

# Single Mothers as Bricoleurs: Crafting Embryos and Kin

Journal of Family Issues

1–30

© The Author(s) 2020

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/0192513X20910767

journals.sagepub.com/home/jfi



Rosanna Hertz<sup>1</sup> 

## Abstract

Single mothers by choice who delay having a child without a partner can choose to conceive with donor sperm and eggs. When they do, however, they face twin paradoxes: (a) advances in assisted reproductive technologies (ARTs) make it easier to have a child but harder to make an unquestioned claim to being a mother in light of a conventional genetic narrative; and (b) children who come from the same batch of donor embryos have more in common with each other genetically than they do with their gestational mother. Those paradoxes pose fundamental questions about motherhood and kinship. For example, does gestational motherhood with two donors alter the motherhood narrative? What becomes of the role of egg donor? How do single mothers manage their extra embryos and what role do extra embryos play in kinship? In-depth interviews with 42 single women suggest that they respond to the paradoxical effects of ARTs by engaging in a new process of motherhood—maternal bricolage—first in crafting embryos and then in finding homes for the ones they do not use. As bricoleurs, they challenge extant definitions of motherhood and kinship.

## Keywords

Single parents, qualitative, donor-use, motherhood, new kinship studies

---

<sup>1</sup>Departments of Sociology and Women's and Gender Studies, Wellesley College, Wellesley, MA, USA

### Corresponding Author:

Rosanna Hertz, Departments of Sociology and Women's and Gender Studies, Wellesley College, Wellesley 106 Central Street, Wellesley, MA 02481, USA.

Email: rhertz@wellesley.edu

In the not so distant past, the preponderance of single mothers by choice had genetic ties to their children. That is, they may have used donor sperm to conceive a child, but they contributed DNA through their own eggs. However, growing numbers of single women are becoming mothers through gestation without genetic ties, and they are having children at older ages. Two intertwined factors seem to be at work: more single women are postponing motherhood until their thirties and forties (Centers for Disease Control [CDC], 2019),<sup>1</sup> and advances in reproductive technology are making it possible for women to counter age-related infertility by conceiving through the use of an egg donor.<sup>2</sup>

Single women who conceive with two donors are likely to both challenge and reinforce dominant ideas about motherhood and biogenetic relatedness in important ways. For example, multiple women can claim motherhood to the same child even though their contributions may not be equally recognized (Pandre, 2009). Further, even though some women have become gestational surrogates as a form of employment and have relinquished motherhood claims (Jacobson, 2016), single mothers by choice can claim gestational motherhood as *their* motherhood project and can set about raising a child with whom they also have no genetic relationship. Finally, children born to single mothers who used donor embryos are likely to find themselves with full genetic siblings who live in different families. It is an open question as to whether developments like these will reinforce the dominant motherhood and family narratives or will precipitate fundamental change in both meaning and practice.

The notion of “just like but different” has characterized much of the social science research on the impact of assisted reproductive technologies (ARTs) like in-vitro fertilization (IVF) and conception via donor gametes. Franklin (2013), for example, has suggested that IVF results in children “who are ‘just like’ other offspring, but through a process of mimicry that is not quite the same as the original process on which it is based” (2013, p. 34). McKinnon (2015, p. 462) has conceptualized these new forms and the “hybrid” relationships that blur the assumptions of “natural” kinship relatedness as a “curious, paradoxical nature of the assisted reproductive technologies.” Similarly, Payne (2016, p. 483) writes that as a result of ARTs, we are able to not only distinguish between biological and social motherhood but also further divide biological motherhood into various “modalities,” such as gestational, genetic, epigenetic, and mitochondrial motherhood. Others have explored new developments and users of these technologies, including queer families and donor siblings (Cahn, 2013; Gamson, 2015; Hertz & Nelson, 2019; Mamo, 2007; Mamo & Alston-Stepnitz, 2015; Norqvist & Smart, 2014). But few have argued that the dominant model of the genetically related family has been or

will be superseded. Thompson (2005) and Frankin (2013) have argued that dominant notions of biology, gender, and kinship persist because they are deeply inscribed in new reproductive technologies.

The dominance of the conventional genetic family narrative—particularly the centrality of genetic ties—continues even as the number and variety of child-creation strategies expands. One common finding among scholars on kinship through assisted reproduction is that genetic ties—and all the presumed correlates of genetic ties such as physical resemblance and shared traits—continue to be a cornerstone claim to motherhood (Becker et al., 2005; Indekeu, 2015; Nelson & Hertz, 2016; Nordqvist, 2010). Even when lesbian families create children through the use of donors, they employ “genetic thinking” (Nordqvist, 2017), which reproduces conventional families along a set of accepted beliefs. Heterosexual couples who conceive with the husband’s sperm and an egg donor tend to construct a narrative based on shared contribution. That is, the wife asserts a maternal claim to their child through a combination of his paternity and her incubation (Johnson, 2017) as evidenced by shared genealogical lineage through the husband’s family (Hertz & Nelson, 2016).

The absence of genetic ties sets single mothers apart—and makes them especially worthy of study. That is, single mothers face twin paradoxes with the use of ARTs. First, advances in ARTs have the paradoxical effect of making it easier for women to give birth to children but harder for them to make an unquestioned claim to being a mother in light of the conventional narrative. Like their married/partnered counterparts, they say by their actions that their desire to give birth to a child overshadows concerns they may have about the social consequences of having a child with no genetic ties.<sup>3</sup> But unlike those heterosexual peers, they lack the trappings of a husband/partner to legitimate (or to conceal) their ambiguous social status. Second, children who come from the same batch of donor embryos have more in common with each other genetically than they do with their parents. This leads to serious questions about the definition and management of sibling relationships. For example, what do single women do with embryos they “own” but do not intend to use?

I hypothesize that single women who create embryos in order to have children are most likely to respond to the paradoxical effects of ARTs by challenging extant definitions of motherhood and kinship. The paper explores two fundamental questions single women face as they seek to make a claim to motherhood while also wanting to somehow create genetic kin for their children: (a) Does gestational motherhood with two donors alter the motherhood narrative? In particular, what becomes of the role of egg donor? (b) How do single mothers manage their extra embryos? In particular, what role do extra embryos play in improvising kin for their child?

## **Methods and Data**

This paper is based upon 42 interviews with single mothers who conceived with “double donors,” their term for their method of conception that includes both sperm and egg donors. The interviews were collected in two waves using the same method for finding interviewees. The first wave of interviews consisted of 17 single women who conceived with two donors. They are a subset of the 212 parents and 154 donor-conceived children interviewed as part of a study sponsored by the National Science Foundation that was designed to examine donor-use and the search donor siblings within families (see Hertz & Nelson 2019). The second wave (25 interviews) with single women who conceived with both eggs and sperm (or a full embryo) was conducted during 2018 and early 2019 as part of a fellowship at the Brocher Foundation on late-stage motherhood.

Since there are no national data sources that record the number of single mothers who are not married and not living with a partner and who have donor-conceived children, I used a targeted recruitment strategy to identify candidates for inclusion in the study. In 2015 and then in 2018, I posted e-flyers to websites that were well-known in the single mother community: Single Mothers by Choice Organization (SMC, a national organization founded by Jane Mattes in 1981), RESOLVE (a national infertility association established in 1974), two closed Facebook groups (one formed in 2011 and called “Single by Choice” and the other, formed in 2007, called “Donor Conceived Offspring, Siblings and Parents”). I also sent a message with content identical to the e-flyer to list-serves connected with local chapters of SMC in Boston, Minneapolis, and Houston. All four organizations/websites have active online forums but do not collect demographic data on their memberships. In the first wave, the call was for parents who created children with the use of donors. In the second wave, the call was targeted toward single mothers who conceived with two donors; this allowed me to compare their experiences.

The majority of women who responded to the posts lived in the metropolitan areas of in 12 different states across the United States (MA, VA, NY, TN, NJ, TX, CO, GA, OR, WA, SD, and RI). Two women who lived in Canada came to the United States to use a fertility clinic. There were not enough women from small towns or rural areas to explore how their experiences might differ. In-depth interviews were conducted in person (in the states of MA, CA, VA, RI, NY, and MN where half the women lived) or virtually (via Skype, Google Meet, or Facetime). Interviewing in person or virtually produced the same quality of interview material (see Hertz & Nelson 2019). Interviews lasted between 1 and 1.5 hours. All were audiotaped and then transcribed professionally. Transcripts were reviewed for accuracy. Both

**Table 1.** Demographics.

	N	%	Mean	SD	Median	Range
Present age of mother	42		48.43	5.84	47.0	38 – 61 yrs.
Income of mother (USD)	42		\$130,123	\$71,860	\$116,000	30,000 – 250,000
Highest Level of Mother's Education						
BA	13	30.9				
MA	23	54.7				
JD	4	9.5				
PhD	2	4.8				
Race						
White	40	95.2				
Other	2	4.8				
Sexuality						
Straight	38	90.5				
Lesbian/bisexual	4	9.5				

inductive and deductive codes were developed with the help of two research assistants. Construction of the codes was guided by the principles of grounded theory, with emerging themes identified and then reanalyzed for consistency and completeness (See Charmaz, 2006; Glaser & Strauss, 1967).

The average participant age at the time of the interview was 48 years (Table 1). The majority of children were under the age of five years at the time of the interviews. The majority of women were White (95%), identified as heterosexual (90.5%), had at least a B.A. degree, and earned an average income (\$130,000) that was above the average salaries in the U.S. for families. Nevertheless, most women described themselves as struggling financially because their salaries were low for living in urban areas where housing and daycare costs were high.

## Single Motherhood in Context

Women began trying to become pregnant around age 40 though there was a wide range of ages when first tries began. By age 42, nearly 80% of them (33 of 42) had not conceived with their own eggs and had moved on to try with both an egg and a sperm donor. Sometimes women were diagnosed with premature ovarian failure or polycystic ovaries, but most reported that after trying with their eggs for a few cycles, medical personnel told them that they

would have better odds of success conceiving with donor eggs.<sup>4</sup> Twenty-one percent of women had first children with their own eggs and a sperm donor, and then a second child with both an egg and a sperm donor (or a full embryo). The rest of the women conceived their first child, and usually only child, with two donors (or a full embryo that another person had donated to them or which they had purchased).

While their reproductive journeys are beyond the scope of this paper, the majority of interviewees did not expect at the outset that they would need to conceive with two donors to have or complete their family. Virtually all the women said they had never given much thought to egg freezing either because they did not consider their situations that extreme or that it was not available in their area. Only three women in this group froze their eggs in hopes of finding a partner prior to deciding to become single mothers. But they, too, would turn to donor eggs after trying to conceive with their own frozen eggs.

These women postponed motherhood in hopes of finding a partner before they had a baby. They thought long and hard about becoming solo mothers (Hertz, 2006; Hertz & Ferguson, 1997; Jadvia et al., 2009; Mannis, 1999; Zahed et al., 2013). As mature, financially self-sufficient women, they moved forward with their baby project even though they felt that they did so by compromising their preference for a baby with a partner (Bock, 2000; Brown & Patrick, 2018; Hertz & Ferguson, 1998). They used the label “single mothers by choice” to distinguish themselves from poorer and teen mothers, in the process inferring a hierarchy of single mothers by race and social class (Bock, 2000; Hertz, 2006).

Despite being segmented economically, single women face many challenges when they seek to become mothers. They can be stigmatized for violating cultural norms about the order of marriage and children (Bock, 2000; Edin & Kefalas, 2005). They can also be penalized in terms of jobs and career advancement (Goodwin, 2005; Hays, 2003; Hertz, 1999; van den Akker et al., 2017). Even though single women at all ages are expected to delay parenthood until they are married, single women who are older face the challenge of their biological clocks ticking and running out of time (Hertz, 2011). Recently, some women have gone to great lengths to postpone motherhood through freezing their egg in order to continue to prioritize romance and marriage over having a child without a partner (Brown & Patrick, 2018; Inhorn et al., 2018; Myers, 2017). They expect that egg freezing will preserve their fertility so that they can eventually have children who are genetically related to themselves and their partners. But since elective egg-freezing hardly guarantees a successful pregnancy, it is unrealistic to presume that motherhood can be postponed (Balwin & Culley, in press). Delaying motherhood into her late thirties or forties increases the likelihood that a woman’s fertility will

decline and that she will need to find an egg donor to conceive (even if she finds a suitable partner) (CDC, 2016, p. 47).

When women decide to become solo parents, they also have to navigate the world of sperm donors. Use of donor gametes and embryos strains the conventional motherhood and family narratives for all women, but acutely for single women. We know from earlier research that when single women decide to move forward with their motherhood projects without partners, they work hard to create middle-class families similar to heteronormative two-parent families (Hertz, 2006; Jones, 2008). This includes finding an acceptable sperm donor and then giving the invisible “father” an image that will satisfy offspring, family, and friends (Hertz, 2002; Zadeh et al., 2016). The disclosure of donor-use—often justified as an aid to a child’s identity formation—has increased, even though family secrets around donor-use remain (Freeman, 2015; Firth et al., 2018). While single mothers are likely to disclose sperm donor use (Scheib et al., 2003), less is known about disclosure when single mothers conceive with both an egg and a sperm donor. In one of the only studies of disclosure by single women who conceived with two donors, mothers claimed they would disclose sperm donor use but not egg donor use because the use of two donors diverged from socially accepted beliefs about women’s role in pro-natal Israeli culture (Landau, 2008). But even heterosexual couples are not likely to disclose egg donor use over concerns that family relations could be damaged and to protect their children (MacCullum & Golombok, 2007; Murray & Golombok, 2003). Disclosure disrupts a conventional claim to motherhood—a shared genetic tie—and raises questions about broader kinship based upon biological/genetic beliefs. It remains an empirical question as to whether these single women will also hide their use of an egg donor.

Against this backdrop, I hypothesize that single women who create embryos in order to have children are most likely to respond to the paradoxical effects of ARTs by challenging extant definitions of motherhood and kinship. They must invent a new narrative of motherhood and kinship or risk being further marginalized. That pressure alone makes it worthwhile to listen carefully to the stories they tell.

## **Embryos and the Meaning of Motherhood**

Does gestational motherhood with two donors alter the motherhood narrative? In particular, what becomes of the role of egg donor? Single women who have chosen to pursue pregnancy with donor gametes tell stories that are remarkably similar in many ways. When they started trying to get pregnant, most women thought they would be able to do so with their own eggs.<sup>5</sup> While

they were often disappointed by their inability to conceive this way, most felt that they did not have time to pause and reflect upon this loss. They needed to move forward as quickly as possible. Their own eggs failing them made them worry that they were too old to have children at all. An egg donor was their last hope for biological motherhood. All sought donors who were young, healthy, and smart.<sup>6</sup> All were keen to create a supportive social environment for themselves and their offspring, and to minimize the visible differences between themselves and what they frequently referred to as “normal” mothers, meaning women who had a genetic tie.

While concerned that their children would not share their family’s genes, they were convinced that biological motherhood through gestation would create a normal child. Virtually everyone I interviewed contended that gestation created a bond between mother and child that was as physically real and as precious as any other claim to motherhood. That is, like women who used egg donors with their husband’s gametes (Kirkman, 2008), they emphasized the influence of epigenetics and the idea that a mother’s body can shape a fetus by triggering gene expression (Payne, 2016). For example, when I questioned Jamie about the absence of agreement among scientists about the mechanics of epigenetics, she replied with confidence: “I do believe I had a huge role to help the fetus grow and determine what kind of child it would ultimately be because of epigenetics. There were three of us involved—two donors and me—and I believe my input was still significant.” Others went beyond the physical influence of gestation to suggest that they believed that they could pass behavioral traits while carrying their child. For instance, Denise, who conceived at age 49, chose African-American donors with an eye toward providing a racial and cultural fit between her and the baby, but she also insisted that she contributed a critical ingredient: “I put into my body my attitude while I was pregnant. He’s a very calm baby because I made a big effort to remain being calm and no drama when I was pregnant. That was all very important to me.” In other words, they invoked epigenetics to position the labor of their actions as a distinct claim to motherhood, similar to bodily claims made by the surrogates Pandre (2009) studied.

What’s different in the narrative employed by single women who used donor eggs and sperm was the importance of “having a hand” in the process of creating the embryo. As single women, they felt acutely the tension “between ‘unnatural’ (and undesired) childlessness and ‘unnatural’ motherhood” (Throsby, 2002, cited in Kirkman 2008, p. 242). They stressed repeatedly that because their individual DNA would not be present in the embryo, they invested great energy into finding donors through whom they could put their stamp on a child. Shannon, who became pregnant with twins at age 45, described how she could make her child more related to her:

My egg donor didn't have Irish blood, and that is important to me. If the baby wasn't going to get my genes, and that is part of what I consider that I would pass along is that heritage. I found it in the sperm donor.

Brenda, who became pregnant at age 48, talked movingly about her conviction:

I think in part I wanted control over the choice of donors. If I wasn't going to be able to have it be with my own body's eggs and controlling who I met [to have a baby with his sperm], I wanted to at least be able to choose the donors, which is a bit like genetic engineering.

The combination of epigenetics and visible signs of pregnancy normalized women's view that gestational motherhood trumps what happened in the petri dish.

Like Denise, Shannon, and Brenda, most of the women I interviewed described the early stages of conception as a kind of maternal *bricolage*: choosing and combining the right materials (sperm and egg).<sup>7</sup> Women made difficult choices that they hoped would render their child similar to themselves and their extended families. As Jamie, who was 43 years old when her son was born, put it,

I felt being a donor conceived child might be hard enough, I wanted to make sure my child did not feel physically out of place as compared to me or my whole family. And, if interests truly are nature not nurture I wanted to be sure I could help with those interests (that is, I'm not an artist). By choosing someone as similar to me as possible I was hoping to reduce this potential outsider feeling.

Those choices enabled Jamie and the other women in this research to make a meaningful claim to intimate involvement in the conception of their child. Like bricoleurs, they do not create the pieces. Instead, their artistry resides in the selection and arrangement of the pieces in a particular order or geometry. Making the claim to being a creator, inventor, originator, or inspiration and to having shaped the genetic makeup of the embryo was for these women essential to crafting a compelling and socially legitimate claim to motherhood.

When they began looking for materials, these bricoleurs confronted the striking reality of contemporary gamete markets. They found that there were not as many egg donors as sperm donors and that information about egg donors was skimpy by comparison to the profiles men were asked to provide. Prices varied, too, affected by factors like the number of eggs that were provided (e.g., shared egg programs), the proven fertility of the donor (i.e., percentage of successful pregnancies from a given donor's eggs) and the extent of services required (e.g., embryo creation, IVF or another procedure or paying higher fees for more tries at successfully having a baby). Laura described the situation she faced in dealing with a clinic:

I could ship sperm from any donor bank. But [with eggs] you didn't have a choice. You were on a list. You came up. They offered you a donor. You could agree or say "no" and they would go to the next person on the list. You could keep waiting. . .but I had to stop losing money and get pregnant.

Single women sometimes described the process of bricolage in terms that are as mysterious and yet as compelling as conventional cultural tropes built around divine intervention and/or blood ties. For example, Melanie dreamt about a "spirit baby" who guided her in picking donors. She attributed her experience to the complexity of the choices she faced and to the conviction that she was delving into truly spiritual matters. After consulting a medium, she concluded that "My spirit baby guided me towards two people." Roberta talked about how her son, who died at an early age, entered her dreams to tell her he saw her caring for his two sisters. She felt he gave her permission to have more children—which, as it happens, she did (two girls).

Alongside these stories were the philosophical questions or quandaries that other women pondered and then wove into their narratives. Yasmin expressed it this way:

I have thought like: do these two (donors) even get along? Like would they have ever had a child together? I don't know that they would have. What's so crazy about this process is that my daughter would have never existed without me, being as I am the one to connect these two genetic materials.

Embedded in Yasmin's remark and the other stories are the building blocks of a different narrative of motherhood: one that emphasizes a woman's contributions—her choices, her discrimination, and her determination—to the act of creation. The embryo/child would not have happened if it not for her intentional act of bricolage. Her choice of donors plays an exceedingly important role in determining the outcome. Moreover, there is in the process of making a baby (and therefore, in making a mother) science, chance and/or mystery/spirituality on a par with the conventional narrative of motherhood.

### *Motherhood after Baby Arrives: Genes Can't Matter But They Do*

Single women who conceived with two donors were thrilled to be mothers but were often ambivalent about the absence of shared genes and unsure how to talk about it. They faced the challenge of reconciling their claim to motherhood with the absence of their own genetic imprint.

This dilemma showed up most frequently when I asked women how they thought about the egg donor. For example, as Gail, age 47, whose oldest daughter was conceived with her eggs and who had just recently given birth to a second daughter conceived with an egg donor, explained,

Wow this egg donor thing doesn't matter, it just doesn't matter. She's my child, she's 100 percent my child. I carried her. I've breast fed her, birthed her. This is not to say that I don't think about the egg donor but this child is mine.

Almost every woman acknowledged the centrality of the egg donor, but rather than talk about her as a person, they segued into talking about her genes. Paula, who was age 44 when her daughter was born, explained her ambivalence,

In the biggest picture is the fact that I was trying so hard to have a child, I knew I wanted a child so badly and I was trying so hard for so long and with so much disappointment that in the end, genes couldn't matter. But they matter in my mind. I thought that I would forget [the egg donor] after she was born but no one forgets.

A real test of their willingness to challenge the conventional motherhood narrative came when women pondered whether to disclose their use of an egg donor. Many found the decision to disclose to be very difficult (see also Landau et al., 2008; Yee et al., 2013). Some women had not disclosed to their parents that they had used two donors for fear that their child would not be treated by their parents in the same way as their siblings' children. Several women reported that they worried the most about how their parents would react. For example, Nadine described how revealing identities that are non-normative was fraught: "I expected, 'Oh, this is not my grandchild.' Not that they would act like that, but that they would *feel* like, 'Oh, this is not really my grandchild.'"

About half the women said that they were not sure they would disclose egg donor use to their child, even though they had usually disclosed it to their immediate family and social circle. They were concerned about how this could alter their relationship to their child.<sup>8</sup> Occasionally, women said that it was their child's story to tell, a narrative their child might not wish to share with everyone or anyone. They told acquaintances who asked about their child's father that the child was donor-conceived; they did not volunteer any more information. Partial disclosure—the sperm donor—remained manageable and within the realm of becoming an older mother who had not found a suitable partner.

Some women felt that the absence of genetic ties did not matter. These women usually were mothers to a first child who was conceived with their own eggs; the second child was conceived using the same sperm donor and an egg donor. They had a second child to complete their family and to ensure their child a sibling who would have a shared sperm donor. Their children would be half siblings, though women did not like this “fractured” language to describe how their family was built. They said that they knew this child would feel connected differently, but they hoped he or she would not feel a lesser connection. For example, Alex felt she needed to revise the birth narrative she had constructed for her four-year-old to take into account her six-month-old who is double-donor conceived:

I really should make my priority making her a book about her, a book about how she came to be and pictures of you know, my pregnancy, and baby pictures and all that sort of stuff. But, in that [the book for her older daughter] I talked about how I went to the doctor, and the doctor took my eggs and mixed it with a sperm from a donor, and so I started trying to rework the story where I’m not talking about my eggs.

Complicating the issue of disclosure is the fact that the use of identity-release sperm donors has become more common while egg donors usually remain anonymous (see Table 3). Women who said they had disclosed (or would when their child was older) wished they could have selected an identity-release donor because it might be important to their child’s self-concept in the future—but, they were rarely available. Since the industry continues to have few identity-release donors, and egg donor siblings are rare, it seemed practical to emphasize the sperm donor, which further diminished the egg donor.<sup>9</sup> Women focused on sperm donor relatives, searching for them to give their child some genetic family they perhaps could grow up knowing (see Table 3). Searching for these genetic relatives has become a routine practice in the single mother community. Sixty-seven percent of these women had searched for and found sperm donor siblings, slightly higher than the percentage of single mothers (61%) who reported searching for sperm donor siblings in 2009 (Hertz & Mattes, 2011). Other women said they were likely to register to find these half siblings in the near future.

As much as single mothers might like to set the egg donor aside, she is often implied in everyday conversation with family and friends on topics like physical and behavioral resemblances (Nordqvist, 2017). Women did feel that as much as it pleased them that extended family members embraced their child, comments about their child’s lack of shared genes would surface in family small talk. Those comments could sting. For example, Paula was sensitive to her mom’s attempt to smooth over her lack of a genetic tie:

**Table 2.** Motherhood Trajectory

	N	%	Mean	SD	Median	Range
<b>Age</b>						
Age when started w/ own eggs	42		40.75	4.46	40.0	25 - 47
Age when started w/ donated eggs/embryos	33		41.68	3.4	42	34 - 47
<b>Motherhood Experience<sup>1</sup></b>						
A. First child w/ own eggs and a sperm donor	9	21.4				
Second child w/ embryo or egg/sperm donor	9	21.4				
B. First child with embryo or egg/sperm donor	33	78.6				
Second child with embryo or egg/sperm donor	7	16.7				
Total Number of Children	58					
Number of children from double donors	49					
Age of Double Donor Children <sup>2</sup>	49		4.7	4.05	3.75	0 - 17
Age of All Children	58		5.8	5.98	4.00	0 - 28
<b>Sought Alternative Routes to Gestational Motherhood?</b>						
Yes, adoption or fostering	27	64.3				
No	15	35.7				

<sup>1</sup>All first children were mutually exclusive and add up to N = 42. Not every mother had a second child. And a few women had third children that are not included

<sup>2</sup>Eight sets of twins conceived with two donors are only counted once.

My mom every once in a while says, “Oh, I can’t believe it. It’s so weird how she’s starting to look more and more like you.” Or it is not just about looks but also “Oh she is just like you—she is your perfect match.” She says stuff, because it’s on her mind, but it doesn’t impact the way she treats my daughter. But people say it in an ironic way. “You’re a perfect match,” and it feels like, “even though she doesn’t have your genes.” It does not disappear from people’s minds.

Other women were upset that family members were insensitive to the reality that their child is not part of the family’s genealogy:

**Table 3.** Children's Genetic Relatives (REVISE TABLE ON PAGE PROOFS).

	N	%
<b>1. Full Genetic Siblings</b>		
a. <i>Growing up together in the same household</i>		
• Mother had twins from her first pregnancy	8	19.0
• Mother had a second child with extra embryos	7	16.0
b. <i>Growing up elsewhere in a different household</i>		
• Mother gave away embryos that created this child	12	28.5
• Mother conceived with embryos she received from another family	4	9.5
<b>2. How Leftover Embryos Became Important For Kin Networks</b>		
a. <i>Women who had leftover embryos after completing their own family</i>	28	66.7
b. <i>What women did with their extra embryos</i>		
• Gave away to create other families	12	42.9
• Gave to scientific research	4	14.2
• Undecided	12	42.9
<b>3. Donor Sibling Contact (not mutually exclusive)<sup>1</sup></b>		
a. Sperm donor siblings, yes	28	66.7
b. Egg donor sibling contact, yes	1	2.5
c. Embryo donor sibling contact, yes	16	38.0
<b>4. Possibility Of Future Contact With Either Donor<sup>2</sup></b>		
<i>Types of Sperm Donor</i>		
a. Yes, Known donor	4	9.5
b. Yes, Identity-release	21	50.0
c. No, Anonymous	17	40.4
<i>Types of Egg Donor</i>		
a. Yes, Known	7	16.6
b. Yes, Identity-release	4	9.5
c. No, Anonymous	31	73.8

<sup>1</sup>Only included are families who have the potential for donor siblings. Three women conceived with a family member's gametes.

Embryo donor siblings includes those who used an embryo to conceive or who gave embryos away.

<sup>2</sup>It is possible that anonymous donors will be found through DNA websites

Just an anecdote is that my mom is really into genealogy right now. That's her hobby is to research her blood relatives and it just feels bad to me. [Because?] Because her granddaughter is not part of that. It's interesting to her, and that's great, but I feel like there's an insensitivity to the situation that hasn't been addressed, and I don't know how to bring it up.

The challenge of reshaping the genetic narrative of motherhood is nowhere more evident than in the situation faced by single women with double donors. On one side, they want (sometimes desperately) to establish a relationship to their offspring that is as honored and as unquestioned as the one that genetic mothers have with their children. Belief in epigenetics, careful selection of sperm donors, and downplaying the egg donor are all “private strategies”—that is, personal, internal characterizations—that minimize the distance between the dominant narrative and their lived reality. Though they might be proud of the choices they had made—of their act of bricolage—they could, however, not make it public. On the other side, some single mothers publicly acknowledged that they came by their children differently. Sometimes it was driven by a desire to be honest; other times it was a product of circumstances that could not be hidden (e.g., advancing age or prior infertility) and that forced them to disclose the fact to family and friends. Either way, this group of women put forward explanations intended for public consumption and repetition. Bricolage—the careful selection of donors, the combination of a unique pair of gametes, and the physical act of gestation—provided the foundation for a competing narrative of motherhood.

## Managing Embryos

How do single mothers manage their extra embryos? In particular, what role do extra embryos play in improvising kin for their child?

The second paradoxical effect of ARTs emerges usually when “the prime objective” of getting pregnant (as one woman quipped) has been fulfilled. As mothers, they recognize that they will share no genetic ties with their offspring and that their offspring will share complete genetic ties with any child born from the same set of embryos. This situation leads to important questions about how they should think about the embryo, what they would do with unused embryos and how they could manage the relationships among siblings. These questions challenge women to either find ways to creatively adhere to/interpret the dominant narrative or to revise it.

Before examining their answers, it is relevant to note that the conception and gestation caused many women to reflect on their own history of genetic thinking. When asked if she worried about how people might think about her not having genetic ties to her baby, Beth put it this way:

I don't want people to judge, *because maybe I thought this too about other people* [emphasis added]: ‘Oh, so that's not your baby. It's not your baby because it's not your blood.’ I think that was always a reason why I didn't want to use an egg donor.”

Beth's shift in perspective implied a realization that consanguinity—blood lines (often used interchangeably with ideas about family members having a genetic connection) so important to the conventional narrative of motherhood—could no longer suffice. Either epigenetics would have to be substantiated as an equivalent or some other hybrid answer would have to be created.

### *The Meaning of Embryos*

Twenty-nine percent of women in this study used their leftover embryos to create full genetic siblings for their first-born (see Table 3). While 33% of women did not have leftover embryos, the rest did. Among the 28 women who had leftover embryos after completing their own family, 43% had given them away to another family. Another 43% who had leftover embryos were still deciding if they would have second children with these embryos or find intending parents for them. No one destroyed their unused embryos; only a few women wanted them to be used for scientific research. A significant percentage elected to manage the transfer of their leftover embryos themselves. In Table 3 we can see that 73% of children have full genetic siblings, including 38% of these children whose full genetic siblings are growing up in a different family with their own parent.

Women held a wide range of views about embryos: whether they were alive, whether they were property (because they were usually paid for), or whether they were even related to one another (Proovst et al., 2009). Everyone had views, but few women spoke with confidence, in large measure because their views evolved as a result of conversations with family members, clinic counselors, and potential embryo recipients. Most had not seriously considered the status of an embryo before they experienced the birth of a living baby; until that point it was, at best, hypothetical. Liz was typical of many women:

I didn't have any moral objection to destroying them, but if someone I trusted to be a decent parent wanted them, I'd be happy to gift them. I have three embryos left that I am paying storage fees for. Right now, I am not sure if I want to use them myself.

Lacking guidelines, precedent, or lore, they had to decide for themselves what meaning to give to their embryos.

At one end of the continuum of views were a few women who believed that embryos were objects they owned because they had paid for them. They could dispose of them as they saw fit.<sup>10</sup> Embryos were not regarded as

living beings; the best that could be said was they could benefit society through scientific research. On the other end were those who endowed the embryo with certain essential rights. Those who advocated for “embryo rights” recognized that they sometimes held a position at odds with pro-choice ideology. For example, Cydney expressed her discomfort as she realized that her emotions hardly aligned with her view of herself as pro-choice:

I believed before I started this whole process [that] life begins when a child can survive outside of the womb. Is that seven months when the lungs are fully developed? I'm pro-choice. . . . I guess I feel different now that I was given this gift and I feel responsible for protecting this life and at least giving these embryos a chance to have life. If they don't become, result in life, then at least we gave them the best chance we could.

In between were women who referred to embryos as “the frozen” or “snowflakes” to describe their limbo status. Michele talked about a batch of embryos this way: “A snowflake never falls in the same place. It never falls in the wrong place either and every snowflake is different.” This metaphor captured her beliefs about how embryos brought to life would express traits differently but would also complement each other. In her view, “place” alludes to how a family's environment would shape an embryo.

In the midst of difference, the majority of women expressed a sense of responsibility for the fate of their embryos. Many talked about their obligation to pass along the opportunity to have a child to others who had experienced the same frustration and yearning they had. Most felt a surprising (and often unanticipated) emotional attachment to their frozen embryos. As Bebe put it, “the most troubling part of the process is that I can't have all of them as my children.” Several women saw an opportunity to remedy the financial constraints that poorer women faced when it came to using ARTs to have a child. Karen put it this way:

[Embryo storage] starts getting more expensive every year. I think it started out at \$700 and then it goes to 800 and then 900, so it's getting more expensive every year. I just thought, “You know, there's no way I'm going to destroy these embryos.” So, I decided to find a woman who could not afford to make embryos herself but wanted to be a mother.

Jordan's likened her decision to gift her embryos to rescuing a puppy:

I view those other embryos as my creation. I actually feel attached to them. I feel worried for those embryos. This is not an analogy that is smooth, because

obviously a puppy is not like a kid. But whenever I rescued dogs, I wanted to make sure they went to a safe home, and that they were taken care of, and I stayed in touch with those people. . . . Their connection is to me, but it's not about my daughter. It's about me being attached to them.

Giving away embryos may have felt like a good deed, but women soon discovered that making embryos is not just about one child's life. The moment they shared or "gifted" an embryo, they initiated a relationship that had the potential to last for months, years, or a lifetime. Bricolage, it seems, is not just about sourcing gametes and finding successful clinics. Embryos need human tending, too.

### *What Women Do with Unused Embryos*

The simplest resolution was to use leftover embryos to have a second or even a third child. Sixteen percent of women had second children this way and an additional 10% decided to have a third child. Even if their families did not mirror the cultural ideal of genetic ties between parent and child, at least their children would be full genetic siblings. Not only would their children resemble each other but they would have the opportunity to discover their own unique identities as they interact (McHale et al., 2012).

Many women added a new wrinkle to motherhood: their motherhood project expanded to securing genetic ties *for* their children. Some women, like Jamie, felt that extra embryos could be used to give their child a "genetic relative"—a relationship that might be important in the future. Jamie had a five-year-old son who she did not want to disappoint by not giving him the possibility to have a full genetic sibling. She only wished that he were old enough to weigh in:

So, do I give them away and then tell him, "Hey, you have all these biological siblings out there" or do I just erase the whole issue and donate them to research? If I do [the latter], would he be like, "Oh, wow, I wish I had biological siblings now that you explained my journey." If I donate them, I'd have to make sure they weren't anonymous. I'd have to make sure the people would be open to making sure that their child is informed that my son is out there and that they could reach out or the children can decide to have a connection or not. At least they should know each other exists.

Genetic siblings might also be an insurance policy if a medical issue arose. Marlene reckoned that an embryo sibling might bring benefit someday to her twin sons:

To have another sibling-ish person might be helpful for them at a certain point. Who knows, my father died of heart disease, my mother had cancer. I don't know how long I'm around. As an older mother I wanted them to have each other, but this was a little bit of, I don't say insurance policy, but just another family-ish connection.

While fertility clinics would have taken their unused embryos and placed them *anonymously* on their own lists, very few of the women I interviewed took that route. Instead, they took control of the sharing process by locating intending parents through their own social networks, including local single-by-choice mother's groups, work acquaintances, local parishes, and online embryo donor websites. In doing so, they extended their bricoleur role. Not everyone was public about this activity, however. Some preferred to do it privately because going public would undue their careful efforts to make (or to imply) that they were their child's genetic mother. Those women who were open about their involvement saw it as a way to have a hand in creating genetic ties for children. Whether prescient or not, they anticipated that they would have to provide their children with an explanation someday. As it turns out, that private explanation—centered on their act of bricolage—could also serve as a public part of their motherhood narrative.

To manage their unused embryos, women had to figure out ways to qualify candidates (including partners, male or female) and to determine their trustworthiness to be given an embryo. Celine explained that it had become common for women seeking embryos to share deeply personal histories in brief resumes. She gave the example of a candidate who described herself this way: "I'm Sally, age 47, 6 IUIs, 2 transfers open sperm donor with IVF, taking a break but considering egg or embryo donor." That woman's self-introduction depicted an emotional rollercoaster that Celine deeply understood and empathized with. It also spoke volumes about the evolution of social norms and technology.

Trustworthiness or sincerity was more difficult to establish. For instance, Shannon recalled attending a single-mother-by-choice meeting where she got to know Eliza, a woman in her group:

A couple of times, I think when I came in late, it was the winter, I have the double stroller. . . . I've just made it up those stairs, I got babies in layers, and I was just like, "You unpack that one. I'll do this one." I ended up sitting next to this woman a few times. I'd listen to her story. She had tried to have a child herself. She had tried to adopt. She was on the path to Guatemala [to adopt], and that almost, almost happened. But then the country shut down adoption. She just had too many unfair dead ends.

Shannon also observed Eliza around children. She felt she would make a good mother, and she liked that Eliza wanted to know her, her children, and how they acted together. Shannon described Eliza's participation in the family:

She spent some more time with me and watching me with my children. It was so respectful. She wanted to know who I am and who they are, and who we are as a family. We had a few more visits. . .there is something about this woman Eliza that I liked so much. I could see her as a mother.

Shannon's account suggests that both women felt "honored." Shannon felt honored that this woman from her SMC group liked her family and the woman felt honored to be given a chance to become a mother with her embryos. Shannon also felt that as they got to know one another they discovered similar orientations to child-rearing and to being in the world. She had already rejected a couple who she felt argued too much and did not seem well-matched. As a token of her trust, Shannon gave Eliza information about her twins; information that the clinic would not provide to embryo recipients. One twin had ADHD; one was outgoing and liked science while the other loved writing stories. Shannon was unsure if any of this information was genetically based, but she wanted to share it with Eliza to prepare her.

As these stories testify, the making of an embryo is about much more than one mother's child. Many families can be linked by embryos, as Firth et al. (2017) suggest through their research on embryo donation programs. And as these single women find ways to navigate institutions like clinics, hospitals, and insurance companies and to grapple with complex and unanticipated ethical questions such as the status of an embryo, they simultaneously reinforce and wear down conventional notions of what it means to be a mother and to be a family.

### *Improvising Kin*

In addition to the disappointment they attributed to not having genetic ties to their children, these single women often felt saddened by the absence of conventional kinship relatedness. Helen explained the distinction this way: "It really was not just because I would not have a genetically related child, but that as a mother-to-be I was unable to give my child the gift of a genetically related family he would be raised with."

The sense of sadness and feeling of a void led some women to reinforce conventional ideas about kinship and led others to directly challenge them. Recall Beth's point earlier about not wanting others to be biased the way she

once had been. Aimee was concerned about who would pay the price for flaunting convention:

I still struggle with the concept that [my daughter] is not genetically mine. She has something that is unique and different about her but that is not always a good and welcomed thing. And part of that may be. . .what I'm doing is different. I don't want her or anyone in our family to think negatively about it.

To illustrate the complexity of challenging the narrative of kinship that assumes genetic relatedness is contained within a bounded nuclear family, it will help to consider two instances of genetic full-siblings who are raised by different mothers. In these cases, we see the influence of genetic connections, particularly the way in which family members beyond the immediate circle try to mediate claims to kinship. But we also see how new meanings get attached to familiar roles, like sibling, grandparent, and donor.

This first instance depicts the difficulties encountered when a single woman seeks to create family in an unwieldy kinship paradigm. Three years prior to my interview, Orla had given birth to a son, James, using her own eggs with a sperm donor. Since then, she had become close to Melinda, a woman whose son shared the same sperm donor as James. Early on in their friendship, Melinda joked to Orla that she had so many embryos leftover that if Orla ever needed them she was welcome to them. Two years after their initial meeting, Orla, who at that point was 43 years old, confided to Melinda that her own eggs were no longer viable and that her doctor recommended finding an egg donor. Melinda immediately offered her two of her five frozen embryos. Since their sons already shared a sperm donor, the embryo would be Melinda's son's full genetic sibling and Orla's son's half genetic sibling.

Before going forward, Orla felt she needed to understand how Melinda and Melinda's extended family would feel if she carried this baby. In Orla's words:

I was worried that it would be upsetting to see a sibling—a full sibling, Melinda's child—growing up somewhere else. We spoke about it a lot. We met with therapists and did all of the necessary things to make sure that she was definitely okay mentally. I wanted her to speak to her family because she has a much bigger family than me and I just wanted to make sure that her mom wouldn't see that child as her grandchild. Because we know each other, I wanted to make sure we covered all our bases.

Those conversations—between Orla and Melinda, with and without mediators—spoke volumes about the complexity of kinship in an ARTs enabled

world. Already challenging convention by birthing a child with donor sperm—and opening the door to engaging with a network of half-siblings (Hertz & Nelson, 2019)—Orla took up Melinda’s offer of frozen embryos and set about creating a child that was a half-sibling to his legal brother and a full sibling to his mother’s friend’s child.

We now turn to our second example, wherein three women grow a wide net of relationships in an effort to provide rich ties for their children. The case begins with Liana, who had a two-year-old daughter conceived with sperm from an anonymous donor and eggs from an identity-release donor. Not long after giving birth, Liana used the sperm donor’s vial number to discover that her daughter had a genetic half sibling living nearby. She got into contact with that child’s mother, Jane, and the two began arranging visits so the kids could meet, even though neither child was old enough to understand what was going on. Jane had conceived her child with her own eggs.

Meanwhile, Liana also made direct contact with the woman who had donated the eggs she’d used. She wanted to take advantage of knowing the egg donor’s identity so she could satisfy her curiosity: “I wanted to know just what kind of person she was, and if she would be open to meeting my daughter.” Their meeting went well, and they texted occasionally, with Liana sharing pictures of her child. That exchange gave Liana the opening to get information (e.g., health history) from the donor in the future if she needed it. (Presumably, the donor was left with the knowledge that Liana’s child was healthy and happy.)

To this point, Liana (and her daughter) were connected to Jane and her son and a growing sperm donor-sibling network on one side and to the egg donor on the other. Both relationships “felt right, though unusual” to her. She felt she was “building an extended family” for her daughter.

At the time I interviewed Liana (two years after her daughter’s birth), she had decided that she was only going to have one child. She had agreed to donate her four unused embryos to Nadia, a woman she met at a single mother’s workshop. Nadia couldn’t afford the costs of sourcing two donors. She accepted Liana’s offer and they drew up legal contracts necessary to transfer the embryos. Liana and Nadia agreed to stay in touch, in part because both were excited that their children would be full genetic siblings. Liana felt obliged to let her known egg donor know what was transpiring and did so.

Nadia got pregnant on the first try. This meant that Liana’s leftover embryos were now Nadia’s. Shortly, thereafter, Jane contacted Liana. Jane’s doctor had told her that it was very unlikely that she could have another child with her own eggs; she was now searching for an embryo she might use to have a second child. If Nadia agreed to donate the leftover embryos to Jane,

there would soon be a kinship network of three full genetic siblings and a half-genetic sibling, three gestational mothers, one known egg donor, and an anonymous sperm donor. Given the rapidly eroding system of anonymity on the sperm donor side, they could expect to soon know many more sperm donor-half siblings and they all agreed that in the future they would find their children's anonymous sperm donor through the D.N.A registries.

As these two stories illustrate, bricolage extends to the creation and management of kinship ties, too. Like most kinship networks, these involve both accommodation and enlistment (Hertz & Nelson, 2019). Some kin are inherited and others are chosen (Carsten, 2004). Creating embryo-linked networks and maintaining contact is a new kin choice. But single women with children born from donor embryos must improvise in the definition and management of kin networks. Roles like grandparent, dibling (or half sibling), and donor have to be given content. Single mothers like Orla and Melinda have to come to agreement about what they explain (or explain away) as the difference between different kinds of siblings born from different mothers.

## Conclusions and Implications

At the outset of this paper, I hypothesized that single women who create embryos in order to have children are most likely to respond to the paradoxical effects of ARTs by challenging extant definitions of motherhood and kinship. I drew specific attention to two consequences of ARTs for single mothers: (a) that they would make it easier for single women to have children, but harder to make an unquestioned claim to being a mother according to the conventional genetic narrative; and (b) that their children would have more in common genetically with siblings in other families. In other words, advances in technology could enable challenges to the definition of motherhood and kinship.

In many ways, the analysis of interviews conducted with women who bore children by means of "double" donors suggests that the conventional narrative is being challenged. While it may be too soon to conclude that single mothers who use double donors will successfully rewrite the narrative, there is more than enough evidence to argue that change is underway. It is worth noting that terms like donors, donor siblings, and kin network have become part of the lexicon used to describe contemporary families.

At the same time, it is clear that the conventional narrative has proven remarkably durable, as evidenced by the many references interviewees made to being or wanting to be regarded by others (and, often themselves) as "normal," despite the extraordinary efforts they made to have children.

The practice of bricolage—a term that I employ to encapsulate a theme derived from interviewees—is particularly important. Bricolage is what single women do when they choose donor gametes, arrange for the union of those gametes, and then carry a child to term. Some, as we saw, used their participation in those activities to serve as a foundation for their claim to motherhood. A few went so far as to contend publicly that their participation justified a claim to motherhood comparable with the conventional narrative—eschewing, in effect, gradient statuses like social, biological, genetic, gestational, and epigenetic motherhood.

For virtually all the women who had embryos remaining after having a child, the practice of bricolage carried over to how they cared for those embryos and, more importantly, how they “completed” their families by ensuring that their children would have the opportunity to connect with genetic siblings. Some women chose not to disclose to their families their role as an embryo donor—to sustain it as a private strategy—and, thus, to avoid drawing attention to the distance between themselves and the dominant narrative. But those who disclosed did so out of a public strategy that included openness to their families, friends, coworkers, and embryo recipients.

However, it is important to note that many women chose to pursue a private strategy or remained undecided as to how and when they would amend the narrative they currently adhered to. Most of these women preferred to brush aside anything that made their child or the circumstances of his or her conception appear different in favor of the inference that all was normal. They could see little but the downside to proclaiming publicly that they were challenging convention. Understandably so, as I discussed in reference to the inequalities experienced by many single mothers.

There are some areas in which single mothers with double donors are collaborating to change conventional narratives even though they employ very different strategies. For example, single mothers who craft embryos often work to deconstruct the primacy of genes as central to kin-claiming by emphasizing the importance of their bodily claim, their nurturance, and social belonging through the mother’s extended family. On a daily basis, they talk and behave as though nurture outweighs nature in order to “do” kinship (Mamo & Alston-Stepnitz, 2015; Nordqvist & Smart, 2014), while paradoxically they invoke the importance of genetic relatives as a resource for shaping children’s identities (Hertz & Nelson, 2019).

Given the historical and ideological importance of conventional genetic narratives, especially in patriarchal societies, it is not likely that a hierarchy of motherhood will go away any time soon. And it is quite possible that strategies for having children enabled by advances in ARTs may be nullified by conservative forces seeking to reinforce traditional notions of family.

If what these single mothers are doing is revolutionary, it is probably best to characterize them as reluctant revolutionaries. Most would say they are just working hard to do what is best for their children. However, they are growing in number—and so is the variety of families that are linked by means of shared embryos. Together they are inventing new forms of kinship. It remains for future research to address whether and how late stage motherhood further challenges dominant motherhood and kinship narratives.

### **Acknowledgments**

I thank my research assistants, Katherine Khanna, Christine Yi, and Alexandria Shook for coding data. I thank Robert J. Thomas for editorial and substantive comments. I also thank the Brocher Foundation in Hermance, Switzerland, for a residential fellowship. I thank my colleagues, who shared this time with me, for their company and conversations around reproductive health. Versions of this paper were presented at the ESHRE Symposium (Belgium 2020) and the Eastern Sociological Society (Philadelphia 2020).

### **Declaration of Conflicting Interests**

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### **Funding**

The author disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Brocher Foundation, [The Consequences of Delayed Motherhood, summer 2019], the National Science Foundation [Social and Biogenetic Factors of New Forms of Family, grant number 1355740 Hertz] and Wellesley College provided social science faculty awards [2017 and 2019].

### **ORCID iD**

Rosanna Hertz  <https://orcid.org/0000-0002-9954-5611>

### **Notes**

1. The U.S. fertility rate is on a steady decline, according to the most recent Center for Disease Controls data. However, there has been an increase in births to women over 35. (CDC, 2019).
2. Estimates are that more than 8 million babies have been born worldwide with the use of IVF; another half a million babies are born each year through IVF and other related technologies. <https://www.sciencedaily.com/releases/2018/07/180703084127.htm>. In the United States, egg donors were used in 24,300 ARTs treatment cycles, a steady increase in ARTs cycles with egg donors from previous years (CDC, 2016, p. 46).

3. Growing up, these women imagined themselves as mothers, an important part of their womanhood. Sixty-four percent of the women thought about adopting a child (Table 2). But adoption would be the start of a new way to become a mother, while continuing with their use of ARTs and adding an egg donor was an extension of a more “natural” motherhood. That is, the medical personnel helped amplify their options emphasizing that they could still experience pregnancy and birth, an immediate claim to motherhood, just like all women, a finding similar to Johnson (2017) research on patient literature that emphasizes maternal-claims through gestation.
4. Conservative estimates suggest that the number of live births using autologous oocytes has declined in all age groups by the third try. When women used donor oocytes the rates were higher—between 60% and 80% depending upon the age group. (CDC 2016; Luke et al. 2012).
5. Those women who considered adoption concluded that adoption could postpone their dreams of motherhood indefinitely. They also felt IVF with egg donors would give them what they wanted with greater control (over things like a child’s racial/ethnic background) and was quicker and often cheaper than adoption with its multi-year waitlists. Adoption personnel warned that they would be less likely to be chosen by birth mothers than married heterosexual couples for infant placement.
6. Women described the benefits of using younger women’s eggs, which Strathern (1992) refers to as “the enterprising up of nature.” They rarely worried about prenatal screening or any of the other testing of embryos they might have undergone when they tried to conceive with their own eggs.
7. Claude Levi-Strauss (1962) introduced the term “bricolage” by which he meant an attempt to use whatever materials are available in order to resolve new problems.
8. Frith et al. (2018), studying adults whose heterosexual parents did not disclose sperm donor use to their child argue that non-disclosure is a way to maintain the fiction that they are a biogenetic family. They further suggest that family secrets are harmful and that when adults discovered they are donor conceived—and that their dad is not genetically related to them—they feel a distrust toward their parents and a challenge to their personal identity. Women who disclose only sperm donor-use but wavered on what they would do about disclosing egg donor use to their child(ren) run the same future risk.
9. Many interviewees mentioned that anonymity was not so relevant because they their child could register on DNA sites (such as Ancestry or 23&Me) to someday find either their egg or sperm donors.
10. Intending parents are expected to make decisions about the disposal of embryos *prior* to assisted reproductive treatments. Single mothers who conceived with two donors did not share the same reluctance to donate their extra embryos unlike heterosexual couples whose own gametes created embryos and who felt that their extra embryos were a “symbol” of their relationship (Provoost et al., 2009, p. 903). It is unclear if single mothers who conceived with own eggs and a sperm donor would be as willing to find intending parents for their

extra embryos. Moreover, clinics expected to carry out the disposal wishes of the person who has extra embryos. Women in this article faced difficulty with their clinics when they requested that their embryos be transferred to someone they had identified. If the embryos were to be transferred to someone who lived in another state, the transfer could also be complicated by interstate regulations. The interviewees in this research figured out ways to make identified embryo donations, and in some cases, their recipients traveled to the clinic where the embryos were stored to have them implanted.

## References

- Baldwin, K., & Culley, L. (in press). Women's experience of social egg freezing: Perceptions of success, risks and "going it alone." *Human Fertility*.
- Becker, G., Butler, A., & Nachtigall, R. (2005). Resemblance talk: A challenge for parents whose children were conceived with donor gametes in the US. *Social Science and Medicine*, 61(6), 1300–1309.
- Bock, J. (2000). Doing the right thing? Single mothers by choice and the struggle for legitimacy. *Gender & Society*, 14(1), 62–86.
- Brown, E., & Patrick, M. (2018). Time, anticipation, and the life course: Egg freezing as temporarily disentangling romance and reproduction. *American Sociological Review*, 83(5), 959–982.
- CDC. (2016). *Assisted reproductive technologies national summary*. <https://www.cdc.gov/art/pdf/2016-report/ART-2016-National-Summary-Report.pdf>
- CDC. (2019, May). *Vital statistics rapid release; Births Provisional Data for 2018* (Report No. 007). <https://www.cdc.gov/nchs/data/vsrr/vsrr-007-508.pdf>
- Cahn, N. (2013). *The new kinship: Constructing donor-conceived families*. New York University Press.
- Carsten, J. (2004). *After kinship*. Cambridge University Press.
- Charmaz, K. (2006). *Constructing grounded theory*. SAGE Publications.
- Edin, K., & Kefalas, M. (2005). *Promises I can keep: Why poor women put motherhood before marriage*. University of California Press.
- Franklin, S. (2013). *Biological relatives: IVF, stem cells, and the future of kinship*. Duke University Press.
- Freeman, T. (2015). Gamete donation, information sharing and the best interests of the child: An overview of the psychosocial evidence. *Monash Bioethics Review*, 33(1), 45–63.
- Frith, L., Blyth, E., & Lui, S. (2017). Family building using embryo adoption: relationships and contact arrangements between provider and recipient families—A mixed-methods study. *Human Reproduction*, 32(5), 1092–1099.
- Frith, L., Blyth, E., Crawshaw, M., & van den Akker, O.B.A. (2018). Secrets and disclosure in donor conception. *Sociology of Health and Illness*, 40(1), 188–203.
- Ganson, J. (2015). *Modern families: Stories of extraordinary journeys to kinship*. New York University Press.
- Glaser, B., & Anselm, S. (1967). *The discovery of grounded theory*. Aldine.

- Goodwin, M. (2005). Assisted reproductive technologies and the double-bind: The illusory choice of motherhood. *The Journal of Gender, Race, and Justice*, 9(1), 1–54.
- Hays, S. (2003). *Flat broke with children: Women in the age of welfare reform*. Oxford University Press.
- Hertz, R. (1999). Working to place family at the center of life: Dual-earner and single parent strategies. *The Annals of the American Academy of Political and Social Sciences*, 562(March): 16–31.
- Hertz, R. (2002). The father as an idea: A challenge to kinship boundaries by single mothers. *Symbolic Interaction*, 25(1), 1–31.
- Hertz, R. (2006). *Single by chance, mothers by choice: How women are choosing parenthood without marriage and creating the new American family*. Oxford University Press.
- Hertz, R. (2011). Why can't I have what I want? Timing, employment, marriage, and motherhood. In A. I. Garey & K. V. Hansen (Eds.), *At the heart of work and family* (pp. 74–82). Rutgers University Press.
- Hertz, R., & Ferguson, F. (1997). Kinship strategies and self-sufficiency among single mothers by Choice: Post modern family ties. *Qualitative Sociology*, 20(2), 187–209.
- Hertz, R., & Ferguson, F. (1998). Only one pair of hands: Ways that single mothers stretch work and family resources. *Community, Work & Family*, 1(1), 13–37.
- Hertz, R., & Mattes, J. (2011). Donor-shared siblings or genetic strangers: New families, clans, and the internet. *Journal of Family Issues*, 32(9), 1129–1155.
- Hertz, R., & Nelson, M. K. (2016). Acceptance and disclosure: Comparing genetic symmetry and genetic asymmetry in heterosexual couples between egg recipients and embryo recipients. *Facts, Views and Visions in OBGYN and Reproductive Health*, 8(1), 11–22.
- Hertz, R., & Nelson, M. K. (2019). *Random families: Genetic strangers, sperm donor siblings and the creation of new kin*. Oxford University Press.
- Indekeu, A. (2015). Parents expectations and experiences of resemblance through donor conception, *New Genetics and Society*, 34(4), 398–416.
- Inhorn, M. C., Birenbaum-Carmeli, D., Birger, J., Westphal, L. M., Doyle, J., Gleicher, N., Meirow, D., Dirnfield, M., Seidman, D., Kahane, A., & Patrizio, P. (2018). Elective egg freezing and its underlying socio-demography: A binational analysis with global implications. *Reproductive Biology and Endocrinology*, 16(1), 1–11.
- Jacobson, H. (2016). *Labor of love: Third-party pregnancy and the work of gestational surrogacy*. Rutgers University Press.
- Jadva, V., Badger, S., Morrissette, M., & Golombok, S. (2009). Mom by choice, single by life's circumstances. . .findings from a large scale survey of the experiences of single mothers by choice. *Human Fertility*, 12(4), 175–184.
- Johnson, K. (2017). Contingent maternities? Maternal claim-making in third party reproduction. *Sociology of Health & Illness*, 39(8), 1349–1364.
- Jones, S. (2008). Exercising agency: becoming a single mother. *Marriage and Family Review*, 42(4), 35–61.

- Kirkman, M., (2008). Being a “real” mum: Motherhood through donated eggs and embryos *Women’s Studies International Forum*, 31(4), 241–248.
- Landau, R., Weissenberg, R., & Madgar, I. (2008) A child of “hers”: Single mothers and their children conceived with both egg and sperm donation. *Fertility and Sterility*, 90(3), 576–583.
- Levi-Strauss, C. (1962). *The savage mind: Bricoleur and engineer*. University of Chicago Press.
- Luke, B., Morton, B., Wantman, E., Lederman, A., Gibbons, W., Schatterman, G., Lobo, R., Leach, R., & Stern, J. (2012). Cumulative birth rates with linked assisted reproductive technology cycles. *New England Journal of Medicine*, 366(26), 2483–2491.
- Mamo, L. (2007). *Queering reproduction: Achieving pregnancy in the age of technoscience*. Duke University Press.
- Mamo, L., & Alston-Stepnitz, E. (2015). Queer intimacies and structural inequalities: New directions in stratified reproduction. *Journal of Family Issues*, 36(4), 519–540.
- Mannis, V. (1999). Single mothers by choice. *Family Relations*, 48(2), 121–128.
- MacCallum, F., & Golombok, S. (2007). Embryo donation families: Mothers’ decisions regarding disclosure of donor conception. *Human Reproduction*, 22(11), 2888–2895.
- McHale, S., Updegraff, K., & Whiteman, S. (2012). Sibling relationships in childhood and adolescence. *Journal of Marriage and the Family*, 74(5), 913–30.
- McKinnon, Susan. (2015). Productive paradoxes of the assisted reproductive technologies in the context of cultural studies. *Journal of Family Issues*, 36(4), 461–479.
- Murray, C., & Golombok, S. (2003). To tell or not to tell: The decision-making process of egg donation parents. *Human Fertility*, 6, 89–95.
- Myers, Kit. (2017). “If I’m going to do it, I’m going to do it right”: Intensive mothering ideologies among childless women who elect egg freezing. *Gender & Society*, 31(6), 777–803.
- Nelson, M. K., & Hertz, R. (2016). Donor insemination motherhood: An intersectional analysis of how mothers make sense of genes and donors. *Journal of GLBT Family Studies*, 4, 333–356.
- Nordqvist, P. (2010). Out of sight, out of mind: family resemblance in lesbian donor conception. *Sociology*, 44(6), 1128–1144.
- Nordqvist, P. (2017). Genetic thinking and everyday living: On family practices and imaginaries. *The Sociological Review*, 65(4), 865–881.
- Nordqvist, P., & Smart, C. (2014). *Relative strangers: Family life, genes and donor conception* Palgrave Macmillan.
- Pandre, A. (2009). It may be her eggs but it’s my blood: Surrogates and everyday forms of kinship in India. *Qualitative Sociology*, 32(4), 379–97.
- Payne, J. G. (2016) Grammars of kinship: Biological motherhood and assisted reproduction in the age of epigenetics. *Signs: Journal of Women in Cultural and Society*, 41(3), 483–506.

- Provoost, V., Pennings, G., De Stutter, P., Gerris, J., Van de Velde, A., De Lissnyder, E., & Dhont, M. (2009). Infertility patients' beliefs about their embryos and their predisposition preferences. *Human Reproduction, 24*(4), 896–905.
- Scheib, J., Riordan, M., & Rubin, R. (2005). Adolescents with open identity sperm donors: reports from 12–17 year olds. *Human Reproduction, 20*(1) 239–252.
- Strathern, M. (1992). *Reproducing the future: Anthropology, kinship, and the assisted reproductive technologies*. Routledge.
- Thorsby, K. (2002). Negotiating “normality” when IVF fails. *Narrative Inquiry, 12*(1), 43–65.
- Thompson, C. (2005) *Making parents: The ontological choreography of reproductive technologies*. MIT Press.
- van den Akker, O.B.A., Payne, N., & Lewis, S. (2017). Catch 22: Disclosing assisted conception treatment at work. *International Journal of Workplace Health Management, 10*(5).
- Yee, S., Blyth, E., & Tsang, A.K.T. (2011). Views of donors and recipients regarding disclosure to children following altruistic known oocyte donation. *Reproductive Biomedicine Online, 23*(7), 851–859.
- Zadeh, S., Freeman, T., & Golombok, S. (2013). Ambivalent identities of single women using sperm donation. *International Review of Social Psychology, 26*(3), 97–123.
- Zadeh, S., Freeman, T., & Golombok, S. (2016). Absence or presence: Complexities in the donor narratives of single mothers using sperm donation. *Human Reproduction, 31*(1), 117–124.