

Donor insemination: child development and family functioning in lesbian mother families

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Findings are presented of a comparative study investigating the family relationships and the emotional and gender development of children raised in lesbian mother families. A total of 30 lesbian mother families with 4–8 year old children created as a result of donor insemination (DI) were compared with 38 heterosexual families with a DI child and with 30 heterosexual families who had a naturally conceived child. A variety of assessment measures, including a standardized interview and questionnaires from the parents and psychological testing of the child were used to collect the data. The quality of the couples' relationships and the quality of the mother–child interaction did not differ between lesbian mother families and either of the heterosexual family groups. The quality of the interaction between the social mother and the child in lesbian families was superior to that between the father and the child in both groups of heterosexual families. Childrens' own perception of their parents was similar in all family types; the social mother in lesbian families was regarded by the child to be as much a 'parent' as the father in both types of heterosexual families. With regard to their emotional/behavioural development, boys and girls raised in lesbian mother families were well adjusted and their gender role development did not differ from that of children raised in heterosexual families. These results indicate that child and family development in lesbian mother families is similar to that of heterosexual families.

Key words: donor insemination/follow-up study/lesbian mothers/psychology

Introduction

The use of donor insemination (DI) for lesbian couples is still a controversial matter for most European fertility centres (Englert, 1994; Shenfield, 1994; Golombok and Tasker, 1994). In the UK, where the Human Fertilisation and Embryology Act provides legislation governing the use of reproductive medicine, insemination of lesbian couples is discouraged by

the importance attached to 'the child's need for a father' (Morgan and Lee, 1991). The ethical committee of the American Society for Reproductive Medicine, on the other hand, has a more flexible attitude in that it resists any legal bar to 'medically assisted reproduction by non-traditional families because non-traditional arrangements can be compatible with a nurturing environment and hence compatible with the moral right to reproduce'. On the other hand, it is also stressed that 'the child's best interest is served when it is born and reared in the environment of a heterosexual couple in a stable marriage' (American Society of Reproductive Medicine, 1994).

In Belgium and the Netherlands, where there is still no official regulation of the use of fertility treatments in non-traditional families, a limited number of fertility centres will treat lesbian couples. It is to be expected that in future the number of lesbian couples attending such centres will rise as the intracytoplasmic sperm injection (ICSI) technique provides a new form of treatment for (heterosexual) couples who would previously have made use of DI.

The aim of the present study was to examine family relationships and the emotional/behavioural and gender role development of 4–8 year old children in a group of lesbian mother families who had conceived their child by DI (group LeDI). The lesbian mother families were compared with heterosexual families who had conceived their child by DI (group HeDI) and to heterosexual families with a naturally conceived child (group NC). The areas under investigation were derived from the three salient characteristics of such lesbian DI families: (i) the absence of a father; (ii) the lesbian sexual orientation of the mother; and (iii) the use of an anonymous donor.

Absence of a father

The reluctance of most fertility centres to provide DI for lesbian women derives from the fundamental conviction in Western culture that a father is essential to the healthy psychological development of the child. The father has traditionally been viewed as a symbol of authority responsible for the introduction of prohibitions and limitations, while the mother takes care of the emotional, affective and practical requirements of family life.

The importance of the father has been considered by various theories of developmental psychology. Psychoanalytical theorists have emphasized the need for a father-figure in the child's gender development in that the Oedipal phase necessitates the child's relinquishing of its incestuous attraction to the parent of the opposite sex by identifying with the parent of the same sex. From this perspective the absence of a father would entail

disruption of a son's male identification process, opening up the possibility of less masculine behaviour in childhood and of later development towards homosexuality (Freud, 1905; Bieber *et al.*, 1962). The gender development of female infants has been less convincingly dealt with by psychoanalytic theorists, but here too the absence of a father was thought to carry the risk of a disturbed sexual identity (Freud, 1933). Moreover, identification with the father has been seen as necessary in the development of a conscience, through which the child learns to regulate its primary impulses (Freud, 1905; Burlingham, 1973; Herzog, 1982).

Social learning psychologists, who place more emphasis on active learning processes, have stressed that the father provides a model for sons by which appropriate male gender-role behaviour could be learned, especially during the toddler and preschool years (Bandura, 1977). Absence of the father is assumed to disrupt this learning process. However, contemporary social learning theorists have stressed the importance of other models such as peers and general gender stereotypes in the acquisition of gender roles (Fagot and Hagan, 1991; Maccoby, 1992). Cognitive developmental theorists on the other hand, do not necessarily consider the father to play a key role in the socio-emotional and gender development of his children (Kohlberg, 1966; Stagnor and Rubble, 1987). According to this theory children integrate information about sexual identity from their wider social environment, actively constructing for themselves what it means to be a boy or a girl.

In a meta-analysis of 67 empirical studies of the effect of father absence on the child's gender-role development, no overall differences were found between children brought up with and without a father (Steveson and Black, 1988). Not a single study revealed an effect on girls and only a few studies found an effect on boys. Father-absent boys of preschool age tended to show less sex-stereotyped choices of toys and activities. Older father-absent boys appeared to be more stereotyped in their behaviour than their father-present peers and this effect was strongest for aggressive behaviour. A longitudinal study of children's adjustment after divorce produced similar findings (Hetherington, 1989): aggressive behaviour and problems in relation to the mother and peers was common among adolescent boys living in a single-mother family but not among girls. However, several authors suggested that discordant family relationships rather than the absence of a parent were responsible for the children's difficulties (Hess and Camara, 1979; Wallerstein and Kelly, 1980; Hetherington, 1988).

Homosexual orientation of the mother(s)

A second assumption in connection with lesbian parenthood is that the mother's lesbian identity will influence the child's gender development. Lesbian mothers are often assumed to demonstrate atypical female gender-role behaviour themselves and to be less concerned to discourage non-conventional gender-role behaviour in their children. Daughters of lesbian mothers are therefore assumed to be less feminine and sons less masculine, and the probability of their developing a homosexual orientation later in life is consequently believed to be greater. Although little is known about the processes

involved in the development of sexual orientation, it is generally accepted that a complex interaction between biological, psychological and social factors is involved. A number of recent biological studies indicate that genetic factors play a part in determining sexual orientation. Studies of gay men and lesbian women with twin siblings found that a significantly greater proportion of monozygotic than dizygotic twins self identified as gay or lesbian (Bailey and Pillard, 1991; Bailey *et al.*, 1993). Prenatal hormonal environment is also thought to play a part in the development of sexual orientation: gonadal hormones appear to influence sex-role development and sex differences in brain morphology (Meyer-Bahlburg, 1984; Le Vay, 1991).

A number of psychological studies have pointed to a link between atypical gender-role behaviour in childhood and adult homosexuality (for review see Bailey and Zucker, 1995). In retrospective studies, differences in childhood gender-role behaviour have been found between homosexual and heterosexual men and women, with homosexuals reporting consistently greater involvement in cross-gender activities. Prospective studies, that avoid the biases associated with retrospective reporting, have also found an association between cross-gender behaviour and a later homosexual orientation.

Empirical research on the gender-role development of school age children brought up by lesbian mothers has failed to find a difference between the gender development of these children and that of the children of heterosexual single mothers (Kirkpatrick *et al.*, 1981; Golombok *et al.*, 1983; Green *et al.*, 1986). More recently a longitudinal study of the sexual orientation of 25 children of lesbian mothers and 21 children of heterosexual mothers in adulthood reported that the large majority of children from lesbian mother families identified as heterosexuals and that a similar proportion of young adults from lesbian and heterosexual families reported having experienced feelings of attraction towards someone of the same gender (Tasker and Golombok, 1995; Golombok and Tasker, 1996).

Research on lesbian parenthood, however, has not been limited to the gender development of the children. Studies with regard to the emotional and social development of these children and of the quality of the relationship between the mother and the child, have been remarkably unanimous in that no differences have been found between lesbian mother families and control groups of heterosexual single mother families (for review see: Falk, 1989; Patterson, 1992; Golombok and Tasker, 1994). However, a particular characteristic of these studies is that most compared lesbian mothers with heterosexual single mothers. It will be important for further research also to include comparison groups of heterosexual two-parent families.

The present study population, of children born into a lesbian relationship by means of DI, differs in a number of essential ways from children in the existing studies.

Presence of a social mother

In the current investigation, a female partner has been present since the beginning who together with the biological mother wished to have the child. From previous research it has been

shown that this 'social' mother is very involved in the child's upbringing (Brewaeys *et al.*, 1995). Her position differs from the father's position in two respects: she is female and she has no biological connection with the child. Attention was paid to: (i) the quality of her interaction with the biological mother; (ii) the quality of her interaction with the child; (iii) her help with child-care activities; (iv) her role in disciplining the child; and (v) the child's own perception of its relationship with the social mother.

Absence of a father

In the present study, children were born into a lesbian relationship with no male presence from the outset. All the children in previous studies were born into a heterosexual relationship and often spent their early years in the presence of their father. Only later did the mother opt for a partner of the same sex. It has often been argued that precisely such early infantile experience has a profound influence on later emotional/behavioural and gender development. For this reason the present study also looked at: (vi) behavioural and emotional adjustment of the children; and (vii) gender-role behaviour. The children's young age precluded the examination of their sexual orientation.

The use of an anonymous donor

The use of an anonymous donor in gratifying their desire for a child is something that lesbian mothers have in common with infertile heterosexual couples who use DI. Children born from anonymous donors are effectively cut off from half their genetic make-up. Similarly, they have no genetic link with one of their (social) parents. In the literature on this topic it has been argued at length that the lack of a genetic link with a parent may have a negative influence on the parent-child relationship and on the child's emotional development (for review, see Brewaeys, 1996). There are, however, important differences between lesbian and heterosexual DI families. Most heterosexual couples opt to keep the DI origin secret from the child, whereas all lesbian couples intend to tell their children at an early age about the use of a donor (for review see Brewaeys, 1996). Moreover, most heterosexual couples are happy with the donor's anonymity, whereas more than half of the lesbian couples would prefer an identifiable donor (Brewaeys *et al.*, 1993, 1995).

Follow-up studies of heterosexual couples who have had children by means of an anonymous donor are still scarce and results of comparative studies remain inconclusive. The findings of two studies failed to reveal any differences with control groups as regards the children's psychological development (Kovacs *et al.*, 1993; Golombok *et al.*, 1995, 1996) but a French study found an increased emotional vulnerability among young DI children compared with controls (Manuel *et al.*, 1990).

The few empirical findings on lesbian mothers with donor children, which study the emotional, cognitive and gender development of the children, have not identified particular problems for the child (Steckel, 1987; Patterson, 1994, 1995; Flaks *et al.*, 1995). However, the samples were small and were not entirely representative for the total population of lesbian

mothers because the families were recruited through lesbian-mother support groups and through friendship networks.

The aim of the present investigation was to examine the effect of the use of an anonymous donor on the development of family relations and on child development in lesbian mother families. The lesbian mother families (LeDI) were studied in comparison with two control groups: (i) a group of heterosexual parents who had conceived their child by means of donor insemination (HeDI) and (ii) a group of heterosexual parent families with a naturally conceived child (NC).

Materials and methods

Subjects

A total of 30 lesbian mother families (LeDI) each with a child aged 4–8 years conceived by DI were recruited through the Fertility Department of the Brussels University Hospital. All families where the mother had attended the clinic between 1986 and 1991 were asked to take part in the study. The response rate was 100%. The control groups of 38 heterosexual DI families (HeDI) and of 30 naturally conceived heterosexual families (NC) were recruited through the Fertility Department and the Obstetric Department of the University Hospital Leiden respectively. All heterosexual DI families with a child born between 1986 and 1990 were asked to take part in the study. The NC families were matched as closely as possible with respect to the age of the biological mother, age of the child, family size and birth seniority, i.e. each child was the first born within the present couple's relationship. The response rates were 53% for the HeDI families and 60% for the NC families.

Due to practical constraints, the recruitment procedure for the families differed across the groups. The lesbian mother families were asked to participate in this follow-up study by the first author at the time inseminations began. They were then contacted by letter when the child was 1–2 years old in order to provide the first data set (Brewaeys *et al.*, 1995) and again when the child was 4–8 years old in order to obtain the second data set. The control families were asked to participate in the study when their child was between 4 and 8 years old. They were contacted by letter signed by their formal medical doctor. In order to maintain confidentiality, contact by the first author occurred only after the family had agreed in writing to take part in the study.

Both parents were asked to take part in the interview, which took place at home, but for practical reasons the mother was interviewed alone if her partner was not available. For lesbian mother families, 28 of the 30 interviews involved both mothers, for HeDI families 29 out of 38 fathers were involved and for NC families 15 out of 30 fathers took part in the interview. The questionnaires were administered to both parents and were returned by post. In the lesbian mother group all questionnaires were returned, in the HeDI group 36 out of 38 were returned and in the NC group 26 out of 30. Psychological assessment of the children was carried out in all lesbian mother families, in 26 out of 38 HeDI families and in 26 out of 30 NC families.

The strength of this study, in comparison with previous studies of lesbian mother families with DI children, is that all lesbian couples with children who attended the clinic during a 6 year period participated in the study. This study sample may therefore be considered to be truly representative for the general population of lesbian mothers who attend a fertility clinic in order to conceive.

Demographic features

The demographic features of the three study groups are shown in Table I. No significant differences were found between groups for

Table I. Demographic features in the lesbian mother (LeDI) and heterosexual (HeDI) families who conceived their children by donor insemination, in comparison with heterosexual families (NC) with naturally conceived children

		LeDI (<i>n</i> = 30)	HeDI (<i>n</i> = 38)	NC (<i>n</i> = 30)	<i>P</i> value
Age of child	mean	5	5.4	5	NS ^a
	range	4–8	4–7.6	4–7	
Gender of child	girl	15	12	19	<i>P</i> <0.05 ^b
	boy	15	26	11	
Age of biological mother (years)	mean	36	36	37	NS ^a
	range	28–42	30–44	30–44	
Age of social mother/father (years)	mean	39	40	40	NS ^a
	range	29–59	29–58	30–50	
Family size	mean	2	1.8	1.9	NS ^a
	range	1–4	1–3	1–4	
Educational level of biological mother	university degree	4	4	7	<i>P</i> <0.05 ^b
	higher non-university	19	11	13	
	secondary	6	13	10	
	less than secondary	1	10	3	
Educational level of social mother/father	university degree	5	8	11	<i>P</i> <0.01 ^b
	higher non-university	20	9	13	
	secondary	3	16	3	
	less than secondary	2	5	2	
Religion (%)	yes	56	60	44	NS ^b
	no	44	40	56	
Rural/urban (%)	rural	63	63	37	NS ^b
	urban	37	37	63	

NS = not significant.

^aOne-way analysis of variance.

^bPearson χ^2 test.

the mean age of the children, mean age of the biological mother and mean age of the social mother or the father. The number of children in the family did not differ between groups. Across the three groups, an equal number of families were religious and the proportion of families living in a rural or urban setting did not differ significantly.

Significant differences between groups were found for the educational level of both the biological mother (BM) and the social mother (SM) or the father. Heterosexual DI parents had a lower educational level than did lesbian mothers or NC parents (χ^2 BM = 14.62, *df* = 6, *P* <0.05, χ^2 SM = 21.62, *df* = 6, *P* <0.01). The educational level was categorized according to four levels: (i) university degree; (ii) higher non-university education; (iii) secondary education; (iv) lower than secondary education.

A significant difference was also found for the gender of the children (χ^2 = 6.94, *df* = 2, *P* <0.05): there were more boys than girls in the HeDI group and there were more girls than boys in the NC group. As gender might be potentially related to the dependent variables, all data pertaining to the children were presented separately for boys and girls.

Statistical analysis

One-way analyses of variance were performed for all continuous variables to examine significant differences between the three groups. When a significant difference was found, a series of post-hoc *t*-tests, corrected for inflated α levels by means of the Tukey B test, were carried out in order to compare the study groups two by two. The lesbian-mother families were therefore compared with the DI families and to the NC families separately and the DI families were compared with NC families (LeDI versus HeDI, LeDI versus NC, HeDI versus NC).

To examine the influence of educational level, two-way analyses of variance were calculated with 'group' and 'educational level' as factors and with the variable under study as dependent variable. A significant main or interaction effect from 'educational level' on the variable under study is reported in the results.

To examine the influence of gender child on the child-variables [child behaviour checklist (CBCL) and preschool activities inventory (PSAI)], a two-way analysis of variance was calculated with the variables 'group' and 'gender' as factors and with the variable under study as a dependent variable. Significant main or interaction effects from 'gender' on the variable under study are reported in the results.

Measures

The quality of the relationship between the parents

Both the mother and the social mother or the father completed the Golombok–Rust inventory of marital state (GRIMS; Rust *et al.*, 1990), a 28-item questionnaire to assess the quality of the relationship between partners. A total score of around 20 represents a good relationship, a score of 30 is average and a score of greater than 40 indicates severe problems. It has been shown to have good reliability and to discriminate well between clinical and non-clinical groups (Rust *et al.*, 1990).

The quality of the parent–child relationship

The quality of the parent–child relationship was assessed by a standardized interview with the parents using an adaptation of the technique developed by Quinton and Rutter (1988). This procedure has been validated against observational ratings of parent–child relationships in the home, demonstrating a high level of agreement between global ratings of the quality of parenting by interviewers and observers. For this study the interview took place at home, was tape-recorded and took ~1.5 h. The Dutch version was translated according to the back-translation procedure in order to minimize the language differences. Three interviewers were trained using the pilot version with a group of children not involved in this study.

Detailed accounts of the child's behaviour and the parents' response to it were obtained from both parents or from the mother (if the father was not present at the interview). Parents were asked to describe in detail the most important characteristics of their child and what the child was like to get on with. Daily routine activities such

as waking, meal times, leaving for school, returning home, parents' play activities with the child and bedtime were reported. Information was obtained on the parent's handling of any problems associated with these areas. Particular attention was paid to parent-child interactions related to issues of discipline and the child's fears and anxieties. Two overall ratings of the quality of parenting were made taking into account information obtained from the entire interview: (i) mother-child interaction and (ii) social mother/father-child interaction were each rated on a five-point scale ranging from 0 (very poor) to 4 (very good). These ratings of the quality of interaction between parent and child were based on the parent's report of the time spent together with the child, their mutual enjoyment of each other's company, their play activities and their expressed (physical) affection to one another.

Inter-rater reliabilities were calculated in a study by Golombok *et al.* (1995) using the same ratings. A total of 27 interviews, randomly selected, were coded by a second interviewer who was 'blind' to the family type. Pearson product-moment coefficients for mother-child interaction and for father-child interaction were 0.72 and 0.69 respectively.

A practical problem in this study was that fathers in the heterosexual families more often tended to be absent from the interview than did social mothers in the lesbian mother families. In such cases, the father's ratings were not based on direct information from the father himself but on information about the father obtained from the mother. For this reason, a check was run on both heterosexual groups (DI and NC) to see if there was a significant difference between the father ratings for the fathers present at the interview ($n = 44$) and for fathers not present at the interview ($n = 21$); it appeared, however, that the father's presence or absence at the interview had no significant effect on the scores for the quality of father-child interaction.

Division of professional and childcare activities

Interview data were obtained on the time spent by both parents in professional employment outside the home and on the extent to which the partner was helpful in practical childcare activities, rated by the interviewer on a five-point scale ranging from 0 (none) to 4 (takes the load).

Disciplinary issues

Interview data were obtained on the extent to which the partner was helpful in disciplining the child. A detailed description of the most important disciplinary conflicts was obtained from the mother, with special attention to the strategies used to solve the problem and to the role of the partner with regard to disciplining the child. The partner's help in handling control issues was rated by the interviewer on a five-point scale from 0 (unhelpful) to 4 (takes the load). Data were also obtained relating to the frequency of these control conflicts in the previous month and the severity of such conflicts was rated on a three-point scale: 0 (minor), 1 (moderate) and 2 (major conflict).

The child's own perception of his/her relationships with the biological mother and with the social mother or the father

The child's perception of his/her relationships with both parents was assessed by means of the family relations test (FRT; English version: Bene and Antony, 1985, Dutch version: Baarda and van Londen, 1985). This standardized instrument measures the child's positive and negative feelings about both parents. In this test procedure, the interviewer invited the child to play a game about his/her family. First the child was asked which persons belonged to the family. Then the child was asked to choose an imaginary mother and social mother or father from a set of male and female cut-out figures and these were placed in front of the child together with a neutral figure, 'Mr Nobody'. The child was then given a set of cards with a 'feeling' printed on each (e.g. Child likes to give ... a hug, ... is mad at child) and was asked to give each card to the person for whom he/

she felt this feeling to be the most appropriate. The child's response was then classified according to one of the following categories: (i) positive feelings towards the parent and (ii) positive feelings from the parent; (iii) negative feelings towards the parent and (iv) negative feelings from the parent.

In the present investigation, the scores were combined to give two global ratings for each child: (i) positive feelings between child and mother: (positive feelings to mother + positive feelings from mother) - (negative feelings to mother + negative feelings from mother); and (ii) positive feelings between child and social mother/father: (positive feelings to social mother/father + positive feelings from social mother/father) - (negative feelings to social mother/father + negative feelings from social mother/father). The higher the score the more positive the feelings. Acceptable test-retest reliability has been demonstrated and validation studies have shown the test to discriminate well between clinical and non-clinical groups of children (Baarda and van Londen, 1985).

The emotional/behavioural adjustment of the children

The CBCL for ages 4-18 years is a widely used and well validated instrument for the assessment of behavioural/emotional problems and social competencies of children on the basis of the reports of their parents (CBCL/4-18, Achenbach, 1991). It has been translated and validated for the Dutch population (Verhulst *et al.*, 1996); this study provides norms for a large heterogeneous population sample giving us the opportunity to compare the study sample with Dutch population norms. In both the American and the Dutch study significant associations were found between CBCL scores and clinical psychiatric judgement and diagnosis (Achenbach, 1991; Verhulst *et al.*, 1996).

The problem scale, used in this study, provides an overall measure of the child's emotional/behavioural adjustment and contains 118 items which are scored '0' if not true, '1' if somewhat true and '2' if very true. The sum of the scores for each item results in a total problem score that ranges from 0 to 240.

Achenbach (1991) also developed a technique to discriminate between normal and clinical scores. Problem children are defined as those above the 90th percentile of the cumulative frequency distribution of the total problem score from the normal sample.

The findings of Verhulst *et al.* (1996) revealed that the social competence scales, a measure of the child's adjustment in school, social relationships and extracurricular activities, had a limited reliability for children aged <6 years. This scale was therefore not used in this study.

Assessment of gender role behaviour in young children

Children's gender-role behaviour was assessed using the preschool activities inventory (PSAI, Golombok and Rust, 1993), a psychometrically constructed screening instrument specifically designed to differentiate 'masculine' from 'feminine' boys and girls within a normal population sample. Good test-retest reliability has been demonstrated and validation studies have been satisfactory (Golombok and Rust, 1993). The questionnaire requires mothers to rate the frequency of their child's play with a variety of toys, games and activities. The PSAI contains 28 items with scores from '1' to '5' (from never to very often). High scores indicate more masculine sex-typed behaviour and low scores more feminine sex-typed behaviour. Standardized age-adjusted scores were used in the present investigation.

Results

The quality of the couples' relationships

The number of parental separations since the child's birth was three in the LeDI, two in the NC group and one in the HeDI

Table II. The couple's relationship and the parent-child interaction: comparison between lesbian mother (LeDI) and heterosexual (HeDI) families who conceived their children by donor insemination, in comparison with heterosexual families (NC) with naturally conceived children, showing mean, SD, *F* ratios and significance levels

	LeDI	HeDI	NC	<i>F</i> ^a	<i>P</i> ^a	LeDI versus HeDI ^b	LeDI versus NC ^b	HeDI versus NC ^b
Couples' relationship								
GRIMS BM	21 (7.02)	22 (9.74)	22 (9.43)	0.155	NS			
GRIMS SM/father	21 (8.33)	23 (10.13)	23 (9.56)	0.350	NS			
Parent-child interaction								
Overall ratings interview								
Mother-child interaction	2.95 (0.85)	2.74 (0.72)	2.80 (0.85)	0.159	NS			
SM/father-child interaction	3.07 (0.79)	2.34 (0.78)	2.53 (0.99)	8.225	<i>P</i> < 0.001	<i>P</i> < 0.05	<i>P</i> < 0.05	NS

GRIMS = Golombok-Rust inventory of marital state; BM = biological mother; SM = social mother; NS = not significant.

^aOne-way analysis of variance.

^bPost-hoc *t*-tests with Tukey B correction for inflated α levels.

group. No significant difference between groups was found for the quality of the couples' relationships for either mothers or social mothers/fathers as measured by the total GRIMS score (Table II).

Overall ratings of the parent-child interactions

A significant difference between groups was found for 'social mother/father-child interaction' [$F(2,95) = 7.519, P < 0.001$]. The quality of the parent-child interaction was significantly higher for the lesbian social mothers than for the heterosexual fathers in both HeDI and NC groups (LeDI versus HeDI: $P < 0.05$, LeDI versus NC: $P < 0.05$). No significant differences were found between groups for 'mother-child interaction' (Table II).

Among the lesbian mothers, the quality of the parent-child interaction did not differ significantly between the biological mother and the social mother. In both groups of heterosexual families (HeDI and NC), however, mothers scored significantly higher than fathers (paired sample *t*-test HeDI: $df = 37, t = -2.84, P < 0.01$, paired sample *t*-test NC: $df = 28, t = -3.27, P < 0.005$).

There was a significant main effect of 'educational level' on the variables 'mother-child interaction' and 'father-child interaction' [mother-child interaction by educational level of mother: $F(3,97) = 4.125, P < 0.01$, father-child interaction by educational level of father: $F(3,95) = 4.064, P = 0.01$].

Division of professional and childcare activities between parents

Parent's professional employment

The proportion of time spent in employment outside the home by both parents differed significantly between groups ($\chi^2 df = 2, 14.56, P < 0.001$). Of the biological mothers, more lesbian mothers (58%) had a full-time job than did the HeDI mothers (24%) or NC mothers (9%). Among the lesbian biological mothers, only two were not professionally active, in comparison with 12 of the HeDI mothers and seven of the NC mothers. The LeDI social mothers, 86% of whom worked full-time, did not differ significantly in this respect from the HeDI fathers (94%) or the NC fathers (86%).

Partner's help with childcare activities

A significant difference between groups was found for 'practical help in childcare' [$F(2,93) = 50.235, P < 0.001$]. Social

mothers of lesbian families were significantly more involved in practical childcare activities compared with fathers in both heterosexual control groups (LeDI versus DI: $P < 0.05$, LeDI versus NC: $P < 0.05$). DI fathers, however, were significantly more active in helping their partners than were NC fathers ($P < 0.05$) (Table III). Equal load-sharing occurred in 50% of the lesbian mother families and in none of the heterosexual families.

Handling disciplinary issues

A significant difference between groups was found for 'partner's help with control' [$F(2,93) = 19.668, P < 0.001$]. Social mothers of lesbian families helped their partners significantly more often in disciplining the child than did heterosexual fathers in both control groups (LeDI versus HeDI: $P < 0.05$, LeDI versus NC: $P < 0.05$). A significant negative Pearson product moment correlation was found between the variables 'partner's help with control' and 'severity of discipline conflicts' ($r = -0.25, P < 0.01$), indicating that more help from the partner was associated with less severe conflicts about discipline. However, when parents were asked how often conflicts about disciplinary issues had occurred during the previous month, and at which level of conflict these had occurred, differences between groups were not significant (Table III).

Child's perception of his/her relationship with each parent

The qualitative analysis of the FRT-test provided some data on the child's perception of both parents. All children from lesbian mother families chose both biological mother and social mother as family members and all children reported not having a father. The names attributed to the social mother differed: 18/30 children called their social mother a name equivalent to 'mother' and 12/30 children called their social mother by her given name or by a nickname. In all cases the child attributed female sex to both biological mother and social mother. In their choice of cut-out figures, however, four of the 30 children chose a male figure for the social mother. All children except one were informed about their mothers having used a donor and they translated this information themselves with a story along the lines of: 'They went to the doctor in order to get some seeds'.

Table III. The division of childcare activities and the handling of disciplinary issues: comparison between lesbian mother (LeDI) and heterosexual (HeDI) families who conceived their children by donor insemination, in comparison with heterosexual families (NC) with naturally conceived children, showing mean, SD, *F* ratios and significance levels

	LeDI	HeDI	NC	<i>F</i> ^a	<i>P</i> ^a	LeDI versus HeDI ^b	LeDI versus NC ^b	HeD versus NC ^b
Division of childcare activities between partners								
Partner's help with child care	2.8 (0.69)	1.6 (0.64)	1.2 (0.55)	50.236	<i>P</i> <0.001	<i>P</i> <0.05	<i>P</i> <0.05	<i>P</i> <0.05
Handling of disciplinary issues								
Partner's help with control	3.2 (0.64)	2.2 (0.93)	1.8 (0.97)	19.668	<i>P</i> <0.001	<i>P</i> <0.05	<i>P</i> <0.05	NS
Frequency of control conflicts in past month	12 (8.6)	13 (8.1)	12 (6.8)	0.221	NS			
Severity of control conflict: level of battle	0.2 (0.43)	0.3 (0.53)	0.5 (0.77)	1.536	NS			

^aOne-way analysis of variance.

^bPost-hoc *t*-tests with Tukey B correction for inflated α levels.

Table IV. Child measures: the child's perception of his/her relationship with the parents, the child's emotional/behavioural adjustment and gender role development: comparison between lesbian mother (LeDI) and heterosexual (HeDI) families who conceived their children by donor insemination, in comparison with heterosexual families (NC) with naturally conceived children, showing mean, SD, *F* ratios and significance levels

	LeDI boys <i>n</i> = 15 girls <i>n</i> = 15	HeDI boys <i>n</i> = 26 girls <i>n</i> = 12	NC boys <i>n</i> = 11 girls <i>n</i> = 19	<i>F</i> ^a	<i>P</i> ^a	LeDI versus HeDI ^b	LeDI versus NC ^b	HeD versus NC ^b
Child's perception of the relationship with the parents								
FRT scores								
Sum positive and negative feelings BM	3.9 (4.78)	3.6 (5.6)	3.4(5.2)	0.064	NS			
Sum positive and negative feelings SM/F	0.4 (4.6)	-0.5 (5.6)	0.5 (6.2)	0.384	NS			
Behavioural/emotional adjustment								
CBCLscores	23.5 (12.9)	29.9 (14.5)	20.5 (9.7)	4.796	<0.05	NS	NS	<0.05
Boys and girls combined								
CBCL boys	28.6 (11.8)	29.8 (13.6)	22.8 (12.5)	1.221	NS			
CBCL girls	19.6 (12.4)	30.5 (16.2)	18.9 (7.2)	3.790	<i>P</i> <0.05	<i>P</i> <0.05	NS	<i>P</i> <0.05
Gender role development								
PSAI boys	51.24 (8.8)	55.61 (9.6)	58.09 (8.8)	1.919	NS			
PSAI girls	38.85 (9.2)	39.07 (8.6)	36.87 (9.8)	0.279	NS			

FRT = family relations test; BM = biological mother; SM/F = social mother/father; NS = not significant; CBCL = child behaviour check list; PSAI = preschool activities inventory.

^aOne-way analysis of variance.

^bPost-hoc *t*-tests with Tukey B correction for inflated α levels.

The quantitative analysis revealed no significant differences between groups for the FRT scores for each parent. Children of lesbian mother families did not differ significantly in their feelings for their biological mother compared to children of heterosexual parents. The children's feelings for the social mother in the lesbian families did not differ significantly from the children's feelings for their father in heterosexual families. In all groups the (biological) mother received a greater quantity of positive feelings than did the social mother or father (Table IV).

The effect of gender on FRT scores was not significant (two-way analysis of variance). Boys and girls did not differ significantly in the feelings expressed towards each parent.

Emotional/behavioural adjustment of the children

A significant difference in total problem score was found between the three groups under study [*F* (2,95) = 4.796, *P* <0.05]. However, no significant differences were found between the group of lesbian mother families and either group of heterosexual families (LeDI versus HeDI, LeDI versus NC). The only significant difference appeared to be between the heterosexual DI and NC groups, with the DI children having

higher total problem scores than the NC children (*P* <0.05) (Table IV).

There was no significant main effect of gender on the total problem score (two-way analysis of variance) showing that the children's gender did not affect the differences in mean CBCL scores found between the groups under study. Nevertheless, findings for boys and girls are also presented separately in Table IV. The scores of girls differed significantly between groups while those of boys did not [girls: *F* (2,43) = 3.790, *P* <0.05]. Girls in the HeDI group had higher scores than girls in both other groups (LeDI and NC).

When comparing the total problem scores of the study groups (LeDI and HeDI) with those of a Dutch population sample (*n* = 1241, mean score boys = 22.5, mean score girls = 20), significant differences were found for the heterosexual DI families but not for the lesbian mother families. Boys and girls in the HeDI group had higher total problem scores than the Dutch population sample (Student's *t*-test: boys = 2.276, *P* <0.05, girls = 2.3675, *P* <0.01).

In all groups the number of children with a mean score above the clinical cut-off (above 90th percentile) was assessed. In the LeDI group, two boys and one girl had scores within

the clinical range (10%). In the HeDI group, four boys and three girls had scores within the clinical range (18%) whereas only one girl of the NC group fell into the clinical range (3%).

There was no significant main effect of 'educational level' on the CBCL total problem score (two-way analysis of variance) showing that the parents' 'educational level' did not affect the differences in mean CBCL scores found between the groups under study.

Gender role development

No significant difference was found between groups for the mean PSAI scores for either boys or girls (Table IV).

Discussion

The findings with regard to family development revealed that the quality of the relationship between lesbian mothers and their partners was comparable to that of the heterosexual couples. In addition, the quality of parent-child interaction was not significantly different for the (biological) mothers in the three family types. However, one striking difference was found between lesbian and heterosexual families: social mothers showed greater interaction with their children than did fathers. Interestingly, the quality of parent-child interaction did not differ significantly between the two mothers in lesbian families, but in both heterosexual groups mothers interacted more with their children than did fathers. Moreover, women in all groups obtained higher scores than men for the quality of the interaction with their children, despite their sexual orientation. Thus although social mothers in lesbian families showed greater interaction with their children than fathers in heterosexual families, this difference appeared to derive from the parent's gender (man or woman) rather than from the parent's sexual orientation (heterosexual or homosexual). Similarly, Flacks *et al.* (1995) found in their comparative study of lesbian and heterosexual families that both lesbian and heterosexual mothers obtained higher scores than heterosexual fathers with regard to 'parenting awareness skills'. The fact that the other parent is also a woman makes her role in the lesbian family essentially different from that of the father in a heterosexual family in that her investment in the child is stronger.

The different position of the social mother in lesbian families compared with that of fathers in heterosexual families is confirmed by the division of professional and childcare activities between the two parents. Biological mothers in lesbian families spent significantly more time in employment outside the home than mothers in heterosexual families. Social mothers in lesbian families were significantly more involved in practical child care activities than fathers in both heterosexual control groups. In half of the lesbian families, the social mother's involvement in practical childcare was equal to that of the biological mother, while in not a single heterosexual family was this the case.

Traditionally, caring has been regarded as a typically female activity, while men have been regarded as mainly contributing to maintaining 'discipline' in the family. However, in the present study it was found that social mothers in the lesbian

families helped their partners more actively with disciplining the child than did the heterosexual fathers in their families. Lesbian mothers, furthermore, reported no more problems with disciplining their children than did heterosexual parents; the number of conflicts about disciplinary issues and the severity of the disputes was similar in all family types. These results, therefore, fail to confirm the assumption that father absence would lead to a lack of discipline within the family.

Family relationships were not only studied via information provided by the parents, information was also gleaned from the FRT about the child's own perception of family relationships. Results showed that the social mother in the lesbian families was regarded by the child to be as much of a 'parent' as the father in the heterosexual families. It is also worth noting that there was no difference in the child's perception of the fathers between the HeDI group and the NC group, indicating that the lack of a genetic link between parent and child did not influence the child's feelings for the parent. However, in both lesbian mother families and heterosexual families respectively, the (biological) mother obtained a higher score for positive feelings than the social mother or father. Interestingly, the greater involvement of the social mother in all child care activities was not reflected in the child's perception of her as a parent.

The most important conclusion emerging from all these findings with regard to family functioning is that children in lesbian mother families have been growing up for the first years of their lives in a warm and secure family environment, just like the children in the heterosexual control groups. Both women in the lesbian mother family were actively engaged in child care and a strong mutual attachment had developed between social mother and child. It seems therefore at odds with reality to consider a lesbian household as a single mother family unit. Current legislation, however, continues to deny the relationship of the social mother with the child and with the biological mother. For example, in case of divorce from or death of the biological mother, her partner has no official right to any form of child custody.

Findings with regard to the emotional/behavioural adjustment of the children as measured by the total problem score of the CBCL, revealed that children raised in lesbian mother families did not differ from children raised in the heterosexual control groups. Moreover, both boys and girls in the lesbian mother families had similar scores compared to a large Dutch population sample. Thus no evidence was found for the supposition that father absence would lead to increasing emotional problems among children. A number of empirical studies revealed an elevated incidence of behavioural problems among boys from father absent families (Hess and Camara, 1979; Wallerstein and Kelly, 1980; Hetherington, 1988, 1989). The absence of such problems in lesbian mother families might be associated with two important family features: (i) the children of lesbian mothers grew up in a family with two parental figures; and (ii) the great majority did not go through the process of separation between parents. It has been suggested that precisely the economic hardship of many single families and the traumatic experience of parents' divorce might be

responsible for the behavioural problems in father absent families.

It is important to note that children from heterosexual DI families appeared to have more problems with emotional/behavioural adjustment than the control group of NC families and than a large Dutch population sample. Both heterosexual and lesbian DI families had in common that one of the parents was not genetically linked to the child. However, an important difference between these groups is the issue of confidentiality. The question of whether parents intended to tell their children about DI was investigated in both study groups; all lesbian mothers except one had already told their children that a sperm donor was used by the time the child was between 4–8 years old. Of the heterosexual parents, eight out of 38 parents had the intention of telling, but only one had already done so (Brewaeys *et al.* 1997). Several authors have stressed the potential negative effect of family secrets on the child's emotional development.

Another possible explanation for these divergent results between lesbian DI families and heterosexual DI families might be the parents' different approaches as regards the use of a donor. Heterosexual couples are referred to DI with a medical indication and tend to interpret the treatment as a cure to a physical disease. Until recently medical practitioners have encouraged their patients in the denial of the long-term consequences of DI by advising complete secrecy. This approach, together with the taboo surrounding male infertility, has created a climate in which there was little space left for an open discussion about the pros and cons of DI treatment with other significant people such as the partner, family members and the physician. In contrast to infertile heterosexual couples who may experience social pressure to have children, lesbian women often have to justify their desire for a child. Moreover, as a result of the absence of a father figure little possibility is left to lesbian mothers for denying their different family structure. The decision to have children in a lesbian relationship has therefore been openly discussed with many others. The search for a fertility centre prepared to consider their DI request and the justification of their wish to have children to an official institution also demands active problem solving behaviour of the couples involved. It is therefore conceivable that this open coping approach to DI treatment induces a self selection process among lesbian couples which is absent in heterosexual couples.

Demographic findings showed that the educational level of the heterosexual DI parents was lower than that of both lesbian and NC parents. When considering this variable as a parameter of the social class of the parents, one could expect that the less favourable social environment might have influenced the higher incidence of emotional/behavioural problems among children of heterosexual DI parents. No support was found for this suggestion as there was no main or interaction effect of 'educational level' on the total CBCL scores (two-way analysis of variance).

Furthermore, as the response rate was only 53% for the heterosexual DI families, it remains difficult to generalize the finding of the increased incidence of emotional/behavioural

problems among DI children of heterosexual parents on the basis of these results only.

Data collected with the same assessment measure were reported among DI families in Australia ($n = 22$) and here no differences were found in the emotional/behavioural adjustment of DI children compared with NC and adopted children (Kovacs *et al.*, 1993). The response rate was 88% but the sample size remained rather small. Recent results of a European study of assisted reproduction families also failed to find an increase of psychological problems among DI children ($n = 111$) compared with in-vitro fertilization (IVF), NC and adoption children (Golombok *et al.*, 1996). However, with an overall response rate of 47%, this sample cannot be regarded as entirely representative for the population of DI parents. A French study of young DI children compared the findings of the DI group ($n = 94$) with two controls: first children born after the parents' fertility treatment not involving the use of a donor, and second children from parents with no fertility problems (Manuel *et al.*, 1990). The response rate reached 76%. Among the children of both fertility groups an increased emotional vulnerability was found compared with the naturally conceived children but the difference between DI children and children born after other fertility treatments was not significant. A limitation of this study is the research method itself: unknown measures were used and there were no data available about the validity and reliability of the questionnaire. Firm conclusions about the emotional/behavioural adjustment of DI children cannot be drawn yet and further research on DI families is needed to increase our knowledge about the effect of this fertility treatment procedure on child development.

This study was the first to investigate gender role behaviour of children born in a lesbian relationship compared to children born in a heterosexual relationship. The findings showed that children in lesbian families did not differ significantly from children in both heterosexual family groups. Boys and girls born in lesbian mother families showed similar gender-role behaviour compared to boys and girls born in heterosexual families. A clear-cut interpretation of these findings remains difficult since the samples were small and the children were young. Nevertheless, these results do not confirm those psychological theories which emphasize the crucial role of the father for normal gender development. Our results support the idea that the role of the parent is a minor one in the acquisition of the child's sex-typed behaviour. Developmental psychologists have stressed that learning about gender roles is a complex process in which children actively socialize themselves as male or female by observing many men, women, boys and girls (Fagot and Hagan, 1991; Maccoby, 1992). There is also a growing body of research showing that biological factors might play, at least partly, a role in human gender development. Our findings, however, fail to find evidence for a possible impact of the mothers' sexual orientation on the child's acquisition of gender roles.

The children's peer relationships have not yet been investigated in the present study because of their young age. One might expect that a major challenge for these children, once they go to school, will be in dealing with the attitudes of their peers towards homosexuality and lesbian motherhood.

However, the fact that they have lived in a secure and warm family environment in their early years can be regarded as a buffer against potentially negative influences from society. Attachment theory has long indicated that secure attachment to parental figures is highly predictive for the future social development of the children (Ainsworth et al., 1974; Main and Weston, 1981).

In summary, this study compared lesbian mother DI families with both heterosexual DI families and heterosexual families with naturally conceived children. The quality of family relationships did not differ between lesbian mother families and either of the heterosexual family groups. However, the quality of interaction between the social mother and the child in the lesbian mother families was superior to that between the father and the child in heterosexual families. The social mothers, moreover, were more active in disciplining the child than were the heterosexual fathers. Children's own perception of their parents was similar in all family types in that the social mother in lesbian families was regarded by the child as just as much a 'parent' as the father in the heterosexual families. With regard to their emotional/behavioural development, boys and girls raised in lesbian mother families were well adjusted. Important to note is that children from heterosexual DI families revealed more emotional/behavioural problems compared to their naturally conceived counterparts. Gender-role development, as measured in this study, did not differ between children of lesbian mother families and those of heterosexual families. These results, like those of prior research (Steckel, 1987; Patterson, 1994, 1995; Flaks et al., 1995) indicate that child and family development in lesbian mother families is similar to that of heterosexual families.

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