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ARTICLE

Forming a family with sperm donation: a survey of 244 non-biological parents

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Abstract There has been little research on the views and experiences of non-biological parents of sperm donor children. This paper reports the results of a survey of non-biological mothers and fathers. An online survey was designed and conducted by the Donor Sibling Registry, a US-based non-profit organization that supports those who have used donor conception. A total of 244 people responded (199 non-biological mothers and 45 non-biological fathers). The survey aimed to understand the perspectives of the respondents who had used donor spermatozoa within heterosexual or same-sex relationships, by exploring their views on a number of key issues. Certain issues and concerns associated with not being genetically related to their offspring were experienced differently by men and women. However, there were many important areas of common ground: a concern for getting a healthy donor, the importance of matching the donor to the non-biological partner, and the amount of thought that went into selecting the donor. The implications of these results for policies concerning donor spermatozoa are discussed.

KEYWORDS: anonymity, disclosure, lesbian families, non-biological parenting, parents' attitudes, sperm donor conception

Introduction

Despite the volume of research on various aspects of donor conception, the experiences of certain groups who have built their family in this way are still under-researched. The non-biological parents of children conceived by sperm donation are one such group. This paper seeks to address this lack of knowledge by presenting the results of a survey carried out by the Donor Sibling Registry (DSR). The DSR is a worldwide, non-profit organization with more than 30,000 members that aims to educate, connect and support donors, recipients and offspring.

There have been few studies that have specifically addressed the perspective of the non-biological parent in

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families created with sperm donation and this survey is distinctive in that it includes both non-biological fathers and mothers. The survey aimed to understand the perspectives of these parents within heterosexual and same-sex relationships, who had conceived using sperm donation, in greater depth by exploring their views on a number of key issues related to using donor insemination. The participants' attitudes and approaches to forming a family with sperm donation within heterosexual and same-sex relationships are discussed and the similarities and differences between the non-biological mothers' and fathers' perspectives are elucidated. Finally, the policy implications of these findings are considered.

Background

There is a growing body of literature on female same-sex couples who have planned to have children using donor insemination, exploring the perspectives and experiences of this group of prospective parents (Almack, 2005, 2006; Bos et al., 2003; Donovan and Wilson, 2008; Dunne, 2000; Gartrell and Bos, 2010; Haimes and Weiner, 2000; Jones, 2005; Touroni and Coyle, 2002; Werner and Westerstahl, 2008). However, much of this literature has only surveyed or interviewed the biological mother and, if her partner has been involved, it is generally in a joint interview and data not sought on comparisons between the two types of parent. Touroni and Coyle (2002), for example, interviewed couples together and addressed questions to both participants to explore their joint decision-making processes and negotiations involved in choosing donor insemination. In the study by Donovan and Wilson (2008), only one non-biological mother was interviewed separately. One of the few studies to consider non-biological mothers' perspectives in isolation from the biological mother is Bergen et al. (2006), which interviewed both members of the couple separately (see also Suter et al., 2008 for the wider study's findings) to explore how the non-biological mother constructed a legitimate parental identity. This was done in a number of ways: such as giving the child the non-biological mother's surname or a double-barrelled name; and having ways of addressing the non-biological mother that reflected her parental status, i.e. calling the biological mother 'mummy' and the co-parent a derivative of 'mummy' such as 'mama' or 'mum'.

The predominance of interviewing couples together is also prevalent in research into heterosexual couples' experiences of donor conception. Burr (2009) studied heterosexual couples who had used donor insemination and their attitudes to donor anonymity and the non-biological fathers were interviewed as part of a couple, if at all. In Grace et al. (2008) research on how the sperm donor was conceptualized, couples were interviewed together unless there was a specific reason not to do so (e.g. divorce); four men were interviewed alone, compared with 11 women. An exception to this general trend is the work of Nachtigall and Becker whose various studies have surveyed men and women separately. Their study on how families approached and managed the talk of 'resemblance' of the donor-conceived child to the non-biological partner (Becker et al., 2005) conducted interviews with the men and women separately and their study on stigma (Nachtigall et al., 1997) compared the mothers' and fathers' perspectives. A further study from this group on disclosure (MacDougall et al., 2007) also interviewed members of the couple separately and made comparisons between men and women's approaches to disclosure. They found that women favoured telling the child earlier than men and had different disclosure strategies. Scheib et al. (2003), examining parents' perspectives on identity-release sperm donors, also included non-biological parents' views as a separate element in the study and examined the attitudes of three groups: households headed by single women and lesbian and heterosexual couples. The questionnaire allowed space for each member of the couple to answer separately and this enabled them to analyse the data for the non-biological parents and compare lesbian and heterosexual co-parents. They found that the asymmetry between the non-biological parent and the birth mother in their relationship with the child affected both sets of non-biological parents in similar ways. This study focused on the issues around identity-release donors and disclosure, whereas the current study reported here has a broader remit and allows comparison between the different types of non-biological parents and family formation on a wider range of issues.

This survey aimed to understand the perspectives of non-biological parents within heterosexual and same-sex relationships who had used donor insemination in greater depth by exploring their views on a number of key issues: (i) how they chose their donor; (ii) what they thought about the process of using donor insemination; (iii) and their approaches to telling the child they were conceived by donor insemination.

Materials and methods

This was an online survey designed by the DSR and was live for 15 weeks from October 2009 to January 2010. Links to the survey were posted on the DSR website and people were invited to complete it online. This survey was one of seven posted concurrently by DSR to elicit information from different groups involved in gamete donation (donors, parents, grandparents and donor offspring from both heterosexual and lesbian, gay, bisexual and transgender parents) and this paper reports on the findings of the non-biological parents of the donor offspring survey. The respondents were the lesbian partners of women who had had sperm donation to conceive a child and the male partners in heterosexual relationships whose female partners had used sperm donation. A few days after the initial online posting/invitation, all DSR members were sent an email inviting them to participate in the study. An invitation was also posted on the DSR's blog, the DSR's Yahoo! group and the DSR's Facebook page, all of which are open to the public. Participants did not have to be members of the DSR to take part and, if they left contact details, they could be entered into a draw for US$50 (for non-DSR members) and US$100 (for DSR members) prizes (23 out of 244 did not leave contact details). Information at the beginning of the survey explained what was involved and taking part in the survey was deemed to supply informed consent. As this was a non-intervention sociological study, formal ethics committee approval was not sought

prior to data collection. Data was collected in accordance with the ethical guidance set out in the International Sociological Association's Code of Ethics (2001), which states that formal ethics committee approval does not have to be sought for this type of research (unlike clinical trials) but that the project must comply with the guidance issued in the Code (which this project did). Once the data was collected, LF and NS were then asked to analyse the data and write it up for publication. Data was fully anonymized before secondary analysis in compliance with the University of Liverpool's research ethics committee guidelines and approval to conduct this analysis was given. Data was stored in accordance with the Medical Research Council's Good Research Practice guidelines (MRC, 2005).

The survey was designed on the basis of the DSR's 10 years of experience in working with donor families, supporting non-biological parents of donor offspring and on previous surveys and research conducted by WK (Freeman et al., 2009; Jadva et al., 2009; Kramer et al., 2009). The survey was made up of 68 questions that covered the following issues: (i) how the sperm donor was chosen and the process of decision making; (ii) attitudes towards donor anonymity and use of identity-release donors; and (iii) if and how they would tell the child that they were conceived from sperm donation. Questions carried tick-box options, such as agreeing or disagreeing with statements or choosing from a range of options (these options are reported where relevant). Not all participants answered every question and some questions only had a small response rate. The survey was not a formal instrument and was not designed to test a hypothesis. Therefore, reliability and validity tests were not conducted (Concato et al., 2000; Smith, 1983) and, as it was a convenience sample, the results are reported in terms of descriptive statistics: counts and percentages. Some questions included space for the participants to comment: these opportunities were added where experience suggested that people might want to explain their answers in a more detailed manner and this qualitative data is also reported.

A total of 244 people responded to this survey, with 94.3% finishing the survey (measured by Survey Monkey, the online survey software, as clicking through every page). Of the total, 18.5% (45) were non-biological fathers and 81.5% (199) were non-biological mothers. The majority of participants were not members of the DSR (54.8%) and 80% were from the USA (**Figure 1**). This method of respondent recruitment produced a convenience sample and as this survey was posted on online with open access it is not possible to calculate response rates, as there is no easily measurable set of possible respondents. All participants were parents of donor-conceived children. A majority of participants (70.9%) were aged between 36 and 55 years, with the highest single percentage (23.4%) aged between 41 and 45 years (**Figure 2**).

Results

Choosing the sperm donor

When participants were asked if they were involved in the choice of donor, nearly 78% of 197 women, compared with 58.1% of the 43 men who responded to this question, reported having equal input in the decision with their partner (**Table 1**). Twenty-nine women and seven men said that they were the primary decision maker and the partners of four non-biological fathers and five non-biological mothers made the decision on their own when choosing a donor. Of those surveyed, 24.4% of men and 34.3% of mothers considered using a male relative as a donor. For 82.4% of the non-biological mothers who responded, using donor spermatozoa from a clinic was their first option and they were enthusiastic about it, but significantly fewer men (41.7%) held the same view. Eighteen out of 36 non-biological fathers (50%) indicated that they were 'not enthusiastic about a clinic's donor but willing to proceed'; by comparison, just 24 of 193 non-biological mothers (12.4%) were of the same opinion. This reflects the different reasons for the use of sperm donation between family types.

Most participants (96.4%) (**Table 1**) reported that people were supportive of their plans to use donor insemination. In terms of talking to other people about their plans to conceive by donor insemination, a large number of women had talked to friends (89%) and appeared more likely to do this than the men (53.1%). Among the men, their father was the most likely person they had talked to (56.3%).

Participants were asked if they had tried to match the donor with themselves and were given a list of attributes to choose from: ethnicity, occupation, interests, colouring, height and build. Participants could tick yes or no to each and they were also given the option to comment: 83.4% had matched by ethnicity, 69.9% by colouring and 52.9%

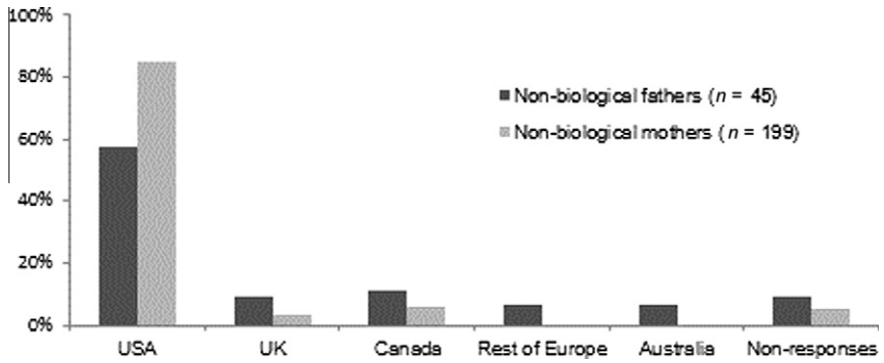

Figure 1 Countries of respondents' origin.

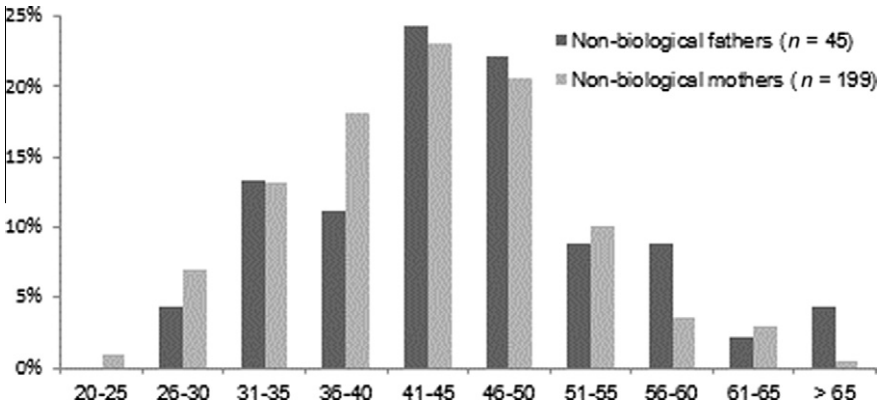

Figure 2 Age of respondents.

Table 1 Comparison between male and female non-biological parents in regards to choosing a sperm donor.

Question	*Non-biological fathers*		*Non-biological mothers*	
	Responses (n)	*Yes (%,* n)	*Responses* (n)	*Yes (%,* n)
Equal input into choice of donor	43	58.1 (25)	197	77.7 (153)
Considered using male relative	45	24.4 (11)	198	34.3 (68)
Clinic's donor was first option	36	41.7 (15)	193	82.4 (159)
Not enthusiastic about clinic's donor but willing to proceed	36	50.0 (18)	193	12.4 (24)
Consulted				
Friends	32	53.1 (17)	173	89.0 (154)
Father	32	56.3 (18)	173	38.7 (67)
Level of information about donor determined the sperm bank used	38	42.1 (16)	189	41.3 (78)

Percentages are based on the number of responses for a given question.

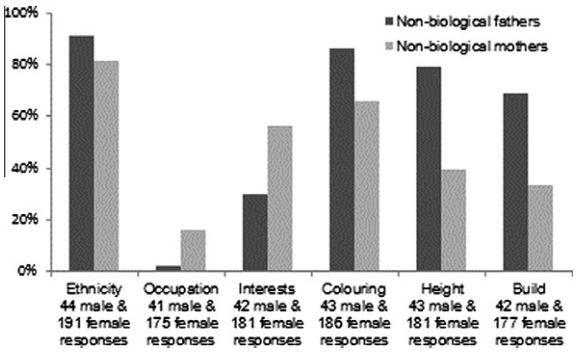

Figure 3 Criteria by which the respondents matched the donor to themselves.

by interests (four women and one man did not answer the question) (**Figure 3**). A non-biological father commented: 'I wanted a left-handed donor since I am left-handed and I thought it might be something that my children and I might have in common.'

More than half (58.3%) of participants did not match by occupation: of the 41 male responses to this question, only one non-biological father (2.4%) indicated that they had matched by occupation; as did 28 (16%) of the 175 non-biological mothers (see **Figure 3**). Among the non-biological fathers, matching for colouring, height and build appeared to be generally more important to them than they were for the non-biological mothers. However, this did not mean that matching for physical characteristics was unimportant to non-biological mothers. One mother said: 'We wanted a donor that was similar in features to myself. My partner carried the child and I am the adoptive mother.' Another mother commented: 'Photo donor matching [despite gender] was crucial in our decision — and the fact that our first child looks more like the non-bio parent I think helped our transition into a non-traditional family so much more.'

Participants were asked to rank the five most important attributes they had looked for in a donor from a predetermined list: athleticism, body type, education, ethnicity, eye colour, hair colour, hair thickness, hair type, intelligence, interests, donor's health, donor's family's health, height, occupation, occupation of parents, personality, race, religion, shape of face, skin type and weight. The health of the donor was important to all participants: 69.2% of the 195 women and 63.2% of the 38 men who responded to this question believed that was the most important consideration when choosing a donor. Ethnicity was as important as health for men and the fourth most important attribute for women (**Table 2**). The donor's interests were the second most important attribute for women and the fifth for men. More men thought that the donor's height was important and thus rated it third, whereas only 25% of non-biological mothers thought that it was an important aspect of choosing a donor. There appears to be little difference in how the men and women rated the importance of the intelligence. Both

groups of parents thought that the donor's family's health was important, with 39.5% of men expressing this view and women rating it as the fifth most important aspect. One non-biological father commented on the importance of 'overall health as described in extended profile, including extended family members.'

More men (26.3% of 38) than women (10.7% of 195) thought that the donor's skin type was an important consideration when choosing a donor but there was no difference in how they rated the importance of the donor's race or hair colour. In sum, when choosing a donor, women's and men's rankings differed slightly. The donor's health, ethnicity and height were most important attributes for men, followed by intelligence and interests. For women the donor's health was the most important attribute, followed by the donor's interests, with intelligence, ethnicity and the donor's family's health, in descending order of importance.

The majority (93%) of participants thought that a sperm bank should divulge all the donors' reported health issues and 91.8% would not have chosen spermatozoa from a donor if no health record had been available. Many participants thought that donor spermatozoa should be screened more thoroughly: 83% would pay more for spermatozoa if it was screened for more genetic diseases; 66% thought that psychological and personality testing should be added to the health profile and be mandatory; 81% thought that it should be illegal for donors with serious genetic disorders to be able to donate; and (iv) 90% would not have chosen a donor who had produced a child with autism.

In response to the question, 'what factors were important to you in selecting a sperm bank?', the most popular response (41.3% of women and 42.1% of men) was level of information about the donor (**Table 1**). Ninety-four percent of participants thought that people should receive compensation if they received the wrong spermatozoa (not the one they had chosen), as they had picked the donor very carefully and donors were not interchangeable with one another.

Table 2 Comparison between male and female non-biological parents with regards to the five most important attributes when choosing a donor.

Non-biological fathers (n = 38)		*Non-biological mothers (n = 195)*	
Attributes	*Yes (%, n)*	*Attributes*	*Yes (%, n)*
1. Donor's health	63.2 (24)	1. Donor's health	69.2 (135)
1. Donor's ethnicity	63.2 (24)	2. Donor's interests	54.3 (106)
3. Donor's height	55.3 (21)	3. Donor's intelligence	55.4 (108)
4. Donor's intelligence	50.0 (19)	4. Donor's ethnicity	53.8 (105)
5. Donor's interests	44.7 (17)	5. Donor's family health	52.3 (102)

The five most important attributes are ranked in descending order of importance.

Attitudes towards donor anonymity

The majority of participants (67.1%) had used an anonymous donor: the breakdown between non-biological mothers and fathers was 63.3% and 84%, respectively. This meant that more non-biological mothers than non-biological fathers had used an open or willing to be known (non-anonymous) donor. Many participants were happy with their choice of an anonymous donor (57%) and there appeared to be no difference between men and women. However, 43.5% of women and 38.2% of men said they wished they had chosen a non-anonymous donor. One non-biological mother commented: 'Now that the kids are here, I more completely understand why it would have been good to have an ID-release donor. While I can't cry over spilt milk, I do advise other friends differently.' And another said: 'I would never change the gift we received but we went into it not knowing about ID release and before that became a big push. I feel like we have denied our child his rights.' A non-biological father commented: 'We later came to realize that we'd prefer for our children to have a choice in finding out the identity of the donor and not restrict them in any way.'

Other participants were not concerned about the identity-release status of the donor, but chose their donor on the basis of the donor's personal and medical characteristics. As one non-biological mother said: 'The characteristics or traits of the donor we chose were more important than his being willing to be known' and another: 'We have a happy healthy little boy. We would have used an open donor if there was one with all the criteria we wanted available. Guess what I'm trying to say is I'm perfectly happy with our choice whether open or closed donor.' A non-biological father commented: 'At the time, it was more important to find a donor we liked — there were more anonymous donors than known donors [open-identity donor] so we had more options.' A non-biological mother made a similar comment: 'If there was an open-ID donor that 'clicked' with us, I think we would have chosen him. But all of our open-ID choices were overweight men, conservative republicans or religious men, and we just couldn't agree to that.'

The predominant reason why participants chose an anonymous donor (42.6%) was that the sperm bank they went to did not offer non-anonymous donors or it was contrary to regulations in their country (e.g. the UK before 2005). Thirty-five men and 113 women answered the question regarding why they chose an anonymous donor (**Figure 4**). Just 13 non-biological fathers answered a question about the importance of the genetic relationship between donor and child. Six of those, and 13 of the 45 non-biological mothers who also responded, were of the belief that the genetic relationship between the child and the donor was not important (**Table 3**). As one non-biological father said: 'It takes more than genetics to make a father.' However, the lack of a genetic relationship with the child could be an issue for non-biological mothers who talked about the difficulties of being the non-biological parent when the relationship had ended: 'Not having a biological connection to my son has made things very difficult legally and practically.' Another said: 'Insofar as my ex-partner insisted on taking our daughter with her to start a new job, under the premise that, as her biological parent, she couldn't live

apart from her. That trumping of my ties and rights as our daughter's parent added more strain to an already stressed partnership.'

There is an important distinction to be made between having information about the donor and the possibility of the child being able to contact the donor and have some form of relationship with them at a later date. Some of the non-biological mothers commented that they wanted more information about the donor but not the possibility of any involvement of the donor in their lives. Nearly 29% of the non-biological mothers who 'strongly preferred an anonymous donor' indicated that it was due to concerns that a non-anonymous donor could seek legal rights; no non-biological fathers shared this concern (**Table 3**). As one non-biological mother said: 'Both my partner and I were concerned about a donor's involvement with our family as well as legal rights seeing as we live in a state that does not recognize second-parent adoption.'

There appeared to be a difference between non-biological mothers and fathers over whether they were interested in meeting their child's donor. Of the women who answered this question, 73.1% indicated that they would like to meet the donor, compared with just 45.2% of the men who answered. Thus, over half of non-biological fathers indicated that they would not like to meet the donor (**Table 3**). One father commented: 'I am afraid the meeting would affect my role as a father in a negative way.' When asked if they would like to meet their child's half-siblings, 27.2% of the non-biological mothers and 14.3% of the non-biological fathers who answered this question indicated that they had 'already met some'. Of those who had not already met some of their child's half-siblings, 76% of mothers indicated that they would like to meet their child's half-siblings but only 47.2% of fathers indicated that same desire. Both types of parent commented that it was up to their child if they wanted to pursue such meetings.

Counselling and the telling of children

When asked about professional counselling, 39.4% of the women who answered this question indicated they had professional counselling before starting clinical sperm donation, as did 57.5% of the men who responded (**Table 4**). Overall, 25.8% of participants had had counselling arranged by the clinic prior to treatment as it was mandatory. About half the participants (50.2%) had not considered having counselling before they commenced treatment. Of those who had counselling ($n = 96$), 72 answered the question on what advice they were given during these sessions: 60.8% of the women and 81% of the men were advised to tell their child early in life they were donor conceived. Furthermore, 68.6% of the women and 42.9% of the men were told that a child is likely to have curiosity about their genetic heritage and 41% of all respondents were told that genetics do not make a family.

Participants were also asked about any advice they were given by the sperm bank/clinic when undergoing treatment. The majority reported they had received little advice on which type of donor to use (anonymous or non-anonymous): 71% ($n = 222$) did not receive any advice about whether to tell their child about their donor conception from a sperm bank; of the 65 respondents who did receive advice, 42% were advised to do so before the child was 10. Interestingly, 35.7% of female respondents and 39.1% of male respondents were advised never to tell (**Table 4**). The majority were advised to tell others (family, friends, etc.) on a needs basis (50% of women and 57% of men). Not surprisingly, 90% (172) of women reported everyone knew that they had used donor insemination, as opposed to 19% (eight) of the men who responded (**Figure 5**). Most men (78.5%) had only told close family members. Slightly more men than women (60.5% versus 55.7%) had told their child they were conceived using donor insemination but 40% of women and 25% of men thought that their child was still too young to have that conversation. The majority had told from birth onwards (50.8%) and most had told by the time the child was 10. Telling was generally done by both members of the couple (81.8%); most told over a period of time (72.5%); and 86.6% thought that their timing of telling the child was right. Nine respondents reported they had no intention of disclosing to their offspring (six men and three women). Of these, two men had concerns that the child would not view them as their parent anymore, three women and two men said that there

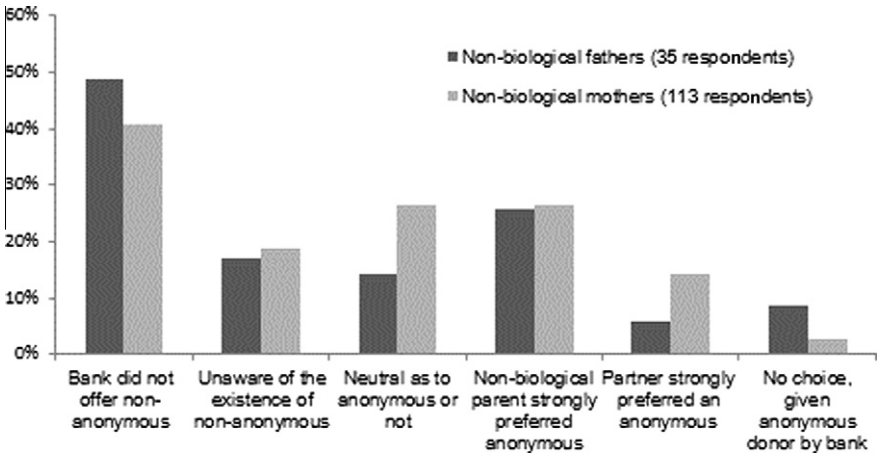

Figure 4 Reasons for choosing an anonymous donor.

Table 3 Comparison between male and female non-biological parents in regards to attitudes to donor anonymity.

Question	*Non-biological fathers*		*Non-biological mothers*	
	Responses (n)	*Yes (%,* n)	*Responses* (n)	*Yes (%,* n)
Believes that genetic relationship not important	13	46.1 (6)	45	28.9 (13)
Worried about donor seeking legal rights	13	0	45	28.9 (13)
Wants to meet donor	42	45.2 (19)	193	73.1 (141)
Will meet half-siblings	36	47.2 (17)	142	76.0 (108)
Has already met some of child's half-siblings	42	14.3 (6)	195	27.2 (53)

Percentages are based on the number of responses for a given question.

Table 4 Comparison between male and female non-biological parents with regards to professional counselling about telling of children about donor origins.

Question	*Non-biological fathers*		*Non-biological mothers*	
	Responses (n)	*Yes (%,* n)	*Responses* (n)	*Yes (%,* n)
Professional counselling received	40	57.5 (23)	185	39.4 (73)
Advice given				
To tell child early in life (counsellor)	21	81.0 (17)	51	60.8 (31)
That child likely to be curious about heritage (counsellor)	21	42.9 (9)	51	68.6 (35)
Never to tell (clinic)	23	39.1 (9)	42	35.7 (15)

Percentages are based on the number of responses for a given question.

was no reason to tell their child, one man said it was too emotional to discuss it and one man said that there was no point as they did not have any information on the donor.

When asked to comment freely on the advice they would give parents who were unsure whether to tell the child they were conceived by donor insemination, 139 people responded (110 women and 29 men). Most respondents advocated honesty and both types of parents gave similar advice: '...to be honest with their children from the start, secrets are not good in any type of family.'

They also advised telling the child early on. One father said: 'Do it! and do it early in an age-appropriate manner. That way it is just normal information about themselves on a par with a physical characteristic or medical history, and not a huge revelation. You will have to talk about it over and over again at each developmental stage, but then it is not a big deal and you are just supplying more age-appropriate information each time.'

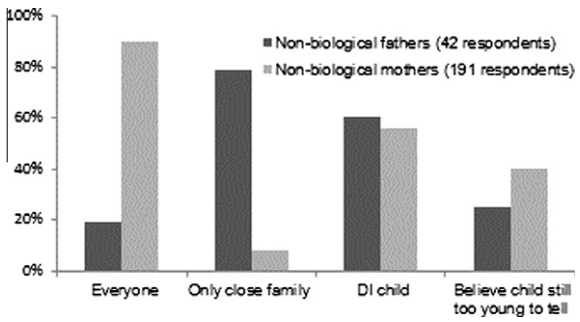

Figure 5 People knowing the respondents have had donor insemination (DI).

Discussion

There are some limitations to this study that need to be borne in mind when interpreting the results. First, the majority of the participants were non-biological mothers and therefore the views of the non-biological fathers may not have been adequately addressed. It has long been recognized that it is difficult to recruit men to studies that discuss their infertility and its treatment (Lloyd, 1996). Therefore, it is important to try and involve men in this type of research so that their concerns are recognized and taken into account. Second, with all research of this nature, it is possible that surveys such as this attract those who are more willing to be open about discussing their experiences of donor conception and is not representative of all those who have undergone such procedures. Also, the survey was carried out by the DSR, a body that has a specific mandate and interest in this area, and this could influence the respondents' responses. The majority of participants were not members of the DSR, however, and therefore this may point to a wider sample. However, the self-selection of participants may make generalizing these findings to other groups of non-biological parents difficult. The results of the study are therefore from a convenience sample and this means that statistical inferences cannot be drawn from the data. A third limitation was the wide range of participants in terms of geographical spread (reflecting different policies and legislative frameworks) and the time since becoming a

donor parent and this makes it hard to draw conclusions as to trends in attitudes about telling and anonymity. The survey was also designed to focus on issues raised specifically by sperm donation and thus it did not include parents by egg donation in this survey. An internal limitation was not all participants answered all the questions (some were not relevant to all participants) but this meant that some questions had a very low response rate and due to the online nature of the survey it is not possible to determine why these were not answered (although this is a limitation with any survey conducted without the researcher present). However, conducting an online survey gives an opportunity for discussions to take place among a larger number of participants than would otherwise be possible (Freeman et al., 2009). Despite these limitations, this study gives an insight into the distinctive concerns of non-biological parents of sperm donor children and allows comparison between male non-biological parents in heterosexual relationships and female non-biological parents in lesbian relationships.

It is clear that a lot of thought went into choosing the donor for both types of parents. For some men and women, the characteristics of the donor were more important than whether the donor was prepared to be identity release or anonymous. The desire for a particular donor meant that some couples sacrificed their preference for a known donor. The non-biological fathers wanted to ensure that the resulting child would be as physically similar to them as possible. This is a well-known practice and it has been argued that this is so the child can 'pass' as the genetic child of the man (Burr, 2009; Haimes, 1990). Earlier editions of the UK's Human Fertilisation and Embryology Authority's Code of Practice deemed this physical matching as important and stated: 'those seeking treatment are expected not to be treated with gametes provided by a donor of different physical characteristics unless there are compelling reasons for doing so' (HFEA, 2004) This prescription has been removed after the 2005 SEED Review (HFEA, 2005) and the Code now states that recipients should be made aware of the likelihood of any child inheriting the donor's physical characteristics (HFEA, 2009: 20.1(b)).

Despite the matching of physical characteristics often being associated with the attempt to hide the donation or to encourage genetic continuity among heterosexual couples, there were interesting responses from the non-biological mothers on how physical matching between them and the donor helped them form a more cohesive family unit. This could reflect a desire to 'pass' as the child's biological mother and choosing the donor based on their characteristics gave them a greater 'stake' in the future child (Hayden, 1995; Reinmann, 1997; Scheib et al., 2000). Jones in her study of female same-sex couples using donor spermatozoa to conceive found a similar desire for physical matching of the donor with the non-biological mother. Such matching 'facilitates an implied bio-genetic tie between the co-mother and the donor-conceived child' (Jones, 2005, p. 227) Thus, as Scheib et al. (2003) note, there are important similarities between these groups of parents, based on the lack of a genetic relationship with the child and a desire to physically match the donor with the non-biological parent appears to be important for both men and women.

Alongside concerns to match physical characteristics, the donor's health and the health of the donor's family was important to both non-biological fathers and mothers when choosing a donor. Both sets of parents thought that spermatozoa should be screened more rigorously than the current US Federal guidelines. Grace et al. (2008) also found that, among biological mothers of sperm-donor children, screening and ensuring the good health of the donor was important. The findings of this study put a slightly different emphasis on reasons for choosing donors than the earlier study by Scheib et al. (2000). This found that 'health items' were less important than physical attributes, character descriptors and donors' physical and psychological match to the recipient's partner when choosing a donor, (although these factors were also found to be important in this study).

Non-biological mothers had distinctive concerns over their relationship with the child and the difficulties of negotiating this in the absence of any legal or formal recognition of their parenthood (unlike the non-biological fathers). Non-biological motherhood has been described as 'a tenuous concept', without the rich cultural and social resources of birth-motherhood (Reinmann, 1997). Gartrell et al. (2000), for example, found that 14% of biological mothers' parents did not recognize the non-biological mother as a co-parent. There have been a number of studies on how this relationship is negotiated (Bergen et al., 2006; Donovan and Wilson, 2008; Touroni and Coyle, 2002). In the present study, 52.6% of same-sex couples had given their child a double-barrel name, a strategy that provides some external recognition of the non-biological mother's role (Bergen et al., 2006). This concern and ambiguity over the status of the non-biological mother was also reflected in the use of an anonymous donor by some same-sex couples to minimize the risk of the donor intruding into their family and demanding parental status (see also Donovan and Wilson, 2008; Reinmann, 1997; Suter et al., 2008; Turner and Coyle, 2000).

As this study surveyed a wide population that had used sperm donation for family building over an unspecified time, the majority had used an anonymous donor. The reasons for this were partly practical — the clinic they used did not offer non-anonymous sperm donors. More same-sex couples used a non-anonymous donor than the heterosexual couples. Same-sex couples' preferences for non-anonymous donors have been found in other studies (Brewaeys et al., 2005; Gartrell et al., 1996; Scheib et al., 2000). In the present study, the majority of participants were happy with their choice of anonymous donor. There is also a well-documented preference for some biological mothers of sperm donor children in a heterosexual relationship for anonymous donation (Golombok et al., 1996; Lycett et al., 2005). In this survey there appeared to be little difference between non-biological mothers and fathers on their preferences for using an anonymous or non-anonymous donor. Some participants (of both genders) were more concerned with the health and physical and psychological characteristics of the donor than their identity-release status.

In terms of telling the child that they were conceived by donor insemination, the majority of both men and women had told their child and 37.4% thought that their child was still too young to have that conversation. There was little difference between heterosexual couples and same-sex couples' disclosure patterns. This is an unusual finding, as the proportion of heterosexual couples telling was slightly higher than in same-sex couples (60.5% versus 55.7%) and

might reflect the self-selected sample. Other studies have found the reverse to be the case, with more same-sex couples disclosing (Baetens and Brewaeys, 2001; Jadva et al., 2009; Scheib et al., 2003). Only nine respondents (three women and six men) had no intention of ever disclosing to their child how they were conceived. This is a lower figure for those who plan never to tell their child than some other studies have reported: figures range from 61% (Lycett et al., 2005) to 46% (Golombok et al., 2006) and 16% (Shehab et al., 2008) of heterosexual donor insemination parents who had decided not to tell. Hence, studies have highlighted a wide variation in numbers who have or are planning to tell their child (Blyth et al., 2010). Despite generally receiving little counselling or advice from the clinic where they had treatment, participants reported that they felt they had told their child early in their lives and had told at the right time, with most telling by the time the child was 10 and the majority from birth onwards.

There was a difference between non-biological female and male parents in their attitudes towards meeting the donor and possible siblings of their child, with more women than men being interested in such a meeting. It seems that same-sex couples are more prepared to facilitate contact and see a role for the donor (Scheib and Ruby, 2008). However, there appeared to be no appreciable difference between the importance attached to the genetic relationship by the non-biological mothers and fathers.

Policy recommendations

This exploratory survey has produced some interesting data and indicates that further qualitative and quantitative work is needed to compare and contrast the experiences of these two groups who have become parents by sperm donation. Despite the limitations of this study, there are important implications for practice and policy that arise out of this study.

First, some non-biological mothers were concerned about their tenuous and, at times, ambiguous legal status and this could be addressed by statute. This has been done in the UK under the 1990 HFE Act (revised 2008), which enacted provisions for the female partner of the woman carrying the child to be deemed the legal parent and be named on the birth certificate. These provisions apply if the woman is in a civil partnership or the carrying woman's partner meets the 'agreed female parenthood conditions' and that the partner has consented to have treatment together with the woman carrying the child. If a child is deemed to have a legal parent under the 2008 Act, then no man can be the legal father of that child. As has been noted by commentators, there are a number of difficulties with these legal parental provisions in the 2008 Act that arise from trying to fit legal provisions for same-sex couples into a framework largely designed for heterosexual couples (McCandless and Sheldon, 2009). However, despite possible problems with the technicalities of such legal parent provisions, similar enactments would provide legal recognition for this form of parenting, a form that has been shown to have no ill effects on the psychological adjustment of the child (Golombok and Tasker, 1997; Gartrell and Bos, 2010; Gartell et al., 2000, for example). Further, this legal recognition could encourage the use of non-anonymous donors, as there would be no fear of the donor's unwanted intrusion into the family. This would be advantageous as a model of gamete donation that is non-anonymous has been argued to better safeguard the interests of those conceived (Blyth and Frith, 2009).

Second, all the participants were concerned about the health of the donor and therefore donor-screening practices were very important to them. As the majority of the participants were from the USA and the DSR is a US-based organization, these results have implications for donor screening policy in the USA. The Food and Drug Administration has jurisdiction over setting standards for screening and testing donors of all forms of human tissue and tissue-based products under Regulation 21 CFR Part 1271. These regulations were primarily designed to prevent communicable diseases. Reproductive tissue is not included in all of the 21 CFR Part 1271 regulations. Only small sections of the Good Tissue Practice regulations, for example, apply to the majority of reproductive establishments (Keel and Schalue, 2010). The storage and use of reproductive tissue raise distinctive issues that these regulations are not specifically designed to cover. One area that is not adequately covered under current regulations is genetic testing of gamete donors. These regulations do not incorporate guidance on genetic testing of prospective donors and this has resulted in wide variation in the practices of sperm banks. Sims et al. (2010) found that routine testing for genetic diseases varied substantially between different banks, with different conditions and tests being performed. This has resulted in unacceptable variations in practice and insufficiently robust genetic screening (Heled, 2010). Greater uniformity would be desirable to ensure recipients are adequately informed of what has been tested for (and the tests used) to enable better comparisons to be made between sperm banks.

The DSR online survey has provided a useful insight into this neglected, but important, group of parents involved in donor conception. It has allowed comparisons to be made between non-biological mothers and fathers and different family formations and shown the commonalities and differences between the participants' attitudes and approaches to forming a family with sperm donation.

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