulated at the moment of birth, and how this experience would be recapitulated in the future, in the way the person starts new cycles in their life. He also writes about the importance of the way a baby is conceived, and that if parents are making love without the conscious awareness of the new life that may result, this can have a traumatic impact to the incoming consciousness.

Because babies are conscious beings, at least from the moment of conception, how the mother feels during conception, gestation and birth has an impact on the baby (McCarty, 1996, Luminare-Rosen, 2000.) From this perspective it is important to take into account the struggles and difficulties that women undergo when they use ART, because those experiences are directly communicated to the babies in the womb.

London (2001), found that women who have successfully undergone infertility treatments go to First-Time Moms over Forty support groups with a mixture of deep gratitude for the child they eventually gave birth to and enduring issues about the physical, emotional, financial, and spiritual toll that the treatments took on their lives.

Knowing that the stress mother undergo affects their babies, it would be important to consider ways to reduce this stress and to support mothers and parents in their process of artificial conception.

Bringing more Consciousness to Artificial Reproductive Technologies

More and more couples are using ART in our societies. Davis-Floyd and Dumit (1998) refer to how some authors "see the technologization of reproduction as a regression –away from what is natural and important" (p. 9).

The authors of this paper believe that it behooves us to exercise caution in the use of ART as we bring more awareness into the field. Before resorting to ART parents should be made aware of the many books on the subject of conceiving naturally (Conkling, 1998, Wesson, 1999, Malpani, 2001), as well as therapy programs (Payne, 1997).

Some authors like Payne propose effective ways to work in therapy in order to bring more consciousness into what is blocking the couple to conceive naturally. She has a high rate

of success in working with couples with infertility problems. The use of these resources could significantly reduce the need to use ART in couples that are having difficulties conceiving.

It is unrealistic to believe that we are going to eradicate the use of ART, especially when it is the last and only viable option for many couples to conceive. In those situations, it would be interesting to bring more consciousness to the procedures. Conception should not be considered just as a laboratory protocol, but as a process where new consciousness is coming into life.

Some additional considerations should be given to such questions as: When does life start and is it moral to freeze embryos? Also, how can ART become a more sacred and empowering experience for the whole family? One way this could be done is by introducing the concept of a doula or a witness who would be present to support and educate the parents during the whole process of ART.

CONCLUSION

The goal of this paper was to discuss present day ART techniques, the psychological impact of ART on children so conceived and ways in which more consciousness can be brought to ART conceptions. The existing studies suggest that children conceived through ART are not at a psychological disadvantage compared to children conceived naturally. The authors hypothesize that the fact that babies conceived artificially are wanted and loved is the main reason why they are not at a disadvantage or indeed do better on some of the psychological parameters. Taking into account the latest research from pre- and perinatal psychology, which shows how babies are conscious beings from conception, these authors suggest that more consciousness could be held around these procedures. At the same time, more research done from the perspective of pre- and perinatal psychology would be necessary to establish how and if the use of ART is having an impact on the psychology of the offspring.

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REFERENCES

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). Patterns of attachment: A psychological study of the strange situation. Hillsdale, N.J.: Erlbaum.

Castellino, R. (1995). The polarity therapy paradigm regarding pre-conception, prenatal and birth imprinting. Available from Castellino Training Seminars, 1105 N. Ontare, Santa Barbara, Ca 93105.

Castellino, R. (1996) Umbilical affect: stage four, bonding, circumcision and treatment strategies. Unpublished manuscript distributed only in his training.

Chamberlain, D. (1988). The mind of your newborn baby. Berkeley: North Atlantic Books.

Conkling, W. (1998). Getting pregnant naturally: Healthy choices to boost your chances of conceiving without fertility drugs. New York: Aron Books.

Davis-Floyd, R. and Dumit, J. (1998) Cyborg babies. From techno-sex to techno-tots. New York and London: Routledge.

Farrant, G. (1998). Cellular consciousness and conception: an interview with Dr. Graham Farrant. Interview by Steven Raymond. Pre- and Perinatal News, 2 (2), 4-7 and 20-22.

Gibson, F., Ungerer, J., McMahon, C., Leslie, G., & Saunders, D. (2000). The mother-child

relationship following in vitro fertilization (IVF): Infant attachment, responsivity, and maternal sensitivity. Journal of Child Psychology & Psychiatry & Allied Disciplines, 41(8), 1015-1023.
Golombok, S., MacCullum, F., Goodman, E., & Rutter, M. (2002). Families with children conceived by donor insemination: A follow-up at age twelve. Child Development, 73 (3), 952-968.
Hahn and Chun-Shin (2001). : In vitro fertilization and the family: Quality of parenting, family functioning, and child psychosocial adjustment. Developmental Psychology, 37 (1), 37-48.
Hahn and Chun-Shin (2001). Review: Psychosocial well being of parents and their children born after assisted reproduction. Journal of Pediatric Psychology, 26 (8), 525-538.
Landau, R. (1998). Secrecy, anonymity, and deception in donor insemination: A genetic, psychosocial and ethical critique. Social Work in Health Care, 28 (1), 75-89.
Levy-Shiff, R., Vakil, E., Dimitrovsky, L., Abramovitz, M., Shahar, N., Har-Even, D., Gross, S., Lerman, M., Levy, I., Sirota L., & Fish, B. (1998). Medical, cognitive, emotional, and behavioral outcomes in school-age children conceived by in-vitro fertilization. Journal of Clinical Child Psychology, 27 (3), 320-329.
London, N. (2001). Hot fashes, warm bottles: First-time mothers over forty. Berkeley: Ten Speed Press.
Luminare-Rosen, C. (2000) Parenting begins before conception. A guide to preparing body, mind and spirit for you and your future child. Rochester, Vermont: Healing Arts Press.
McCarty, W.A. (1996) Being with babies. What babies are teaching us. Vol. 1. Available from Wondrous Beginnings, 5662 Calle Real, 221. Goleta. Ca 93117.
McMahon, C.A., Tennant, C., Ungerer, J., & Saunders, D. (1999). Don't count your chickens: A comparative study of the experience of pregnancy after IVF conception. Journal of Reproductive & Infant Psychology, 17, (4), 345-356.
Malin, M., Hemminki, E., Raeikkoenen, O., Sihvo, S., & Peraelae, M.L. (2001). What do women want? Women's experiences of infertility treatment. Social Science & Medicine, 53, (1), 123-133.
Malpani, A. and Malpani, A. (2001). How to have a baby. Overcoming infertility. New Delhi: UBS Publishers' Distributors Ltd.
Papaligoura and Zaira (2001). Mother-infant communication can be enhanced after conception by in-vitro fertilization. Infant Mental Health Journal, 22 (6), 591-610.
Payne, N. (1997). The whole person fertility program. A revolutionary mind-body process to help you to conceive. New York: Three Rivers Press.
The Southern California Reproductive Medical Center (2001). Retrieved from http://www.cainfertilitydoctors.com/
Van Balen, F. (1998). Development of IVF children. Developmental Review, 18 (1), 30-46.
Verny, T. (1981). The secret life of the unborn child. New York: Dell Publishing.
Wesson, N. (1999). Enhancing fertility naturally: Holistic therapies for a successful pregnancy. New York: Inner Traditions Intl. Ltd.