

Donor insemination: Dutch parents' opinions about confidentiality and donor anonymity and the emotional adjustment of their children

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Results from a comparative study investigating 38 donor insemination (DI) Dutch families with 4–8 year old children are presented. The aims of this study were to investigate parents' opinions on the issues of confidentiality and donor anonymity, to assess the emotional development of the children, and to examine in DI families the association between secrecy with regard to the use of a donor and the emotional adjustment of the children. The DI families were compared to families with a child conceived by in-vitro fertilization (IVF) and to families with a naturally conceived child. Secrecy appeared to be associated with DI and not with IVF: 74% of the DI parents intended not to inform the child about the way in which she/he was conceived, whereas none of the IVF parents intended to keep the secret. Only one set of DI parents and two sets of IVF parents had actually told the child. As to donor anonymity, a spread of opinions appeared among DI parents; 57% preferred an anonymous donor, 31% would have liked non-identifying information about the donor, 9% preferred the donor's identity to be registered and 3% remained unsure. Parents' major concern was to know more about the medical/genetic background of the donor. Mothers and fathers in the DI families differed in their opinions concerning the issues of confidentiality and donor anonymity: fathers, more often than mothers, were secretive with regard to the use of a donor and husbands, more often than their wives, were in favour of donor anonymity. With regard to the emotional development of the children, more emotional/behavioural problems were revealed among DI children than among children who were naturally conceived. No association was found between secrecy and the emotional/behavioural adjustment of the children.

Key words: child development/confidentiality/donor anonymity/donor insemination

Introduction

It is now well established that infertility and its treatment constitute a stressful life event (Berg and Wilson, 1990; Domar,

1992; Beaupaire *et al.*, 1994; Whiteford and Gonzalez, 1995). Some authors have suggested that the impact of infertility may even, after successful treatment, have effects on the development of the future parent–child relationship and on child development, especially when parents have not been able to come to terms with their infertility (Mushin *et al.*, 1985; Berger *et al.*, 1986; Burns, 1990). Although many aspects of the infertility experience are similar for men and women, there are essential differences with potential long-term effects. Men, more than women, seem to associate their problem with serious doubts about their masculinity and sexual adequacy. One of the few studies to investigate the psychological distress of male and female infertile patients separately found more long-term effects for the males than for the females involved (Connolly *et al.*, 1992). After 7–9 months follow-up, males who were diagnosed with a fertility problem continued to have higher scores on questionnaires assessing anxiety and psychiatric morbidity compared to males in couples with a female or unexplained fertility problem. Moreover, until recently, donor insemination (DI) was the only treatment that the medical world had to offer to couples with male infertility. DI fathers lack a genetic link with their child, while most other fertility treatments result in a child genetically linked to both parents. It has been assumed that the lack of a genetic link to both parents may have a negative effect on future parent–child relationships.

DI, which was introduced ~100 years ago, is one of the oldest techniques in reproductive medicine. In the course of the 1980s, questions were asked about the long-term psychological consequences of DI for the families and children involved and pleas for more openness in DI practice were increasingly heard. Several authors argued that secrecy within DI families would inevitably have negative consequences on family development, since secrets about essential issues such as genetic origins would undermine the relationship of trust between the parent and the child (Rowland, 1985; McWhinnie, 1986; Warnock, 1986; Clamar, 1987). Moreover, a number of authors considered it the child's right to know her/his own origins (Haimes, 1988; Baran and Pannor, 1989; Bruce, 1990; Daniels and Taylor, 1993; Snowden, 1993). Pleas for disclosure of DI to children were accompanied by doubts about the use of anonymous donors. It was assumed that children who were aware of their DI origins would be likely to develop identity problems if no detailed information about the donor was available (Back and Snowden, 1988; Daniels, 1988; Mahlstedt and Greenfield, 1989; Haimes, 1993; Snowden, 1993). In The Netherlands, the plea for more openness in DI practice has recently received public attention and the majority of DI counsellors now advise their patients to disclose the DI origin

to their child (Cohen *et al.*, 1995). The anonymity of the semen donor has also been under discussion and this has led to draft legislation in which identity registration of the donor by a central system would become compulsory. Political debates on this matter are still ongoing.

Despite these changing public opinions with regard to the issues of confidentiality and donor anonymity, the majority of DI parents themselves continue to keep the DI origin secret from their children (Brewaeys, 1996; Golombok *et al.*, 1996). Little is known, however, about the processes involved in the decision-making of the couple. In the majority of investigations no distinction was made between the opinion of the wife on the one hand and that of the husband on the other. The few studies which separately investigated mothers' and fathers' opinions with regard to confidentiality remain inconclusive. Some found discrepant attitudes between parents, with mothers more often preferring openness than fathers (Rosenkvist, 1981; Schover *et al.*, 1992; Daniels *et al.*, 1996), others failed to find differences between the opinions of husbands and wives (Kremer *et al.*, 1984; Berger *et al.*, 1986; Schover *et al.*, 1994). With respect to donor anonymity, a study by Purdie *et al.* (1992) found differences between men and women: 42% of the wives and 28% of the husbands opted for an identifiable donor. Further research is needed to clarify potential differences between DI mothers and DI fathers. The present study, therefore, investigated mothers' and fathers' opinions separately with regard to both confidentiality and donor anonymity in The Netherlands.

The aims of the present study were (i) to investigate opinions on the issues of confidentiality and donor anonymity among DI mothers and DI fathers, (ii) to examine the emotional/behavioural development of DI children and (iii) to investigate whether or not secrecy was associated with differences in the emotional adjustment of DI children.

DI families were compared with two control groups: families with a child conceived by the in-vitro fertilization technique (IVF) and families with a naturally conceived child (NC). Studying these three family types provided an opportunity to examine the effects of the infertility experience on the one hand and to examine the role of a lack of genetic link on the other hand.

Materials and methods

Subjects

The data for this study were collected as part of The European Study of Assisted Reproduction Families (Golombok *et al.*, 1996). The initial group was extended from 29 to 38 DI families and the control groups comprised 30 IVF and 30 NC families with children between 4 and 8 years old.

Both the DI and IVF families were obtained through the fertility department of the University Hospital Leiden, The Netherlands. The NC families were obtained through the obstetric department of the same hospital. All DI and IVF families with a child who attended the clinic between 1986 and 1991 were asked to take part in the study. The response rates were 53% for the DI families, 67% for the IVF families and 60% for the NC families. The NC families were matched as closely as possible to the DI families with respect to the age of the mother, age of the child, family size and birth order, i.e.

each child was the first born within the current relationship. The cause of the fertility problem was recorded in both IVF and DI families: in all DI families a male factor had led to DI treatment while in three of the IVF families male subfertility was the reason for IVF treatment which had, despite this, led to the birth of a child genetically linked to the father. In the remaining IVF couples the cause of infertility was either female or unknown. All families were contacted by a letter signed by their own doctor. In order to maintain confidentiality, contact by the first author occurred only after receipt of a written statement from the family agreeing to take part in the study. Participation in the interview, which took place at home, was requested from both parents but for practical reasons the mother was interviewed alone if the partner was not free. The questionnaires were administered to both parents and returned by post. Completed questionnaires were received from 36 out of 38 couples in the DI group, from 29 out of 30 couples in the IVF group and from 26 out of 30 couples in the NC group. The study was approved by the ethical committee of Leiden University Hospital.

Measures

Parental attitudes towards confidentiality and donor anonymity

A questionnaire designed for a previous study was adapted in order to investigate the issues of confidentiality and of donor anonymity (Brewaeys *et al.*, 1993). All questions were asked to both parents separately during the interview, which was tape recorded. If the father was not present, his written response was sent to us by mail.

Confidentiality. Did parents intend to tell their children about their method of conception? Responses to this question were coded according to one of the following categories: (i) already told, (ii) intend to tell, (iii) intend not to tell, (iv) undecided. Did they inform other people about their method of conception? Responses to this question were coded according to the following categories: (i) nobody, (ii) family only, (iii) friends only, (iv) family and friends. What were the reasons for not telling? The spontaneous answers to this question were transcribed and coded by the interviewer according to the following categories: (i) knowing about the lack of genetic link would be a threat to the father-child relationship, (ii) the father's infertility should remain a secret, (iii) knowing about DI would be a threat to the child's emotional well-being, (iv) other reasons.

Donor anonymity. All DI parents involved in the study had used an anonymous donor. They were therefore asked the following question: 'Imagine that you had had the choice between these three possibilities, which would you have chosen?' (i) An anonymous donor for whom no information was available, (ii) a donor for whom non-identifying information (such as physical and personal characteristics) was available, (iii) a donor whose identity was registered in a central system and could be disclosed at the parents' request or at the child's request once adult.

The emotional/behavioural adjustment of the children

The Child Behaviour Checklist (CBCL) for ages 4–18 years (Achenbach, 1991) was administered to the mothers of the Dutch sample. The Dutch version of the CBCL (Verhulst *et al.*, 1996) provides norms from a large heterogeneous population sample, thus giving the opportunity to compare the study sample scores with Dutch population norms. The CBCL is a widely used and well validated instrument for the assessment of behavioural/emotional problems and the social competencies of children on the basis of reports by their parents. In both the American and the Dutch studies, significant associations have been found between CBCL scores and clinical psychiatric judgement and diagnosis (Achenbach, 1991; Verhulst *et al.*, 1996). The total problem scale, used in this study, provides an overall measure of the child's emotional/behavioural adjustment and contains 118 items which are each scored '0' if not true, '1' if

Table I. Demographic features

		DI <i>n</i> = 38	IVF <i>n</i> = 30	NC <i>n</i> = 30	<i>P</i> -value
Age mothers (years)	mean	36	38	37	NS*
	range	30–44	32–44	30–44	
Age fathers (years)	mean	40	41	40	NS*
	range	29–58	29–55	30–50	
Family size	mean	1.8	1.8	2.0	NS*
Age child (years, months)	mean	5, 5	4, 10	5, 0	<i>P</i> < 0.05*
	range	4–7.6	4–6.7	4–7	
Gender child	male	26	18	11	<i>P</i> < 0.05**
	female	12	12	19	
Educational level of father	university degree	8	7	11	<i>P</i> < 0.05*
	higher non-university education	9	11	14	
	secondary education	16	8	3	
	less than secondary education	5	4	2	
Religion (%)	yes	60	55	44	NS**
	no	40	45	56	

NS = not significant.

*One-way analysis of variance.

**Pearson χ^2 .

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 236. 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 scores from the normal sample.

Results

Demographic composition of the sample

The mean age of the mothers and the fathers at the time of the interview was similar in all family types (Table I). The family size, i.e. the mean number of children in each family, did not differ between groups (Table I). The religious affiliation was similar in all family types. A small but significant difference was found between groups for the age of the child [$F(2,98) = 3.836$, $P < 0.05$]. The only difference found was between DI and IVF children (post-hoc *t*-test with Tukey B correction $P < 0.05$); the former were older than the latter. A significant difference was also found for the educational level of the father [$F(2,98) = 3.545$, $P < 0.05$] between DI and NC families, with the former being more poorly educated than the latter (post-hoc *t*-test with Tukey B correction $P < 0.05$). The educational level of the father was categorized according to four levels as shown in Table I. A third significant difference between groups was the gender of the children ($\chi^2 P < 0.05$): there were more boys in the DI families compared with both IVF and NC families (Table I).

In order to counterbalance the potential effect of 'age of child' and of 'educational level of father', these variables were entered as covariates in the analyses. The potential effect of 'gender of child' was assessed using a two-way analysis of variance (ANOVA) with 'gender' and 'group' as factors and the variable under study as the dependent variable.

As a result of the increased incidence of divorce in the past decade, the nuclear family with a mother and a father raising their own biological children is no longer the only family

Table II. Confidentiality. Number of parents intending to inform child and others

	DI (<i>n</i> = 38)	IVF (<i>n</i> = 30)
Tell child*		
Already told	1 (3)	2 (7)
Intend to tell	7 (18)	26 (87)
Intend not to tell	28 (74)	0
Undecided	2 (5)	2 (6)
Tell others**		
Nobody	19 (50)	0
Family only	8 (21)	1 (3)
Friends only	2 (5)	(0)
Family and friends	9 (24)	29 (97)

* χ^2 : $P < 0.001$.** χ^2 : $P < 0.001$.

Values in parentheses are percentages.

model. The composition of the family was therefore recorded in all groups under study.

The number of families in which one of the parents already had children from a previous marriage did not differ significantly between groups ($n = 8$ in DI and IVF, $n = 6$ in NC). The number of families in which the parents had separated after the birth of the child was one in the DI, four in the IVF and two in the NC group.

Parental attitudes towards confidentiality and donor anonymity

Information revealed to the child

A significant difference was found between groups with regard to the issue of confidentiality: only 21% of the DI parents had decided to inform their child about the way in which she/he had been conceived, whereas 94% of the IVF parents decided to do so (Table II). Of the DI parents, 74% intended to keep this secret, while none of the IVF parents intended to withhold this information from their child. Very few parents were undecided ($\chi^2 = 37.6$, $df = 3$, $P < 0.001$). In the DI group, one family had already told the child and two had done so in

Table III. Donor anonymity. Number of DI mothers, fathers, mothers and fathers combined preferring an anonymous donor, identifying information and identity registration

	DI mothers <i>n</i> = 38	DI fathers <i>n</i> = 37	DI mothers and fathers combined <i>n</i> = 75
Anonymous	17 (45)	26 (70)	43 (57)
Non-identifying information	13 (34)	10 (27)	23 (31)
Identity registered	6 (16)	1 (3)	7 (9)
Unsure	2 (5)	0	2 (3)

Sign test for matched pairs $P < 0.005$.

Values in parentheses are percentages.

the IVF group. In four of the 38 DI families, it appeared that mothers were in favour of telling while fathers were not; nevertheless, they were prepared to respect their husband's opinion in this matter. No such differences between partners were apparent in the IVF group (Table II).

The reasons for the 28 DI parents not intending to disclose DI to their children were as follows: the great majority (82%) mentioned that informing the child about DI would be a threat to the child's well-being. As derived from their comments during the interview, they wished to protect their child from potentially upsetting information. In their opinion, knowing about the lack of a genetic link with their father might give rise to feelings of insecurity in the child. Moreover, several couples believed that telling the child about the donor without any further knowledge of him was pointless. Thirty percent of the parents also mentioned that such information would be a threat to the father-child relationship. Examination of the transcripts revealed the fear among parents that if the child were to know that 'his/her father was not his/her real father', she/he would be less attached to him and would want to know more about the donor. Nine percent of the parents could think of no good reason to inform the child about a matter that was in their own eyes 'of little importance'. Five percent of the parents were motivated by the need to keep the male infertility a secret.

The responses about the reasons for not telling their children did not differ significantly between mothers and fathers.

Information revealed to others

A significant group difference was found for the information parents had revealed to others. Of the DI parents 50% had informed at least one other person about DI, mostly a family member or a close friend. All IVF parents had been open about the IVF procedure to one or more family members and 97% had also told others such as friends and colleagues ($\chi^2 = 35.68$, $df = 3$, $P < 0.001$) (Table II).

Within the DI group, a discrepancy existed between the information revealed to others and the intention not to tell the child: 10 out of 38 (26%) families had been open about DI to others, mostly during the DI treatment period, but were not in favour of telling their child. Among DI couples there was also a significant difference between mothers and fathers: wives had informed others more often than their husbands (sign test for matched pairs: $P < 0.05$).

Donor anonymity

The reports of DI mothers and fathers combined revealed a remarkable spread of opinion on donor anonymity: 57% of

the parents were in favour of an anonymous donor, 31% would have preferred non-identifying information and 9% would have preferred an identifiable donor (Table III). However, when the responses of fathers and mothers were taken separately it appeared that they differed significantly on this point. Fathers were more likely than mothers to prefer an anonymous donor (26 versus 17). Mothers were more likely than fathers to prefer non-identifying information about the donor (13 versus 10), and six of the mothers would have preferred an identifiable donor while only one of the fathers did so (sign test for matched pairs: $P < 0.005$) (Table III).

A significant difference as regards donor anonymity was also found between those parents who intended to inform their child about the use of a donor ($n = 8$) and those who intended to keep this secret ($n = 28$): all parents opting for disclosure would prefer more information about the donor, while only 38% of the parents opting for secrecy would have wanted this (Fisher exact: $P = 0.018$). Those parents who would have preferred more information about the donor gave the following reasons: (i) the majority felt the need to know more about the medical/genetic background of the donor, (ii) some parents were curious themselves about the physical and personal characteristics of the donor and (iii) only one father and three mothers considered that the child itself might want to know more about the donor.

Emotional/behavioural adjustment of the children

Group comparisons were conducted using one-way ANOVA with the child's age and the educational level of the father as covariates. 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 DI families were therefore compared to the IVF and NC families separately and the IVF families were compared to the NC families (DI versus IVF, DI versus NC, IVF versus NC).

A significant difference between groups was found for the total problem score of the CBCL [$F(2,94) = 3.442$; $P < 0.05$]. The mean scores (SD) were as follows: DI children = 29.9 (14.5), IVF children = 25.5 (12.2) and NC children = 20.5 (9.7). Further analysis of the data showed that DI children scored significantly higher than NC children (post-hoc *t*-test: $P < 0.05$). CBCL scores did not differ between DI and IVF children, nor did they differ between IVF and NC children. Thus, these findings showed that children in the DI families were reported to have more emotional/behavioural problems

compared with children in the NC families but not compared with children in the IVF families.

When comparing the CBCL total problem scores for DI and IVF children separately with those of a Dutch population sample ($n = 1241$, mean score = 21), significant differences were found for the DI families but not for the IVF families. DI children had higher total problem scores than the Dutch population sample ($t = 3.39$, $P < 0.005$).

In each of the three groups the number of children with a mean score above the clinical cut-off (>percentile 90) was also assessed. The results revealed that in the DI group, four boys and three girls scored within the clinical range (18%). In the IVF group, two girls and one boy had scores within the clinical range (10%), whereas only one girl in the NC group fell into the clinical range (3%).

There was no significant main or interaction effect of gender on the CBCL total problem score (two-way ANOVA with 'gender' and 'group' as factors). The children's gender did not affect the differences in mean CBCL scores found between the groups under study.

Association between secrecy and family functioning

In order to study the association between secrecy and the behavioural/emotional adjustment of the children, a comparison was made between those DI parents who had told or intended to disclose the DI origin to their children ($n = 8$) and those opting for secrecy ($n = 28$). Two demographic variables, the religious affiliation of the parents and their educational level were also checked. No significant difference was found between the two groups for the total problem CBCL scores. The mean CBCL total problem scores and the SD were as follows: DI families preferring disclosure = 26.9 (14.9), DI families preferring secrecy = 30.8 (14.7). Thus these findings showed no evidence for an association between secrecy and the emotional behavioural adjustment of the child.

A significant group difference was found between the two groups for the father's educational level (t -test; $t = -1.96$, $P < 0.03$). In the families preferring openness, the further educational level was higher than in the families opting for secrecy.

Discussion

The results with regard to the issue of confidentiality revealed that secrecy is associated with DI and not with IVF: none of the IVF parents intended to keep their child in the dark as to how it had been conceived, whereas 74% of the DI parents preferred not to inform their child. The Dutch data concerning the DI group are very much in line with those collected in the three other European countries involved in the study (Italy, Spain and the UK) where only 12% of the DI parents had decided to tell (Golombok *et al.*, 1996). Further analysis of the Dutch data showed that concern for the well-being of the child her/himself seemed to be the major motive for DI parent's secrecy (82%). In their view, telling the child about the use of a donor would disturb the child's life and this was a risk that they were not prepared to take. Of the DI parents, 30% found the potential threat to the father-child relationship a

reason to keep the matter secret and only very few parents mentioned the stigma associated with male infertility as an important motive. It therefore seems that uncertainties about the use of donor gametes rather than the taboo surrounding male infertility is the DI couples' major motive in their choice for secrecy.

A similar difference between IVF and DI parents was found as regards the information revealed to others: all IVF parents had been open to other people in a broad social network, whereas only 50% of the DI parents had told someone else, mostly a close family member. Among the DI parents, there was also a discrepancy between the parents' openness about DI in their social environment and their openness toward the child; 26% of the parents who had told at least one other person, mostly during the treatment period, did not intend to tell the child. The risk that the secret might be disclosed to the child by a third person therefore appeared to be real. These findings are in line with previous research on DI families, all reporting the same discrepancy between information revealed to the child and information revealed to others (for review see Brewaeys, 1996). Various studies do in fact mention that considerable numbers of parents regret their earlier openness once the child has been born (Back and Snowden, 1988; Amuzu *et al.*, 1990; Kloch and Maier, 1991). Taking adoption research into account, from which it appears that adopted children find it traumatic to be told by a third person that they were adopted, it would seem to be better to avoid this discrepancy in future (Triseliotis, 1973, 1993). The issue of confidentiality should therefore be thoroughly discussed with couples entering a DI treatment programme.

Differences were also found between DI fathers and mothers: mothers had talked to others about DI more often than fathers, and in four families mothers were in favour of informing the child whereas fathers were not. It is conceivable that the discrepancies between partners on such important family issues could lead to tension or conflict as the child is growing up.

Only one DI and two IVF couples had already told their child about her/his conception method. Considering that the study children were between 4 and 8 years old, there seems to be a trend among parents to postpone the decision to tell until a later developmental stage. As intending to tell does not mean that they will actually do so, it remains to be seen in the further follow-up of these families how many of these parents will ever get to the decisive point of informing their child. Several authors have stressed that there is a lack of generally accepted stories available for parents with children created by the new reproductive technologies, which might help them in informing their child (Daniels and Taylor, 1993; Cook *et al.*, 1995). As opposed to adoptive parents, who now receive a great deal of support and information, there is uncertainty, especially among DI parents, about when and how to tell their children.

The findings with regard to parents' opinions on the issue of donor anonymity showed that DI parents differed widely on this matter. Anonymous donors would not be the exclusive preference if parents were offered the choice. Forty percent of the couples studied would prefer more information, with the majority opting for non-identifying information. These findings

are in line with those of an American study in which patients using donor gametes in order to conceive expressed a similar variety of opinions on donor anonymity (Braverman and Corson, 1995). The major concern of the DI parents in this study was the need to know more about the medical/genetic background of the donor. The same concern about the medical history of the donor was found in two other studies investigating parents' attitudes to donor anonymity (Kloch and Maier, 1991; Brewaeys *et al.* 1993). Interestingly, very few parents considered that the child her/himself might want to know more about the donor.

Differences with regard to donor anonymity emerged between women and men: more mothers than fathers would have liked information about the donor (55 versus 30%). The fact that it is the man who is the cause of the fertility problem and who lacks a genetic link with the child seems to put him in a far more vulnerable position than his female partner. This may explain, at least partly, his reluctance to know more about the donor. Interestingly, a similar trend was found among lesbian mother families with DI children: the social mothers (the biological mothers' partners) opted significantly more often for an anonymous donor than the biological mothers (Brewaeys *et al.*, 1995). These results suggest that the parent who lacks a genetic relationship with the child may experience the donor as more threatening to his/her position in the family than does the biological parent, regardless of the parent's gender. It would be important for further research to investigate the potential effects of this family asymmetry on the development of the DI child.

Another important finding is that all parents intending to inform their child about DI would have preferred more information about the donor compared to only 38% of the parents who preferred secrecy. These findings support the view of several authors who have suggested that the issues of secrecy and donor anonymity are linked to one another; more openness in DI practice would lead to the need for more information about the donor (Back and Snowden, 1988; Daniels, 1988; Mahlstedt and Greenfield, 1989; Haimes, 1993; Snowden, 1993).

The findings with regard to the emotional/behavioural adjustment of the children showed that DI children had the highest total problem score compared to IVF and NC families. A significant difference was found for the CBCL scores of DI children compared with the CBCL scores of the NC control group and for the CBCL scores of DI children compared with a large Dutch population sample. The CBCL scores of IVF children did not differ from those of either the NC control group or the Dutch population sample. These findings therefore point to a higher incidence of emotional/behavioural problems among DI children.

There are, however, a number of methodological considerations limiting a possible interpretation of this finding. First, as the response rate of the DI families was only 53%, this sample could not be regarded as entirely representative for the Dutch population of DI families. Moreover, as the Ethical Committee of the University Hospital Leiden did not give the authorization to investigate the reasons for non-participation, it remained impossible to analyse the group of non-responders. No conclu-

sions can therefore be drawn about possible differences between participants and non-participants. Second, similar findings were also collected in the European Study of Assisted Reproduction Families, involving data from 43 UK, 29 Dutch, 23 Spanish and 17 Italian DI families (Golombok *et al.*, 1996). Children's emotional/behavioural problems were assessed with the Rutter A scale completed by the mother and the Rutter B scale completed by the children's teacher (Rutter *et al.*, 1970, 1975). The 29 Dutch DI families in the European study were those included in the extended study sample of this paper. The overall results of the European study, involving all countries, found that DI children showed no more emotional/behavioural problems than the IVF, NC and adopted children of the control groups. However, when looking at the differences between countries, mothers and teachers reported significantly more emotional/behavioural problems among the 29 Dutch DI children than did those of the other countries (Golombok *et al.*, 1996). In order to enable a comparison between the results of DI children with Dutch population norms, an additional assessment of children's emotional/behavioural adjustment, by means of the CBCL, was performed for the Dutch study group. The analysis of these data, as reported in this study, led to similar results; the mothers of DI children continued to report more emotional/behavioural problems compared to the NC control group and compared to Dutch population norms. The reason for the divergent results between the Dutch sample and the samples from the other countries remains unclear, but is most likely due to random sampling error. Moreover, considering that the overall response rate for the samples of DI families in the European study just reached 47%, any generalization of the findings with regard to DI families remains limited.

Other follow-up studies of DI children have been sporadically carried out in the past and results remain inconclusive. A French study of 94 young DI children and their families compared the findings of the DI group with two controls: first children born after the parent's fertility treatment not involving the use of a donor, and second children of parents with no fertility problems (Manuel *et al.*, 1990). Parents of both infertility groups presented an 'anxious over-investment' in their children compared to a control group of parents who had conceived their children naturally. Among the children of both fertility groups there were signs of increased emotional vulnerability as compared to the naturally conceived children. Despite the high response rate (76%), 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. An uncontrolled Australian study of 50 young DI children with a response rate of 100% found a high incidence of hyperactive behaviour among the DI children (Clayton and Kovacs, 1982). However, a later comparative study failed to find any significant difference between the 22 DI children and the control groups of naturally conceived children and adoptive children. The response rate in this latter study was 88%, but findings remain preliminary because of the small sample size (Kovacs *et al.*, 1993).

In the third part of this study we investigated whether or not secrecy was associated with the emotional/behavioural

adjustment of the child by comparing those DI parents who intended to disclose the DI origin to their children with those opting for secrecy. Although preliminary, the findings did not point to an association between secrecy and the emotional/behavioural adjustment of the children. Interestingly, parents who intended to disclose the DI origin to their children were better educated than those opting for secrecy. It is generally known that higher social classes are trendsetters for new family values and lifestyles in society. It would be interesting, therefore, to examine in future whether this finding turned out to be a first sign of more openness among DI parents in The Netherlands.

In conclusion, the findings of this study suggest that DI parents have to deal with a number of difficulties associated with the use of a donor, which IVF parents have not. The secrecy surrounding DI families, uncertainties about how to inform the child, discrepancies between information revealed to others and to the child, different attitudes between mothers and fathers as to donor anonymity and confidentiality, are all factors which may or may not have influenced certain family processes which we were not able to analyse with the instruments used in this study design. Many questions about the impact of the use of a donor remain unanswered and further research is therefore needed.

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