

Choosing identity-release sperm donors: the parents' perspective 13–18 years later

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BACKGROUND: A growing number of donor insemination (DI) programmes offer 'open-identity' sperm donors, who are willing to have their identity released to adult offspring. We report findings from parents who chose such donors and whose children are now adolescents. **METHODS:** Using mail-back questionnaires, parents from 45 households (40% headed by lesbian couples, 38% by single women, 22% by heterosexual couples) reported their experience with using an open-identity donor and disclosure about it, as well as their child's plans for donor identity-releasesm. **RESULTS:** Almost no parents regretted using an open-identity donor. Almost all parents had told their child about his or her DI conception early on and reported a neutral to moderately positive impact. Finally, of those who had told, almost all expected their child to obtain the donor's identity. We also discuss differences found between birth mothers and co-parents and among single women, lesbian couples, and heterosexual couples. **CONCLUSIONS:** Families were relatively open and positive about their use of DI and that their child could obtain the donor's identity. Disclosure did not appear to have a negative impact on the families, regardless of parental sexual orientation and relationship status.

Key words: adolescence/disclosure/donor insemination/open-identity sperm donor/parenting

Introduction

In most donor insemination (DI) programmes, sperm donors are anonymous and identifying information is not available to recipients or resultant offspring. However, a growing number of programmes both across the USA and internationally now have donors who are willing to release their identity to adult offspring (i.e. 'open-identity' donors; Benward, 1998; Stevens, 2001; Blyth, 2002). At The Sperm Bank of California (TSBC), the first in the USA with an open-identity programme, identity-releasesm donors agree to release their name, address, telephone and driver's license numbers, and date and place of birth to interested offspring who are ≥18 years old. (The term identity-releasesm is specific to a service at our programme.) The identity-release option is very popular in this programme, with almost 80% of recipients wanting this kind of donor (Scheib *et al.*, 2000). Such popularity reflects recent findings suggesting a desire for more donor information among both recipients and adult offspring and for parents being able to give their children the option of identifying and possibly meeting the donor (Raboy, 1993; Cordray, 2000; Scheib *et al.*, 2000).

Origins of open-identity

The open-identity option arose from two related origins, both oriented toward the perceived best interests of the child (as opposed to those of the parents, donors, or practitioners). In the

USA, the option was first created in 1983 at TSBC in response to recipients who wanted to be able to tell their children about their DI origins and give them the option of learning who their donor was when they reached 18 years of age. The option was very much offspring-driven, with only the adult offspring, and not the parent(s) or donor, being able to obtain identifying information. When the option was created, most of the recipients were single women and lesbian couples for whom custody issues were a significant problem. Thus, having donor identity-release occur only when the child was no longer a legal dependant removed the risk of recipients losing their parental rights or having to share them with a donor. (California State law later came into effect that also protects a recipient's parental rights and clarifies that a donor does not have them, including not having any financial obligation.) Other American programmes followed later with similar arrangements—protecting the legal rights and responsibilities of the parents and freeing the donors of them. Nevertheless, the open-identity option, and variants thereof, are still only available at a small number of DI programmes in North America.

The open-identity option also arose in several other countries from a second, though somewhat related, origin—one in which there was formal recognition of the rights of the child to his or her genetic origins (United Nations Convention on the Rights of the Child, Part 1, Article 8, 1989). In this case, open-identity occurred country- or state-wide and was not optional as

it is in the USA. Open-identity was legislated first in Sweden in 1985, with similar legislation following in Austria, Switzerland, the Australian state of Victoria, and, most recently, The Netherlands (Benward, 1998; Frith, 2001). Although New Zealand has not legislated open-identity, most programmes have voluntarily switched to using only these types of donors (Daniels and Lewis, 1996). Thus, open-identity in this country has similarities in approach to both American programmes (i.e. DI programmes offer open-identity voluntarily) and programmes in countries such as Sweden (i.e. almost all New Zealander programmes offer only open-identity donors).

DI origins: disclosure to children

One potential benefit of having an open-identity donor is that it helps parents and children avoid a possible sense of futility in having incomplete knowledge about the child's origins and the child becoming preoccupied with this lack of information (e.g. Snowden *et al.*, 1983; Baran and Pannor, 1993; Cook *et al.*, 1995; Daniels *et al.*, 1995; Brewaeys, 1996; Lindblad *et al.*, 2000; for adopted people's experiences see Triseliotis, 1993). Nonetheless, it is not clear whether parents are more likely to tell their children when they have an open-identity as opposed to anonymous donor (but see Greenfeld *et al.*, 1998 for the finding in egg recipients that having a donor known from conception, as opposed to an anonymous donor, is related to recipients' plans to share conception information with the child). In DI, the extent of disclosure is unlikely to be determined entirely by simply having the donor's identity available to adult offspring. It is likely to be impacted by a combination of factors, including not only having the donor's identity, but also by recommendations from DI practitioners, the cultural context around male infertility and acceptance of DI, and whether the recipient is even heterosexually partnered or instead has a female partner or is single (for a review and debate on whether or not to disclose, see Daniels and Taylor, 1993 and associated commentaries; see also Golombok, 1997; Klock, 1997; Frith, 2001; McWhinnie, 2001).

Most of what is known about disclosure within DI families comes from recipients who used anonymous donors. Studies reveal considerable variation in the extent of actual disclosure or plans for it among families and across countries. In the UK, Golombok and her colleagues found that only 5% of DI parents had told their near-adolescent children about their conception origins (Golombok *et al.*, 2002b), with an earlier study suggesting that few (4%) planned to tell (a further 16% were undecided; Cook *et al.*, 1995). [In considering the number of individuals who *plan* to disclose, it is important to note that this does not necessarily reflect the number who *actually* disclose, with the reported direction of change more often going toward non-disclosure (e.g. Durna *et al.*, 1997; Klock, 1997; but see also Daniels *et al.*, 1995). In addition, reported disclosure rates are likely to be over-estimates, because some study non-respondents do not participate due to privacy issues and fears of revealing their use of DI (e.g. Nachtigall *et al.*, 1997; Jacob *et al.*, 1999; Gottlieb *et al.*, 2000).]

Additional studies in Europe revealed similar trends among families with near-adolescent children; no Italian parents had

told, 4% of Spanish parents had told, and 23% of Dutch parents had told (Golombok *et al.*, 2002a; see Brewaeys, 1996 for a review of earlier studies). With such low rates of disclosure and so many definitely planning against it, researchers suggest that DI is not a widely accepted method to become parents in these countries (see also Golombok *et al.*, 1996; Bielawska-Batorowicz, 1993).

Such high rates of non-disclosure may also be impacted by the fact that relatively little information is available about the donor, in comparison with what is available in other countries (e.g. USA, New Zealand). In the USA, where more information is generally available for both anonymous and open-identity donors and counselling at DI programmes more oriented toward the possibility of disclosure, rates of disclosure, or plans for it, are slightly higher among recipients. Recent rates range from ~20–30% (with a further 10–15% undecided; Klock *et al.*, 1996; Leiblum and Aviv, 1997; Nachtigall *et al.*, 1998) to as high as 72% among female DI recipients (Braverman and Corson, 1995; see also Wendland *et al.*, 1996; Jacob *et al.*, 1999). Knowing why and how to disclose, along with having information to answer their children's questions about the donor is likely to help parents disclose.

Although only limited information is available about the donors in Sweden, one might expect disclosure rates to be similar to or higher than those among American or European DI parents, because open-identity is legislated and Swedish parents are counselled and expected to share DI conception information with their children. In a recent study, Gottlieb *et al.* (2000) contacted parents who had children through two Swedish DI programmes after open-identity was legislated (i.e. post-1985). Eleven percent of parents had told their children, with an additional 41% planning to tell and 11% more undecided. Although this is a relatively high rate for disclosure or plans for it, Gottlieb *et al.* argue that these results suggest low compliance with Swedish legislation on open-identity and expected information sharing. In an earlier article, Nielsen *et al.* (1995) argue that non-disclosure and privacy remain a priority for Swedes, regardless of legislation, and reveal an attitude similar to that of their Danish neighbours. Thus, the low compliance among Swedes is likely to be due to open-identity not being voluntary and not necessarily reflecting cultural acceptance of DI as a method to become parents, as well as to the difficulties associated with only having limited information about the donor.

Clearly, greater cultural acceptance of DI as a means to parenthood is also an important factor in the probability of disclosure. Daniels and colleagues suggest that New Zealanders take a much more open approach to DI information sharing (Daniels *et al.*, 1995). The move towards having open-identity donors in DI programmes voluntarily suggests this is the case. Also, Purdie *et al.* (1992) found that 83% of couples definitely or probably would tell their children about their DI origin. Couples in this programme had received counselling about disclosure, as well as knowing that at least non-identifying donor information would be available.

When DI is a preferred method of conception, as it is among many same-sex couples and single women, it is also likely to result in higher disclosure rates. In addition, single women and

lesbian couples do not face male infertility and the possible reluctance to discuss issues associated with it, whereas they will have to answer their children's questions about the absence of a male parent. Thus among these parents, rates of disclosure, or plans for it, tend to be almost 100% (Leiblum *et al.*, 1995; Brewaeys, 1996; 2001; Klock *et al.*, 1996; Wendland *et al.*, 1996; Jacob *et al.*, 1999).

Offspring responses: the impact of disclosure

Once parents share information with children about their DI origins, little information is available about the children's reactions or later feelings about their origins. Results from a longitudinal study of DI families (Golombok *et al.*, 2002a) suggest that the children are doing well in general, but no information is available as yet about how they are accepting their DI origins, because so few have been told. Two recent studies with families headed by heterosexual couples begin to provide information on how children respond to learning about their DI origins. Almost a third of participants in a New Zealand study had told their children about their conception (Rumball and Adair, 1999). All children were aged <8 years, with most having first begun learning about their DI origins at ≤3 years old. Their responses were mainly positive with the majority being interested in their conception story and some being curious about the donor. In Sweden, DI parents reported similar responses from their children, especially curiosity, upon learning about their origins. In addition, no parents reported regretting the decision to share the information with their children (Lindblad *et al.*, 2000).

Studies of DI families headed by lesbian couples can also provide insight about children's responses. Indirect information comes from a study in which all children but one were told at a young age about their mothers having used a donor (Brewaeys *et al.*, 1997a). Although no information was provided about their reactions, it is telling that the children (ages 4–8 years) were well-adjusted and exhibited few behavioural problems. (See similar results in Chan *et al.*, 1998, which included not only lesbian couples, but also single women and heterosexual couples.) Most recently, Vanfraussen *et al.* (2001) directly examined children's responses to learning about their DI origins and their desire for information about the donor. The children were told when they were quite young (i.e. toddlers) and mothers reported that none had responded negatively. The children (average age at study almost 10 years) described the donor as someone outside their family, and in neutral terms (e.g. 'father [only] in a biological sense', 'a donor or unknown man', p. 2021). The children were almost equally divided on whether or not they wanted more information about the donor. (The authors note, however, that more children may have actually wanted information about the donor, but loyalty toward their parents, especially the non-genetic mother, may have inhibited them from saying so.) Thus overall, their responses suggest more of a neutral and curious attitude than one of negativity.

In contrast to results from studies with children, a study of adults who had been conceived through DI suggests that they have difficulties with their origins (Turner and Coyle, 2000). Problems included feeling negatively distinct from one's

family, mistrust of family, a sense of abandonment by the donor and DI practitioners, and frustration and feelings of loss because of the lack of information about and access to their donor (see also Snowden *et al.*, 1983; Baran and Pannor, 1993; reviewed in Blyth, 2002). These findings are critical and ground-breaking. They may also not be representative of feelings of DI youth and adults in general. The study sample was small (16 individuals) and had been recruited through DI support networks, thus potentially biasing the sample toward those with negative experiences and a need for support. In addition, and perhaps most importantly, participants discovered their origins as adults and often in difficult circumstances (e.g. divorce or death). In contrast, it is likely that learning of one's origins early on (e.g. pre-school), in positive circumstances and with donor information readily available, will help to dispel many of the negative feelings experienced by Turner and Coyle's study participants.

Current study

In the current study, we focused on the parents of DI adolescents, their openness with using DI, and their perspective of having the donor identity-release option for their child. Specifically, we examined parents' current attitudes about having chosen identity-release donors, whether or not their child had been told about his or her DI origin, the impact of disclosure on the family as reported by the parents, who they are open with about having used DI, how they feel about the possibility of the donor's identity being released to their child, and whether or not their now adolescent child plans to obtain the donor's identity. We also examined differences between responses from birth mothers and co-parents (i.e. fathers or co-mothers), as well as across families headed by single women, lesbian couples, and heterosexual couples. We conducted the current study within the context of preparing for the first releases of sperm donor identities to 18-year-old offspring. These represent the first planned (from conception) releases of donor identities to adult offspring from an American DI programme, and indeed may be the first planned releases in the world. As such, it was necessary to develop an identity-release protocol. (Note that the DI youth and donors also participated in the study, but here we present results from the parents only.) This study will be of special interest to DI programmes with an open-identity option and those considering whether or not to offer the option, as well as providing insight into the extent of disclosure among different types of DI recipients (i.e. heterosexual couples, lesbian couples, and single women) and its perceived impact on family relationships.

Materials and methods

Procedure and materials

The procedure involved contacting parents with an initial phone call and following with a mail-back questionnaire. In the phone call, a staff member explained the study, invited the parent to participate and, for those who declined, asked whether or not they had told their child about his or her DI conception and whether or not their child planned to obtain the donor's identity. We initially conducted two focus groups with local parents to identify issues of concern around donor identity-

releases and then developed a mail-back questionnaire from these discussions, as well as from issues identified in the research literature (e.g. questions about openness, impact of disclosure on familial relationships).

Each questionnaire contained three sections. Section One contained demographic questions. Section Two contained questions about choosing a donor, disclosure about DI and its perceived impact, feelings about a possible identity-release and the donor, expectations about their (18 year old) child requesting identity-release and any additional information the child might want. Section Three contained questions about the identity-release protocol and services, and feelings about contact with the donor after identity-release. Questions in Sections Two and Three used Likert rating scales, item and adjective endorsements, and open-ended questions. If the child had a co-parent, we also asked the parents to estimate how much each had contributed to the questionnaire's completion. For questions about disclosure and its impact, the donor, a possible identity-release, and contact with the donor after identity-release, we provided space for the birth mother and co-parent to answer separately. Thus in the results below, we provided responses from birth mothers and co-parents separately. Responses to open-ended questions were coded by research assistants with inter-rater agreement of >90%. Descriptive statistics were used to summarize responses, and χ^2 and likelihood ratio analyses, *t*-tests, and analyses of variance, all with two-tailed tests of significance, were used to compare responses between birth mothers and co-parents and across single women, lesbian couples, and heterosexual couples. The study had Institutional Review Board approval.

Participants

Birth mothers and co-parents qualified to participate if their oldest child was aged between 12 and 17 years and had an identity-release donor, resulting in 105 eligible families. Thirty-five families were excluded from the study, because they had no contact information (i.e. an address and/or phone number; *n* = 29) or had given the programme explicit instructions not to contact them under any circumstance (*n* = 6). Thus we attempted to contact parents, via a phone call, from the remaining 70 families. Nine families could not be contacted (of these, eight had a lesbian birth mother and one had a heterosexual birth mother). A further six families declined to participate; of these, five had a heterosexual birth mother who had not told their child about his or her DI conception, nor ever planned to, and felt that the study was not relevant, and one had a lesbian birth mother whose partner declined because the birth mother was very sick. Parents in the remaining 55 families agreed to participate and were mailed a letter further explaining the study, a consent form to sign, and a single questionnaire to complete by the birth mother and, when applicable, the co-parent. A total of 46 questionnaires were completed and returned by 45 birth mothers and 28 co-parents, resulting in a 65.7% (46/70) response rate. Response rate excluding those who could not be contacted was 75.4% (46/61). We then excluded one family because the birth mother had a lesbian ex-co-parent with whom she completed the majority of the questionnaire, but she was now heterosexually partnered, making categorization into a lesbian or heterosexual couple ambiguous. Thus, among participating families, 40% were headed by lesbian couples (*n* = 18), 37.8% by single women (*n* = 17) and 22.2% by heterosexual couples (*n* = 10) (we categorized birth mothers as single, in a lesbian couple, or in a heterosexual couple according to their parenting status and/or who was in the household; some women reported having relationship partners who did not live in the same household and did not parent, and thus were categorized as single). Responses from three co-parents, who were now the birth mothers' ex-partners, were included among the 18 lesbian couples (two co-parents) and 10 heterosexual couples (one co-parent). Among those for whom

Table I. Characteristics of the participants

Characteristics	Single women	Lesbian couples	Heterosexual couples
Age at interview (years; mean \pm SD)			
Birth mother	50.8 \pm 3.0	48.8 \pm 5.2	49.2 \pm 4.1
Co-parent		48.8 \pm 5.1	47.8 \pm 6.2
Oldest child	14.3 \pm 1.3	14.1 \pm 1.4	14.6 \pm 1.7
Relationship length (years of living together; mean \pm SD)			
Together since child's conception		19.0 \pm 3.9	22.7 \pm 5.0
New relationship		7.1 \pm 4.9	8.0 \pm 3.7
Education [highest degree obtained % (<i>n</i>)]			
Birth mother			
High school degree	11.8 (2)	11.8 (2)	20.0 (2)
College degree	29.4 (5)	11.8 (2)	20.0 (2)
Post-graduate degree	58.8 (10)	76.5 (13)	60.0 (6)
Co-parent ^a			
High school degree		17.6 (3)	11.1 (1)
College degree		11.8 (2)	66.7 (6)
Post-graduate degree		70.6 (12)	22.2 (2)
Current household income [% (<i>n</i>) ^a]			
\leq \$50 000	43.8 (7)	5.6 (1)	14.3 (1)
>\$50 000	56.2 (9)	94.4 (17)	85.7 (6)

^aGroups differ, *P* < 0.05.

we had a relationship status (64/69), sexual orientation and relationship status was related to whether or not the parent(s) participated (likelihood ratio, $G^2 = 15.1$; *df* = 2; *P* < 0.001), with single women participating most often (17/17), followed by lesbian couples (18/28), and finally heterosexual couples (10/19).

Results

Participants

On average, birth mothers were 49.6 years old and co-parents were 48.4 (see Table I for the breakdown by parents' sexual orientation and relationship status; any differences across groups are noted). The average age of the oldest child in the family was 14 years, with the frequency distribution of the children's ages in this sample not differing significantly from that of all children between 12 and 17 years with identity-release donors ($G^2 = 2.6$; *df* = 5). Over half the families (55.6%) had more than one child, of whom 80% were also conceived through DI and 52.6% had the same donor. Couples who had been together since the conception of their child, on average, had been living together for ~20 years. 58.1% of couples had broken-up and those in a new relationship had been living together for 7.4 years. Whether or not a couple broke up was not related to sexual orientation ($G^2 = 0.78$; *df* = 1). Over 84% of both birth mothers and co-parents had a college degree, with 65.9% of birth mothers and 53.8% of co-parents also having a post-graduate degree. Education of co-parents differed between lesbian and heterosexual couples, with a higher proportion of lesbian co-parents having a post-graduate degree ($G^2 = 8.6$; *df* = 2; *P* = 0.01). Finally, almost 80% of families had a household income >\$50 000. Not surprisingly, a larger proportion of households headed by two individuals in comparison with one had an income of >\$50 000

Table II. Donor insemination experience

	Single women	Lesbian couples	Heterosexual couples
Why chose identity-release [% endorsed reason (<i>n</i>)]			
Did not choose it specifically	11.8 (2)	16.7 (3)	30.0 (3)
Option of getting more donor information	100.0 (15)	93.3 (14)	100.0 (7)
Option of knowing who donor is	100.0 (15)	86.7 (13)	85.7 (6)
Option of meeting donor	93.3 (14)	93.3 (14)	85.7 (6)
It was the right thing to do	80.0 (12)	93.3 (14)	71.4 (5)
Feelings about upcoming donor identity-releases			
Birth mother			
Overall feeling (mean \pm SD) ^a	4.7 \pm 0.5	4.8 \pm 0.4	4.4 \pm 0.7
Descriptives [% endorsed reason (<i>n</i>)]			
It was the right thing to do (i.e. to have the identity-release option) ^b	88.2 (15)	93.8 (15)	55.6 (5)
Curious	76.5 (13)	75.0 (12)	55.6 (5)
Concerned/anxious	52.9 (9)	37.5 (6)	77.7 (7)
Looking forward to your (adult) child meeting the donor	58.8 (10)	62.5 (10)	33.3 (3)
Proud	35.3 (6)	43.8 (7)	11.1 (1)
Has no expectations ^b	0 (0)	12.5 (2)	22.2 (2)
Co-parent			
Overall feeling (mean \pm SD) ^a		4.7 \pm 0.5	4.0 \pm 1.6
Descriptives [% endorsed reason (<i>n</i>)]			
It was the right thing to do (i.e. to have the identity-release option) ^c		94.1 (16)	50.0 (3)
Curious		64.7 (11)	66.7 (4)
Concerned/anxious		41.2 (7)	50.0 (3)
Looking forward to your (adult) child meeting the donor ^c		52.9 (9)	0 (0)
Proud		17.6 (3)	0 (0)
Has no expectations		23.5 (4)	16.7 (1)

^aLikert rating scale, where 1 = very negative; 2 = moderately negative; 3 = neutral; 4 = moderately positive; 5 = very positive.

^bGroups differ marginally, $P < 0.10$.

^cGroups differ, $P < 0.05$.

($G^2 = 7.8$; $df = 2$; $P = 0.02$). We also asked that when both the birth mother and co-parent could help to complete the questionnaire, they estimate how much, if anything, each contributed. Contribution by the birth mother averaged 69% (SD = 18.1; range = 50–100%) and co-parent 31% (SD = 18.1; range = 0–50%). Gender of the co-parent made a marginal difference: women contributed on average 35.9% and men 23.2% ($t = 1.8$; $df = 24$; $P = 0.08$).

Choosing identity-release donors

Why choose identity-release?

We asked parents why they chose an identity-release donor, both as an open-ended question and by providing options they could endorse. A number of parents (from $n = 8$ households, 17.8%; see Table II; any differences across groups are noted) reported that identity-release had not been a factor in their choice of donor, and were excluded from additional analyses of this question. In response to the options we provided, the most common response was that it gave the child the option of getting more information about the donor (given by 97.3% of parents). In addition, >90% of parents reported that they wanted their child to have the option of knowing who the donor was and of meeting him, and 83.8% thought it had been the right thing to do. Almost all responses to the open-ended question could be categorized into the options we provided. A

small number of parents (from eight households), however, gave unique responses, the most common of which was that it would help to contribute to the child's sense of identity/heritage.

Feelings about upcoming donor identity-releases

We asked parents how they felt about their adolescent child having the identity-release option and the possibility of meeting the donor, and provided birth mothers and co-parents with separate space to answer. Birth mothers reported that they felt quite positive (mean rating of 4.7 out of 5 on a Likert scale, SD = 0.5; see Table II), with all feeling at least neutral and 95.2% feeling moderately to very positive. We also gave respondents adjectives to endorse and space to write an answer when they had additional information. The majority of birth mothers (83.3%) felt that it was the right option for their child to have (e.g. one said it helped avoid 'leav[ing] the child with a void'), with marginally more women in lesbian relationships and single women reporting this than heterosexually partnered women ($G^2 = 5.7$; $df = 2$; $P = 0.06$). A large number (71.4%) were also curious about the upcoming identity-release and possible meeting. Although no birth mothers were negative, many (52.4%) were still concerned and anxious about the upcoming release, including how the process would unfold, whether the donor would live up to the (adult) child's

Table III. Disclosure about donor insemination (DI)

	Single women	Lesbian couples	Heterosexual couples
Told child about DI conception [% (n)] ^a	100.0 (17)	100.0 (18)	70.0 (7)
Age child was told (years; mean \pm SD)	4.9 \pm 1.9	4.9 \pm 2.8	4.4 \pm 2.5
Child's reaction (mean \pm SD) ^b	3.4 \pm 0.6	3.2 \pm 0.7	3.5 \pm 0.8
Child's feelings now (mean \pm SD) ^b	3.7 \pm 0.9	3.4 \pm 0.8	3.6 \pm 0.8
Impact on parent-child relationship (mean \pm SD) ^{a,b}			
Birth mother	4.0 \pm 0.8	3.8 \pm 0.9	4.1 \pm 0.7
Co-parent		3.4 \pm 0.7	3.6 \pm 1.1
Told others about DI use [% (n)]			
Birth mothers			
Told at least one friend	100.0 (17)	100.0 (17)	90.0 (9)
Told at least one family member ^a	100.0 (17)	100.0 (17)	70.0 (7)
Of those that told at least one family member:			
Told whole family	76.5 (13)	58.8 (10)	71.4 (5)
Co-parents			
Told at least one friend ^a		100.0 (17)	77.8 (7)
Told at least one family member		88.2 (15)	75.0 (6)
Of those that told at least one family member:			
Told whole family		40.0 (6)	66.7 (4)
Reaction of friends to parents' use of DI (mean \pm SD) ^b			
Birth mothers	4.4 \pm 0.6	4.4 \pm 0.7	4.2 \pm 0.7
Co-parents		4.2 \pm 0.8	3.8 \pm 0.8
Reaction of family to parents' use of DI (mean \pm SD) ^{a,b}			
Birth mothers	3.9 \pm 0.8	3.9 \pm 0.7	4.3 \pm 1.0
Co-parents		3.5 \pm 0.9	3.3 \pm 0.5

^aGroups differ, $P < 0.05$.^bLikert rating scale, where 1 = very negative; 2 = moderately negative; 3 = neutral; 4 = moderately positive; 5 = very positive.

expectations, whether he would be willing to meet their child, (for some) if he would be homophobic, whether he might try to exert parental rights to the child (note: the identity-release agreement and that the child will be an adult protect against this), and how a meeting might go. In addition, some of these parents expressed concerns about the donor's response if their child was one of the last offspring to try to contact him and the child's reaction if the donor had died. For birth mothers with more than one child, 20% reported being worried about their other children, because the sibling shared the same donor or because s/he might not have something like the identity-release option if s/he had a different donor or was adopted. Nevertheless, many of these same parents still felt that identity-release was the right thing to have and 54.8% of all parents endorsed 'looking forward to your child meeting the donor'. A third of birth mothers reported being proud and a few (9.5%) said they had no expectations (reported by marginally more women in heterosexual relationships than those in lesbian relationships or who were single; $G^2 = 4.8$; $df = 2$; $P = 0.09$). No birth mothers reported regretting that their child had the identity-release option and that s/he might be able to meet the donor.

Co-parents reported similar feelings, with no significant differences between them and the birth mothers. Co-parents reported being quite positive about the upcoming identity-release and possible meeting (mean rating = 4.5, $SD = 0.9$; see Table II)—all but one co-parent were moderately or very positive. The majority (82.6%) felt that it was the right option for their child to have, again, with more lesbian co-parents endorsing this than heterosexual co-parents ($G^2 = 5.3$; $df = 1$; P

= 0.02). Many were also curious (65.2%) and concerned (43.5%) about similar issues as described by the birth mothers. Only one co-parent regretted that the child had this option. Some co-parents (39.1%) looked forward to the (adult) child meeting the donor, although this was limited to lesbian co-parents ($G^2 = 7.3$; $df = 1$; $P = 0.007$). A few said they had no expectations (21.7%), three (13%) felt proud, and several (12.5%) were worried about their other children. Thus, not unexpectedly, both co-parents and birth mothers had concerns about how the process would unfold, but nevertheless were positive overall about possible identity-releases.

Openness about using DI

Disclosure to the child

We asked parents whether or not they had told their adolescent child how s/he was conceived. If they had not, we asked if someone else had, or whether the parents planned to tell the child in the future. Parents from three households had not told their child (6.7%; see Table III; any differences across groups are noted), with heterosexual couples being less likely to tell than lesbian couples and single women ($G^2 = 9.8$; $df = 2$; $P = 0.007$). No one else had told their children, and parents from two of the families planned to tell at some point, whereas parents from the third family were undecided. The parents who planned to tell had already told friends—in one family, the birth mother's friends had reacted neutrally (only her friends had been told), whereas in the other family, the friends (both the birth mother's and co-parent's) had reacted very positively.

Thus, the vast majority of parents (93.3%) had told their child about his or her DI conception, including 70% of

heterosexual couples. Most parents (81.0%) had first told their child at an early age, by age 6, with the average age at which s/he learned being 4.8 years ($SD = 2.4$, range 2–12; see Table III). In fact, the average age was somewhat younger, because parents from seven families (16.7%) said the child had ‘always known’ and had not given an age at which s/he learned. Parents rated their child’s reaction upon learning. The most common reaction was a neutral or no response (68.3% of children), with all but one child responding at least neutrally (mean = 3.4, $SD = 0.7$; see Table III). We asked why they thought their child had responded this way. Research assistants, who were naïve to the DI literature, coded responses into four categories with inter-rater agreement ranging from 94.6 to 97.3%. The most common response given by parents from 53.1% of households (i.e. 17/32 who gave reasons) was that the child was too young to understand, followed by a second category of responses given by 31.1% that included the child never knowing any differently, it was part of their life, and that s/he thought that this was ‘just another way of having children’. A few parents (from 4/32 households) felt that their child responded as s/he did, because they were always honest with him or her, that they would not hide reality, and that they wanted to create a sense of trust. Finally, parents from 3/32 households said the child’s reaction was in response to knowing how ‘wanted’ s/he was.

We also asked how the child felt now and why s/he felt this way. Again, most parents (90%) rated that their child was at least neutral in feeling, with over half (52.5%) rating him or her as positive about his or her DI origins (mean rating = 3.5, $SD = 0.8$, range 2–5; see Table III). Reasons for their child’s feelings were categorized with inter-rater agreement ranging from 92.1 to 97.4%. The most common category of reasons (given by parents from 39.51% of households; 38 gave reasons) included that the parent was honest with the child, but that DI was not a major focus for him or her (e.g. ‘they had a life outside [DI],’ ‘that homework [was] more of an issue at this point’), that it was just part of his or her life, or that s/he did not know any differently. The next most common reason (given by 21.1%) was that their child felt the way s/he did about his or her DI origins because s/he felt ‘so wanted’. The same percentage of parents (21.1%) gave a third reason, that the child was happy, and would not give up his or her other mother (in cases of having lesbian parents), but would have preferred to have had a more traditional family structure—life would have been easier that way.

We questioned whether birth mothers and co-parents felt differently about the impact that disclosure had had on their relationship with the child and provided separate space to answer. Among birth mothers, the most common response (given by 63.4%) was that it had had a moderate to very positive impact, with the rest feeling that the impact had been neutral (mean rating = 4.0, $SD = 0.8$; see Table III). Thirty-six birth mothers also explained the kind of impact telling had. The most common explanation (given by 77.8%) was that telling had created a sense of trust in the child, because s/he knew his or her mother would always inform him or her of reality. A second explanation (given by 19.4%) was that the child felt s/he was very wanted.

All but two co-parents felt that telling had had a neutral to positive impact on their relationship with the child (90.9% felt the impact was at least neutral, 40.9% felt it was moderately to very positive; mean rating = 3.5, $SD = 0.8$; see Table III). Although co-parents were fairly positive, they felt less positive about the impact of disclosure on the relationship with their child than birth mothers (3.5 versus the birth mothers’ rating of 4.0; $t = 2.3$; $df = 60$; $P = 0.02$). Fourteen co-parents explained the kind of impact it had had. The two co-parents who reported a negative impact felt that telling had impeded the establishment of their relationship. In contrast, the rest of co-parents provided explanations similar to the birth mothers’: 50% of co-parents reported that telling had created a sense of trust in the child and that s/he knew his or her parent would always inform him or her of reality and 21.4% reported that the child knew s/he was very wanted.

Disclosure to others

We asked parents whether they had told friends and/or family members about using DI and that they had an identity-release donor, and if they had, what the reaction had been. Birth mothers and co-parents were given separate space to answer. Almost all birth mothers (97.7%) had told at least one friend. In addition, 93.2% had told at least one family member, and, of those, 68.3% had told their whole family (i.e. immediate and extended members). Single women, women in lesbian relationships, and heterosexually coupled women did not differ in their disclosure to friends, but fewer heterosexually coupled women had told family members ($G^2 = 9.7$; $df = 2$; $P = 0.008$; see Table III). Although slightly smaller proportions of co-parents had told friends and/or family, their rates of disclosure did not differ significantly from those of birth mothers. All but two co-parents (92.3%) had told at least one friend. 84% had told at least one family member, and, of those, 47.6% had told their whole family. Lesbian and heterosexual co-parents did not differ in their rates of disclosure to family members, but they did to friends—more lesbian co-parents had told friends than heterosexual co-parents ($G^2 = 4.6$; $df = 1$; $P = 0.03$).

Friends and family almost always reacted neutrally, if not positively, to learning that the parent(s) had used DI and had an identity-release donor. Among birth mothers, friends reacted moderately positively on average (mean rating = 4.3, $SD = 0.7$; see Table III), with all friends responding at least neutrally and 88.1% feeling moderately to very positive. Family members reacted similarly, with all but one birth mother’s family responding at least neutrally and 72.5% responding moderately to very positively (mean rating = 4.0, $SD = 0.8$). Co-parents’ friends responded similarly to those of birth mothers (i.e. moderately positive, mean rating = 4.1, $SD = 0.8$; all reacted at least neutrally, 70.1% reacted moderately to very positively). Co-parents’ families, however, reacted less positively than those of birth mothers ($t = 2.5$, $df = 58$, $P = 0.02$), although they were still on the positive end (mean rating = 3.5, $SD = 0.8$; all but one family reacted at least neutrally, 40% reacted moderately to very positively). No differences were found between reactions to lesbian co-parents’ disclosures and to those of heterosexual co-parents.

Table IV. Feelings toward the donor

	Single women	Lesbian couples	Heterosexual couples
What the donor is called [% (n)] ^a			
The donor	35.3 (6)	77.8 (14)	42.9 (3)
Biological or birth father	29.4 (5)	5.6 (1)	42.9 (3)
Father/dad	17.6 (3)	16.7 (3)	0 (0)
Other ^b	17.6 (3)	0 (0)	14.3 (1)
Feelings toward the donor			
Birth mothers			
Overall feeling (mean \pm SD) ^c	4.2 \pm 0.9	4.3 \pm 0.9	4.2 \pm 0.9
Descriptives [% endorsed reason (n)]			
Appreciative	70.6 (12)	88.2 (15)	70.0 (7)
Curious	70.6 (12)	76.5 (13)	70.0 (7)
Concerned/anxious	41.2 (7)	29.4 (5)	30.0 (3)
Important person in your lives	23.5 (4)	17.6 (3)	10.0 (1)
Has no expectations	17.6 (3)	17.6 (3)	20.0 (2)
Co-parents			
Overall feeling (mean \pm SD) ^c		4.2 \pm 0.9	3.7 \pm 1.6
Descriptives [% endorsed reason (n)]			
Appreciative		70.6 (12)	33.3 (2)
Curious ^d		76.5 (13)	33.3 (2)
Concerned/anxious		23.5 (4)	16.7 (1)
Important person in your lives		11.8 (2)	0 (0)
Has no expectations		29.4 (5)	33.3 (2)
Youth (as reported by parents)			
Overall expected feeling (mean \pm SD) ^{a,c}	4.3 \pm 0.5	3.8 \pm 0.6	3.4 \pm 0.9
Descriptives [% endorsed reason (n)]			
Appreciative	31.3 (5)	23.5 (4)	10.0 (1)
Curious	93.8 (15)	94.1 (16)	80.0 (8)
Looking forward to meeting the donor	68.8 (11)	76.5 (13)	40.0 (4)
Concerned/anxious	75.0 (12)	47.1 (8)	40.0 (4)
Important person in your lives ^d	18.8 (3)	29.4 (5)	0 (0)
No thoughts	25.0 (4)	17.6 (3)	10.0 (1)
Doesn't care	12.5 (2)	5.9 (1)	0 (0)
Resentful/threatened/angry/upset ^a	6.3 (1)	0 (0)	30.0 (3)

^aGroups differ, $P < 0.05$.^bOther includes donor is not discussed, is called 'him', or was given a temporary name.^cLikert rating scale, where 1 = very negative; 2 = moderately negative; 3 = neutral; 4 = moderately positive; 5 = very positive^dGroups differ marginally, $P < 0.10$.

Feelings toward the donor/the role donor plays in family's life

What families call the donor

To understand how the families perceived their donor, we first asked what they called him. Most commonly, the families called the donor 'the donor' (by 54.8% of families), followed by 'biological/birth father' (by 21.4%; see Table IV; any differences across groups are noted). A smaller number (14.3%) called the donor 'father/dad'. Unique names included using a temporary name or calling the donor 'him' (each by one family). The frequency at which families used the different names was related to household composition ($G^2 = 14.4$; $df = 6$; $P < 0.05$). Single parents were divided across all four categories of 'the donor', 'biological/birth father', 'father/dad', and other (i.e. donor not discussed, 'him', and given a temporary name), lesbian couples tended to call the donor 'the donor' most often, followed by 'father/dad', and 'biological/birth father', and heterosexual couples were divided among 'the donor', 'biological/birth father', and other, but not 'father'. Some families (26.2%) used more than one name, such as

'donor/biological father', 'donor/dad', 'donor/nice man who helped us', and 'biological father/dad', because it was often difficult to know what to call him (e.g. some said that "donor" sound[ed] too clinical').

Feelings toward the donor: birth mother and co-parents

We asked how the birth mothers and (separately) co-parents felt about the donor. Birth mothers reported that they felt quite positive (mean rating = 4.3, $SD = 0.9$) with all but one feeling at least neutral and 76.7% feeling moderately to very positive (see Table IV). We also gave respondents adjectives to endorse and space to write when they had additional information. Most commonly, birth mothers endorsed feeling appreciative of the donor (77.3%) and curious about him (72.7%). A smaller proportion (34.1%) had concerns, including whether they had made the right choice of donor, that he would make parental claims on their child, that he would be willing to meet their child, and, if he were, that he would be nice to him or her and/or be able to live up to the child's expectations. No one reported being angry, jealous, or resentful and one was unsure whether

Table V. Plans for donor identity-release

	Single women	Lesbian couples	Heterosexual couples
Likelihood that the (adult) child requests donor identity-release (mean \pm SD) ^a	4.4 \pm 0.9	4.4 \pm 1.0	3.6 \pm 1.5
When will the request be made? [% (n)]			
At age 18 years	52.9 (9)	77.8 (14)	60.0 (6)
Age \geq 18 years ^b	11.8 (2)	11.1 (2)	0 (0)
Later ^b	29.4 (5)	11.1 (2)	30.0 (3)
Probably will not request donor's identity	0 (0)	0 (0)	10.0 (1)
Do not know	5.9 (1)	0 (0)	0 (0)
What will offspring do with the donor's information?			
Nothing	11.8 (2)	16.7 (3)	10.0 (1)
Ask for genealogical/other information	52.9 (9)	38.9 (7)	60.0 (6)
Ask for health information	35.3 (6)	50.0 (9)	40.0 (4)
Try to contact the donor by letter, e-mail, or telephone	88.2 (15)	83.3 (15)	80.0 (8)
Try to contact the donor in person	41.2 (7)	50.0 (9)	30.0 (3)
Why would offspring try to contact the donor?			
To learn more about themselves/increase their sense of identity	82.4 (14)	86.7 (13)	70.0 (7)
To create an ethnic or cultural connection	23.5 (4)	22.2 (4)	10.0 (1)
Might want a relationship	47.1 (8)	50.0 (9)	40.0 (4)

^aLikert rating scale, where 1 = not at all likely; 3 = moderately likely; 5 = very likely.

^bLater (e.g. when the child was more settled, was having children of his or her own).

she was threatened by the donor. Thus overall, birth mothers were quite positive about the donor, with the most common sentiments being that of appreciation and curiosity.

Co-parents reported similar feelings, with no differences between them and the birth mothers. Co-parents reported being moderately positive about the donor (mean rating = 4.1, SD = 1.1), with all but one being at least neutral and 65.2% feeling moderately to very positive (see Table IV). Many were also appreciative of the donor (60.9%). Almost two-thirds of co-parents reported being curious (65.2%), with marginally more lesbians reporting this than heterosexual co-parents ($G^2 = 3.5$; $df = 1$; $P = 0.06$). About a third (30.4%) had no expectations. Some (21.7%) expressed concerns about issues similar to those expressed by birth mothers, including that the donor might be overwhelmed by contact from offspring. No one reported not caring, being angry, threatened, jealous, or resentful. Thus overall, co-parents were fairly positive about the donor, similar to the birth mothers, with the most common feelings again being that of appreciation and curiosity.

Feelings toward the donor: youth

We asked parents to anticipate what their adolescent child's feelings would be toward the donor on a rating scale and using adjective endorsements. Parents from eleven households felt that they could not rate their child's feelings on a scale, but all but two were able to provide some information (i.e. many found it easier to endorse adjectives and provide additional information) and many said they already knew how the child felt. Parents expected or knew that their child felt moderately positive about the donor (mean rating = 3.8, SD = 0.7), with all but two expecting or knowing him or her to be at least neutral and 76.5% expecting or knowing him or her to feel moderately to very positive (see Table IV). In comparison with heterosexual and lesbian couples, single women reported their child to be most positive about the donor ($F = 4.4$; $df = 2, 31$, $P = 0.02$). Almost all parents (90.7%) expected or knew that their

child was curious about the donor, with almost two-thirds (65.1%) reporting that s/he looked forward to meeting the donor. Many (55.8%) reported that their child would be concerned and/or anxious about what the donor was like, whether he would be willing to meet him or her, and whether he would like him or her. About a quarter (23.3%) felt that their child would be appreciative of the donor. About a fifth (18.6%) expected that the donor was an important person in the child's life, with heterosexually coupled parents reporting this marginally less often ($G^2 = 5.3$; $df = 2$; $P = 0.07$). Finally, parents from four families (9.3%) expected some sort of negativity from their child, including being threatened, resentful, and/or angry/upset. Heterosexually coupled parents reported this more often than other parents ($G^2 = 6.9$; $df = 2$; $P = 0.03$). Of these four families, however, three had not told their child about his or her DI conception. Thus among families in which the child knew about his or her origins, very little negativity was expected toward the donor. In addition, not surprisingly, some parents expected that their child had concerns about what the donor was like and how meetings would go, but many still thought their child looked forward to meeting his or her donor. Most commonly, however, the overwhelming feeling was that their child was curious about what the donor was like.

Plans for donor identity-release

Our last set of questions focused on plans to obtain the donor's identity. We first asked how likely the (adult) child was to request the donor's identity. Parents from five households were unsure, but the rest, on average, reported that their child was more than moderately likely to request the information (mean = 4.2, SD = 1.12; see Table V; no differences were found across groups). In addition, all parents but one were able to report when they thought their child would request identity-release, including those who had not yet told their children about having a donor. Most (64.4%) thought their child would come forward at age 18 years, whereas 22.2% thought their child

would definitely come forward later and not at age 18 years, with one parent reporting that 'life is too hectic at 18, [s/he] will be heading to college'. Parents from only one household thought their child would not make the request at all.

The last question concerned what parents thought their (adult) child would do with the donor information. We provided options to choose from, as well as space for additional answers. (Note that for each option, parents from one or two different households almost always stated that they were unsure.) Parents from six households thought that their child would probably do nothing with the information, other than just read it and keep it as part of his or her family history. Others thought their child would want genealogical and other information (48.9%) and/or additional health information (42.2%), either from the programme or the donor. Most commonly, however, 84.4% of parents thought their child would try to contact the donor by letter, e-mail, or phone, whereas fewer (42.2%) thought s/he might try to contact him in person. Some of the options we provided were to give insight into why the (adult) child would contact their donor. Parents from 82.9% of households thought their child would want to communicate with the donor to 'learn more about him- or herself/increase his or her sense of identity', and 20.5% thought it would help to create an ethnic or cultural connection. The final option was whether the child would want a relationship with the donor, and, if s/he did, we asked parents to describe the type s/he hoped for. Parents from about half (46.7%) of the households thought their child might want a relationship. Of these, most reported either that the type of relationship would depend on what the initial contact and donor were like (42.9%) or that they could not predict the type of relationship (42.9%). None of the parents reported that their child would contact the donor to fill a father's role or for financial reasons. In summary, the majority of parents expected their child to request donor identity-release when s/he turned the age of 18, although some expected that s/he would wait till s/he was older and more settled. Most thought their child would try to contact the donor by letter, e-mail or phone, most often to learn more about him- or herself and secondly perhaps to form a relationship, dependent on what the donor was like. It did not appear that the children were looking for a parent in the donor.

Discussion

In the current study, we report findings from lesbian couples, single women, and heterosexual couples who used DI with sperm donors who are willing to release their identity to adult offspring (i.e. 'open-identity' donors). The recipients (now parents) and their adolescent children are among the oldest DI families studied so far and represent the only sample who have open-identity donors. Overall, the parents appeared satisfied with their decision to use such donors, with the exception of very few individuals, and reported choosing this option because it would allow their adult child to obtain more information about the donor, including who he is and perhaps meeting him. Both birth mothers and co-parents, on average, felt positive about the donor and upcoming identity-releases, even in the face of (some) having concerns about how the

process would go. A high proportion of parents (70–100%) told their child about his or her DI origin, with most doing so at an early age, and almost a fifth saying that the child had 'always known'. Although such high rates of disclosure are not surprising among lesbian couples and single women, they are among heterosexual couples in comparison with previous studies (e.g. Nachtigall *et al.*, 1998; Golombok *et al.*, 2002a). The extent of disclosure reported in the current study is likely due, in part, to being able to provide the child with substantial information about the donor that is available from our programme and the child having the option to identify and obtain further information about him when s/he becomes an adult. This option helps to avoid frustration among both parents and DI children when little information is available about the donor. In addition, such disclosure may also reflect the beginning of a societal trend toward greater openness within donor conception families, with recognition of the benefits of being honest with children about information traditionally thought necessary to be kept a secret. Indeed, parents reported that the impact of disclosure on both the child and the parent–child relationship ranged from neutral to moderately positive, when the child was told at a young age, providing little support for the belief that disclosure is harmful to the child and family's well-being (see also Vanfraussen *et al.*, 2001; Golombok *et al.*, 2002a). In addition, most parents had told at least one family member and friend, and they too rarely responded negatively, providing encouragement for families outside this sample, who wish to be more open about their use of donor conception.

Parents provided insight into their adolescent child's feelings about the donor, the role he played in their lives, and the child's plans for identity-release. When talking about the donor, most families referred to him as 'the donor' or 'biological/birth father,' whereas very few stated that they used the terms 'father' or 'dad'—a response similar to that reported in a study of pre-adolescent DI children (Vanfraussen *et al.*, 2001). We also asked parents what they anticipated their child would feel toward the donor, but many already knew how the child felt. Most parents expected or knew that their child felt at least neutral, if not moderately positive, about the donor (see also Vanfraussen *et al.*, 2001). Among the few parents who anticipated negative feelings, it was when the child had not yet been told about his or her donor conception. Some thought their child would have concerns and/or be anxious about the donor, such as what he would be like and whether he would be willing to meet him or her and like him or her, nevertheless similar numbers also reported that their child looked forward to possible meetings. Most of all, however, the overwhelming response from the children was curiosity about the donor. This is consistent with findings from studies with younger children (e.g. Rumball and Adair, 1999; Lindblad *et al.*, 2000) and from a parallel study with DI youth, almost all of whom were children of the parents in the current study (J.E.Scheib, M.Riordan and S.Rubin, unpublished data). The three top questions among the youth were 'What is the donor like?' 'Is he like me?' and 'Can I meet him?' In addition, all but one wanted a picture of him. Finally, nearly all parents reported that they anticipate that their child will request the donor's

identity and attempt to contact him. None of the parents reported that the child seemed to be looking for a parental figure in the donor (see also Hewitt, 2002; Shanner and Harris, 2002).

Although all parents face challenges with having used donor conception (e.g. if, when, and how to tell the child how s/he was conceived, how to respond to questions about the potential of being different), heterosexual couples face unique issues, such as how to deal with the concept of the child having a father and a donor. Experience from adoption is helpful, but not often used by parents, because of the belief that DI is different due to the asymmetry in genetic relatedness between the parents and child, a visible pregnancy/no obvious infertility, and the donation of gametes rather than giving up one's child. In addition, limited insight is available from families headed by heterosexual couples, because so few disclose their use of DI. Couples more generally—both lesbian and heterosexual—face other unique issues, such as one parent not sharing a genetic relationship with the child. Therefore, we compared responses from parents in the three household types—those headed by single women, lesbian couples and heterosexual couples—as well as from birth mothers and co-parents to identify any differences in behaviour, concerns, and needs. In this case, the information was used to help us better understand the issues individuals face when using DI and develop a protocol and support services for donor identity-releases.

Indeed, trends and significant differences emerged along the lines described above. The first set of differences appeared to reflect the presence versus absence of a father in the child's life, whereas the second set appeared to reflect the loss to the co-parent and potential threat to his or her role in the child's life, when their genetic relationship was missing. With respect to the first set, having a father in the household meant that the child and others were less likely, if at all, to question the child's conception origins. Thus, it was not surprising that in comparison with single women and lesbian couples, heterosexual couples disclosed less often to their child, heterosexual birth mothers disclosed less often to their friends, and heterosexual co-parents disclosed less often to their family. Heterosexual couples also reported less often that they felt donor identity-release was the right option to have and a trend suggested they may also have been less likely to actively choose the option initially. Finally, when the child knew about his or her donor conception, heterosexual couples were less likely to feel that the donor was an important person in their lives.

Interestingly, although differences emerged, families headed by single women and lesbian couples, as with heterosexual couples, also conceptualized the donor as different from a father (e.g. see also Vanfraussen *et al.*, 2001). Very little data suggested that their children were looking for a father in the donor. Few called him 'father'. The majority did not report feeling that the donor was an important person in their lives. Instead, results from the current study suggest that the overwhelming feeling about the donor was curiosity. Findings from the DI adolescents themselves suggest that this curiosity was based on helping the children better understand themselves (J.E.Scheib, M.Riordan and S.Rubin,

unpublished data). Thus, although these families feel positively toward the donor, it appears that his role is not as a father. What other type of role the donor plays should emerge as identity-releases begin to happen.

In the current study, an additional set of differences emerged between the groups, which likely reflected concern for the co-parent's feelings and role in the family. Much as the presence of a genetic tie between the donor and child introduces questions about the donor's role as a father, the absence of the tie can lead to questions about the co-parent's role as a parent. This lack of a genetic relationship, and an asymmetry in the relationship between birth mother and child and co-parent and child, is similar for families headed by heterosexual couples and lesbian couples, and thus some similarity in responses was expected from the two family types. Reflecting this, the terms 'donor' and 'biological/birth father', rather than 'father/dad', were used more often in families headed by two parents than one, likely out of concern for the co-parent's feelings and recognition of his or her role in the family. Similarly, relative to couples, single parents expected their child to be more positive about the donor. This is consistent with concerns reported by the youth themselves, one of which was how the co-parent would feel during the identity-release process and thus may have led the youth to downplay their feelings toward the donor (J.E.Scheib, M.Riordan and S.Rubin, unpublished data). When parents told their child about his or her donor conception, in comparison with birth mothers, co-parents perceived there to be a less positive impact on their relationship with the child (interestingly, the children did not report a such a difference; J.E.Scheib, M.Riordan and S.Rubin, unpublished data). Co-parents also encountered less support from people outside the immediate family—their extended families were less positive than the birth mothers' families about their using DI and an identity-release donor. Finally, a trend suggested that slightly fewer co-parents than birth mothers expressed curiosity about and appreciation for the donor and/or looked forward to their adult child meeting the donor. This was especially pronounced among heterosexual co-parents, and perhaps reflects a difference between using DI as a preferred conception method among lesbian couples and using it as a last resort in response to male infertility in a context in which historical, cultural, and evolutionary biases likely exist against using another man's gametes to conceive one's child (Curry, 2000; Scheib, 2001). Thus overall, although most co-parents were positive about having used donor conception and were supportive of their child's identity-release option, they still seemed somewhat less enthusiastic than the birth mothers. Such differences are not surprising, given the unique challenges they face as co-parents. It is important to note, however, that findings from a recent study indicate that DI fathers are as committed to parenting and close to their children as their counterparts in naturally conceived and adopted families (Golombok *et al.*, 2002b). In line with this, it is also clear from the current findings that parents, both birth mothers and co-parents, are quite positive about having used DI and having the identity-release option, as well as being relatively open about it, even in the face of the unique challenges they encounter when using donor conception.

Several limitations should be kept in mind when considering the current results. First, although parents from almost 50 households participated, numbers were smaller in each of the three types of households (i.e. single women, lesbian couples, and heterosexual couples) and it was possible that we would not detect differences among the groups. In order to address this, we discussed both significant differences and non-significant trends, with the acknowledgment that the latter were only trends. Whether these differences and the findings overall will generalize to other samples has yet to be determined, but they are important nevertheless, because they provide basic information and insight from DI families with adolescent children, about whom little is known. An additional concern related to families who did not participate in the study. Although the response rate was relatively high for a study of DI users, and thus the sampling bias might not be expected to have that large an effect, it is possible that non-participants may have had a different experience from that which we found among study participants. For example, non-participants may have been less open about their use of DI (e.g. Nachtigall *et al.*, 1997; Gottlieb *et al.*, 2000; Golombok *et al.*, 2002b) and less positive about their experience overall. In the current study, several non-participants never planned to disclose, suggesting that actual disclosure rates were slightly less than what we found among participants. Whether the experience of non-participants was less positive is unclear. Although we have no information about the families we never contacted, nothing from the short interviews with non-participants suggests that they had a less positive outcome (see also Golombok *et al.*, 2002a,b). Nonetheless, more research is needed before we can make firm conclusions about all DI families who use open-identity donors.

In summary, the current results indicate that families who used identity-release donors were positive about their decision and that their child had the option of identifying and possibly meeting his or her donor when s/he reached age 18 years. All three types of families—those headed by single women, lesbian couples, and heterosexual couples—were quite open about the donor conception, including telling the child at an early age, and felt that disclosure had at least a neutral, if not positive, impact on the child and their relationship with him or her. With very few exceptions, parents reported that their child felt positively toward the donor and planned to obtain his identity. The children did not seem to be looking for a father in the donor, instead their interest stemmed more out of a strong curiosity about him, likely because they felt that learning more about him would help them learn more about themselves. Although further research is needed, the current study is important because it is one of the few about DI families 13–18 years after the child's conception and provides insight on the experience of having an open-identity sperm donor.

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