A review of family donor constructs: Current research and future directions

Olga van den Akker

School of Life and Health Sciences, Aston University, Aston Triangle, Birmingham, UK

This review addresses research on gamete donors, recipients, and offspring and demonstrates that the foci on all three within the triad are largely directed at disclosure or anonymity; and each in turn centers on the perceived importance of the genetic link. The importance attached to genetics has led some countries to review the ethics of anonymous gamete donation (e.g. New Zealand’s ‘open system’ of information sharing) and has led other countries (Sweden, Austria, Victoria, Australia; the Netherlands, the UK) to change their laws allowing donor gamete offspring the right to obtain identifying information about their genetic parent. This review demonstrates that genealogical inconsistencies between and within members of the triad are common regardless of legislation. A discussion of future trends and concerns, relating to the use of gamete donation and the effects legislation is likely to have on the donor triads in the UK following 2005, is provided. The review also addresses the importance of testing theoretical models within future research, and argues this would lead to a better understanding of the underlying problems encountered at a psychosocial level, such as continued preference for anonymity in donors and denial in large numbers of users of the involvement of a donor in conception. Lack of disclosure effectively prevents true implementation of legislation; if a child is not informed, it is the result of donated gametes, it cannot take up the legally available option of finding out identifiable information about their genetic parent(s).

Key words: donors/gametes/genealogy/offspring/recipients

Introduction

The aim of this review is to examine the importance of a genetic link and provide an overview of the research on characteristics, behaviours, and intentions of the triads involved in gamete donation. The ultimate aim for recipients is to construct a family, which naturally occurs with a full genetic link to both parents. This is the ideal family and the norm. In gamete donation, only one genetic link is obtained. Despite the long-standing practice of gamete donation, recipient families are seen as alternative to the norm and consequently have felt stigmatized. In contrast, the donor relinquishes a genetic link in a prospective child and is in effect carrying out a practice which is contrary to the traditional creation of a family for him or her self, and their behaviour too deviates from the norm. Consequently, the characteristics and motivations of gamete donors have also been questioned. Finally, a gamete donor child is brought up within a family which is not fully genetically linked, has a genetic half parent somewhere else, and the family it is brought up in does not necessarily disclose this to the child. The missing genetic link within a family has also made the resultant offspring worthy of scientific investigation. The significance of a genetic link within families stems from constructs of traditional family theory (Smith, 1995), from the increasing emphasis on genetic knowledge being essential for health information (Riordan, 2004), and from basic human rights issues (see, e.g. Draft HFEA Regulations 2004, 2004). Thus, behavioural intentions which are influenced by attitudes, beliefs about the sociocultural norm and aspects of control, will be examined in this review.

The context

In April 2005, the law on donor gamete anonymity changed in the UK. The implications resulting from these legal changes are that donor offspring (provided they are informed of their conception) will be able to find out what their donor parent(s) identity is in 2023, and as a direct result of that, donor and recipient characteristics may change. Donors may wish to have a relationship with their 18+year-old genetic offspring without having had parental responsibility for them; recipients may travel abroad to avoid using identifiable donor gametes. These changes in the law will not be applied to pre-April 2005 donors, retrospectively. There is some controversy associated with the new regulations, but in general, there has been a growing acceptance of the principles behind them. Adoption used to be a closely guarded secret, but that was changed as it was not considered to be in the best interests of the child. The closely guarded position of donor-conceived people is now also not considered to be in the best interest of the child. The regulations therefore provide for donor-conceived people to have...
access to information about their genetic origins. However, they make no provision for disclosure to occur to make that access possible. Thus, although it is the genetic origins which are the dominant factors occupying regulatory bodies and the government, no in depth research of the cognitions underlying the importance of the genetic link have been carried out within gamete donation triads. It is therefore crucial to examine issues of genealogy (a line of descent traced continuously from an ancestor) or, more accurately of genetic lineage, in gamete donor research, and to demonstrate how these are likely to remain important in the future, as genealogy remains socioculturally emphatic in family constructs. A full understanding of the cognitions of those involved may eventually allow effective implementation of the legislation.

The interpretation of family constructs

As is shown in population studies, attitudes to the use of donated material in assisted conception to construct families have changed gradually and conservatively. The practice of the donation of gametes is inextricably linked to the perceived importance of what constitutes motherhood and fatherhood. A survey in the late 80s (Dunn et al., 1988), of 755 students, reported that they were less accepting of all new reproductive technologies, particularly those involving third party involvement than of adoption. An attitude survey carried out >10 years since the first test tube baby demonstrated a very slow shift in the public’s acceptance of the creation of alternative families (Halman et al., 1992). They questioned 185 infertile and 90 fertile couples. Infertile couples expressed a preference for interventions where both of a couple could maintain a genetic link. It is likely that when couples are confronted with information, and when this is more relevant to them, their attitudes become more positive. These results have some implications for the future of reproductive medicine. The science and technology are ready to provide many people with a child, and the increasing demand shows that in practice, infertile people will go through extreme lengths to use alternative forms of conception. Theoretically, however, there seems to be some degree of cognitive dissonance (Festinger, 1957) between people’s actions and their beliefs. This dissonance appears to be based on the beliefs in a preference for a genetic link following population norms and on a desire for equity in the genetic link with a partner in a resultant child. In practice, there is no genetic link equity, not a fully genetically related child and consequently no cognitive consonance.

The importance of a genetic link

Research which explicitly questions individuals about important biological or social aspects of families shows more liberal attitudes. Miall’s (1994) community study of people’s opinions of childlessness showed that 92% thought motherhood and 91% thought fatherhood was important for people. However, only 69% believed there was a biological basis for motherhood and 32% for fatherhood, demonstrating a cultural shift in the importance of biology. Even oocyte donors do not believe their donation is incompatible with motherhood, arguing their donation contributes to the significance of motherhood by assisting others who are denied this option (Kirkman, 2003b). This shift in emphasis on biology was recently supported by data from Skoog-Svanberg et al. (2003) who reported that attitudes were becoming more supportive of the practice of oocyte donation, non-genetic motherhood, and of disclosure. Exceptionally, this large sample survey incorporated aspects of the Theory of Planned Behaviour (TPB; Ajzen, 1985, 2002) to determine the psychological contribution of attitudes, subjective norms, and behavioural control to predict intentions to donate. Another dramatic demonstration of a shift in emphasis was also reported by Thornton et al. (1994). In their ingenious general population experiment of women and men’s attitudes to being a genetic or a gestational mother, a choice had to be made. Of the 50 women, 28 preferred to be a birth mother, 22 a genetic mother. Similar results were found for the male sample, with 27 preferring their partner to be a birth mother and 21 a genetic mother.

Data on clinical populations demonstrates ‘shifts’ in decisions too, depending on their personal needs. This was confirmed by Kazem et al.’s (1995) study of attitudes towards oocyte donation including cadaveric and fetal oocytes. These two sources were generally the least preferred, however, they noted that those who needed it most (infertile and recipient women) were more likely to agree to the use of fetal and cadaveric sources of oocytes than those who had less personal need ( fertile women and donors). These clinical population data show that when a choice has to be made, pragmatic factors may play a role in the decision-making processes. This was confirmed by van den Akker’s (2000, 2001a,b, 2003) studies of clinic population attitudes to different ways of overcoming involuntary childlessness. When the option for a full genetic link was available that tended to be the option of choice. Options with a lesser genetic link were preferred if no other ones were practically possible. Pragmatic factors (i.e. opting for a feasible rather than ideal choice of constructing a family) will have an effect on current and future trends and put into question the explicit statement contained within the Human Fertilization and Embryology Act (1990) that the mother carrying the baby is to be considered the mother of the child. In terms of preferences at least, there appears to be no evidence supporting the notion that birth motherhood is unequivocally preferred to genetic motherhood from either general or clinic population studies. It also reveals nothing about the cognitive evaluations of the reality of families constructed with a partial genetic link.

Methodology

A number of sources were used to search the literature including, Medline, Science Direct, PsychINFO and BIDS. Numbers of ‘hits’ varied between the databases, and exact numbers were not noted because there was considerable overlap and many ‘hits’ were irrelevant (endocrinological) to the present evaluation. Keywords used included; gamete/embryo donor(s) gamete/embryo offspring, gamete embryo recipient(s). Other references came from a review document made available by the HFEA (van den Akker, 2002a), and a number of books, including Jennings (1995), Leiblum (1998), Daniels and Haines (1998), Hamer-Burns and Covington (1999) and van den Akker (2002b). The initial search revealed that the focus of the research evaluated is different between recipients, donors and offspring, so that not all aspects have been addressed in all groups of people. This has made equity of apparently comparable information difficult and at times impossible. Virtually no psychosocial data was available on embryo donors, or recipients, with few exceptions (e.g. Soderstrom-Antilla et al., 2001) or offspring so these were excluded from the review.

Overall, the quality of the data assessed was patchy, with information and statistical analyses provided inconsistently and incompletely
in many studies. Consequently, a decision was made to assess research common to each group within the triads to obtain an overview of some of the most frequently reported issues investigated. The review reflects the incompleteness of the data surveyed, and the consequent reasoning not to carry out a meta-analyses or systematic review. The review also shows the focus of the research. Donors have mainly been investigated in terms of suitability and anonymity; what makes people donate their own genetic material and is it faulty? Recipient research has focused less on suitability and more on stigma and disclosure issues; what reason do they have not to reveal the true genetic origins to those around them and to their offspring? Donor offspring have been least investigated, but studies which have done this, have studied abnormalities and psychosocial functioning in relation to their partially genetic relationship to the family. In all cases—the donor, recipient and offspring—the foci are related in one way or another to genealogy. However, almost without exception, research has failed to draw on appropriate psychological theory and has failed to predict not only the behaviour, but also the expectations and underlying cognitions of those involved in the triads, as is shown below.

**Gamete donation**

Gamete donation is in demand, but a chronic shortage of donated gametes has been apparent in the UK even before the changes in law regarding identification of donors (Murphy and Golombok, 2000), and this is more pressing for ethnic minority groups (Purewal and van den Akker, 2005) with supplies not matching the demands. Donation of gametes is much more common in men than women. The reasons for the differences are sociocultural and technological. Characteristically, women nurture and care for babies, and do not relinquish them, and although technological advances in egg collection makes it possible for women to donate gametes, oocyte donation is relatively less common compared to sperm donation and is also more intrusive. All gamete donors are assured that they are not considered the legal parent of any child resulting from their donation, and that they hold no parental responsibility for the child(ren). Donors are informed of the importance of accurate information on the forms, because if they do not, the consequences can be devastating for the recipient family, the donor child and themselves. In such exceptional circumstances, a donor child can sue a donor, once it has reached the age of 18 years, if he or she was born with a disability or defect, which the donor should have disclosed. Traditionally, donor information for offspring has been scant and did not allow them to find out anything tangible about their genetic mother or father. Donor offspring had access to non-identifying information when they became 18 years old, or if they wished to marry someone they were related to, but it was clearly not enough. The new legislation implemented in April 2005 is intended to deal with this and allow offspring conceived from donor gametes to obtain identifiable information about their donor parent(s).

**Gamete donors**

Information on sperm donors perception of the experience rarely reports on their psychological well-being (Daniels, 1998). Daniels (1998) reported finding 22 reports on semen donors, with the more recent ones increasingly acknowledging the psychosocial needs of donors. More is known about oocyte donors. Oocyte donors tend to be positive about their donation experience (Power et al., 1990; Schover et al., 1991; Sauer and Paulson, 1992; Snowden, 1994; Soderstrom-Antilla, 1995; Ahuja et al., 1997; Lindheim et al., 1998; Kalfoglou and Gittelsohn, 2000; Jordan et al., 2004), with some even describing the donation as gratifying maternal desires (Raoual-Duval et al., 1992), although there are reports of negative perceptions about the techniques involved (Rosenberg and Epstein, 1995; Ahuja et al., 1997; Jordan et al., 2004) and about the lack of flexibility with regard to anonymity and information about the outcome of their donations (Kalfoglou and Geller, 2000).

**Gamete donors—anonynmity**

Despite reports of positive experiences from donors, gamete donation has been shrouded in secrecy and anonymity has been advocated by experts (similar to the advice on secrecy previously advocated in adoption) and developed to protect all parties concerned. Over the years, the belief that donors themselves were unwilling to provide information about themselves and that they would not donate if they had to disclose identifying information about them became unquestioned and accepted. For sperm donors the data are mixed, but largely supportive of anonymity, though there are exceptions. Daniels and Taylor (1993) found that sperm donors would be happy to have identifying information about them provided to any possible children conceived as a result of their donation(s). More sperm donors are happy with the possibility that their offspring would attempt to contact them in later life than is generally assumed (Rowland, 1983; Leeton and Harman, 1986; Walker et al., 1987; Daniels, 1989; Power et al., 1990; Mahlstedt and Probasco, 1991; Robinson et al., 1991; Kirkland et al., 1992; Purdie et al., 1992; Ahuja et al., 1997; Daniels et al., 1997), obtain a photo (Sauer et al., 1989) felt a sense of responsibility (Fidell and Marik, 1989), or think about their offspring (Daniels et al., 1996).

For oocyte donors, a considerably more recent practice and hence not as fully ingrained in secrecy, there is also some supporting evidence for anonymity (Khamis et al., 1997; Westlander et al., 1998). Abdalla et al. (1998), for example, found that from HFEA records of information provided by oocyte donors, 94% did not respond to the space allowing for a brief description of themselves. Other studies have shown that less than half of oocyte donors would be happy with identifying information about them being disclosed to offspring (Walker et al., 1987; Robinson et al., 1991; Schover et al., 1991; Soderstrom-Antilla, 1995; Abdalla et al., 1998; Lindheim et al., 1998; Kalfoglou and Gittelsohn, 2000), although a 66% agreement with open donation was reported by Sauer and Paulson (1992), with all their oocyte donors being willing to donate again.

Following social and research pressures from advocates of openness, the UK has taken the consultation document (Department of Health, 2001) advice on board and has taken the radical step to opt for identifiable donation in April 2005. This is despite the fears that the numbers of donors will decline temporarily as happened in some (Sweden), but not all (Austria, Australia, The Netherlands) of the other countries preceding the UK in legal changes on donor anonymity. There is some support for the fear of declining numbers. For example, a BBC survey (Hill, 2002) found that half (53%) of current sperm donors were against changing the law—from anonymous to identifiable—and would not continue to donate. However, there are claims from America that as many as
70% of previously anonymous sperm donors have agreed to give up their anonymity (Muller, 2004). Furthermore, Daniels and Lewis (1996) have argued that the type of donor donating gametes is linked to supply and demands. If payment is given for donations, the commercialization of gamete donation will reflect on the type of donor recruited to provide the gametes. The same could be argued for the supply and demand of anonymous donors and has been confirmed to some degree in Sweden where Lalos et al. (2003) found the new identifiable sperm donors ‘were typified by a strong desire to assist infertile couples’.

Gamete donors—screening

The question which research has so far failed to answer is why gamete donors donate, and why they wish to do this anonymously? Research reports on the results of screening of gamete donors have attempted to shed some light onto these questions. Although medical screening is fairly comprehensive in donors, donors have attempted to shed some light onto these questions. Like many physical characteristics, psychological traits, personality characteristics and diseases and conditions such as schizophrenia, depression and alcoholism have also been shown to be heritable (Plomin, 1989). Lessor et al. (1993) reported that oocyte donors tend to be well adjusted and highly functioning women, and Garrido et al. (2002) reported oocyte donors were young, aged between 18 and 35, and held a range of occupations; 23% were university students and 14% were housewives. However, Lindheim et al. (1999) reporting on women undergoing embryo transfers, who were interested in an embryo donation share program, found that 60% were interested purely because they experienced financial hardship. Most work on donors has focused on compensation and altruism. German et al. (2001) in a large sample evaluation of 383 oocyte donors receiving $2500 versus 239 oocyte donors receiving $5000 per cycle, found no differences between these groups on a number of criteria including eventually serving as donors, and no significant differences in incidence of psychopathology (as measured on the MMPI) between groups was evident. Financial reward often appears to be a major factor for donation of oocytes (e.g. Lindheim et al., 1999).

Schover et al. (1992) reported some mild psychopathology in approximately 47% and alcohol abuse in 35% of sperm donors, and Cook and Golombok (1995) reported the majority of sperm donors in the UK were students motivated by payment. These profiles indicate donors are not as a rule healthy altruistically motivated individuals. Also, they have no need to feel responsible for the well-being of the resultant child(ren) and could put themselves at serious risk by not disclosing psychological conditions which are heritable. Moreover, with the changes in UK law in 2005, it is likely that only donors willing to be identified as genetically related to any donor offspring will volunteer as donors. However, whether post-April 2005 legislation gamete donor characteristics will be any different (e.g. more altruistic or healthy) is as yet unknown. There are also some future concerns. It is possible that future donors may donate in order to have children they are not legally responsible for, or because they wish to have some sort of relationship with the grown up product of their own gametes. Alternatively, donor offspring may seek out a genetic parent who does not at all fit the picture of a well-meaning altruistic donor. At present, these possible issues are no one’s responsibility. Theory led research identifying predictors of gamete donation behaviour could be used to predict (and subsequently screen out) donors with worrisome attitudes and intentions.

Gamete donors—welfare

The donor’s welfare in both the short and long term is also an important factor for consideration. Oocyte donors (Schover et al., 1992) and surrogates (Klyman, 1986) have been known to donate to cope with previous losses. Lessor et al. (1993) reported no regrets in oocyte donors following donations, and no negative psychological consequences in the short term have been reported in other studies of oocyte donors (Schover et al., 1991; Rosenberg and Epstein, 1995; Soderstrom-Antilla, 1995; Lindheim et al., 1998). Contact or knowledge about the child can also be beneficial to the donor, as was found in surrogacy (van den Akker, 2003), and Winter and Daniluk (2004) have reported on the viability of interfamily oocyte donation. Only one study reported on mild psychological problems in sperm donors (Schover et al., 1992). Partrick et al. (2001) found there were donor needs which are not currently addressed, for example, previous donors have called for the availability of post-donation support and discussion groups for anonymous donors. Clearly, the long-term effects of donors need further investigation focusing on those who did this to correct previous actions which they now regret (e.g. a termination of pregnancy), and those who took part in egg sharing schemes (particularly the ones who failed to conceive themselves), who in the short term appear to be doing well (Ahuja et al., 1998, 1999). An additional long-term concern is the fact that, although the change in law incorporates the suggestion that donors will have no obligation to get to know their donor offspring, no mechanism is in place ensuring such donor offspring do not come knocking on the donor’s door unannounced. The development of guidelines, based on sound psychological theoretically derived principles should assist in the selection and short- and long-term post-donation well-being.

Gamete recipients

Recipients of gamete donation are couples with identified male or female factor infertility, couples who do not wish to pass on a serious genetic condition in their child, couples where one has previously been sterilized, and is increasingly used by heterosexual single women and lesbian couples. Many in the latter groups do not use clinical services to use insemination (Stephenson and Wagner, 1991). For a couple or individual making the decision to use donated gametes to construct their family, the choice is one part of the process. Adapting psychologically, socially and culturally to that alternative family, is another. Baran and Pannor’s (1989) study of donor insemination in infertile couples, couples with a vasectomy and couples with genetic conditions found that the infertile men had the greatest problems with adaptation. The vasectomized men (who had proven their fertility) had few problems associated with their decision to use donor insemination, and men who utilized donor insemination so as not to pass on their genetic condition were hugely confident about their decision, the donor and disclosure. Disclosure is intimately linked to the recipient’s welfare. Those who are confident about having made a
positive decision to use gamete donation to have children, do not pretend no intervention was used and disclose this to their social and family networks, including the donor conceived child. Recipients who feel a certain amount of anguish about the underlying reasons to need to resort to gamete donation have concerns about their self-image (e.g. their masculinity/femininity is challenged), and therefore feel the need to disguise not only their ‘problem’ but the truth about the child’s conception to the child and the wider network. It is therefore perhaps not surprising that the early literature on professional practices revealed that many heterosexual couples were advised not to tell anyone of the procedures in donation (Holbrook, 1990). As a direct consequence of this, many clinics do not have effective protocols for the assessment of the welfare of the children produced (Patel and Johnson, 1998), because once a pregnancy is established, no one but the expecting parents hold responsibility for the child.

According to UK law, clinics must take into consideration the requirements of the Act that: ‘a woman shall not be provided with treatment services unless account has been taken of the welfare of any child who may be born as a result of the treatment’ [HFE Act, 1990, Section 3(5)]. Ironically, the HFEA also states that when considering using treatment with donated gametes, one consideration for the couple intending to use donated gametes must be their ability to cope with any donor child(ren)’s need ‘to know’ about their origins. However, no mechanism is in place ensuring donor children’s needs are met.

**Gamete recipients—welfare**

Research involving the psychosocial functioning of donor oocyte recipients is still in its infancy (Hershberger, 2004). Nevertheless, some information on donor insemination recipients is available. Although donor gamete recipients initiate donation to overcome their childlessness and have a partial genetic link (Rosenkvist, 1981; Owens et al., 1993; Daniels, 1994), many are plagued by a number of common problems. Lasker and Borg (1994) have reported on numerous anxieties experienced by donor insemination recipients centring on the donor’s identity; and concerns that the donor child should look like the husband in the case of sperm donation (Bielawska-Bartorowics, 1994; Nielsen et al., 1995), or possess other specific characteristics (Leiblum, 1995).

As was argued for donors, changes in recipient characteristics are also anticipated. In Sweden, when the law changed, giving donor offspring the right to identify their biological parent, recipient Swedish couples travelled to Denmark where donors are still anonymous (Hill, 2002). The same migration for sperm donors was observed in The Netherlands, where following the 2002 legislation recipients travelled to neighbouring Belgium for anonymous gametes. Thus, British recipients willing to receive British identifiable donor gametes are also likely to differ from recipients who will go abroad to obtain anonymous donor gametes. The latter have recently been described as exercising pragmatic solutions to legal diversity (Pennings, 2002, 2004) and as exercising their reproductive autonomy (Blyth and Farrand, 2005).

**Gamete recipients—disclosure**

Disclosure has been subject to intense investigation in recipients of donor gametes. This is because it was known that many people did not tell their child that donor gametes were used in their conception, thereby pretending they were the genetic parents, when they were not. In an attempt to shed some light on the practice of non-disclosure, Crammond (1998) assessed the literature on the counselling needs of patients receiving donated gametes. The areas identified included, unresolved feelings about not being the genetic parent and uncertainty/insecurity whether to disclose the donation to the potential child and others. In a questionnaire study of 27 couples with male factor infertility (Leiblum and Aviv, 1998), nearly 3/4 had not disclosed donor insemination to their child and had no intention of doing this in the future. The majority (85%), however, had confided to at least one other person about their donor insemination conception. What was particularly interesting about the results of this study was that approximately one third of their sample said they did not know how or when to disclose this information to their child (Leiblum and Aviv, 1998), confirming other research (Cook et al., 1995; Daniels, 1997; Rumball and Adair, 1999; Kirkman, 2003a), and showing a lack of post-donation guidance (Kirkman, 2003a), which is currently recognized in adoption (and in one oocyte donation study, Baetens et al., 2000; in surrogacy, van den Akker, 2000) as important. Most of the couples studied in Leiblum and Aviv’s study were not offered counselling at any stage. Ahuja et al. (1997) reports that a resolution to the choice in recipients has not been always reached. It is therefore not surprising that without cognitive consonance and appropriate information, many people tend to do nothing, even though this may not be in their own or their child’s best interests (Baran and Pannor, 1993).

Gottlieb et al. (2000) studied Swedish parents who had used donor insemination since the 1985 legislation to determine how many would tell their child they were not genetically related. Contrary to expectations, the majority of parents (89%) had not informed their child(ren), and 59% had told someone else. The unacceptable consequence is that these children may find out from someone else how they were conceived. A proportion of Gottlieb et al.’s 89% who had not disclosed, said they believed their children were still too young to receive this information. In other words, some of those may yet disclose. In America, few oocyte or sperm recipients disclose this to their children (Sauer et al., 1988).

With the growth in donation possibilities and the successes described in disclosure of adoption, legislators are increasingly concerned to follow good practice for the many offspring born through donated sperm, oocytes, embryo’s or surrogacy. In general, oocyte recipients are more favourable to openness (26–70%; Kirkland et al., 1992; Pettee and Weckstein, 1993; Weil et al., 1994; Hahn and Craft-Rosenberg, 2002) than donor insemination recipients (10–30%; Robinson et al., 1991; Schover et al., 1992; Golombok et al., 1996; Klock et al., 1996; Brewaeys et al., 1997a). Recently, Klock and Greenfeld (2004) reported that 71% of 62 oocyte donation couples had chosen anonymous donations, yet half the sample had or would disclose this to their offspring. However, of the total sample, 82% of the women and 66% of the men had disclosed to others, which could result in a proportion of the non-disclosed children finding out from others how they were conceived. Of those who had told others, 60% of women and 62% of men said they would not do this again, stating privacy and the right of the child to be the first to know as the reasons for this regret. In Belgium, oocyte recipient parents can opt for known or anonymous oocytes. Baetens et al. (2000) reported that the majority (68%) opted for known gametes, as this would allow them to know the origins of the genetic material. This year, Brewaeys
et al. (2005) reported almost identical results in a Dutch study of recipients choosing identifiable versus anonymous sperm donors. They too reported a majority (63%) opting for identifiable donors (in heterosexual, and 98% in lesbian couples). As is found in surrogacy, known donation is nearly always accompanied by disclosure. Virtually all lesbian families using donor insemination disclose (Brewaeys et al., 1997b; Baetens and Brewaeys, 2001; Scheib et al., 2003). The most likely reason for disclosure in lesbian families is the overt lack of a male in the family. A study investigating the reasoning behind heterosexual parents disclosure of their offspring’s genetic origins (Nachtigall et al., 1998) found that of 70 men and 86 women who had children through donor insemination treatment, 30% said they would disclose this to their children, but a larger percentage (54%) would not, or remained undecided (16%). The reasoning behind the decision to tell was to be ‘honest’, whereas reasons not to tell were seen as ‘confidentiality’ issues. Lycett et al. (2005) reported very similar reasons for disclosing (to avoid accidental disclosure and a desire for openness) and non-disclosure in recipients (no reason to tell and to protect family members). The intention to disclose will therefore depend on the attitudes towards the perceived normative values (not being a genetic parent when others are) and control beliefs (do not know how/when to disclose). Predicting behaviour by understanding the under psychological constructs should help recipients. Since donor offspring are not few and far between, but form large populations in their own right across the world, it is time to consider the impact of being the parent of a donor child and of being a donor child.

Gamete donor offspring

Since research on donor offspring has primarily focused on their medical and psychological status, it is perhaps not surprising that a number of problems in donor insemination offspring have been reported including hyperactivity (Kovacs et al., 1993) and increased vulnerability as a result of increased parental anxiety (Snowden and Mitchell, 1981; Manuel et al., 1990). Other findings were more reassuring. Lansac and Royere (2001) report no difference in chromosomal abnormalities or birth defects from the general population, and no negative health in children born from frozen sperm; the general health of children born from oocyte donation is also within normal limits (Soderstrom-Anttila, 2001). A very recent study reported on the development of positive relationships between gamete donor recipients and their offspring assessed at 2 years of age (Golombok et al., 2005).

Gamete donor offspring—disclosure

The fact that many gamete recipients do not disclose, suggests that many gamete donor offspring do not know about their alternative conception. Donor conceived children who have not been told about their conception, but have subsequently found out have reported numerous negative consequences, including mistrust within the family, lack of genetic continuity, poor self-perception (Turner and Coyle, 2000); feeling that they did not fit in with their families because of physical differences (Baram and Pannor, 1993); being aware from a relatively early age that something was not said within the family (Vercollone et al., 1997); learning about their conception in shocking and unexpected circumstances (Snowden et al., 1983) or finding out later in life provoked anger (McWhinnie, 1995) and resentment (Dudley and Neave, 1997), or upset (Turner and Coyle, 2000; Kirkman, 2003a). Furthermore, donor offspring appear to invariably indicate a desire not to be deceived about their origins (Turner, 1993; Donor Conception Support Group of Australia. In Lorbach, 1997; Haimes, 1998; Whipp, 1998); and many have a need to find out about their genetic origins (Montuschi, 2002), though this is not uniform (Vanfraussen et al., 2001). Thus, openness has been shown to be beneficial in children (Rumball and Adair, 1999) adolescents (Scheib et al., 2005) and adult offspring (Daniels and Taylor, 1993), but evidence that secrecy is harmful is not reported in young donor children (Golombok et al., 1996; Nachtigall et al., 1997; Shenfield and Steele, 1997), or adolescents (Golombok et al., 2002).

Gamete donor offspring—welfare

If the best interests of the child are considered, clearly non-disclosing parents are not considering the child’s rights, but their own. Studies of single heterosexual and lesbian mothers (families where a father is overtly lacking, and no pretence is possible) have demonstrated good psychosocial functioning in the children (Strong and Schinfeld, 1984; Golombok and Tasker, 1994; Flaks, 1995). No significant differences in socio-emotional welfare (Golombok et al., 1999); no major obstetric, paediatric or emotional problems (Clayton and Kovacs, 1982), and good parent–child relationship between donor insemination children and their parents (Brewaeys, 2001) have been reported. A few studies have assessed oocyte donor children up to the age of 8 years, and their psychosocial functioning is also reported to be healthy (Applegarth et al., 1995; Soderstrom-Anttila et al., 1998). No altered perception of existing self-concepts following disclosure in children were reported by Snowden et al. (1983) and Vercollone et al. (1997). However, reports of adult offspring who were told in adulthood about their donor status are increasingly becoming available. Invariably, issues of identity (Stevens-Botsford, 2000; Stock, 2002) and confusion over genetics (Franz and Allen, 2000) have been reported. However, it is important to note that research of young and adult gamete donation offspring is extremely difficult due to the fact that parental approval is necessary for such research. Parents who do not disclose are unlikely to agree to research on their offspring. The available data is therefore not generalizable to gamete donor offspring populations as a whole.

Summary of current research

Clamar (1980) noted that ‘infertility as a life crisis is dealt with in a vacuum’. She refers to the fact that the emotional turmoil experienced during investigations and treatment precludes adequate time and resources being made available to assess the wider consequences of such treatments, such as living with a partially genetic child. The implementation of the 2005 law in the UK should make the decision to be open about donation easier, but as was shown in this review, recipient parent’s openness and disclosure cannot be enforced, donors do not all wish to be identifiable, and the offspring cannot voice their needs and intentions if they do not know they were conceived with donated gametes.

Openness and disclosure of identifying information or the identity of donors in gamete donation, is therefore still a contentious issue. The research considered in this review has not shown
that recipients and donors are universally supportive of revealing genetic origins in gamete donation, although as was shown, the majority of offspring do prefer more rather than less information about their heritage. Some of the issues involved in both donor and recipient selection are problematic, and the review has demonstrated that not all the patients’ needs are met (Souter et al., 1998), and that cognitively issues of honesty and genetic lineage are not resolved. Studies of recipient patient satisfaction have revealed that counselling or support particularly after treatment is seen as beneficial (Donegan, 1994; Smith et al., 2000). Donor needs have received little research attention, yet these are likely to become the subject of more research interest in the future, as their post-donation needs are now also recognized (Partrick et al., 2001).

**Future directions**

The research covered in this review has also shown that the future of infertility treatment with donated gametes must consider that preferences may have to be overruled by the most likely to succeed options (van den Akker, 2005), and other social, legislative and financial considerations (Chliaoutakis et al., 2002) and that these may need to be resolved cognitively with the assistance of appropriately qualified and experienced professionals. Improvements in research utilizing appropriately constructed theoretical models are therefore imperative.

**A theoretical perspective**

Psychological research on gamete donors and recipients is virtually devoid of theoretical underpinnings, although bereavement theories have been applied extensively to the loss or lack of fertility and resolution in recipient couples. To the author’s knowledge, no attempt to determine theoretically based predictor variables of donors views of the psychological costs and benefits of the reality of donating gametes (having a genetically related child somewhere else), or of being subsequently identified as a genetic parent, have been made. Similarly, recipients’ views of the costs and benefits of the reality of a partially genetically related child, or of disclosure to that child, have not been made. Many reasons have been outlined above as to why men and women do or do not donate gametes, and why recipients do or do not disclose this to their offspring. However, as Daniels (1998) states ‘we know very little about the dynamics of decision making within couples’. The psychological mechanisms underlying decision making could be tested using one of a number of available theories, such as attribution, stages of change or health action process theories. In particular, the TPB developed by Ajzen (1985, 2002), and an improvement on other health psychological theories because of its emphasis on social cognitions, could be used to test components of donation, genetics and disclosure in donors and recipients.

According to the TPB, behaviour is guided by three factors; belief about the likely outcome of a certain behaviour and the assessment of these outcomes (behavioural beliefs); the belief about the normative expectations of others and motivations to follow with these expectations (normative beliefs); and the belief about those factors which may help or stop performance of the behaviour and the perceived power of these factors (control beliefs). Therefore, behavioural beliefs are influenced by the attitude held towards the particular behaviour. The normative belief is the perceived social pressure or subjective norm, and finally the control belief indicates the perceived behavioural control a person has (Ajzen, 2002). For example, in gamete donation, an individual’s intention of donating gametes is the intention to perform the behaviour. This behaviour is influenced by his or her positive/negative attitudes towards donating, the subjective norms (e.g. social norms and pressures to not to donate and social norms about relinquishing or receiving donor genetic material), and the behavioural control (e.g. social opinions are searched for help on decisions and motivations of behaviour, and the proximity of a clinic may increase the likelihood of donating). Similarly, a recipient’s intention to use donated gametes and to disclose could be predicted by his or her normative and control beliefs. An example of how the TPB could be applied to a study of oocyte donors is Kan et al.’s (1998) study of individuals enquiring about anonymous oocyte donation. They found that simple logistic reasons such as time, distance, anaesthetic and child-care issues were deciding factors not to donate (behavioural control), and ‘negative publicity’ (normative beliefs) were deciding factors in a subgroup.

The TPB could be a useful model for the examination of psychological determinants underlying gamete donors and recipients behaviour. This model could be successful in explaining why some men and women are more likely to donate than others and what recipients’ belief systems and behaviours underline their intentions to disclose. Preliminary studies have been carried out on general populations. For example, Svanberg, Lampic, Bergh and Lundkvist (2003) used this model to assess the influences on public opinion of oocyte donation using 729 women and 556 men in Sweden. They developed a questionnaire covering various attitudes towards oocyte donation. Four subscales were used to measure attitudes. (i) attitudes in general, (ii) attitudes towards disclosure/non-disclosure to offspring, (iii) attitudes towards parenthood and (iv) attitudes towards the importance of a genetic tie. The internal validity for these attitude scales were .67, .80, .80 and .78 respectively, as assessed by cronbach alpha. They found that generally men and women supported the idea of oocyte donation as an alternative method of having a family. The majority of the respondents approved of anonymous donation, which was supported by other studies (Lessor et al., 1990; Westlander et al., 1998). In general, 17% of women said they would consider donating oocytes themselves. They were characterized by accepting more liberal attitudes to normative values of the importance of a genetic link and had positive behavioural control beliefs such as proximity to the clinic and support/discussion groups with other donors. Purewal and van den Akker (2005) assessed attitudes to oocyte donation in an attempt to understand the underlying reasons for the shortage of ethnic minority donors. Using the TPB in a small sample (n = 101) of British Asian and Caucasian women, they found that both normative and control beliefs predicted unwillingness to donate, and these influences were particularly prominent amongst Asian participants. These results have shown how cultural values influence some sections of the population’s attitudes and behaviours more than others. Knowing this can encourage appropriate intervention through, for example, public information and education. The TPB has the potential to explain the psychological factors contributing to donation behaviour and the behaviour of recipients. Future research testing the theory in both groups is underway.
infertile couple wishing to have a genetic link may need to use donor gametes instead. The fact that many individuals feel the need to create some form of family shows how society at large extols the virtues of the concept of family. Pronatalism remains the norm. If society can accept rather than stigmatize a diversity of alternative families, there will be progress with cognitive and behavioural consistency, particularly in relation to being identifiable as a (non)genetic parent, openness and disclosure.

**Conclusion**

The evidence presented in this review has demonstrated that the literature was predominantly focused on disclosure of genetic origins and anonymity of genetic origins in the triads. Donor offspring studies have been carried out, but their usefulness is limited; they tend to be highly selected because it is impossible to access those who do not know they were conceived with donated gametes, and parental consent to study offspring is necessary. Few studies have specifically questioned the meaning of and need for a family within personal and normative belief systems, the influence and impact of professionals, treatment availability, financial factors and the influence the social environment has on the choices made. Societal attitudes have changed and the virtues of single parent families, divorced, step, gay and otherwise constructed families are now extolled publicly with widespread acceptance. In contrast, the review has demonstrated that the majority of infertile populations seeking to become a family appear to value a maximum genetic link, and in gamete donation, will hide any lack of genetic input from the resultant child(ren) and also family and friends. Clearly, the interests of the adults involved in donor-assisted conception can override those of the offspring and despite legal changes, no sincere attempts to protect the child’s basic right to genetic identity have been made, and the parental behaviour, unlike that in other socially constructed alternative families is dissonant. The research discussed demonstrates this ironic discord between behaviour and cognitions and has also shown that there is no guarantee that this will change when laws change. More stringently focused psychological research and theory could make a breakthrough, providing information usable in policy formation, clinical practice (e.g. screening) and in the sociocultural context of the—not so alternative—family of the third millennium.

**Acknowledgements**

This review is based on a report by the author commissioned by the HFEA (2002). The author gratefully acknowledges the useful comments and suggestions made by the editor and reviewers.

**References**


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Submitted on October 21, 2004; resubmitted on May 13, 2005; accepted on August 9, 2005