ENCYCLOPEDIA on Early Childhood Development



# Reproductive Technology and Its Impact on Psychosocial Child Development

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## Introduction

Since the first In-Vitro Fertilization (IVF) birth in 1978 in England,[1] more than 1,000,000 children have been born worldwide as a result of Assisted Reproductive Technology (ART).[2] In first-world nations, approximately 1% of births per year are now the result of ART, in some this is up to 4% (e.g., Finland). These children (and their parents) represent a significant group; as adults, they will become an important client group. This article will discuss the possible risks of this mode of conception for a child's psychosocial (i.e., social, emotional, behavioural and psychological) development. Literature in this area is rather limited, with research tending to concentrate more on the impact of ART on physical development and the risk of birth defects.

## Subject

Research to date has focused on: a) parent-child relationships in IVF families; b) investigation of maternal skills in IVF families compared to families with naturally conceived children; c)

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consideration of relationships in non-traditional family groups, e.g., lesbian couples; d) consideration of the possible impact of non-genetic parenting (i.e., using donated eggs/sperm).

**Problems**

Studies investigating the impact of reproductive technology on the psychosocial development of the child have conceptual and methodological limitations:

1. Many of the studies regarding this client group included mothers only, limiting the scope of discussion about the impact of ART on these families and the children involved;
2. Since studies generally involve healthy children, the exclusion of the more vulnerable children may affect researchers' abilities to ascertain the full effects of IVF;[3]
3. In addition, cross-sectional studies cannot determine whether the actual IVF conception or the parents' infertility are key determinates of these actual parent-child relationships;
4. Fertility clinics do not perform systematic follow-up and parents of ART-conceived children often prefer to keep their mode of conception secret, but studies need to be replicated with larger groups to validate findings. Non-participation and non-representative samples are also issues.

**Research Context**

In the initial stages of the development of assisted reproduction, ethical, legal, and medical issues were raised. However, in more recent years, concerns have surrounded the psychosocial development of children born after assisted reproduction. As new reproductive technologies have advanced rapidly, questions regarding the consequences for children conceived with the help of these procedures have lagged far behind.[4] Examples of cutting-edge IVF technologies in which virtually no studies about outcome have been performed are blastocyst transfer, pre-implantation genetic diagnosis and in-vitro maturation.

**Key Research Questions**

1. Are these children being raised in a different socio-emotional environment than their naturally conceived peers?
2. Does non-traditional family life (e.g., having two "mothers") have implications for their development into adults?

3. Are children who are denied their genetic and conceptional origins ultimately at risk of problems with their long-term psychological wellbeing, as has been shown in adopted children?
4. What is the impact, if any, on family relationships when the biological origins of children conceived via medically assisted reproduction is disclosed to them?

**Recent Research Results**

Psychological literature suggests that the stress of infertility may lead to dysfunctional patterns of parenting and may result in negative outcomes for the child[5] or that IVF parents will be overprotective of their children or have unrealistic expectations of them.[6]

Hahn[7] reviewed the psychosocial wellbeing of parents and their children born after assisted reproduction. The objective of the paper was to critically review the empirical literature published on this topic since 1980. Several common findings appeared across the literature reviewed. No statistically significant differences in child functioning in terms of emotions, behaviour, self-esteem, or perceptions of family relationships were reported at that time. However, Hahn does cite work by Levy-Shiff et al[8], who assessed the long-term effects on 51 IVF children in Israel. No significant difference was found in IQ or cognitive performance, but IVF children rated on socioemotional adjustment were reported by their teachers to be more anxious, depressed, and aggressive than their peers. This is the only report to date of poorer emotional adjustment of IVF children. Hahn goes on to state that this study's data may have been compromised due to cultural factors, which may also explain discrepancies in results from study to study.

An article by Golombok et al[4] presented findings from a longitudinal study of the first cohort of children conceived by IVF to reach adolescence. Thirty-four IVF families, 49 adoptive families and 38 families with a naturally conceived child were compared on standardized interviews and questionnaire measures of parent-child relationships and children's psychological well-being. The few differences in parent-child relationships that were identified appeared to be associated with the experience of infertility rather than the IVF procedure itself. The IVF children were found to be functioning well and did not differ from the adopted or naturally conceived children on any assessments of social or emotional adjustment.

Hahn and DiPierto[3] examined the associations between homologous IVF and quality of parenting, family functioning and emotional and behaviour adjustment in three- to seven-year-old children. A cross-sectional survey conducted in Taiwan compared 54 IVF mother-child pairs and 59 mother-child pairs with children conceived naturally. IVF mothers reported a greater level of protectiveness toward their children than control mothers. Teachers, blind to condition, rated IVF mothers as displaying greater warmth but not more overprotective or intrusive parenting behaviours than mothers of control children. Teachers scored children of IVF as having fewer behavioural problems than control children. In contrast, IVF mothers reported less satisfaction with aspects of family functioning. Family composition was found to moderate parenting stress: IVF mothers with only one child perceived less parenting stress than did those in the control group.

Colpin and Soenen[9] reported details of their follow-up study of the parent-child relationship and the child's psychosocial development after IVF. The pilot study compared 31 IVF families and 31 families with a naturally conceived child when the children were two years old. Twenty-seven IVF and 23 control families participated again when the children were eight to nine years old. Both parents completed the questionnaires, which assessed parenting variables as well as the child's behaviour.  In most cases, behavioural ratings were obtained from the child's teacher. The results showed no significant differences between IVF and control parents' reports of child behaviour, parenting behaviour, parenting stress and most of the parenting goals. Teachers' ratings of the child's behaviour did not differ significantly between the IVF and control groups.

Researchers have suggested that IVF parents have more emotional involvement and warmth towards their child[4] and less parenting stress.[3,4,7,10,11]

For example, Goisis et al investigated the impact of medically assisted reproduction on parent–child relationships during adolescence. They used a sample of 320 mothers who conceived with the help of assisted reproduction. Interestingly, there were similar conflict frequencies between medically assisted reproduction and natural conception families.[12] Previous studies have identified a relationship between disclosing the method of conception and lower levels of mother–child conflict,13,14 and particularly between mother and adolescent males.[15] Another significant finding from Goisis et al was that mothers who underwent assisted reproduction reported being closer to their children than mothers who conceived naturally.[12] These findings are supported by a systematic review by Illioi et al; this review summarized 17 studies that assessed the psychological adjustment and family relationships within families that

underwent assisted reproduction. The overall findings were that positive parent–adolescent relationships were present in families that had in vitro fertilization (IVF), egg donation, and donor insemination.[16]

In contrast, there has also been studies to suggest that there is some evidence of parental overprotection towards children,[3,4,17] higher stress and anxiety[11,14] and lower self-esteem[18,19] amongst children conceived from assisted reproduction. Parental overprotection may have resulted from the emotional, psychological, and financial obstacles that parents had to overcome to conceive.[3] As a result, this may have negative consequences on the parent-child relationship. On the other hand, overprotection towards children conceived from assisted reproduction may explain the higher probability of living with parents till adulthood and the lower probability of not being in education or employment.[20]

An important discussion to consider amongst families that had assisted reproduction is the parental disclosure to their children. This can create anxiety as it can be challenging to decide when the best time is to disclose this information, and parents may worry about the child's response and the effect this has on their relationship. Recent research has suggested that when children, that were conceived via medically assisted reproduction, find out the method of conception, this influenced their relationship with their parents positively.[21,22] Similarly, findings from a longitudinal study suggested that when parents disclosed the biological origins to their children before they became 7 years old, there were higher quality mother–child relationships and higher levels of psychological wellbeing at the age of 14.[23] However, not all parents disclose this information to their children, which may be explained by the greater level of protectiveness from IVF mothers towards their children; this was identified in a study by Hahn and DiPierto.[3] Furthermore, the study from Blake et al included 64 families with a child conceived by donor insemination or egg donation, and they observed that disclosure of the biological origins to the child was not always associated with improved levels of parental psychological wellbeing. For example, when children were of an older age and had a more sophisticated understanding of their donor origins, disclosure was associated with poorer psychological wellbeing.[24] As a result, the discussion surrounding biological origins is a sensitive topic between the parent and child, and it might be important to consider the optimal time and environment to deliver this conversation in as this can have an impact on the parent and child relationship.

In a comprehensive study, Barnes et al.[25] examined the relationships between parent and child, and also in the couple (the dyadic relationship), and their attitudes towards parenting and work.

This study involved 1,523 five-year-old children in approximately equally sized groups either conceived naturally, by conventional in vitro fertilization and by intracytoplasmic sperm injection from five European countries (Belgium, Denmark, Greece, Sweden, and the United Kingdom). The response rates varied from close to 100% to as low as 50%. However, there were some interesting findings. Firstly, ART families found the experience of parenting more positive than naturally conceiving families. Secondly, they were less committed to work than naturally conceiving families. Thirdly, there was no evidence of child temperament problems or difficulties in the dyadic relationship. Notwithstanding these caveats, all scores were normal in all groups; there were relative differences whose clinical significance remains unknown.

In contrast, a very recent study noted less aggressive behaviours, but more withdrawn behaviours and a higher incidence of clinical depression in 310 adolescents, who were aged 14 years, conceived after assisted reproduction when compared to their peers who were naturally conceived.[26] In addition, a large Norwegian study included 32,580 children conceived through assisted reproduction and observed that this cohort tended to be brought up in more resourceful environments,[27] which would be advantageous to their development and wellbeing. When this factor was accounted for, the risk of psychological disorders was higher.[20] Therefore, this highlights the importance of taking sociodemographic backgrounds into consideration when studying the psychological development of children conceived from assisted reproduction.

**Conclusions**

Overall, the existing literature is reassuring. It appears that conceiving a child by IVF and disclosing this method of conception to the child does not have a detrimental effect on the child's psychological development over and above the range of emotional environments to which children in naturally conceived families can be exposed.
There are far more important issues beyond the brief of this report that definitely have implications for public policy. These include the major problems in ART resulting from higher-order births, prematurity and disability and the impact of falling fertility, as noted below.

**Implications for Policy and Service Perspectives**

1. Evidence of any problems attributable to reproductive technology on psychosocial child development is weak and contradictory. On balance, this seems unlikely;

2. Service providers need to consider more fundamental issues, such as encouraging a policy of single embryo replacement to reduce the rate of higher-order births (three or more babies);
3. A reduction in higher-order births will also lead to a reduced workload for neonatal intensive care units and reduce the secondary disability burden on families, health-care systems and society/the economy as a whole;
4. Long-term surveillance of these children would be ideal as a way of anticipating future risks, such as reduced fertility, for the next generation;
5. Since fertility rates are falling and the use of the new reproductive technologies is growing, these children will make up a significant client group as adults. If they have been exposed to undue risks as a result of their mode of conception, they will take a very different view of these risks in relation to those who helped in their conception.

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