Social versus Biological Parenting: Family Functioning and the Socioemotional Development of Children Conceived by Egg or Sperm Donation

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By investigating egg donation families, donor insemination families, adoptive families, and families created by in vitro fertilization, the aim of the present study was to examine parents' emotional well-being, the quality of parenting, and children's socioemotional development in families with a child who is genetically unrelated to the mother or the father. The differences that were found to exist between families according to the presence or absence of genetic ties between parents and their children reflected greater psychological well-being among mothers and fathers in families where there was no genetic link between the mother and the child. The families did not differ with respect to the quality of parenting or the psychological adjustment of the child.

Keywords: Family functioning, parenting, assisted reproduction, donor insemination, egg donation.

Abbreviations: IVF: in vitro fertilization; PSI/ SF: Parenting Stress Index/Short Form.

Introduction

Although the use of donor sperm to enable couples with an infertile male partner to have children has been practised for many years, it is only since 1983, following advances in reproductive technology, that infertile women have been able to conceive a child using a donated egg (Lutjen et al., 1984; Trouson, Leeton, Besanka, Wood, & Conti, 1983). This procedure involves fertilization of the donated egg with the father’s sperm in the laboratory, followed by the transfer of the resulting embryo to the mother’s uterus. Thus it is now possible for children to be born to, and raised by, mothers with whom they have no genetic link.

A number of concerns have been expressed regarding the potential negative consequences of gamete donation for children's psychological well-being, the most common of which is that the practice of keeping information about genetic origins secret from the child may have an adverse effect on the quality of parent–child relationships and consequently on the child (Daniels & Taylor, 1993; Schechter & Bertocci, 1990; Triseliotis, 1973). In the field of assisted reproduction, parallels have been drawn with the adoptive situation and it has been suggested that lack of knowledge of, or information about, the donor may be harmful for the child (Clamar, 1989; Snowden, 1990; Snowden, Mitchell, & Snowden, 1983).

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Findings suggestive of an association between secrecy about genetic parentage and negative outcomes for children have come from research on adoption. It has been demonstrated that adopted children benefit from knowledge about their biological parents, and that children who are not given such information may become confused about their identity and at risk for emotional problems (Hoopes, 1990; Sants, 1964; Schechter & Bertocci, 1990; Triseliotis, 1973). In the field of assisted reproduction, parallels have been drawn with the adoptive situation and it has been suggested that lack of knowledge of, or information about, the donor may be harmful for the child (Clamar, 1989; Snowden, 1990; Snowden, Mitchell, & Snowden, 1983).

From a family therapy perspective, secrets are believed to be detrimental to family functioning because they create boundaries between those who know and those who do not, and cause anxiety when topics related to the secret are discussed (Karpel, 1980). In examining the particular case of parents keeping secrets from their children, Papp (1993) argued that children can sense when information is being withheld due to the taboo that surrounds the discussion of certain topics, and that they may become confused and anxious, or even develop symptoms of psychological disorder, as a result. A further concern raised by the use of gamete donation is that parents may feel or behave less positively toward a nongenetic than a genetic child. It has been argued that the child may not be fully accepted as part of the family,
and that the absence of a genetic tie to one or both parents may have an undermining effect on the child’s sense of identity (Burns, 1987). It has also been suggested that whether or not gamete donation has been used in the child’s conception, the stress of infertility may lead to dysfunctional patterns of parenting, which may result in negative outcomes for the child (Burns, 1990).

In spite of the expectations that children conceived by gamete donation may be at risk for psychological problems, a previous study of assisted reproduction families by the present authors (Golombok, Cook, Bish, & Murray, 1995) found a greater involvement in parenting among donor insemination parents than among a control group of parents with a naturally conceived child, with no differences in the quality of parent–child relationships between donor insemination parents and either adoptive parents or parents with a genetically related child conceived by in vitro fertilization. The children in these different family types were functioning well and did not differ with respect to their emotions, behavior, or relationships. It was concluded that a strong desire for parenthood seemed to be more important than genetic relatedness for fostering positive family relationships, and that conception by sperm donation did not appear to have an adverse effect on the socioemotional development of the child.

In the current investigation, an additional group of families with a child conceived by egg donation was recruited, and examined together with the donor insemination, adoptive, and in vitro fertilization (IVF) families from the previous study (Golombok et al., 1995). The comparison between families according to whether or not the child was genetically related to the mother (donor insemination and IVF families vs. egg donation and adoptive families), and whether or not the child was genetically related to the father (egg donation and IVF families vs. donor insemination and adoptive families), as well as the interaction between them, provides an opportunity to examine the consequences of social versus biological parenting in families matched for the parents’ strong desire for a child. Unlike the families with a naturally conceived child in the previous investigation, all four groups of families had experienced a period of infertility preceding the transition to parenthood, and had thus been highly committed to raising a child.

From the findings of the previous study it is expected that egg donation parents, like donor insemination parents, would have positive relationships with their much-wanted children and that the children themselves would be functioning well. It is conceivable, however, that differences may exist with respect to the quality of parenting and children’s socioemotional development according to whether it is the mother or the father who lacks a genetic link with the child. There is a growing body of empirical evidence to show that the course of a child’s social and emotional development is related to the quality of the child’s attachment to parents (Bowby, 1969, 1973; Main, Kaplan, & Cassidy, 1985), and that secure attachment relationships are fostered through parents’ sensitive responding to the child (Grossmann, Grossmann, Spangler, Suess, & Unzer, 1985; Isabella, Belsky, & von Eye, 1989). Other aspects of parenting have also been shown to influence children’s psychological well-being. For example, Baumrind (1989) has demonstrated that an authoritative parenting style, i.e. a combination of warmth and discipline, has positive outcomes for children’s socioemotional development. As mothers generally interact more with their children than do fathers (Lamb, 1997; Parke, 1995), and their identity is more tied up with their parental role than it is for fathers (Hoffman, Thornton, & Marris, 1978; Woollett, 1991), the absence of a genetic link with the child may matter less for mothers than for fathers in terms of the quality of parent–child relationships and outcomes for the child. In addition, fathers are more concerned than mothers about the need to achieve immortality through their offspring (Hoffman et al., 1978), which may cause them to be less committed to nongenetic children than to children with whom they share a genetic link. Thus differences between families according to genetic relatedness between the mother and the child would not necessarily be predicted whereas more negative outcomes may be expected in families where the child and the father are genetically unrelated compared with families where a genetic link exists between the father and the child.

Method

Participants

Forty-one families with a child conceived by IVF (28 boys and 13 girls), 45 families with a child conceived by donor insemination (25 boys and 20 girls) and 21 families with a child conceived by egg donation (13 boys and 8 girls) were obtained through infertility clinics throughout the U.K. Total populations of IVF and donor insemination families with a child aged between 4–8 years from each participating clinic were asked to take part in the research. For the egg donation families, the lower age limit was set at 3½ years in order to increase the sample size of this relatively new family type. The donor was anonymous to all of the donor insemination families and to 18 of the egg donation families. In the case of the three egg donation families who conceived their child with the help of a known donor, the donor was a family friend. The response rate for IVF, donor insemination, and egg donation families respectively was 95%, 62%, and 81%.

Fifty-five adoptive families were recruited through adoption agencies by approaching families with a 4–8-year-old child who had been adopted in the first 6 months of life (28 boys and 27 girls). The adopted children were born in the U.K. and were of the same ethnic origin as their adoptive parents. The response rate for adoptive families was 76%. Children with major congenital abnormalities, children who had experienced obstetric or perinatal complications that were thought likely to involve brain damage or risk of persisting disability, and children of a multiple birth were not included in the study.

There were similar proportions of boys and girls in each group of families. A significant difference between groups was found for age of the child [F(3, 158) = 20.16, p < .0001]. The adopted children were the oldest, aged 6 years 3 months on average, and the egg donation children the youngest, with a mean age of 4 years 6 months. Similarly, a significant group difference was found for the age of the mothers [F(3, 158) = 10.32, p < .0001]. In this case, the egg donation mothers were the oldest (mean age 41 years) and the donor insemination

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1 The response rate for egg donation families is estimated as one clinic did not keep an accurate record of those who declined to take part.
Measures

Parents' marital and psychological state. Both the mother and the father completed the Golombok Rust Inventory of Marital State (Rust, Bennun, Crowe, & Golombok, 1988; Rust, Bennun, & Golombok, 1990), a questionnaire measure of the quality of the marital relationship. Scores range from 0–84 with a score of 34 or above indicating marital dissatisfaction. The Beck Depression Inventory (Beck & Steer, 1987; Steer, Beck, & Garrison, 1986) and the Trait Anxiety Inventory (Spielberger, 1983) were also completed by both parents to assess depression and anxiety respectively. Scores range from 0–63 for the Beck Depression Inventory with a score of 10 or above indicating mild-moderate depression, and from 20–80 for the Trait Anxiety Inventory with 35 representing the average score for working adults aged between 19–39 years. All three of these instruments have been shown to have good reliability and to discriminate well between clinical and nonclinical groups.

The short form of the Parenting Stress Index (PSI/SF) (Abidin, 1990) was also administered to both parents to provide a standardized assessment of stress associated with parenting for mothers and fathers separately. This measure produces a total score of the overall level of parenting stress an individual is experiencing, with a score of 86 or above indicating a clinically significant level of stress, as well as the four subscale scores of parental distress (feelings of parental incompetence, stresses associated with restrictions on lifestyle, conflict with the child’s other parent, lack of social support, and depression), parent–child dysfunctional interaction (the parent’s perception that the child does not measure up to expectations and that interactions with the child are not reinforcing), difficult child (the behavioral characteristics of children that make them easy or difficult to manage), and defensive responding (social desirability). Test–retest reliability for this instrument has been shown to be high over a 6-month period. Concurrent and predictive validity has been demonstrated for the full-length questionnaire, and the short form has been reported to correlate very highly with the full-length version.

Quality of parenting. The quality of parenting was assessed by standardized interview with the mother using an adaptation of the technique developed by Quinton and Rutter (1988). This procedure has been validated against observational ratings of mother–child relationships in the home, demonstrating a high level of agreement between global ratings of the quality of parenting by interviewers and observers (concurrent validity, \( r = .63 \)). The researchers were fully trained in the interview techniques by one of the authors of the interview procedure (DQ). The interview, which was tape-recorded, lasted for around 1.5 hours and was conducted with the mother alone. Detailed accounts were obtained of the child’s behavior and the parents’ response to it. The mothers were asked to describe the child’s daily routine focusing on waking, meal-times, leaving for school/day care, returning home, mother’s and father’s play activities with the child, and bed-time. Information was obtained on the parents’ handling of any problems associated with these areas, and particular attention was paid to parent–child interactions relating to issues of control and the child’s fears and anxieties.

Four overall ratings of the quality of parenting were made taking into account information obtained from the entire interview: (1) warmth was rated on a 6-point scale ranging from 0—“none” to 5—“high”. This rating of the mother’s warmth toward the child was based upon the mother’s tone of voice and facial expression when talking about the child, spontaneous expressions of warmth, sympathy, and concern about any difficulties experienced by the child, and enthusiasm and interest in the child as a person; (2) emotional involvement was rated on a 5-point scale from 0—“little or none” to 4—“extreme”. This rating, which represented anxious over-involvement at the extreme end, took account of the extent to which the family day was organized around the child, the extent to which the needs or interests of the child were placed before those of other family members, the extent to which the mother was over-concerned, over-protective, or inhibited the child from age-appropriate independent activities, the extent to which the mother was willing to leave the child with other caretakers, and the extent to which the mother had interests or engaged in activities apart from those relating to the child; (3) mother–child interaction and (4) father–child interaction were each rated on a 5-point scale ranging from 0—“very low” to 4—“very high”. These ratings of the quality of interaction between the parent and the child were based upon mothers’ reports of the extent to which the parent and the child enjoyed each other’s company, wanted to be with each other, spent time together, enjoyed joint play activities, and showed physical affection to one another. Interview data were also used to make ratings of the father’s contribution to parenting with respect to helping the mother with childrearing (rated on a 5-point scale from 0—“no help” to 4—“takes a major parenting load”) and parental coordination over control (rated on a 5-point scale from 0—“active uncoordination” to 4—“coordinated action”). In addition, the seriousness of disputes between the mother and the child was rated on a 4-point scale from 0—“minor episodes” to 3—“major battles”.

Although the validity of the mothers’ reports of father–child interaction has not been established using observational ratings of father–child relationships, a correlation of .4 was found in the previous study by Golombok et al. (1995) between mothers’ reports of father–child interaction and fathers’ reports of the child being difficult to manage as measured by the difficult child subscale of the PSI/SF. This gives some evidence for the validity of the mothers’ reports of father–child interaction, particularly in view of the differences between these two constructs. In the previous study, 27 randomly selected interviews were coded by a second interviewer who was “blind” to family type in order to calculate inter-rater reliabilities. Pearson
product-moment coefficients for warmth, emotional involvement, mother–child interaction, and father–child interaction were found to be .75, .63, .72, and .69 respectively. In the present investigation this process was repeated for 18 of the egg donation families (3 were not included due to the poor quality of the tape-recordings). The reliability coefficients for warmth, emotional involvement, mother–child interaction, father–child interaction, father’s contribution to parenting, parental coordination over control, and seriousness of disputes between the mother and the child were .66, .51, .46, .74, .77, .77, and .89 respectively.

In addition, mothers of children conceived by egg donation or donor insemination were interviewed about their openness regarding the circumstances of their child’s conception. Systematic information was obtained from these mothers with respect to whether or not they had told their child about his or her genetic origins, and whether or not they had told the child’s grandparents or family friends. Those who did not plan to tell their child were asked about their reasons for secrecy, and each of the following variables was coded as “yes” or “no” according to the mother’s responses: (1) to protect the child; (2) to protect the father; (3) to protect the mother; and (4) there is no need to tell.

Children’s socioemotional development. The presence of behavioral and emotional problems in the child was assessed using the Rutter “A” scale, which is completed by the mother and produces an overall score of the child’s psychiatric state. This questionnaire has been shown to have good inter-rater and test–retest reliability, and to discriminate well between children with and without psychiatric disorder (Rutter, Cox, Tupling, Berger, & Yule, 1975; Rutter, Tizard, & Whitmore, 1970).

Each child was administered the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (Harter & Pike, 1984). This is a measure of children’s perceptions of their cognitive and physical competencies, and of their perceptions of acceptance by their mother and by peers, all of which have been shown to be associated with the development of self-esteem in later childhood. Children’s perceptions in these domains do not necessarily reflect their actual competencies or acceptance by others. A score is obtained for each of the following subscales: (1) cognitive competence, (2) physical competence, (3) maternal acceptance, and (4) peer acceptance. The higher the score, the more positive the child’s feelings of competence and social acceptance. Satisfactory internal consistency has been demonstrated, with coefficient alpha values ranging from .85 to .89 for the different age groups of children studied. The scale has been shown to discriminate between groups of children in predicted ways, for example between peer acceptance and length of time at a school, and between perceived cognitive competence and academic achievement at school, indicating that it is a valid measure.

Results

Parents’ Marital and Psychiatric State

Table 1 shows the means, standard deviations, F values, and significance levels for all of the measures of parents’ marital and psychiatric state by group. Multivariate analysis of variance (MANOVA) was conducted with two between-subjects factors: (1) whether or not the child was genetically related to the mother (donor insemination and IVF families vs. egg donation and adoptive families) and (2) whether or not the child was genetically related to the father (egg donation and IVF families vs. donor insemination and adoptive families). The dependent variables were mothers’ and fathers’ total scores on the Golombok Rust Inventory of Marital State, the Trait Anxiety Inventory, the Beck Depression Inventory, and the PSI/SF. There was no significant main effect for either genetic relatedness to the mother or genetic relatedness to the father using Wilk’s criterion for combined ratings. However, a significant interaction was found \(F(8,110) = 2.25, p < .05\). The data for each variable were then analyzed using 2 × 2 analyses of covariance with age of child, age of mother, and social class as covariates.

With respect to the quality of the parents’ marital relationship for those couples who had not separated or divorced, a significant main effect for marital satisfaction was found for mothers as assessed by the Golombok Rust Inventory of Marital Satisfaction \(F(1,135) = 4.32, p < .05\), showing that mothers of genetically unrelated children reported greater marital satisfaction than mothers of genetically related children irrespective of whether or not the father had a genetic link with the child. No differences in marital satisfaction were found for fathers. Neither were there significant group differences for mothers or fathers for depression as assessed by the Beck Depression Inventory.

With respect to anxiety level as measured by the Trait Anxiety Inventory, a significant main effect was found for fathers \(F(1,121) = 4.58, p < .05\), showing that fathers reported lower levels of trait anxiety when the child was genetically unrelated to the mother irrespective of whether or not there was a genetic link with the father. No significant differences in trait anxiety were found for mothers.

A significant main effect in stress associated with parenting as measured by the total PSI/SF score was also found for fathers \(F(1,122) = 8.54, p < .01\), again reflecting lower levels of stress among fathers when the child was genetically unrelated to the mother whether or not there was a genetic relationship with the father. Analysis of the fathers’ subscale scores identified significant main effects for parental distress \(F(1,123) = 4.36, p < .05\), parent–child dysfunctional interaction \(F(1,122) = 7.38, p < .01\), and difficult child \(F(1,122) = 4.74, p < .05\), all in the direction of lower levels of stress reported by the father when the mother was not genetically related to the child. For mothers, significant interactions were found for the total PSI/SF score \(F(1,144) = 7.70, p < .01\) and the parenting distress subscale score \(F(1,145) = 8.93, p < .01\), showing that mothers who were not genetically related to their child reported lower levels of parenting stress when the child had a genetic link with the father. With respect to defensive responding, a significant main effect was found for fathers \(F(1,123) = 8.13, p < .01\), indicating that in families where the child was not genetically related to the mother, fathers were less likely to give socially desirable responses to the PSI/SF. A significant interaction was found for mothers \(F(1,145) = 7.24, p < .01\), reflecting more defensive responding in families where both parents were genetically related to the child.

Quality of Parenting

Table 2 shows the means, standard deviations, F values, and significance levels for all of the measures of quality of parenting by group. MANOVA was conducted with the
Table 1
Means, Standard Deviations (SD), and F Values for Comparisons of Parents’ Marital and Psychiatric State between Family Type

<table>
<thead>
<tr>
<th>Family Type</th>
<th>Donor insemination</th>
<th>Adoptive</th>
<th>Egg donation</th>
<th>Genetic relationship to:</th>
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<tr>
<td></td>
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<td>SD</td>
<td>Mean</td>
<td>SD</td>
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<tr>
<td>Marital state</td>
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<td></td>
<td></td>
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<td>13.4</td>
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<tr>
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<td></td>
<td></td>
<td></td>
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<td>4.4</td>
<td>4.3</td>
</tr>
<tr>
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<td>4.6</td>
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<tr>
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<td></td>
<td></td>
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<tr>
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<td>8.4</td>
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<td>Father</td>
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<td>8.6</td>
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<tr>
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<td>12.5</td>
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<td></td>
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<td>3.1</td>
<td>14.7</td>
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*p < .05; **p < .01.

Table 2
Means, Standard Deviations (SD), and F Values for Comparisons of Quality of Parenting between Family Type

<table>
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<tr>
<th>Family Type</th>
<th>Donor insemination</th>
<th>Adoptive</th>
<th>Egg donation</th>
<th>Genetic relationship to:</th>
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<td>SD</td>
<td>Mean</td>
<td>SD</td>
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<td>3.3</td>
<td>0.6</td>
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<tr>
<td>Father–child interaction</td>
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<td>0.9</td>
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<tr>
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<td>5.1</td>
<td>1.0</td>
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<tr>
<td>Coordination over control</td>
<td>2.5</td>
<td>0.9</td>
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<tr>
<td>Seriousness of disputes</td>
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<td>0.4</td>
<td>1.2</td>
<td>0.5</td>
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</table>

*p < .05.

same two between-subjects factors as before; (1) whether or not the child was genetically related to the mother and (2) whether or not the child was genetically related to the father. The dependent variables were warmth, emotional involvement, mother–child interaction, father–child interaction, father’s contribution to parenting, parental coordination over control, and seriousness of disputes between the mother and the child. There was no significant main effect for either genetic relatedness to the mother or genetic relatedness to the father using Wilk’s criterion for combined ratings. However, a significant interaction was found [F(7, 122) = 3.22, p < .01]. The data for each variable were then analyzed using 2 × 2 analyses of covariance with age of child, age of mother, and social class as covariates.

A significant difference was found between groups for warmth [F(1, 151) = 6.19, p < .05], with less warmth expressed by mothers when the child was not genetically related to the father irrespective of whether or not there was a genetic link with the mother. No significant differences were found in the level of mothers’ emotional involvement with the child. Nor were significant differences identified for either mother–child interaction or father–child interaction.
The groups did not differ with respect to the fathers’ overall contribution to parenting. However, a significant interaction was identified for parental coordination over control \(F(1, 145) = 6.06, p < .05\), showing that in families where the child was not genetically related to the mother, parents reported more coordination over discipline of the child when there was a genetic link between the child and the father. In terms of the seriousness of disputes between the mother and the child, a significant interaction was found \(F(1, 132) = 4.00, p < .05\), indicating that in families where the child did not have a genetic link with the mother, more severe disputes were reported when there was a genetic link with the father.

**Children’s Socioemotional Development**

Table 3 shows the means, standard deviations, \(F\) values, and significance levels for all of the measures of children’s socioemotional development by group. MANOVA was conducted with the same two between-subjects factors as before: (1) whether or not the child was genetically related to the mother and (2) whether or not the child was genetically related to the father. The dependent variables were the total “A” scale score and the four subscale scores of the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children; cognitive competence, physical competence, maternal acceptance, and peer acceptance. There was no significant main effect for genetic relatedness to the mother. However, a significant effect was found for genetic relatedness to the father using Wilk’s criterion for combined ratings \(F(5, 120) = 2.83, p < .05\). The interaction was not significant. The data for each variable were then analyzed using 2 \(\times\) 2 analyses of covariance with age of child, age of mother, and social class as covariates.

There was no difference between groups for “A” scale scores, showing that the children did not differ with respect to the presence of emotional or behavioral problems. The only significant difference to emerge for the subscales of the Pictorial Scale of Perceived Competence and Social Acceptance was for cognitive competence \(F(1, 124) = 4.15, p < .05\), showing that children who were genetically unrelated to their father perceived themselves to be more cognitively competent than children who shared a genetic link with their father whether or not they were genetically related to their mother.

**Telling about Donor Insemination**

None of the parents with a child conceived by donor insemination, and only one set of egg donation parents, had told their child about their method of conception. A significant difference between groups was found with respect to parents’ attitude toward telling the child \(\chi^2(3, 61) = 16.37, p < .001\). The donor insemination parents were most against telling, with 82% having decided never to tell compared with 38% of the egg donation parents.

Although all but one of the children conceived using a donated gamete had not been told about their genetic origins, 51% of donor insemination parents and 72% of egg donation parents had told maternal grandparents, and 20% of donor insemination parents and 63% of egg donation parents had told paternal grandparents. Although there was no difference between groups in the proportion of parents who had told maternal grandparents, there was a significant group difference with respect to telling paternal grandparents \(\chi^2(1, 56) = 10.28, p < .01\), such that fewer donor insemination parents than egg donation parents had told paternal grandparents. A significant difference between groups was also found with respect to telling family friends \(\chi^2(1, 61) = 14.60, p < .01\). Only 30% of donor insemination parents had told friends compared with 71% of parents with a child conceived using a donated egg. To examine whether the more secretive parents showed more negative outcomes with respect to quality of parenting or the socioemotional well-being of the child, comparisons were carried out between those who had told a friend or family member that their child had been conceived by gamete donation and those who had not. No differences were found for any of the measures.

Parents who planned never to tell their child or who were undecided on this issue were asked to give their reasons. For 49% of donor insemination parents and 69% of egg donation parents secrecy was attributed to a
wish to protect the child. A wish to protect the mother was given as a reason by 19% of donor insemination parents and 23% of egg donation parents, and a wish to protect the father was given by 69% of donor insemination parents and 23% of egg donation parents. There was no group difference in the proportion of parents who reported the wish to protect the child or the wish to protect the mother as a reason for not telling the child. However, a significant difference between groups was found with respect to the wish to protect the father \( [\chi^2(1, 60) = 8.50, p < .01] \), with a greater proportion of donor insemination parents than egg donation parents giving this as a reason for not telling the child. Interestingly, 85% of donor insemination parents and 69% of egg donation parents felt that there was no need to tell the child. There was no significant difference between groups for this variable. Of the three egg donation families for whom the donor was a family friend, one set of parents did not plan to tell the child and two sets of parents were undecided at the time of study. All three sets of parents believed that there was no need to tell, and gave the wish to protect the child as their only reason for maintaining secrecy.

**Discussion**

A number of differences between parents were identified according to their genetic relationship with their child. In families where the child was not genetically related to the mother, irrespective of the presence or absence of a genetic link with the father, mothers reported higher levels of marital satisfaction, and fathers reported lower levels of trait anxiety and less stress associated with parenting as measured by the total score of the PSI/SF and all three subscales. In families where the child was genetically unrelated to the mother but had a genetic link with the father, mothers reported lower levels of parental distress and more coordination with the father over discipline of the child. It seems, therefore, that in families where the child lacked a genetic relationship with the mother there were more positive findings regarding the emotional well-being of parents, although no differences were identified in relation to quality of parenting.

In families where the child lacked a genetic relationship with the father, the only difference to emerge for mothers reflected a more negative outcome in that they expressed less warmth toward the child whether or not they themselves were genetically linked to the child. No differences were identified with respect to the emotional well-being or parenting quality of fathers.

Thus it appears that where differences exist between families according to the presence or absence of genetic ties between children and their parents, the lack of a genetic link between the child and the mother is associated with greater psychological well-being among the parents but not with their quality of parenting. The lack of a genetic link between the child and the father does not seem to be related to the well-being of parents or their quality of parenting apart from lower levels of mothers' warmth to the child. An examination of interaction effects showed that in families where the child was not genetically related to the mother but was genetically related to the father, mothers reported less stress as-sociated with parenting as measured by the total score and the parental distress subscale of the PSI/SF, and greater coordination with the father over discipline of the child. However, disputes between mothers and their genetically unrelated children were found to be more severe when there was a genetic link between the father and the child.

In terms of the socioemotional development of the children themselves, the only difference identified was that children who were not genetically related to their father perceived themselves as more cognitively competent whether or not they were genetically related to their mother. As a high proportion of sperm donors are students (Cook & Golombok, 1995), and many are medical students, this finding may reflect a real difference in cognitive competence between children who are, and those who are not, genetically related to their social father.

It is perhaps surprising that families characterized by the absence of a genetic link between the mother and the child generally showed more positive outcomes than families where the mother is genetically related to the child. A possible explanation for this finding is that raising a child who is not genetically related to the mother is perceived to be a greater undertaking for infertile couples than having a child through assisted reproduction, using the parents’ own gametes, or by donor insemination, where it is only the father who lacks a genetic link with the child. As a result, infertile couples who choose to raise a child who is genetically unrelated to the mother may be even more committed to parenthood, and consequently find parenting a more satisfying experience, than those who become mothers and fathers through other routes. The failure to find the predicted negative effect for families where the father lacked a genetic link with the child may stem from the same phenomenon; a strong desire to have children may outweigh any negative effects arising from the missing genetic link between the father and the child.

It is interesting to examine the findings of the present investigation alongside investigations of other family forms in which children are genetically unrelated to one or both parents. Studies of adopted children (Brodzinsky, Lang, & Smith, 1995), and of children in stepfamilies (Hetherington, 1993; Hetherington & Clingempeel, 1992), have shown that the lack of genetic relatedness between a child and one or both parents can be associated with alienation and hostility between the parents and the child, and that the children are more likely to show psychological problems than children raised by their natural parents. However, the adjustment of children in such families is associated with a number of factors including the age of the child at the time of the family transition (Brodzinsky & Schechter, 1990; Hetherington, Bridges, & Insabella, 1998). It appears, for example, that the earlier children enter into their adoptive family or stepfamily, the less likely they are to develop emotional or behavioral problems. The positive outcomes found in the present study for children raised from birth by a non-genetic parent (or from early infancy in the case of the adopted children) suggests that the absence of a genetic relationship, in itself, does not lead to difficulties for parents or children. In considering the discrepancy
between the findings of this study and the literature on adoption and step-parenting, it may be relevant that children born through egg or sperm donation do not experience the loss of an existing parent. Nor do they need to form relationships with new family members.

There are a number of methodological limitations to the study, which need to be considered. First, only 62% of the donor insemination families participated in the research. Although this response rate is less than ideal, it is important to point out that these families are extremely concerned that by participating in research their secret will be exposed. From telephone conversations with parents of children conceived by donor insemination, it appeared that fear of disclosure was their primary reason for declining to take part. Given that none of the parents had told their child that he or she had been conceived by donor insemination, it was encouraging that almost two thirds of these mothers agreed to be interviewed. A further potential source of bias in the study is that the egg donation families were recruited later than the other family types. This was unavoidable as the oldest egg donation children were still toddlers when data collection for the other families began. However, the interviewers had been involved in the earlier investigation and were thus fully familiar with the study techniques, and attitudes towards gamete donation had not changed markedly in the intervening years. In view of the difference in the ages of the children in the various family types, Pearson product-moment correlations were conducted to examine associations between children’s age and the parenting variables for which group differences were identified. None was significant, suggesting that the differences between groups did not result from differences in the age of the child.

It may be the case that parents of genetically unrelated children are more likely to try to present their relationship with their child in the best possible light due to the negative attitudes that are sometimes associated with nongenetic parenting. Whereas such a social desirability effect cannot be ruled out, it was the parents who were genetically related to their child who obtained the highest scores on the “defensive responding” subscale of the PSI/SF, indicating that socially desirable responding was higher among genetic than nongenetic parents. A further difficulty concerns the reliance on maternal reports of father–child interaction. Nevertheless, other studies using father–mother pairs have found high agreement between fathers’ and mothers’ reports of their involvement with their child and mothers’ assessments (Pleck, 1997).

It is noteworthy that information about genetic parentage had been kept secret from all of the children conceived by donor insemination and all but one of the children conceived by egg donation. In spite of the secrecy surrounding the method of their conception, it seems, from the lack of interaction effects, that these children were no more likely than adopted children (all of whom had been told about their genetic origins) and IVF children (all of whom were genetically related to both parents) to show emotional or behavioral problems, or a poor perception of their competence or social acceptance.

As the use of donated gametes in the treatment of infertility has increased in recent years, so has the pressure on parents to disclose information about genetic origins to their child (Daniels & Lewis, 1996). With respect to adoption, a recent study has shown that, contrary to the concerns of the critics of openness, providing information about birth parents did not confuse children or lower their self-esteem (Wrobel, Ayers-Lopez, Grotevant, McRoy, & Friedrick, 1996). However, the opinion of social policy makers that openness is beneficial for children contrasts sharply with the views of the parents in the present study who preferred not to tell. In this context, it is perhaps worth noting that contemporary family therapists are moving away from the notion that openness is good and secrecy bad, to the position that “it depends” (Chasin, 1993). In evaluating whether secrecy is having a damaging effect on relationships, Papp (1993) argued that questions such as the effect of the secret on the functioning of family members, the effect on the communication between family members, and the effect of the unaware person finding out by accident or through someone else, should all be addressed. Whereas secrecy did not appear to have a negative effect on families with children aged up to 8 years old in the present investigation, it remains to be seen whether secrecy leads to difficulties as these children grow up. Interestingly, the parents who were most committed to secrecy were from families where the father rather than the mother lacked a genetic relationship with the child. The finding that one half of the donor insemination parents and almost three quarters of the egg donation parents had told someone other than their child about the use of a donated gamete in the child’s conception means that for these families there will always be a potential for disclosure from someone other than the parents themselves.

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References


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