Mating by proxy: a novel perspective to donor conception

Iolanda S. Rodino, M.Psych.(Clin.),[a,b,c] *Peter J. Burton, Ph.D.,*[c] *and Katherine A. Sanders, Ph.D.*[a]

[a] School of Anatomy & Human Biology, The University of Western Australia, Crawley, Western Australia, Australia; [b] School of Psychology, The University of Western Australia, Crawley, Western Australia, Australia; and [c] Concept Fertility Centre, Subiaco, Western Australia, Australia

How single, partnered lesbian, and partnered heterosexual women undertaking donor insemination rate the importance of donor characteristics is explored in the context of Trivers's parental investment theory. Consistent with this theory, single women placed higher value on biographical traits reflective of the donor's level of potential resources (occupation, hobbies, age) and good character compared with either partnered lesbian or heterosexual women. (Fertil Steril® 2011;96:998–1001. ©2011 by American Society for Reproductive Medicine.)

Key Words: Donor insemination, donor characteristics, gamete donation, Trivers's parental investment theory, mate choice

The opportunity to become a parent is an important developmental stage in an individual's life (1), and for most heterosexual couples, having children is a natural and uncomplicated process. Although historically fertility clinics directed their services to medically infertile heterosexual couples, their services are now widely used for situations of social infertility whereby single women and lesbian couples embrace reproductive technology as a safe option, both medically and legally, to facilitate family formation. In Australia and New Zealand, approximately 2,500 donor sperm insemination (DI) cycles are undertaken annually (2). Unofficial estimates indicate that single and lesbian women represent about 70% of women seeking family formation through donor sperm insemination (3). It is therefore important to investigate whether relationship status affects issues raised by donor conception.

Literature examining donor conception issues according to recipients' relationship status is limited. Studies have focused on exploring motivations for parenthood; variability in rates of disclosure, with higher rates in single mothers and same-sex couples; and the psychological adjustment of the donor-conceived child (4–9). There is a paucity of research, however, that explores the criteria that recipients use to select their donor and whether the selection of donor characteristics varies between single and partnered (i.e., lesbian or heterosexual) women (4, 6). We propose that Trivers's parental investment theory (10), an evolutionary theory that informs much of mate selection research, provides a novel framework for exploring this issue. Specifically, donor conception permits the investigation of a theory of mating by proxy whereby women vicariously "mate" with men selected on the basis of donor characteristics outlined in clinic proforma. This theory has direct relevance for infertility counselors, whose role is to raise recipient awareness about the potential longer term psychosocial implications of their decisions to conceive using a clinic-recruited sperm donor.

Evolutionary theories of human mating can be considered in terms of short-term and long-term strategies (10–12) reflecting the length of sexual relationships. Human sexual relationships may be short term (e.g., a brief sexual encounter) or may develop into longer term marriage-like relationships. From an evolutionary perspective, it is expected that the characteristics favored in a short-term sexual partner will differ from those favored in a long-term mate, and these are differentiated on the basis of cues that signal "good genes" and/or "good parent." The relative importance of these attributes depends on whether the mating strategy is short or long term, with women subconsciously evaluating the trade-off between characteristics that reflect good genes and the likelihood of male parental investment in offspring. This trade-off is dependent on a woman's current life circumstances (12, 13).

Features such as health and physical characteristics should be preferred in both short- and long-term mates because such characteristics are heritable and index likely survival and reproductive success of resulting offspring (i.e., "good genes") (14–18). Parental investment theory (10) predicts that because women heavily invest in the care of their offspring, their long-term mate selection should include preference for men who show good character and are culturally successful, because of their willingness and capacity to attain resources for both mother and child (10). Numerous studies of women's mate choice demonstrate that women prefer resourceful men as prospective marriage partners (11, 19–21). In our contemporary Western world, men demonstrate their "resources" by their level of occupation, education, and lifestyle (e.g., hobbies and interests). This preference for resourceful men is independent of women's own economic situation (17, 21) and reflects an evolutionarily determined drive to ensure the well-being of any offspring and ultimately maximize reproductive success (10). Consequently in this article, we explore the application of parental investment theory to the field of donor conception as an explanation for the choice of donor characteristics by recipients of donor sperm.

Received April 21, 2011; revised and accepted July 8, 2011; published online August 6, 2011.

I.S.R. has nothing to disclose. P.J.B. has nothing to disclose. K.A.S. has nothing to disclose.

Reprint requests: Iolanda S. Rodino, M.Psych.(Clin.), Concept Fertility Centre, P.O. Box 966, Subiaco 6904, Western Australia, Australia (E-mail: iolanda@perthivf.com).

0015-0282/$36.00
doi:10.1016/j.fertnstert.2011.07.1090

Recipients of donor sperm include single women, partnered lesbian, and heterosexual couples.Our a priori hypothesis predicts that single women undergoing donor conception will have a tendency to value biographical traits in a donor consistent with a long-term mating strategy. Because partnered heterosexual or lesbian women have already found a mate, we predict these women will favor donor characteristics reflective of "good genes." These hypotheses are retrospectively tested with preexisting donor data.

Data for this study were drawn from a broader study investigating stakeholder attitudes to donation by donors, recipients, and offspring (22). Here we report only on data from 165 recipients of sperm donation. Using an internet-based questionnaire, recipients were asked to rate the importance of 15 types of donor information on a Likert-type scale (from 1 = not important at all to 5 = very important), using the item "Please indicate how important you feel it is that the following types of information about the donor be made available to your child." The items of information rated were donor's name, date of birth and photograph, his cultural background, religion and reasons for donation, his physical characteristics, health and age at donation, his current occupation, education, interests and hobbies, information about his family structure, his feelings about contact with the donor-conceived offspring, and number of times he donated. Completion of the questionnaire was voluntary and subjects were recruited through internet support groups and patients of Concept Fertility Centre, Perth, Western Australia. Ethics approval for the study was provided by the King Edward Memorial Hospital Institutional Ethics Research Committee, Perth, Western Australia.

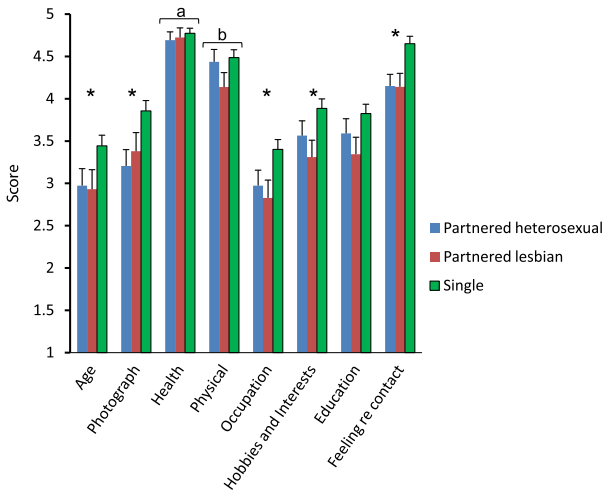
Profile analysis, a type of multivariate analysis of variance for dependent variables scored on the same scale (23), was used to examine the pattern of responses between groups based on partnership status across eight selected types of donor information that reflected evolutionarily relevant characteristics. These were age, physical characteristics, health, and photograph—potential indicators of "good genes" (14–18); occupation, education, and hobbies/interests—potential indicators of available resources (24); and donor's feelings about contact—a potential indicator of "good character."

Included participants were 39 (23.6%) partnered heterosexual women, 29 (17.6%) partnered lesbian women, and 97 (58.8%) single women aged from 18 to 62. There was no significant difference in age distribution across relationship status groups ($\chi^2 = 4.07$, P=.13). Partnered lesbian women (20.7%) were more likely to have used a known donor than single (7.5%) and heterosexual partnered women (5.1%) ($\chi^2 = 5.60$, P=.06). Overall 89 (53.9%) women in this study had completed donor insemination treatment, whereas 23 (13.9%) and 53 (32.1%), respectively, were either waiting for treatment or currently in treatment.

Profile analysis revealed that all groups exhibited a similar pattern of responses across the eight items as indicated by a nonsignificant interaction term (Wilks's Lambda $F_{(14, 312)} = 1.36$, P=.17; Fig. 1). Comparing the mean scores for each item of information across the sample showed that the donor's health characteristics were rated significantly higher than all other features (P<.001). The donor's physical characteristics were rated significantly higher than age, photograph, occupation, hobbies and interests, as well as education (P<.001). There was a significant difference between

FIGURE 1

Estimated marginal mean score for each characteristic stratified by relationship status. Error bars represent 1 standard error. [a]Item differs from all other items. [b]Item differs from all other items except donors feeling regarding contact. *Significant difference on the item between single and partnered women.



Rodino. Mating by proxy. Fertil Steril 2011.

partnership groups ($F_{(2, 162)} = 5.69$, P=.004), with single women rating donor information as more important on average than partnered heterosexual (P=.015) and lesbian women (P=.005) (Fig. 1). Analysis of individual items using one-way analysis of variance indicated that single women statistically differed from partnered women on items of age (P=.05), photograph (P=.01), occupation (P=.02), hobbies and interests (P=.03), and feelings about contact (P=.001), with a trend on education (P=.095). There was no difference in the rating of physical characteristics and health between partnership groups.

Theories of natural selection and donor conception share in common the end product of procreation. From an evolutionary perspective, all recipient groups should be concerned about the quality of the donor's genes (e.g., as reflected by donor's physical appearance and health) as this has an impact on offspring's health and thus the individual's net reproductive success. Our results conform to this perspective in that health and physical characteristics were valued the highest of all items and rated similarly between single and partnered women.

Trivers's parental investment model predicts that preferences for long-term mating partners should benefit parenting efforts (10). Characteristics reflecting ability for resources acquisition and willingness to provide long-term support for mother and offspring are therefore important (10). Our results support this position in that although single women presenting for donor conception are not consciously seeking a long-term partner they rated donor's feelings about contact with offspring, which signals likelihood of parental investment, and donor occupation and hobbies, indicators of donor resources, as of greater importance compared with partnered lesbian and heterosexual women. Our finding that single women undergoing donor conception value characteristics in a donor that reflect a long-term mating strategy is consistent with the findings of Scheib et al.

(25, 26), who used a hypothetical sperm donor scenario. Scheib et al. (25, 26) found that the attributes valued by female university students were similar when choosing a hypothetical sperm donor or long-term mate.

Single women also rated information about the donor's age at the time of donation as more important than partnered women. Although we initially considered age as a marker of good genes because male reproductive capacity declines with advanced age (27), it could also index potential for parent investment as older men typically command and accumulate more resources than younger males. Bereczkei and Csanaky (28) found increased reproductive success in women who married older men.

It is plausible that single women are more curious about donor information in general because they must explain the absence of a father figure and the manner of conception to their child. However, this motive does not explain why partnered lesbian women, who also need to make this explanation, were more closely aligned to the responses of heterosexual women than single women. Other studies (9, 29) have similarly described single mothers' curiosity with the donor that extends beyond the explicit desire to provide information to their child.

That single women tend to place more weight on items reflective of potential resources and good character compared with both groups of partnered women is anecdotally confirmed in donor counseling sessions. It is the author's experience that single women tend to have more questions and higher expectations of their donor's characteristics than partnered women, as if selecting a mate by proxy—an observation shared by other infertility counselors (personal communication with members of the Australian and New Zealand Infertility Counsellors Association).

From an implications counseling perspective, investigations of mate choice patterns via donor conception have direct clinical relevance. Current open-identity donor conception protocols permit access to donor identifying information with greater potential for future contact between stakeholder parties. Infertility counseling practice should highlight the longer term implications of possible future contact between recipients with a donor who does not meet their ideal or fantasy mate selection. Furthermore, although many women are empowered to independently engage in family formation through means of third-party reproduction, not all women are single by choice (8) and family creation by proxy may not always resolve the grief caused by proceeding down a nonconventional family formation pathway because of life circumstances.

In summary, the results reported in this study provide a novel theoretical perspective to the field of donor conception with a merging of two empirical fields—evolution and donor conception. Our findings lend support to the view that donor sperm insemination recipients rate donors in the context of a vicarious mating strategy consistent with Trivers's parental investment theory (10). Specifically, single women subconsciously utilize evolutionarily determined processes and rate donor characteristics reflective of "good parental potential" significantly higher than partnered women. Future studies may wish to consider how evolutionary models of mate selection and parental investment may apply to donors involved in third-party reproduction.

Acknowledgments: We are grateful to the women who participated in the original study and Mr. Doug Robb, Clarity Software, for assistance with the internet-based services.

REFERENCES

1. Riskind RG, Patterson CJ. Parenting intentions and desires among childless lesbian, gay, and heterosexual individual. J Fam Psychol 2010;24:78–81.
2. Wang YA, Chambers GM, Dieng M, Sullivan EA. Assisted reproductive technology in Australia and New Zealand 2007. Assisted Reproduction Technology Series no. 13. Cat. no. PER 47.2009. Canberra: AIHW.
3. Godman KM, Sanders K, Rosenberg M, Burton P. Potential sperm donors', recipients' and their partners' opinions towards the release of identifying information in Western Australia. Hum Reprod 2006;21:3022–6.
4. Leiblum SR, Palmer MG, Spector IP. Nontraditional mothers: single heterosexual/lesbian women and lesbian couples electing motherhood via donor insemination. J Psychosom Obstet Gynecol 1995;16:11–20.
5. Chan RW, Raboy B, Patterson CJ. Psychosocial adjustment among children conceived via donor insemination by lesbian and heterosexual mothers. Child Dev 1998;69:443–57.
6. Scheib JE, Riordan M, Shaver PR. Choosing between anonymous and identity-release sperm donors: recipient and donor characteristics. Reprod Technol 2000;10:50–8.
7. Murray C, Golombok S. Going it alone: solo mothers and their infants conceived by donor insemination. Am J Orthopsychiatry 2005;75:242–53.
8. Jadva V, Badger S, Morrissette M, Golombok S. "Mom by choice, single by life's circumstance." Findings from a large scale survey of the experiences of single mothers by choice. Hum Fertil 2009;12:175–84.
9. Landau R, Weissenberg R. Disclosure of donor conception in single-mother families: views and concerns. Hum Reprod 2010;25:942–8.
10. Trivers RL. Parental investment and sexual selection. In: Campbell B, ed. Sexual selection and the descent of man, 1871–1971. Chicago, IL: Aldine, 1972:136–79.
11. Buss DM, Schmitt DP. Sexual strategies theory: an evolutionary perspective on human mating. Psychol Rev 1993;100:204–32.
12. Gangestad SW, Simpson JA. The evolution of human mating: trade-offs and strategic pluralism. Behav Brain Sci 2000;23:573–87.
13. Scheib JE. Context-specific mate choice criteria: women's trade-offs in the contexts of long-term and extra-pair mateships. Pers Rel 2001;8:371–89.
14. Kirkpatrick M. Good genes and direct selection in the evolution of mating preferences. Evolution 1996;50:2125–40.
15. Scheib JE, Gangestad SW, Thornhill R. Facial attractiveness, symmetry and cues of good genes. Proc R Soc Lond B 1999;266:1913–7.
16. Gangested SW, Thornhill R. Facial masculinity and fluctuating asymmetry. Evol Hum Behav 2003;24:231–41.
17. Geary DC, Vigil J, Byrd-Craven J. Evolution of human mate choice. J Sex Res 2004;41:27–42.
18. Roberts SC, Little AC. Good genes, complementary genes and human mate preferences. Genetica 2008;134:31–43.
19. Buss DM. Sex differences in human mate preferences: evolutionary hypotheses tested in 37 cultures. Behav Brain Sci 1989;12:1–49.
20. Li NP, Bailey JM, Kenrick DT, Linsenmeier JAW. The necessities and luxuries of mate preferences: Testing the tradeoffs. J Pers Soc Psychol 2002;82:947–55.
21. Bokek-Cohen Y, Peres Y, Kanazawa S. Rational choice and evolutionary psychology as explanations for mate selectivity. J Soc Evol Cultur Psychol 2007;2:42–55.
22. Rodino IS, Burton PJ, Sanders KA. Donor information considered important to donors, recipients and offspring: an Australian perspective. Reprod Biomed Online 2011;22:303–11.
23. Tabachnick BG, Fidell LS. Using multivariate statistics. Needham Heights, MA: Allyn & Bacon, 2001.
24. Buston PM, Emlen ST. Cognitive processes underlying human mate choice: the relationship between self-perception and mate preference in Western Society. Proc Natl Acad Sci USA 2003;100:8805–10.
25. Scheib JE. Sperm donor selection and psychology of female mate choice. Ethol Sociobiol 1994;15:113–29.

26. Scheib JE, Kristiansen A, Wara A. A Norwegian note on "sperm donor selection and the psychology of female mate choice." Evol Hum Behav 1997;18:143–9.
27. Kidd SA, Eskenazi B, Wyrobek AJ. Effects of male age on semen quality and fertility: a review of the literature. Fertil Steril 2001;75:237–48.
28. Bereczkei T, Csanaky A. Mate choice, marital success, and reproduction in a modern society. Ethol Sociobiol 1996;17:17–35.
29. Burr J. Fear, fascination and the sperm donor as "abjection" in interviews with heterosexual recipients of donor insemination. Sociol Health Illn 2009;31:705–18.