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Chapter 15

THE EGG FREEZING REVOLUTION?

GENDER, EDUCATION, AND REPRODUCTIVE WAITHOOD
IN THE UNITED STATES

Marcia C. Inhorn

Introduction

Around the world today, healthy women of reproductive age are increasingly turning to a technology called oocyte cryopreservation, or egg freezing, as a form of fertility preservation—one that allows their eggs to be successfully stored in egg banks for future use. Egg freezing is being heralded as a “reproductive backstop,” a “fertility insurance policy,” an “egg savings account,” and particularly as a way for thirty-something career women to “rewind the biological clock” (Goold and Savulescu 2009; Hughes 2012; Wyndham, Figueira, and Patrizio 2012). Younger women in their twenties are increasingly being encouraged to consider egg freezing as a way to “put their fertility on hold,” “slow down their biological clocks,” and “postpone motherhood” in order to have time to achieve their educational and career goals (Lockwood 2011; Shkedi-Rafid and Hashiloni-Dolev 2012). Indeed, the planned postponement of women’s fertility through egg freezing has been heralded as a “reproductive revolution,” equivalent to the introduction of the birth control pill in the early 1960s (ASRM 2018; Gibbs 2010; McDonald et al. 2011).

Yet, the development of egg freezing was not straightforward. As with many other low-temperature technologies used in biomed-

cine to “hold still” life processes, the freezing and thawing of human eggs proved technologically difficult. Although cryopreservation of human eggs was first tried in the early 1980s, and the first reported frozen egg baby was born in 1986 (Lockwood 2011), the methods of slow freezing being used at that time led to low oocyte survival, chromosomal defects, poor embryo development, and overall low birth rates (De Melo-Martin and Cholst 2008).

However, in the new millennium, a novel method called vitrification, which involves “flash-freezing” of human eggs, was introduced (Mertes and Pennings 2012). Despite initial caution, vitrification was proven to lead to excellent clinical success rates—an outcome that encouraged some governments, such as Israel, to authorize and begin using egg freezing in in vitro fertilization (IVF) clinics as early as 2011 (García-Velasco et al. 2013; Inhorn et al. 2018a, 2018b; Lockwood 2011).

Although vitrification remained experimental in the United States and most of Europe, the American Society for Reproductive Medicine (ASRM) lifted the experimental ban on 19 October 2012, with the European Society for Human Reproduction and Embryology (ESHRE) soon to follow. While not enthusiastically endorsing egg freezing as in Israel (Shkedi-Rafid and Hashiloni-Dolev 2012), the ASRM allowed egg freezing to be performed in the United States for a variety of medical and “social” reasons (ASRM 2012). Still, the ASRM urged caution—stopping short of recommending egg freezing to postpone childbearing. As it pointed out, there were insufficient data on safety, success rates, cost effectiveness, and physical and emotional risks to women, who might be lulled into a false sense of security. Furthermore, reliable data on the ultimate success of egg freezing were not readily available, as so few women had returned to use their frozen eggs. In other words, according to the ASRM, the viability of egg freezing and what it would ultimately mean for American women and their future children remained highly uncertain.

Having said this, IVF clinics on both the east and west coasts and in many American cities began by late 2012 to create their own egg freezing programs, with several commercial egg banks also launched at that time. The response on the part of American women was almost immediate. Approximately five thousand egg freezing cycles were undertaken in the United States within the first year of the technology’s approval, according to the Society for Assisted Reproductive Technology (SART). However, according to SART, that number more than doubled to nearly eleven thousand cycles five years later, with that figure expected to rise steadily.

Egg freezing also received major media attention during this period. For example, a 2012 cover story in *The New York Times* explained that parents were offering to subsidize egg freezing for their single, "thirty-something" daughters in the hopes of future grandchildren (Gootman 2012). Five years later, *The New York Times* reported on the "aggressive" marketing of egg freezing to younger millennial women by clinics that "really, really, really want to freeze your eggs" (La Ferla 2018). Although stand-alone egg freezing clinics are promoting egg freezing to younger and younger women, the reality is that this technology is expensive—at a minimum of about \$10,000 per cycle with accompanying hormonal medications. Thus, at the present time, egg freezing is a technology of limited access, available only to those who can afford it.

Most of the media coverage, as well as scholarly reviews on the subject, seems to suggest that women are undertaking egg freezing intentionally to "delay," "defer," or "postpone" their fertility for educational and career purposes, thereby achieving reproductive autonomy (Goldman and Grifo 2016) and forestalling age-related fertility decline (Argyle, Harper, and Davies 2016; Cobo and García-Velasco 2016; Donnez and Dolmans 2017; Gunnala and Schattman 2017). However, without empirical evidence, it is unclear whether the postponement of fertility through egg freezing is intentional and planned, and whether the achievement of education and career advancement are women's primary goals. Similarly, whether women are pursuing egg freezing on the path to "reproductive autonomy"—either from men or from reproduction itself—is highly uncertain.

As early as 2013, Belgian ethicist Heidi Mertes (2013) worried that common media and scholarly portrayals of egg freezing might "oversimplify" women's motivations and circumstances. She pointed to the three distinct ways in which women seeking egg freezing were commonly portrayed: 1) "selfish career-pursuing women," 2) "victims of a male-oriented society that makes it difficult for women to combine motherhood with a good education or professional responsibilities," or 3) "wise, proactive women who will not have to depend on oocyte donors should they suffer from age-related infertility" (Mertes 2013: 141). Mertes questioned whether these portrayals were accurate and suggested that the absence of a male partner might, in fact, be the most common reason for women's adoption of egg freezing as a form of fertility preservation.

Emerging survey data among women who have completed egg freezing in the United States (Greenwood et al. 2018; Hodes-Wertz et al. 2013), Belgium (Stoop et al. 2015), Australia (Hammarberg et

al. 2017; Pritchard et al. 2017), the Netherlands (Balkenende et al. 2018), Korea (Kim et al. 2018), and the United Kingdom (Gürtin et al. 2019) seem to support Mertes's suggestion. In most of these reports, women specifically listed "lack of a partner" as their primary reason for undergoing egg freezing. In the Australian study in particular, women were contacted by mail up to fifteen years after completing egg freezing; 90 percent of women had yet to use their stored oocytes. Most reported that they were still hoping to find a partner, thereby avoiding single parenthood (Hammarberg et al. 2017). In one of the US studies undertaken in the San Francisco Bay Area, women who had undergone egg freezing on average two years before completing an anonymous survey reported significant anxiety, depression, loneliness, and hopelessness about their reproductive futures in the absence of a current male partner (Greenwood et al. 2018). One in six women also experienced regret for having undertaken egg freezing, for reasons that remained unclear in the study.

A number of small-scale, interview-based studies in the United Kingdom (Baldwin 2019; Waldbly 2015, 2019), United States (Carroll and Kroløkke 2018), and Turkey (Göçmen and Kılıç 2017; Kılıç and Göçmen 2018) explored women's egg freezing motivations and experiences directly. For example, a study by Baldwin and colleagues (Baldwin 2017, 2018, 2019; Baldwin et al. 2015, 2018), focusing primarily on twenty-three British women who had completed at least one cycle of egg freezing, found women to be highly educated professionals (68 percent with postgraduate degrees or other professional qualifications), who were mostly working in managerial roles (74 percent). Although all the women hoped to be in a committed heterosexual relationship, 84 percent were single at the time of egg freezing, despite their "readiness" for motherhood. As the authors stated, "For most women, this 'readiness' consisted primarily of being in a stable relationship with a partner who they felt was committed to having a child" (Baldwin et al. 2015: 243). Similarly, an interview-based study of twenty-one Turkish women who were in the process of egg freezing or had completed a cycle within the previous year found these women to be highly educated professionals, with a median age of forty, all of whom were unmarried and six of whom had never had sexual intercourse (Göçmen and Kılıç 2017; Kılıç and Göçmen 2018).

In the United States, sociologists Brown and Patrick (2018) interviewed thirty women who had frozen their eggs, nineteen who were considering it, as well as three who had decided against it. As in the qualitative studies from Britain and Turkey, most of the par-

ticipants in the American study were single and looking for a long-term reproductive partner; only seven women brought up career factors as the main reason for freezing their eggs. As Brown and Patrick (2018: 967) note, "worries about their romantic lives" drove most women in this study to freeze their eggs, with egg freezing being seen as a way to "temporarily disentangle the project of finding a partner from the project of having children."

Given this emerging evidence that highly educated professional women may be preserving their fertility due to lack of suitable partners—rather than intentionally postponing their fertility due to educational or career planning—it is important to clarify whether egg freezing is being used primarily for planned *fertility postponement* (i.e., in achieving educational or career goals during one's twenties or early thirties), or whether it is being used primarily for *fertility preservation* in the absence of a committed reproductive partner (i.e., in the mid- to late thirties and early forties).

This chapter attempts to answer this question definitively through evidence provided by the first large-scale, ethnographic, interview-based study of more than one hundred American women who have completed at least one cycle of egg freezing. The focus here is on *waiting*: Namely, were these women waiting to become mothers on their paths to professional fulfillment? Or were they unable to become mothers because they were waiting for a reproductive partner? These questions of "*reproductive waithood*," as I call it here, are of a fundamentally different order and kind.

A positive response to the first question would suggest that women are pursuing egg freezing for reproductive autonomy, to potentially "liberate" themselves from the biological "time clock"—and from men—in order to pursue reproduction on their own terms and at their own pace. Such intentional reproductive waithood bespeaks the revolutionary potential of this technology to decouple women's motherhood from the constraints of reproductive timing. It also suggests that women are using egg freezing in an emancipatory capacity to decouple their reproduction from their professional attainments.

A positive answer to the second question suggests fundamentally different life circumstances for women. If women are employing egg freezing as a stop-gap measure while waiting to find a suitable partner, then egg freezing becomes a *technological concession* to unintentional reproductive waithood beyond a woman's individual control. Waiting for a man in order to become a mother is a quite different reproductive scenario, one that does not bespeak a "reproductive revolution" facilitated by this new technology. Rather, this interpre-

tation of reproductive waithood suggests that liberal feminist readings of egg freezing are fundamentally misguided.

Following a brief description of the study's methodology, this chapter first examines the detailed sociodemographic characteristics of the women in the study, then the reasons they cite for undertaking egg freezing, as well as their own reflections on the broader societal issues underlying this phenomenon. The final section of this chapter provides compelling evidence that reproductive waithood is intimately tied to gender, education, and delays in marriage, which, in the United States, are underlain by growing, but little discussed, gender-based disparities in men's and women's educational achievements. These disparities in education are also globally present, suggesting that reproductive waithood may become a widespread global phenomenon in the twenty-first century.

The Ethnographic Study

This study of egg freezing was designed to assess the motivations and experiences of women who had completed at least one egg freezing cycle. Between June 2014 and August 2016, the author recruited women from four IVF clinics (two academic, two private), three of which were located on the East Coast corridor (New Haven, Connecticut; New York, New York; and the Washington, DC/Baltimore, MD, area) and one in the San Francisco Bay/Silicon Valley area. Women were contacted primarily by email from the four participating clinics, or they were given flyers directly by their clinicians during appointments.

In total, 114 women who had undertaken at least one egg freezing cycle volunteered to participate in the study, along with twelve other women who were either in the process of egg freezing, or had not completed a cycle for a variety of reasons.¹ All women who volunteered for the study signed written informed consent forms, agreeing to a confidential, audio-recorded interview in a private setting. Interviews were undertaken in women's offices and homes, in the author's office, in IVF clinic settings, or in restaurants, bars, and cafés. Most of the interviews were undertaken by the author in person with women who were living in the New Haven or New York City areas. However, because women from Boston, Baltimore, Washington, DC, San Francisco, and the Silicon Valley area also volunteered for the study, most of those interviews took place by Skype or telephone. Some women contacted by the clinics had also moved

to other cities, such as Chicago, Seattle, St. Louis, or Los Angeles, and were interviewed by the author by Skype or telephone.

Interviews always began with a brief series of sociodemographic questions (i.e., age, place of birth, current residence, education completed, current employment, marital status, ethnicity, religion), as well as relevant details of reproductive history (i.e., age at menarche, contraceptive use, any known reproductive problems). Following these semi-structured questions, the author asked women to describe their life circumstances at the time of egg freezing, and their primary motivations for pursuing fertility preservation. Women often "led" the interviews, describing their egg freezing "stories" and their decision-making processes in detail. Conversations usually lasted about one hour but ranged in length from one-half to more than two hours.

Completed interviews were then transcribed verbatim by two research assistants at Yale University. All interview transcripts were uploaded into a qualitative data analysis software program (De-doose) for thematic content analysis, and detailed interview synopses were written and summarized by the author. Sociodemographic information was transferred into Excel files by a third research assistant for descriptive statistical analysis. The research protocol was approved by the Yale Institutional Review Board and by the ethics committees of all the collaborating IVF clinic sites. The study was generously funded by the US National Science Foundation's Cultural Anthropology and Science and Technology Studies programs.

Egg Freezing: A Sociodemographic Profile

As noted above, basic sociodemographic information was collected from all of the women in this study. Thus, a sociodemographic profile of the women who had pursued egg freezing could be constructed. As shown in Table 15.1, "A Profile of Study Participants and Their Egg Freezing Cycles," about three-quarters (73 percent) of the women froze their eggs in their late thirties (ages thirty-five to thirty-nine), with the remainder in their early thirties (17 percent) or early forties (10 percent). The average age at egg freezing was 36.6. Only one woman in the study had frozen her eggs before age thirty (at age twenty-nine, as encouraged by her IVF physician father).

More than half of the women (57 percent) undertook only one egg freezing cycle, and one-third (31 percent) undertook two cycles. A minority of women undertook a third (9 percent) or higher-order

TABLE 15.1. A Profile of Study Participants and Their Egg Freezing Cycles.

Characteristics	n	%
Age at Egg Freezing		
25-29	1	<1
30-34	19	17
35-39	83	73
>40	11	10
Total	114	100
No. of Egg Freezing Cycles		
1	65	57
2	35	31
3	10	9
<3	4	3
Total	114	100
Total No. of Eggs Stored		
<5	7	6
5-10	25	22
11-15	20	17
16-20	25	22
21-25	18	16
26-30	7	6
31-35	6	5
36-40	3	3
>40	3	3
Total	114	100

cycle (3 percent). On average, nearly eighteen eggs per woman were retrieved and frozen by the women in this study.

As shown in Table 15.2, "Educational Achievement and Ethnicity of Study Participants," women who froze their eggs were of many different ethnic backgrounds but were almost uniformly highly educated. Two-thirds (69 percent) of the women were white, nearly one-fifth (18 percent) were Asian American, and women of African American, Latinx, mixed-race, and Middle Eastern heritage were also represented in the study (13 percent overall). In terms of ed-

TABLE 15.2. Educational Achievement and Ethnicity of Study Participants.

	n	%
Highest Degree		
Associates Degree (2-Year)	1	1
Professional Arts Performance	2	2
Bachelors	23	20
Masters	52	45
MD	16	14
PhD	11	10
JD	8	7
MD-PhD	1	1
Total N	114	100
Ethnicity		
White	79	69
Asian American	20	18
African American	5	4
Latinx	4	3.5
Mixed Race	4	3.5
Middle Eastern Heritage	2	2
Total N	114	100

ucation, only three women had not graduated from college due to their successful careers in the performing arts or military. The rest of the women had considerable educational achievements. Twenty percent of the women had completed bachelors' degrees, but the rest—nearly 80 percent—had earned advanced degrees, including master's degrees (45 percent), medical degrees (14 percent), doctoral degrees (10 percent), and law degrees (7 percent). More than 10 percent of the women had done dual graduate degrees (e.g., MD-PhD, MD-MPH, MPP-PhD). Interestingly, among these highly educated American women, thirty-six women (32 percent) had attended Ivy League institutions, and another thirty women (26 percent) had attended highly ranked public (e.g., University of California-Berkeley) or private (e.g., Georgetown) universities. In other words, well over half (58 percent) of these American women had attended so-called elite US academic institutions.

Given these women's high levels of education, it is not surprising that all were gainfully employed in professional fields, including, among others, health care, basic and applied sciences, government and law, diplomacy and foreign service, academia, business management, information and technology, entrepreneurship, media and communications, human resources, the arts, the military, and beyond. However, only one woman—who, at age thirty, was the second youngest woman in the study—had explicitly used egg freezing to postpone her fertility "en route" to becoming a successful entrepreneur. Another woman, age thirty-three, had passed the difficult Foreign Service exam and froze her eggs in order to pursue her new career in Latin America. But with the exception of these two women, the rest of the women did not pursue egg freezing for career-related purposes.

Rather, as shown in Table 15.3, "Relationship Status and Reproductive Outcomes Following Egg Freezing (EF)," the highly educated professional women in this study were freezing their eggs primarily because they lacked partners. Exactly 82 percent were single at the time of egg freezing, either because they had no partner, were divorced, or had recently broken up from long-term relationships. Among the 18 percent of women who were partnered at the time of egg freezing, half of these relationships were unstable for the reasons outlined in Table 15.3. Only ten women in the study (9 percent) were stably partnered at the time of egg freezing with men who eventually hoped to have children with them.

Table 15.3 also describes the post-egg freezing life circumstances of women at the time of their interviews. More than three-quarters of women (78 percent) were still single, while 22 percent were partnered (with either the same or a new partner). Seven percent of the partnered women had gone onto marry. However, there were often significant differences in age, education, and reproductive history among women and their partners (e.g., a 38-year-old woman with a 55-year-old divorced man with children, or a female emergency room physician with a high-school-educated paramedic). Only five percent of women described themselves as being in "equal" partnerships in terms of their partners' education, age, and reproductive history (i.e., no children from a prior relationship).

As also shown in Table 15.3, some women, whether partnered or not, decided to have children, with or without their frozen eggs. Ten women in the study had born children and three were currently pregnant at the time of their interviews. Few of these women had relied on their frozen eggs to become pregnant. Only ten of the 114 women

TABLE 15.3. Relationship Status and Reproductive Outcomes Following Egg Freezing (EF).

Years Elapsed Since EF Undertaken	n	%
Same year	40	35
1 year	28	25
2 years	21	18
3 years	12	11
4 years	7	6
5 or more years (5-11)	6	5
Total	114	100

Relationship Status at Time of EF	n	%
Single		
Being Single	59	51
Divorced or Divorcing	19	17
Broken Up	16	14
Total Single	94	82
Partnered (Unstable)		
Relationship Too New or Uncertain	6	5
Partner Refuses to Have Children	2	2
Partner Has Multiple Partners	2	2
Total Unstable Partnerships	10	9
Partnered (Stable)		
Partner Not Ready to Have Children	10	9
Total Stable Partnerships	10	9

Relationship Status Following EF (at Time of Interview)	n	%
Still Single	89	78
Partnered	17	15
Married	8	7
Total	114	100

TABLE 15.3. (continued)

Status of Those Women Partnered/Married		
Equal Partnership (Education, Age, No Children from Prior Relationship)	6	5
Partner Divorced without Children	1	1
Partner Divorced with Children	7	6
Partner Significantly Younger	3	3
Partner Significantly Older/Retired	2	2
Partner Significantly Less Educated	1	1
Partner Significantly Less Educated/Divorced	1	1
Partner Significantly Less Educated/Divorced with Children	1	1
Partner Significantly Less Educated/Younger	1	1
Partner with Alcohol or Legal Issues	2	2
Total and Percent of Total N	25	22

Pregnancy and Live Birth Outcomes Post-EF (at Time of Interview)		
Child Born from Frozen Oocyte Conception	1	1
Child Born from Natural Conception (No Frozen Oocytes Used)	3	2
Child Born from Donor Sperm (Single Mother by Choice, No Frozen Oocytes Used)	2	2
Child Born from IUI, IVF or Surrogacy (No Donor Sperm, No Frozen Oocytes Used)	4	3
Currently Pregnant from Frozen Oocyte	1	1
Currently Pregnant from Natural Conception	2	2
Total and Percent of Total N	13	11

Women Who Had Used Frozen Oocytes (by Time of Interview)		
All Oocytes Thawed, One Live Birth, One Blastocyst Remaining	1	1
All Oocytes Thawed, Currently Pregnant, 24 Embryos Remaining	1	1
All Oocytes Thawed, No Fertilization	8	7
Total and Percent of Total N	10	9

interviewed (9 percent) had pursued reproduction using frozen oocytes. Eight women had thawed all of their eggs in an attempt to become pregnant, but only one had delivered a child, while another learned that she was pregnant at the time of the interview. The overall usage of frozen eggs remained low, as did the rate of frozen-egg conceptions.

In summary, the overall sociodemographic profile of the women in this study clearly suggests that the lack of a stable partnership is the primary motivation for egg freezing among these highly educated American professional women. Throughout their educational and career-building years, women in this study had attempted to find compatible male partners, with whom they could build families. But when they were unable to find suitable partners, they had pursued egg freezing, usually in their mid- to late thirties, but sometimes in their early forties, in an effort to preserve their remaining reproductive potential. In short, the widely circulated notion that women are pursuing egg freezing primarily for career advancement is inaccurate, at least at the present time. As shown in this study, few women were "postponing" their fertility for the sake of their careers. Already well established in careers they loved, most women did not view their jobs as a major reproductive obstacle, nor the reason that they had pursued egg freezing. In this study, career planning had little if anything to do with egg freezing, although this may change over time as younger women become more familiar with the technology (Kirkby 2018; La Ferla 2018).

Reproductive Waithood: Women's Perspectives

Given the overwhelming evidence that egg freezing is about partnership problems, not career planning, it is not surprising that women in this study expressed significant frustration over their inability to find partners. Most could only speculate as to why stable relationships with reproductively committed men were so difficult to achieve. Many women experienced this partnership-related reproductive waithood as a significant source of anguish. As one woman, an academic physician in her mid-thirties, put it,

If I found a man, I'd move to Alaska! But most men don't want relationships. They just want to meet and date. And most women won't go out with the [uneducated] check-stand dude, but men will. So, I think I have about a 0.9 percent chance of meeting someone. And meanwhile, I was feeling like, "OMG [oh my god!], my biological

clock, it's ticking, it's ticking, it's ticking," you know? So, even though I'm 1,000 percent happy I did it [egg freezing], it felt somewhat like a defeat. I felt like I gave up, because I couldn't find a man.

During ethnographic interviews, women offered a variety of perspectives on reproductive waithood amid the absence of men, not only in their own lives, but in the lives of educated women more generally. Women's assessments could be summarized in four main ways: women's higher expectations, men's lower commitments, skewed gender demography, and self-blame.

Women's Higher Expectations

Women in this study described how their parents, especially mothers, had encouraged them to "have it all," and that they are now part of the generation of women "leaning in" to their careers (Sandberg 2013). These American women had been raised to believe in gender equality and egalitarian relationships at home and at work. Thus, they hoped not to "settle" for a man who was less educated, less professionally accomplished, or less committed to similar interests and life goals. Many women said that they were still hoping to find the "right" person—the "soulmate" with whom they were "meant" to be. Searching for this egalitarian relationship took time and commitment but could prevent the fearful outcome of "settling" into a "bad marriage." Women in this study were generally still "searching" for these partnerships, but argued that such men were hard to find, rarer even than "unicorns."

Furthermore, women often described their difficulties in "dating down" to less educated or less successful men. They characterized such relationships as fraught with "intimidation" on the part of men, who were generally emasculated by a woman's superior professional status, living situation, or earnings. Gail, a filmmaker who froze her eggs at thirty-five years old, had this to say about her relationship expectations and experiences:

I just recently came to realize, okay, now that I'm thirty-six, that I am now one of those people that I looked at in my twenties and wondered, "What's wrong with them? Why don't they have a partner?" And I'm now thinking that my perception of what's out there is so different. I just want to have a rich partnership with someone who's intellectually and personally and physically stimulating. And I don't meet them very often. I do meet plenty of options, but I mean, yeah, I have a very limited pool of what I'm looking for. I want someone who wants to have a family now. Someone who's driven and successful and has their priorities together in terms of their career, but also

someone who's not intimidated by the fact that I'm the same. And I don't blame them for feeling that way, because we give them the royal "we." We put out a very conflicting message, which is: "I am a strong woman, I can do everything for myself, and I don't need a partner." But I *do* want a partner, and I *do* want a fulfilling relationship and partnership that lasts and a family. I'm not super vulnerable, you know, on the surface, when it comes to connecting with men. So, I don't think they know what to do with us! [laughing] I mean, I don't get hit on very often any more, and the funny thing is, it's only by not-so-bright men [who do so]. But for men of the same educational/professional level? Yeah, it's almost never.

Men's Lower Commitments

Indeed, women in this study were skeptical about American men of their generation, and whether these men shared the same desires and life goals. Women pointed out that men were not necessarily socialized in the same way to want egalitarian relationships with professional women, with whom they could balance the burdens and responsibilities of family life. Women in this study described men's increasing "commitment phobia," particularly men who were the "children of divorce" and were not sanguine about the virtues of either marriage or fatherhood. Furthermore, women on the West Coast often described the "Peter Pan" syndrome—i.e., boys (in men's bodies) who never grow up. These "man-children" were either described as wealthy venture capitalist types who wanted to delay marriage indefinitely while "playing the field" and never committing, or they were described as men unwilling or unable to hold steady jobs, sometimes living with their parents (or being subsidized by them or trust funds), and unable to fulfill the roles assumed by adult men in society. Furthermore, in the San Francisco Bay Area and other "progressive" cities, women described the growing phenomenon of "polyamory"—namely, millennial-generation men's desires to have multiple, open relationships with "primary," "secondary," and even "tertiary" female partners.

In short, women in this study described men's lowered commitments to fidelity, marriage, and parenthood—the trifecta often expected within traditional, heteronormative family structures. Eleanor, a journalist who had frozen her eggs at age thirty-five, had much to say on this subject:

Of the people lately that I've met, who I've wanted to be in a relationship with, they haven't wanted to be in a relationship with anybody. Like, they just want to not have that kind of obligation. So, I think it's

like they don't want to be emotionally responsible for another person. That's what I find to be the particular challenge—that there *are* men out there, you know, but the ones who are single in my age group don't want a relationship. And there are ones who do, but the ones that I've met lately don't. It's really interesting. I mean, I was talking about this with some of my cousins recently, and all of us are thinking about our fathers and how there are so many things that are different today. Like, tons of things that are different today. But one of them is that for our fathers, being a father and having a family was huge, you know. And I don't think they imagined anything else. But I think that a lot of men today—and I can tell you, like I've met *many* of them, and some of them are my friends, too, who are in their mid-thirties, late thirties, early forties—like they just, they don't have that same sense that they need to be a father or they need to have a partner in order to fulfill whatever dreams they have or, you know, to be who they want to be.

Skewed Gender Demography

Beyond changing gender expectations on the part of both women and men, my female interlocutors acknowledged that men of similar backgrounds—namely, single, college-educated, professionals, often with advanced degrees and high earnings—were simply hard to find. As one woman explained it succinctly, "the caliber of women is just higher than the caliber of guys." This lament was especially true among women on the East Coast, and particularly in New York City and Washington, DC, metropolitan areas that are known (via media reports) to have higher percentages of educated women than men. Women in those cities often complained about the dearth of "available" (and heterosexual) male partners in the skewed gender landscapes in which they were living. This predicament was clearly expressed by Alice, a scientist who was working for the federal government in Washington:

You know, it's funny. I'm living in DC, and we joke about this in Washington. It's like I know a lot of really brilliant, amazing women. The friends of mine who do have partners did not meet their partners here. They met them in graduate school, and they married them like right after grad school, and then they moved here. Because when you read the statistics on DC, there are, you know, like 60 percent women and 40 percent men and all this horrible stuff. And I know *lots* of amazing women scientists. Literally, [where I work] I can point out, like, all of our names are on the website. I mean we're all on there, right? And I can point out to you how many of them are single and amazing and are in their thirties, right, and are single, and have prob-

ably been single for a long time, actually, or have dated for a while and then broken up or whatever. And that's just how DC is. It's not uncommon. Like, a very close friend of mine who got her PhD from Harvard and is doing something amazing here in DC, you know, she just had a kid on her own. And she just kind of, she just got a sperm donor and just did the whole thing and just had her kid last year. And that's actually, I think, something that I had thought about doing. But the egg freezing was a pathway that I was willing to go down, I'll say, because then I could continue to date and still hope that I find someone.

For women like Alice—already at the highest levels of educational and professional achievement—"finding someone" was inherently problematic on many levels. Because women in the United States have traditionally been told to marry "up" (hypergamy) while men marry "down" (hypogamy) in terms of age, class, education, salary, and so on, trying to reverse this entrenched gender norm was difficult, especially for women already "at the top." Furthermore, according to most women in this study, men could be very "ageist"—preferring to marry "down" to younger women, rather than women in their late thirties or early forties who might place immediate "pressure" on a partner to have children. Women in this study said that they found few single men of their own age who were eager to partner and have children. Men who were available were often older, divorced, and, if they had children, were often reluctant to have more. Or they were incompatible in other ways, often based on differences in educational background. Angela, a New York City-based architect, described her troubled dating life with both pathos and humor:

The last thing I want to do is, like, drop my work and go out to a bar and hope I meet somebody. You know, prioritizing meeting people feels so inauthentic when you're just going to a place because you hope maybe you're going to find your husband there. And when you get there and it's all girls, you're like, ugh! I don't like that experience. It feels like I'm not really present. Now I am scratching up the dregs, savoring them, while I wait for the divorcees to release some decent men so I can have a turn. But the pickings are slim! I've gone on a couple dates recently, and you know, this guy smoked two packs of cigarettes a day for twenty years, quit a couple years ago, is now sober for eight years, and he's a rock and roll star, or a rock and roll singer. And he sends me all these intense, heavy metal-y tracks. Like, really? This is what I have? If I could teach a daughter one thing, it would be: "Snatch up one of those uninjured, healthy, ambitious college boys! And save a couple hundred thousand dollars—have babies pronto!"

Self-Blame

Like Angela, women who found themselves in this position—namely, with no prospects of a viable partner in their mid- to late thirties—sometimes posed the question, "Why me?" Often with sadness, women expressed their amazement and disbelief that they had somehow "ended up" this way. Yet, they often added that they knew (many) other professional women in this situation. Women sometimes blamed themselves for not finding a partner, criticizing themselves for being too "picky," only attracted to "alpha males," or that they had let a "good one" get away, were not attractive enough to men, or had not put enough "energy" into dating (especially online dating, which was ubiquitous in the study population). Furthermore, women worried about being typecast as desperate, somehow turning off men by their perceived need to reproduce in a hurry. As Jessica, a physician who had undertaken egg freezing at age thirty-seven, explained,

It's easy to start feeling a little humiliated sometimes, just because you know, you don't want to be like so many of the portrayals of the "cougars," the desperateness. They're always high strung and kind of bossy and Type A. They're always running around trying to catch the man. You know? It's this neurotic kind of crazy person. And so you know, it is scary initially, to feel like you might be typecast like that. Like what's wrong with me? But at least at [the egg freezing clinic] the nurses were so nice, the doctors were so nice. They never for a split second made me feel like I was doing something odd or crazy or out of the norm. It really relaxed me about the whole thing.

Indeed, as seen in Jessica's case, egg freezing is becoming the "new normal" for American professional women who find themselves in a situation of unintended reproductive waitness due to the dearth of available male partners. Such normalization may eventually serve to mitigate women's feelings of self-blame—a negative discourse that author Sarah Eckel (2014) has questioned in her book *It's Not You: 27 (Wrong) Reasons You're Single*.

Reproductive Waitness: Educational Disparities and the "Man Deficit"

These American professional women's turn to egg freezing begs two important questions: first, where are all the "missing men," who should presumably want to couple with these accomplished Amer-

ican women? Second, should lack of a partner be taken for granted as a "natural fact" of educated women's reproductive lives?

To answer these questions about "missing men," it is useful to turn to the work of Jon Birger (2015), a business journalist and author who has analyzed US census and World Bank data to understand what he calls the "man deficit." Using US census data, Birger showed in 2015 that there were 5.5 million university-educated women in their twenties (ages twenty-two to twenty-nine) in the United States for only 4.1 million university-educated men. This is a ratio of 4:3. Between the ages of thirty and thirty-nine—when women start freezing their eggs—there were 7.4 million university-educated American women for only 6 million university-educated American men. This is a ratio of 5:4. Adding the two groups together, there were nearly 3 million more university-educated women than university-educated men in women's prime reproductive years in the United States. To quote Birger (2015: 3), "These lopsided gender ratios may add up to a sexual nirvana for heterosexual men, but for heterosexual women—especially those who put a high priority on getting married and having children in wedlock—they represent a demographic time bomb."

What Birger calls a "massive undersupply" of university-educated men in the United States: 1) is growing over time as young women enter universities at much higher rates; 2) has reached a new high of 37 percent more American women than men in higher education, according to the most recent census data; 3) makes the long-term prospects for millennial-generation women decidedly worse; and 4) is particularly acute in major US cities such as Washington, DC, New York, and Miami, where university-educated women tend to cluster, but now outnumber university-educated men by the hundreds of thousands (Birger 2015).

Beyond the United States, this "man deficit" appears to be emerging around the world. As seen in Table 15.4, "Countries Where

TABLE 15.4. Countries Where Women Significantly Outnumber Men in Higher Education.

Country	F/M Ratio	% More Women than Men in Higher Education
Albania	1.39865994	40%
Algeria	1.55961001	56%
Argentina	1.61947	62%
Armenia	1.12863004	13%

TABLE 15.4. (continued)

Country	F/M Ratio	% More Women than Men in Higher Education
Aruba	2.26302004	126%
Australia	1.40989006	41%
Austria	1.20158994	20%
Bahrain	1.92068005	92%
Belarus	1.32676005	33%
Belgium	1.31350005	31%
Belize	1.60633004	61%
Bermuda	2.31813002	132%
Botswana	1.43773997	44%
Brazil	1.39809	40%
Canada	1.29524887	30%
Chile	1.13678002	14%
China	1.18620002	19%
Colombia	1.16246998	16%
Costa Rica	1.30727994	31%
Croatia	1.35680997	36%
Cuba	1.42532003	43%
Czech Republic	1.40742004	41%
Estonia	1.53139997	53%
Finland	1.20589006	21%
France	1.22571003	23%
Georgia	1.21904004	22%
Guyana	2.03288007	103%
Hong Kong SAR, China	1.16025996	16%
Hungary	1.25191998	25%
Iceland	1.71160996	71%
Indonesia	1.1243	12%
Ireland	1.09338999	9%
Israel	1.3829	38%
Italy	1.35718	36%
Jamaica	1.72571003	73%
Jordan	1.11230004	11%
Kazakhstan	1.23714995	24%
Kuwait	1.61944997	62%
Latvia	1.42805004	43%

(continued)

TABLE 15.4. (continued)

Country	F/M Ratio	% More Women than Men in Higher Education
Lebanon	1.15689003	16%
Lithuania	1.46904004	47%
Luxembourg	1.13515997	14%
Macao SAR, China	1.32536995	33%
Macedonia, FYR	1.24822998	25%
Malaysia	1.52705002	53%
Malta	1.37038004	37%
Mongolia	1.38279998	38%
Myanmar	1.22817004	23%
Netherlands	1.10478997	10%
New Zealand	1.35090995	35%
Norway	1.45779002	46%
Palau	1.54859996	55%
Panama	1.49242997	49%
Philippines	1.28163004	28%
Poland	1.52178001	52%
Portugal	1.13217998	13%
Puerto Rico	1.40998995	41%
Romania	1.23240995	23%
Russian Federation	1.21165001	21%
Serbia	1.33327997	33%
Slovak Republic	1.54595995	55%
Slovenia	1.44420004	44%
South Africa	1.48450994	48%
Spain	1.17773998	18%
Sri Lanka	1.53942001	54%
St. Lucia	1.90204	90%
Sweden	1.52547002	53%
Syrian Arab Republic	1.13739002	14%
Thailand	1.41378999	41%
Tunisia	1.65129006	65%
Ukraine	1.15558004	16%
United Kingdom	1.30744004	31%
United States	1.36754	37%

Women Significantly Outnumber Men in Higher Education,"² World Bank data from 2012 to 2016 show that women significantly outstrip men in higher education in more than seventy countries where data are available (World Bank 2018).³ This includes, for example, Australia, where there are 41 percent more women than men in higher education, as well as Belgium (31 percent), France (23 percent), Italy (36 percent), New Zealand (35 percent), Norway (46 percent), Sweden (53 percent), and the United Kingdom (31 percent). In many non-Western countries as well, these educational disparities are emerging, including in Argentina (62 percent), China (19 percent), Cuba (43 percent), Lebanon (16 percent), Malaysia (53 percent), Panama (49 percent), South Africa (48 percent), Thailand (41 percent), and Tunisia (65 percent), to name only a few.

This study on egg freezing reflects these growing educational disparities between men and women. Table 15.3 depicts how some women decided to make "unequal" alliances with older, younger, or divorced men, including men with children from previous relationships, and often men with significantly less education. As women continue to rise educationally around the globe, and men no longer keep pace, such decisions among educated professional women to marry lesser-educated men may become more and more frequent. Birger (2015), for one, calls these unequal partnerships "mixed-collar marriages," where educated women are beginning to marry "down" (hypogamy), reversing traditional patterns of both male hypogamy and female hypergamy.

Reproductive Waithood: The "Men as Partners" Problem

What we see, then, are the difficult choices currently facing educated women in the United States, and potentially many other Western and non-Western societies, in terms of partnership and family formation. Clearly in this study, a variety of "partnership problems" emerged as the key factor in women's decisions to pursue egg freezing. Both with and without partners, women in this study were being forced into an indefinite period of "reproductive waithood" because men were either absent or uncommitted to reproduction, now or in the future.

Indeed, this "men as partners" problem has been identified since the early 2000s in international reproductive health circles (Wentzell and Inhorn 2014). Reproductive health scholars and policy

makers have recognized that: 1) reproduction is inherently relational, 2) both men and women are involved in reproduction, and hence 3) men must be included in reproductive health policies and programs, given their potential importance in enhancing women's reproductive health and rights.

However, this "men as partners" problem is rarely articulated in assisted reproduction scholarship, even though it is the main reason why American women are freezing their eggs. Through listening carefully to more than one hundred women's egg freezing stories, it was clear in this study that the "men as partners" problem in these professional women's lives is both overwhelming and distressing. Indeed, these highly educated, successful women were experiencing their own reproductive lives as being in jeopardy.

Virtually all of the women in this study (except two) were heterosexual, and most were explicit that they were looking for marriage to a man they loved. They hoped to achieve equal partnerships with committed men who would participate with them in parenthood within heteronormative family structures. Although few women in this study had been able to find a reproductively committed partner, most were not willing to condemn all men as callous "jerks." Indeed, the clear majority of women in this study were intent on dating, still hoping to find "Mr. Right." In struggling with what to do in the absence of equal partnerships, some women in this study had "dated down," entering relationships with men who were less educated, less successful, and often younger (or substantially older) than themselves. Others had given up on partnerships altogether, pursuing egg freezing on their way to becoming "single mothers by choice" (Bock 2000; Hertz 2008; Potter and Knaub 1988).

As seen in their interviews, many women realized that their inability to find stable reproductive partnerships was not necessarily their fault. Rather, they spoke of shifting gender norms, including women's higher expectations for egalitarian relationships with men who are not intimidated by them. Furthermore, some women were aware of the skewed gender ratios in their urban areas (e.g., Washington, DC), due to media reportage on this subject. However, knowledge of the educational gender gap, whereby educated women significantly outnumber educated men, is still not widespread in the United States.

As argued in this chapter, however, educational disparities between men and women are growing ever wider, making it increasingly difficult for educated women to find partners. Amid this educated man deficit, "to freeze or not to freeze" has become the leading question

among some of the most educated American women (Greenwood et al. 2018). Egg freezing is not about women who are intentionally "delaying" childbearing or "planning" to "postpone" their fertility—even though the American Society for Reproductive Medicine (2018) has recently characterized the technology in this way. Rather, egg freezing appears to be a stop-gap fertility "preservation" measure among highly educated women, who are forced to grapple with partnership-related reproductive waithood well beyond their individual control.

Conclusion: The Egg Freezing Revolution?

As this chapter shows, the men as partners problem is leading highly educated American women to pursue egg freezing. Moreover, the sadness of partner-related reproductive waithood reverberates through the stories and the lives of the highly educated women in this study. Instead of achieving motherhood, this cohort of exceptionally well-educated, thirty-something American women finds themselves in what author Melanie Notkin (2014) calls "otherhood"—single and approaching the end of their fertility, but still hedging their bets as to whether they can find a loving partner willing to commit to marriage and family life.

Amid this "otherhood-not-motherhood," reproductive waithood seems here to stay. Although egg freezing holds out hope for fertility preservation during this waithood period, it cannot begin to address the educational disparities that underlie the waithood problem in the United States and beyond. That reproductively committed and equally educated men are now "missing" is a major societal trend that must be addressed. This study speaks to the need for future global research to address why men are falling behind on their educational paths, while women are rapidly moving forward. In addition, ethnographic research on educated heterosexual men must be conducted, to get a sense of why many of them are now waiting to marry and become fathers, or are opting out of these pathways altogether.

In addition, research on highly educated women around the globe must be conducted, as they begin to pursue egg freezing in the diverse national settings in which this technology is now becoming available (Allahbadia 2016; Santo et al. 2017). Further global research of this kind will help to determine whether reproductive waithood via lack of male partners is the leading cause of egg freez-

ing elsewhere, or whether education and careers themselves are leading women to wait on marriage and motherhood.

Given the overwhelming ethnographic evidence about reproductive waithood presented in this chapter, it seems important to end by answering the chapter's main question. Is egg freezing heralding a new "reproductive revolution"? This ethnographic study suggests that—at least for now—probably not. The technology is too costly and the results too uncertain to declare a reproductive revolution at the present time. But as egg freezing becomes increasingly globalized and normalized in educated women's circles, and made more accessible over time in larger numbers of clinics at reduced costs, this technology may come to represent the future of reproduction for educated women without partners. Only time will tell.

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Notes

1. In addition, thirty-four women with serious medical diagnoses, especially cancer, were pursuing "medical" fertility preservation and were included in the larger study, along with the wives of two infertile husbands and one transgender man who had frozen his eggs. Eleven clinicians were also interviewed around the country, to get a sense of the regional distribution and uptake of egg freezing. Two other individuals with knowledge of infertility and egg freezing also took part, for a total of 176 interviews in the United States.
2. Gratitude goes to Jon Birger, who compiled this table from World Bank data. It can be found in Inhorn et al. 2018a.
3. This table is based on the most recent World Bank data available from 2012 to 2016, as collected by the United Nations Educational, Scien-

tific, and Cultural Organization (UNESCO) Institute for Statistics: https://data.worldbank.org/indicator/SE.ENR.TERT.FM.ZS?end=2011&name_desc=false&start=1970. The data for Canada are available at <http://www.statcan.gc.ca/tables-tableaux/sum-som/101/cst01/educ7lb-eng.htm>.

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Conclusion

WAITHOOD IN THE TWENTY-FIRST CENTURY

Marcia C. Inhorn and Nancy J. Smith-Hefner

In the twenty-first century, waithood is a growing global phenomenon, with young people waiting to marry and have children, and, in the process, extending their period of young adulthood. In this volume, research by fifteen scholars—including fourteen anthropologists and one political scientist—demonstrate *why* waithood is occurring with increasing frequency, and *how* it is being experienced by young people around the world. Overall, these chapters reveal two broad forms of waithood, both of which pivot around the notion of *intentionality*. These forms might best be described as *unintentional waithood* and *intentional waithood*.

Unintentional waithood reflects the original meaning of the term, which was introduced by political scientist Diane Singerman in 2007. In her research on education and marriage in the Middle East, Singerman used the term "waithood" to refer to a pattern of widespread marriage delay among educated youth in Egypt and in other resource-poor countries across the region (Singerman 2007). As Singerman showed, young people were obtaining higher levels of education than ever before, but their education was not leading to employment. In her work, Singerman gave primacy to the experiences of young men, so as to highlight the role of governments in failing to supply sufficient remunerative employment opportunities