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# If Marc is Suzanne's father, does it follow that Suzanne is Marc's child? An experimental philosophy study in reproductive ethics

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## ABSTRACT

In this paper, we report the results from an experimental reproductive ethics study exploring questions about reproduction and parenthood. The main finding in our study is that, while we may assume that everyone understands these concepts and their relationship in the same way, this assumption may be unwarranted. For example, we may assume that if 'x is y's father', it follows that 'y is x's child'. However, the participants in our study did not necessarily agree that it does follow. This means, at the very least, that we need to make sure all parties in a debate have the same relationships in mind when talking about reproduction and parenthood. Moreover, it gives us reason to explore more carefully the conditions which support or undermine the connections between these concepts. This cannot come from purely theoretical reasoning, nor from empirical research alone, but from the alliance between the two.

## INTRODUCTION

Reproductive ethicists commonly rely on concepts such as 'sibling', 'parent', 'child', 'donor', 'genes' or 'biology'. Such concepts are assumed to be reasonably reliable: in using them, we can be confident that we are talking about the same thing. These apparently stable concepts can then serve as a basis for discussing, for example, the rights and duties of biological versus social parents. Once we commit to one or another interpretation (eg, biological vs social ties as indicators of parenthood), we may take ourselves to be consistent in our use of these concepts and assume that they fall into a specific relation to each other. For example, if Marc is Suzanne parent, then it must also be true that Suzanne is Marc's child. We also tend to assume that we share an idea of what it means for someone to have reproduced. These choices have normative repercussions. If 'having reproduced' and 'being a biological parent' are taken as meaning more or less the same thing, this implies that the duties and rights of reproducers are the same as the duties and rights of biological parents. For example, Velleman has claimed that the people who reproduce genetically are the parents of the children thus created, and that therefore donor conception is unethical because it intentionally alienates children from their parents.<sup>1</sup> Choices such as these have practical, legal and ethical implications for how we think about donor conception.

## Reproduction and parenthood

Since the 1970s, with the development of bioethics as a distinct discipline and the advent of in vitro

fertilisation (IVF), questions about ethics and reproductive technologies have proliferated. As new biomedical possibilities emerge, terms such as 'mother', 'biological parent' and 'reproduction' have come under scrutiny. Concepts that were previously regarded as biologically given are now increasingly recognised as negotiable, or underdetermined, or partly/wholly socially constructed.

Accordingly, new avenues of research have emerged in the literature. In particular, questions about parenthood and reproduction have become a prominent feature of the discourse. There are a number of philosophical accounts of parenthood.<sup>2,3</sup> Some of these privilege biological connections, while others focus on the intentions of prospective parents; others take the causal processes involved in conception to be a key component of parenthood. Still others may highlight the Lockean approach, whereby parenthood is viewed as a status that one acquires through one's activities—especially caring activities—in relation to a child. On the biological accounts, parenthood may be construed as a fixed genetic relationship, which is necessarily connected with reproduction. A good deal of work has been undertaken in various areas of ethics on these topics, both conceptual and empirical.<sup>4–10</sup> We add to this broader discussion an analysis of a very specific relationship between reproduction and concepts of parenthood. Our work in this paper aims to yield insights into how people construe the relationship between genes, reproduction and fatherhood, by using scenarios where the genetic relationship is slightly altered in each iteration.

## Experimental philosophy

It was a common flaw of analytical philosophy of the past to assume that philosophers' intuitions were the same as those of any 'reasonable' person. New approaches to philosophy seek to go beyond these assumptions and intuitions. Cannold has warned of a failure of moral philosophers adequately to understand and respond to lay reasoning in the abortion context.<sup>11</sup> Empirical approaches, such as that espoused by Cannold herself, offer ways of engaging and interacting with the public that aim to reveal new insights into 'philosophical' problems. The use of such methods may help philosophers to avoid becoming, to borrow from Wittgenstein, a wheel that turns by itself.<sup>12</sup>

The approach we adopt in this paper is commonly known as experimental philosophy.<sup>13,14</sup> A typical study in experimental philosophy involves the design of multiple vignettes which present a particular scenario where one variable is altered in each



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iteration of the vignette. The vignettes are then presented to a sample of respondents. Using this method, unexpected associations or inconsistencies in people's interpretations of certain concepts may be revealed. In turn, these help philosophers to understand the ways in which people construct concepts and their relationships. XPhi studies have also fruitfully made apparent cross-cultural differences in intuitions.<sup>15</sup> Many XPhi studies have been conducted in epistemology, free will, moral philosophy and aesthetics.<sup>16 17</sup> Recently, several studies in experimental philosophy of medicine and experimental philosophy of bioethics have also been undertaken.<sup>18</sup>

In the context of reproductive ethics, empirical studies such as interviews, focus groups and surveys to investigate people's opinions and experiences have been increasingly common since around 2000.<sup>11</sup> However, the specific methodology of experimental philosophy has not been widely used. There is some overlap between empirical ethics, qualitative research and experimental philosophy.<sup>19</sup> Given that ethicists are already undertaking empirical work, it might be argued that there is no special need for yet another empirical methodology. However, experimental philosophy, in the sense in which we use the term, is a different endeavour from the studies undertaken by empirical ethicists and qualitative researchers.

Experimental philosophy is in some senses narrower in its scope than other empirical approaches. In most experimental philosophy, especially when vignettes are used, the focus is on the specific concept in question; participants cannot share views, observations or feelings other than those allowed for in the response options. Thus, the overall aim is very different from, for example, that of a qualitative researcher who undertakes semistructured interviews to explore participants' experience of fertility treatment or runs focus groups in order to elicit participants' ethical concerns about a particular phenomenon. Often, the main aim in experimental philosophy is to identify those variables that influence participants' concept of a particular phenomenon. As such, experimental philosophy, especially the flavour that uses vignettes, perhaps has more in common with conceptual engineering than it does with empirical ethics and qualitative research.

Experimental philosophy gives us an additional tool with which to probe the questions we are interested in. Moreover, it can tell us things that do not emerge from other methods of enquiry. For example, the emerging field of *experimental philosophical bioethics* aims to 'make sense of the eliciting factors and underlying cognitive processes that shape people's moral judgments, particularly about real-world matters of bioethical concern'<sup>14</sup>. *Experimental philosophy of medicine* investigates intuitions regarding concepts of disease, health and disability.<sup>18</sup> As with any other empirical methodology, there may be weaknesses in experimental philosophy that can make its findings questionable, or limit its validity in particular cases.<sup>20</sup> We acknowledge these risks and suggest that the vital thing in the context of experimental philosophy is to be concise in pinpointing the concepts to be analysed, to be cautious in interpreting the data and to avoid leaping too quickly from the findings to normative conclusions. Therefore, we deem the method fruitful to analyse concepts in reproductive ethics, which are often fraught with vagueness and uncertainties.

In this experimental reproductive ethics study, we set out to investigate whether our respondents consider reproduction as necessarily entailing parenthood, and whether 'x being y's parent' entails that 'y is x's child'. We also wanted to find out the degree to which genetic contribution is perceived as being necessary or sufficient for reproduction, parenthood and 'being

someone's child'. More broadly, we aimed to explore the potential of experimental philosophy as a tool with which to shed light on important issues in reproductive ethics. We wanted to answer the following research question:

*Do people's opinions on who has reproduced/is a parent/has a child differ depending on the degree of genetic relatedness between the parties involved?*

In the following, we will present the vignettes that we used, our methodology, and discuss our findings.

## METHODOLOGY

### Design

We designed three vignettes. For each vignette we created three separate sets of questions. Each set consists of four questions, with a 5-point Likert scale answer (from 'completely disagree' to 'completely agree'). We recruited 450 participants using Prolific, an online research platform facilitating the recruitment of participants.<sup>21</sup> We calculated the sample size using the Qualtrics online sample size calculator, with as parameters a confidence level of 95%, 1 000 000 as population size and error margin of 5%. This yielded an ideal sample size of 384 participants. We increased this to 450 participants, so that we could deploy a 9×50 (between subjects) design. This means that each of the nine possible combinations of vignette and question sets were presented to 50 respondents. The only requirement that we used as a pre-screener in Prolific was that participants had English as a mother tongue, and that the sample was gender balanced. We did not collect further demographic information besides age and gender. The participants were distributed among all age ranges, although most responses were within the 25–44 age range. Both the geographical location of the participants and their age may have relevance for the responses. We consider this a pilot study, and we encourage its reproduction in different geographical regions and with younger and older respondents. Figure 1 gives an overview of the flow of the vignettes.

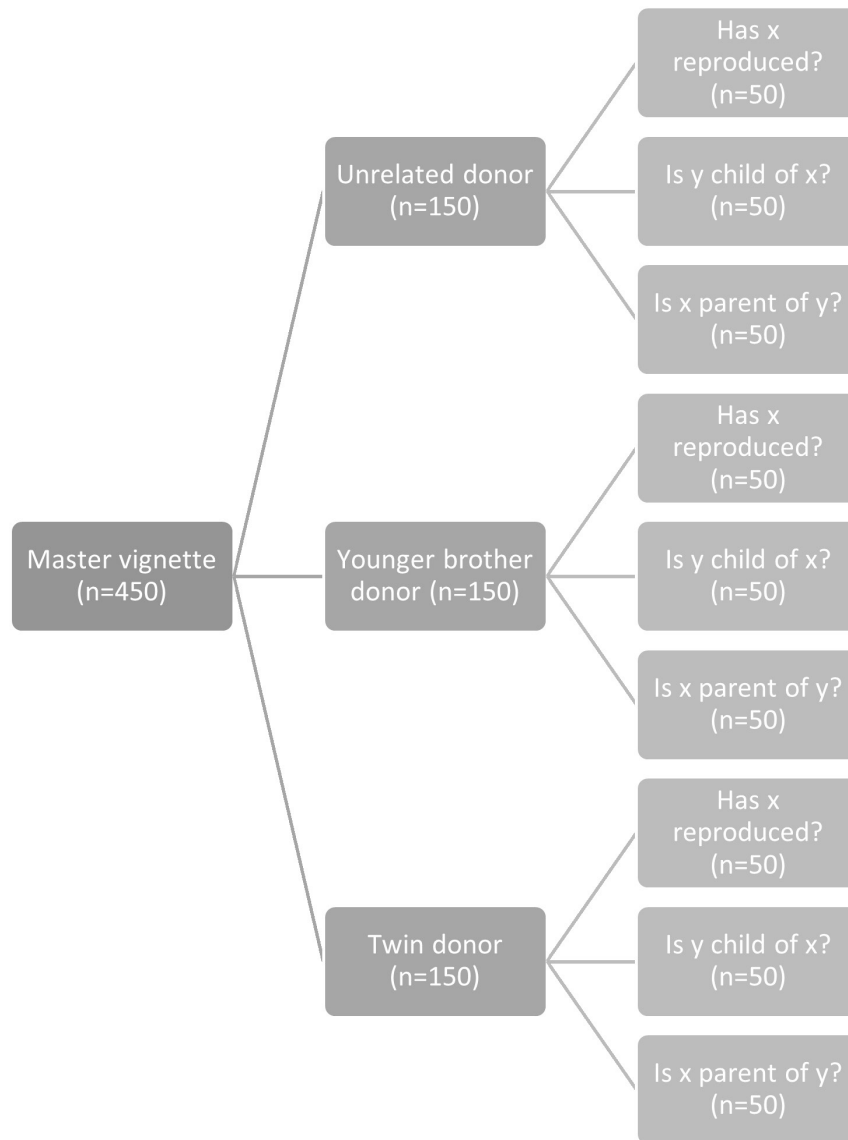
Ethics review was not required for this study. We collected no identifying information and drew up a carefully designed consent process to ensure participants understood the nature of the study and chose to participate freely.

We designed vignettes in which the genetic relatedness between a sperm donor and the social father ('Marc') varied in several ways. The child could be (a) conceived with sperm donated by someone unrelated to Marc, or (b) from sperm donated by Marc's younger brother or (c) from sperm donated by Marc's identical twin brother. We then asked four questions about the degree to which respondents agreed with statements such as 'Marc has reproduced', 'The sperm donor/brother/identical twin has reproduced' and 'The fertility doctor has reproduced'. We also manipulated the type of question: either 'has reproduced' or 'is a parent of' or 'is a child of'. Here is the vignette:

Maria and Marc are a couple in a long-term relationship. They have always wanted to become parents. However, Marc is infertile. A fertility doctor uses Maria's egg and [sperm from a sperm bank/ sperm from Marc's younger brother/sperm from Marc's identical twin brother] to create an embryo. The embryo is transferred to Maria's womb and Maria becomes pregnant. Marc and Maria finally see their dream come true: their baby Suzanne.

### Analysis

The data were analysed using SPSS 29. We assumed that the answers on the 5-point Likert scales can be treated as continuous



**Figure 1** Flow of the vignettes.

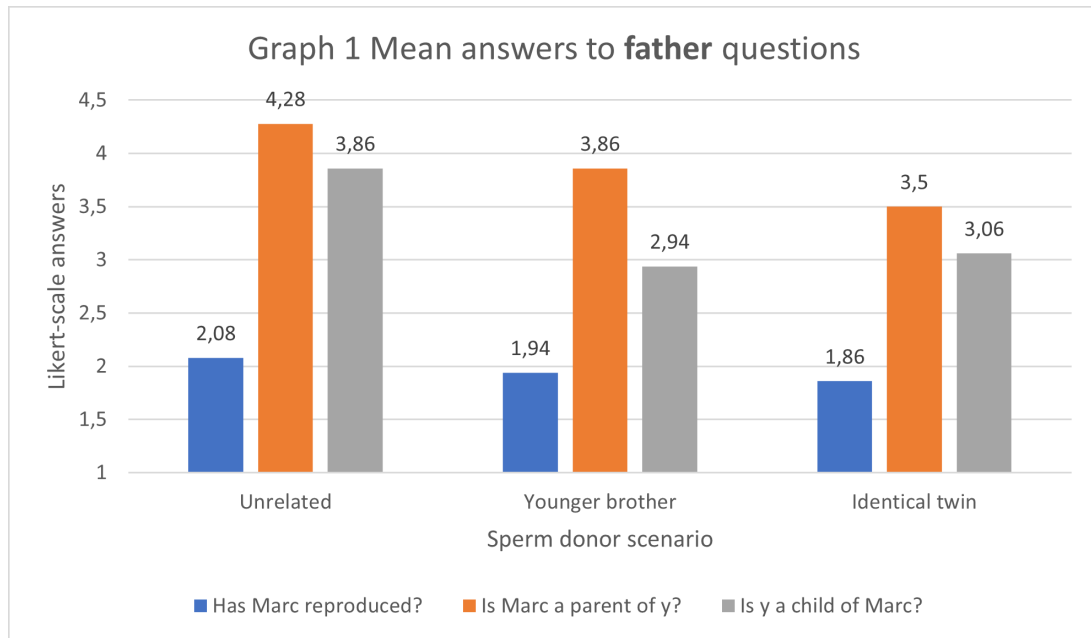
variables. First, descriptive statistics (minimum, maximum, means and SD) were done. Next, one-way analysis of variance (ANOVA) tests were used to (1) compare the three groups (unrelated/brother/identical twin) and (2) compare the three formulations (reproduced/parent/child). We performed a Tukey post hoc test. As a multiple testing corrective, the false discovery rate (FDR) method was used on all p values of the ANOVA tests. We found that all initially significant p values survived this FDR correction. Since the Tukey post hoc tests were only used to find those pairs of means significantly different in the case of significant ANOVA results, no multiple testing correction was performed on the Tukey p values. Thus, all p values <0.05 are reported as being significant. Further details can be found in the online supplemental appendix.

## RESULTS

We first investigated whether people's opinions on who has reproduced/is a parent/has a child differ depending on the genetic contribution. Two significant differences between the parent and child questions can be observed in the younger brother donor scenario. In this scenario, people seemed more

inclined to say that Marc is a parent than that Suzanne is his child ( $p < 0.001$ ) (figure 2). Conversely, they were more inclined to say that Suzanne is the donor's child than that the donor is Suzanne's parent ( $p < 0.001$ ) (figure 3). Participants were somewhat more likely to agree with the statement 'Marc has reproduced' in cases where an unrelated sperm donor was used than in cases where the sperm of Marc's younger brother or his identical twin brother was used (although this difference was not significant).

We then investigated whether people have different intuitions in judgements about 'is Suzanne X's child', 'is X a parent' and 'has X reproduced', where X is either Marc, Maria, the sperm donor/brother/identical twin or the fertility doctor, depending on whether and how the intended parents and donors are related. Here we found significant differences in answer means for the questions regarding Marc in the child and parent formulations (parent  $p = 0.013$ ,  $F = 4.439$ ; child  $p < 0.001$ ,  $F = 7.339$ ) and the donor (parent  $p = 0.003$ ,  $F = 5.958$ ; child  $p = 0.001$ ,  $F = 14.515$ ). When we look closer to find out how genetic contribution plays a role here, we find that for the *father*, significant differences can be found between the unrelated donor and twin scenarios



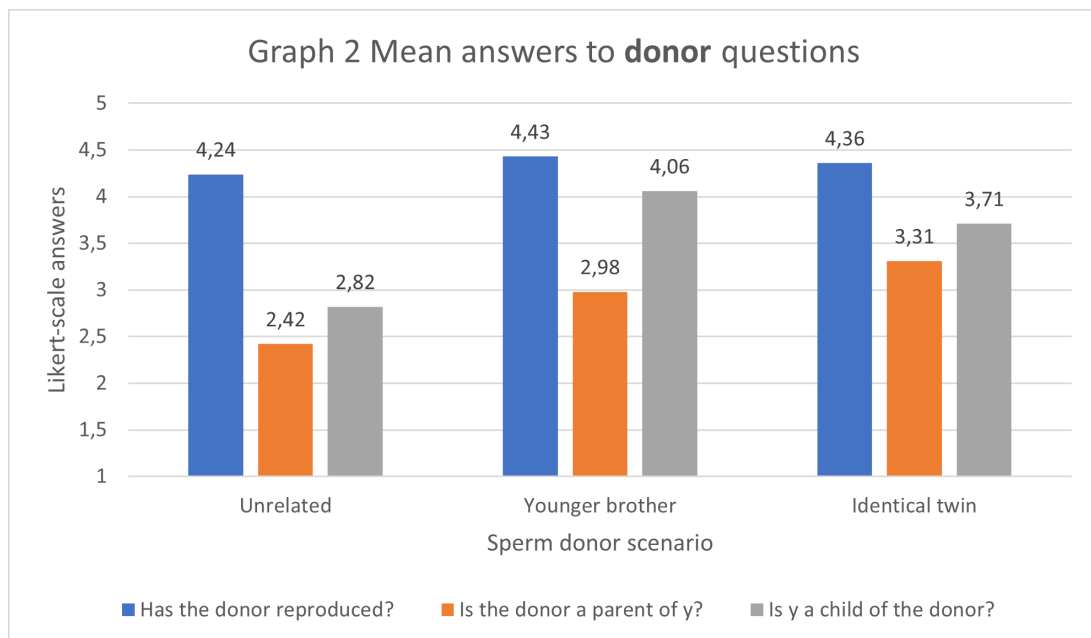
**Figure 2** The mean answers to the three formulations of the question about Marc for each genetic contribution scenario. (Answers were given on a 5-point Likert scale, with 1=completely disagree, 3=neither disagree nor agree and 5=completely agree.)

(parent  $p=0.010$ , child  $p=0.007$ ) and between the unrelated donor and younger brother scenarios (child  $p=0.002$ ) (figure 2). For the *donor*, significant differences can also be found between the unrelated donor and twin scenarios (parent  $p=0.002$ , child  $p<0.001$ ) and between the unrelated donor and younger brother scenarios (parent  $p=0.082$ , child  $p<0.001$ ) (figure 3).

## DISCUSSION

Our study yielded some expected and some surprising results. In particular, the ‘closeness’ of the donor to the social father

seemed to have implications for the attribution of parenthood in a way that goes beyond mere genetic contribution. The discrepancy between ‘reproduce’ and ‘is parent’ and ‘is child’ was expected. That there is in some cases a difference between ‘is y’s parent’ and ‘is x’s child’ was not expected. Our respondents were less likely to agree that someone has reproduced than that someone is a parent in the case of donation by a (younger) brother. Surprisingly, they were also less likely to say that Suzanne is Marc’s child than that Marc is Suzanne’s parent in these cases.



**Figure 3** The mean answers to the three formulations of the question about the donor for each genetic contribution scenario. (Answers were given on a 5-point Likert scale, with 1=completely disagree, 3=neither disagree nor agree and 5=completely agree.)

This might suggest a number of things. It is possible that some participants in the survey assumed that an anonymous donor would play no further role in the child's life. Thus, he is merely a genetic contributor. In contrast, respondents may regard a sibling or identical twin of the prospective father as being likely to play a role in the child's upbringing. If the presumption of an ongoing social role affects people's perceptions, this may help to explain why the brother or identical twin are more likely to be seen as a parent than the unrelated donor.

Looked at in this way, the genetic relationship between Marc and the donor may be regarded by our respondents as a proxy indicator of a future relationship between the resulting offspring and the sperm donor. If so, it is not obviously the genes themselves that are the significant feature here. A follow-up study could yield interesting results if it included, for example, a friend of Marc's or an adoptive sibling as a sperm donor. In such a case, one might also assume an ongoing relationship, but one which would lack a close genetic connection between Marc and the sperm donor.

The emergence of an asymmetry between the respondents' interpretation of the child/parent relationship may also indicate that people view parenthood as something that has a variety of components. Parent can be a verb as well as a noun. It is not just what one is, but also what one *does*. In contrast, the word 'child' is not a verb, and does not function in the same semantic way as the term 'parent'. To be x's child is thus interpreted in one particular relational sense, which is primarily biological: participants regard the offspring as being the child of the sperm donor, even where they also regard Marc as the father.

However, to be y's parent can be understood in a variety of ways, some of which are static and biologically given, while others are dynamic and active. It may be this that leads to the apparently inconsistent 'x is y's parent, but y is not x's child'. This apparent inconsistency, though, seems not only explainable but perhaps justifiable if one takes a Lockean view of what makes someone a father: 'So little power does the bare act of begetting give a Man over his Issue, if all his Care ends there, and this be all the Title he hath to the Name and Authority of a father.'<sup>22</sup> For Locke, being a father is something that emerges from the activities of caring. By implication, fatherhood is a status that can be gained or lost and is not fixed biologically.

When interpreting the results of this study, it is important to avoid claiming too much. All the versions of our vignettes feature sperm donation, and none features egg donation. Accordingly, our data relate to fatherhood directly, and parenthood only partly. Since these concepts are gendered, we cannot extrapolate from our findings to parenthood in general (even though we acknowledge that the necessary connection between sex and fatherhood is open to question). In terms of reproduction, biology and motherhood, people's intuitions might be very different. In addition, there are several ways in which biological motherhood can be subdivided that would add complexity to vignettes such as ours. This would make for a fruitful avenue for further research.

In summary, possibilities created by reproductive technology challenge norms and understandings of intrafamilial relationships in a variety of ways. Not least, it seems that the existence of a genetic relationship between Marc and the sperm donor makes respondents *less* likely to say that Marc has reproduced. This is surprising, since we might otherwise think that *more* genetic relatedness between the social father and the offspring would make people more likely to think that the social father has a claim to have reproduced. For example, in discussions of mitochondrial transfer, the fact that a mitochondrial donor *only*

transmits mitochondria and no or little nuclear DNA has formed the basis for denying the mitochondrial donor the status of a biological parent. One might wonder what the result would have been if we had included a sister as a mitochondrial donor in our vignettes: would that have made participants less likely to say that Maria has reproduced? This remains to be seen in further studies.

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**Contributors** KH, AS and DC initiated the study and designed the vignettes. KH collected the data. EM did the statistical analysis. All authors (KH, EM, AS, DC) contributed substantially to the content, approved the final submission, and take responsibility for the content.

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