

# 'Inconvenient biology:' advantages and disadvantages of first-time parenting after age 40 using *in vitro* fertilization

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**BACKGROUND:** As ages at first birth have steadily risen in the industrial west over the last several decades, the phenomenon of 'delayed childbearing' has come under research scrutiny by demographers, medical specialists and social scientists. In this study, we specifically explore the perceived advantages and disadvantages of postponed conception as well as participants' retrospective opinions on the 'optimal age' for parenting.

**METHODS:** To this end, we examined a cohort purposely chosen to epitomize delayed childbearing, i.e. men and women who used IVF to conceive at the very end of their reproductive capability. In-depth qualitative interviews were conducted between 2009 and 2011 with 46 couples and 15 individual self-selected US women and men who had used IVF to conceive their first child when the woman was aged 40 or older at the time of delivery. Although the demographics of this cohort were consistent with others who use IVF in the USA, their median income was 3–4 times higher than that of the average US family, which may bias their largely positive parenting experiences.

**RESULTS:** Most women and men believed that childbearing later in life resulted in advantages for themselves and their families. These included having established careers with financial security and career-time flexibility, enhanced emotional preparedness, committed co-parenting relationships and a positive overall family experience. The main disadvantage was the unexpected difficulty in conceiving that culminated in the use of IVF and resulted in a smaller family than desired, although many expressed feeling 'lucky' to have children at all. Other disadvantages were lack of energy for parenting, less available lifetime to spend with children and anticipated stigma as older parents.

**CONCLUSIONS:** These disadvantages appear to have influenced conception and parenting experiences so that in hindsight the majority of participants identified the optimal age for first-time parenting as 5–10 years earlier than they had conceived. This age range was imagined to maximize the financial and emotional advantages of later parenting while minimizing the impact of age-related infertility, diminished energy, anticipated health issues and the social stigma of appearing too old to parent.

**Key words:** delayed childbearing / late parenting / age-related infertility / IVF / advantages/disadvantages

## Introduction

'If it weren't for the inconvenient biology, I really think 35 to 45 is a great time to have kids. That may not be true for everybody'. Female Participant.

As ages at first birth have steadily risen in the industrial west over the last several decades (Billari *et al.*, 2007; Matthews and Hamilton, 2009), the phenomenon of 'delayed childbearing' has come under research scrutiny by demographers, medical specialists and social scientists (Temmerman *et al.*, 2004; Collins *et al.*, 2005; Hammarberg and Clarke, 2005; Benzies *et al.*, 2006; Bray *et al.*, 2006; Browning, 2007; Reddy *et al.*, 2007; Buckles, 2008; Usta and Nassar, 2008; Alviggi *et al.*, 2009; Malizia *et al.*, 2009; Simpson, 2009; Billari *et al.*,

2010; Boivin *et al.*, 2010; Bretherick *et al.*, 2010; Balasch and Gratacós, 2011; Beets, 2011). Risks of delayed parenting have also been enumerated in medically oriented studies that document infertility, poor birth outcomes and potential developmental problems in offspring (Bray *et al.*, 2006; Reddy *et al.*, 2007; Usta and Nassar, 2008; Alviggi *et al.*, 2009; Malizia *et al.*, 2009; Balasch and Gratacós, 2011). Other studies have focused on the social risks of delayed childbearing primarily for those who remained infertile and/or childless as a result of age-related infertility (Fisher *et al.*, 2010; van Balen and Trimbos-Kemper, 1993; Gunilla *et al.*, 2005; Wirtberg *et al.*, 2007; Johansson *et al.*, 2009; Volgsten *et al.*, 2010).

A few studies have addressed the psychological well-being of older parents and offspring (Finley, 1998; Mirowsky and Ross, 2002;

Bornstein *et al.*, 2006; Spence, 2008; Boivin *et al.*, 2009) and have identified some positive and negative aspects of the late parenting experiences of women who conceived with or without the use of their own eggs and/or assisted reproductive technologies (Carolan, 2005; Friese *et al.*, 2006; Shelton and Johnson, 2006; Browning, 2007). However, no research has focused exclusively on the experience of couples or single parents in which the woman had given birth after the age of 40 using IVF. Examining a cohort purposely chosen to epitomize delayed childbearing, i.e. men and women who used IVF to conceive at the very end of their reproductive capability, in this study, we specifically explore the perceived advantages and disadvantages of postponed conception as well as participants' retrospective opinions about the 'optimal age' for parenting.

## Methods

This qualitative exploratory research was funded by the National Institute of Child Health and Human Development and was approved by the institutional review board at the University of California, San Francisco. The sponsor was not involved in study design; the collection, analysis and interpretation of data, or the writing and submission of this article. Respondents were recruited through two IVF centers in Northern California. Practitioners sent letters to 400 former female patients who had used IVF to conceive their first child, and were age 40 or older at the time of delivery. There was no age requirement for participating partners. These criteria were selected to identify couples and individuals who had delayed childbearing.

Between 2009 and 2011, the research team interviewed 46 couples and 15 individuals (15% of families approached), a cohort adequate for in-depth, qualitative data analysis (Langness and Frank, 1981; Morse and Field, 1995; Hammersley and Atkinson, 2007). All participants reviewed and signed informed consent documents prior to being interviewed. Initial couple interviews were followed by individual interviews with each partner ~3 months later to collect data on how couples jointly perceived IVF and parenting and to allow individuals to discuss differences without their partner present. Only one couple was unavailable for the individual second interview. If one but not both members of a couple agreed to be interviewed, those respondents were interviewed individually. Single participants were also included in the study. The semi-structured interviews were 1–2 h long. Demographic data were collected and interviews were recorded and transcribed verbatim.

Preliminary core categories were generated from meanings in the data, and a process of code development took place (Strauss and Corbin, 1990; Luborsky, 1994; Mays and Pope, 2000). Successive phases of trial coding were conducted until pairs of coders reached a high level of agreement (Mays and Pope, 1995; Pope *et al.*, 2000). The data were then coded using Atlas.ti, a qualitative data analysis program (Muhr, 1993–2011). This article contains an analysis of the code 'Advantages/Disadvantages' defined as discussion of 'advantages and disadvantages of becoming parents later in life' and the code 'Optimal' defined as 'discussion of optimal age to have children, optimal life course, reflections on things that could have been different or better in retrospect'. The data include responses to the interview questions 'What are the advantages and disadvantages of being parents at this time in your life?' and 'Is there an optimal age range in which to have children?' posed to all participants, as well as any *ad hoc* discussion of these topics. All of the data coded 'Advantages/Disadvantages' were analyzed together and then separately in the larger context of the interview. Subsequently, secondary themes were detailed.

## Results

The median age at the birth of their first child was 42 years for women and 43 years for men. The majority of participants were Caucasian, employed, married, had a post-graduate education, identified as a member of a religious group and reported median family incomes of \$150 000–\$199 000.

Most families had one child via IVF (median age 3.5 years, range <1–10). In seven families, male partners had children from previous relationships (median age 23 years, range 9–36). Approximately 75% used their own gametes for conception via IVF, 15% used donor sperm and 10% used donor eggs or both to conceive one or more children. The demographic description of the cohort is detailed in Table I.

### Advantages of parenting later in life

A majority of women and men in the study believed that childbearing later in life resulted in advantages for themselves and their families. The most frequently cited advantages are illustrated in Table II and included enhanced emotional preparedness, greater financial security and work-time flexibility, committed co-parenting relationships and a positive overall family experience. As one woman summarized: 'Except for the actually getting pregnant part, for me, it's mostly been just a lot of advantages'.

### Emotional preparedness, 'No Regrets'

Almost three-quarters of the women and over half the men cited their perception that they had enhanced emotional preparedness for parenting which was of benefit to both their children and themselves. Frequently cited attributes of emotional preparedness were 'maturity', 'patience' and 'self-awareness'; as one man summarized: "I know that I'm way more self-aware than I was 20 years ago. I feel like I'm in a better position to communicate better with my child and help them more in life and I understand how to be a supportive, encouraging parent". Some felt that their experiences in life had made them more resilient and capable; as this woman put it: 'I think I'm probably a calmer mother than I might have been years ago... I just have more confidence in myself than I did in my 20's, so I don't get fazed by as much as I might have when I was younger'. Some spoke about having a sense of maturity, which contributed to their enjoyment of and enhanced focus on parenting: 'You know, you just don't sweat the small stuff. I think partly because I'm 40 now and because I have a lot of the trappings of success, or have had them and they haven't always made me happy, I think I'm more interested in just my son and me enjoying his childhood together'.

For others, their earlier life experiences before having children were a source of self-enrichment and satisfaction: 'I did a lot of stuff I wanted to do before I had kids. I lived abroad, I traveled a lot, I have an interesting career, so I felt very self-actualized'. This was seen as preventing feelings of regret about the time-consuming obligations of parenthood; as one woman put it: 'I had 21 years from being out of high school to having kids and I feel like I had a great time; I did a lot of stuff. So I don't feel like I'm missing out... that is something that I appreciate having my kids older'. Another woman elaborated: 'We've done a lot of selfish things, and so I don't feel deprived when I have to spend all day long with [my] son and clean up poop

**Table I Study demographics.**

	#	%
Total families	61	100
Couples	46	75
Individual women whose partners did not participate	9	15
Single women	6	10
Total number of study participants	107	100
Women	65	61
Men	42	39
Age		
Median age of women at the birth of their first child	42 (40–46)	
Median age of men at the birth of their first child via IVF	43 (35–67)	
Marital status		
Heterosexual marriages/partnerships	51	83
Same sex female marriages	4	7
Single women	6	10
Men who had previous families	7	17
Children		
Median number of children per family	1 (1–3)	
Median age of first child	3.5 (>1–10)	
Number of families with one child after IVF	40	66
Number of families with two children after IVF	18	29
Number of families with three children after IVF	3	5
Conception methods		
IVF	46	75
IVF with donor sperm	9	15
IVF with donor eggs	6	10
Median months trying to conceive prior to IVF	6 (0–60)	
Average total cycles of IVF	2 (1–6)	
Ethnicity <sup>a,b</sup>		
Caucasian	96	83
African American	2	2
Pacific Islander	1	1
Asian	6	5
More than one race	1	1
Middle Eastern	5	4
Other	2	2
No ethnicity reported	3	3
Household income <sup>b</sup>		
\$0–\$99 999	5	9
\$100 000–\$149 999	11	18
\$150 000–\$199 999	17	28
\$200 000–\$249 999	8	13
More than \$250 000	19	31
Not reported	1	2
Employment <sup>a,b</sup>		
Women employed full-time	34	52

*Continued***Table I Continued**

	#	%
Women employed part-time	15	23
Women without paid work	16	25
Men employed full-time	41	80
Men employed part-time	8	16
Men without paid work	2	4
Education <sup>a,b</sup>		
High school	1	1
Some college	12	10
College	47	39
Post graduate	56	46
No education reported	6	5

<sup>a</sup>Some individual participants reported on behalf of spouses.<sup>b</sup>Some participants did not report in some categories.**Table II Advantages of first-time parenting over age 40 using IVF.**

	Women (n = 65), (%)	Men (n = 42), (%)
Emotional preparedness	72	57
Career/work flexibility	43	31
Financial security	31	36
Perception of strong Partner/ family Relationships	22	12

and spit-up and that kind of thing. To me, it's just a welcome gift as opposed to any kind of burden, and I think that comes with just the experience we've had and the fact that we're so old, we've had a chance to do the other stuff'.

### Career associated advantages

Having an established career with financial security or the flexibility to reduce their working hours, work at home or schedule their work days to better suit their personal and family needs was cited by over one-third of men and nearly half of women. Those in established careers appreciated that they no longer had to 'prove themselves' at their jobs by working extra hours or engaging in lengthy travel. One woman reflected on the greater latitude and opportunities she experienced by having children later in life: 'If I had gotten pregnant when I was 26, I would have been in business school. The trajectory of what windows would have been open to me would have changed. That's no longer true. I have a reputation. I have a history. I have a little bit of political capital to spend. So, if I need to take three months off and have a kid, I can do it'. Parents also discussed how having advanced in their careers improved their confidence and sense of achievement, and made it easier for them to re-orient their priorities to spend time and energy with their families while maintaining a connection to their professions; for example: 'I'm at the perfect point for having kids . . . I

had some time to get some experience and . . . can go back to work easier than if I had [kids] right out of grad school'.

The secure financial resources that frequently accompanied a successful career were specifically cited as an advantage by over a third of men and almost as many women. Parents wanted to be able to provide for their families without 'struggling', for example; 'I think it's much better this way. I'm financially sound, stable . . . I'm not sitting there wondering how I'm gonna put the groceries on the table or provide for my children'. Secure finances were also associated with greater flexibility and options in parenting styles. For example, this father said: 'I got to the point where I'd done the career thing and I'd made some money that I could invest, I mean we're not set for life or anything, but I felt like now was a point where . . . this would be a great time for me to now be a parent because I could be at home, I could be more involved and contribute more to the family'.

Seven male participants had older children from previous relationships. A common theme among them was the increased time available for parenting compared with their experience with the children they had in their earlier relationships. They reported feeling more involved in daily parenting tasks and enjoying being more active in parenting than they had in the past. They attributed this change largely to decreased time and/or energy that they had previously devoted to career building and income generation. For example, this father described: ' . . . as an older parent . . . all the things that I see [my son] do . . . I didn't get to see with my other two children because I was working in a job where it was necessary for me to be not only dependable and reliable but to establish a reputation . . . now I get to . . . be the kind of dad that I should have been before'.

### Relationships and family life

Cited by over a fifth of women but only half as many men as an advantage of later childbearing was the establishment of stable and committed relationships with partners. These were perceived to be beneficial for both men and women, and contributed to a positive family environment for children. Almost all participants characterized their partners or spouses as being involved and sharing parenting tasks. For some participants, their own or their parents' previous unsuccessful relationships influenced their decisions about when and with whom to have children. For example, as this woman explained: 'I wouldn't have done it differently because I really felt like I needed to be at a certain place in my relationship. Maybe I feel bad that it took so long for me to get to that place, but I have past history . . . and I didn't want to bring a child into that'. Many men and women were surprised to be having so much fun parenting and felt that having children later in life was keeping them young. For example, this woman described: 'I mean I can be a child through his eyes again and experience things through his eyes that I wouldn't do at this age if I didn't have him'. Some, such as this father, reported that having children at this point in their lives kept them physically fit: 'He will keep us younger and involved and being active, hiking, biking and so forth'. Women in the sample noted that being parents became their defining social identity rather than their chronological age. For example, parents of school-aged children often described relationships with younger parents which had the positive affect of keeping them more culturally current.

**Table III Disadvantages of first-time parenting over age 40 using IVF.**

	Women (n = 65), (%)	Men (n = 42), (%)
Infertility and the need for IVF	48	17
Less energy	38	26
Less lifetime with children	31	19
Smaller family size	17	2
Stigma of being 'Older Parents'	12	19

### Disadvantages of parenting later in life

While a majority of participants framed parenting later as largely positive, a smaller percentage enumerated disadvantages. These disadvantages are depicted in Table III and included infertility and the need to utilize IVF in order to conceive, the lack of physical energy for parenting, less lifetime in which to enjoy children, smaller family sizes and concerns about being stigmatized as 'older' parents.

#### Difficult conception

For almost half the women but less than a third as many men, the primary disadvantage of later parenting was their difficulty conceiving and the subsequent need for IVF. Unexpected age-related infertility created emotional and financial stressors for participants; 'As a woman, your fertility is going to decrease, and you can't just think that, "Oh, I'll just go do IVF". It's not foolproof, it's not easy, and it's expensive'. Because of their ages, many of the women attempting to conceive were urged by their practitioners to 'go straight to IVF'; a procedure that participants initially considered to be costly and extreme. Half of the participants successfully conceived and gave birth after only one cycle of IVF. Nonetheless, most were presented with poor statistical prognoses during treatment, which led them to later acknowledge how close they had been to not being able to conceive a child. As a result, themes of 'luck' and appreciation permeated discussions of having children at a later age via IVF. These experiences led many men and women to express enhanced appreciation for their children after facing the risk of not having children at all; as this man recounted: 'It's just been a gift. I feel so lucky. I mean, I just feel so, not religious, but I feel so blessed just to have this experience. I'm just so grateful'. This woman described how her infertility influenced her feelings about her child: 'I think that we just really appreciate the fact that we were able to have a child at this age, especially knowing what we know that the statistics aren't that great and that there are so many people who go through IVF multiple times and never conceive . . . Sometimes we look at our son and just think, "Gosh, how did we get so lucky?"'

#### Lack of physical energy

Over a third of women and a quarter of men cited the lack of physical energy they experienced as later-life parents. Noting the substantial demands of raising children, participants reported feeling depleted and they imagined having more vigor for parenting if they were

younger. A mother mused: 'I wish I was 10 years younger, then I wouldn't be so pooped out by the end of the day. I'd have more energy to keep up with my daughter, but I'm tired'. Some were concerned about maintaining physical strength as their children age: 'I think we'll still be able to go out and do outdoor activities with him when he's a young man or a growing teen. I want to be in somewhat good shape'. However, in contrast to this desire, many parents noted that their personal fitness efforts had diminished due to parenting demands.

### Less time with children

Another disadvantage cited by almost a third of women and a fifth of men was the calculation that participants would have less of their total lifetime to spend with their children. While feeling positive about their own projected health and life spans, they simultaneously reflected on having children later with a sense of loss. As this father said: 'By the time they graduate from high school, I'll be in my seventies...I will probably be pretty long lived because our family has a good history of it, but I won't see a lot of their adult life'. Some expressed concerns that they would not live long enough to see their grandchildren.

Participants acknowledged that their chances of becoming ill or dying were higher due to their ages, a risk that came into focus largely only after their children were born. As one mother said: 'I guess that we'll be really old when the kids are still young, I just hope that I'll be healthy long enough for them to really be grown up and kind of secure as adults before we die'. While concern about being healthy long enough for children to reach adulthood was common, many acknowledged the uncertain nature of life at any age: 'You realize that they aren't going to have quite as many years [with you]... But you know, something could happen to me tomorrow and that could be the end of it'.

### Smaller family size

A related consequence of later-life parenting was that women had fewer children than they wished for, with two-thirds of participating families having only one child. Despite preferring the idea of a sibling for their single children, only one-third of participants made additional attempts at conception with IVF predominantly because of poor prognoses, the substantial demands of parenting at a later age or having had twins in their first IVF pregnancy. This woman described her regret: 'You know, if I had started earlier, I would have loved to have had another child, to have two, but we didn't and that's the way it is... We used up all my eggs'. Another woman situated her disappointment over not having more children in a larger societal context: 'I'm gonna be 43. So there's a part of me that's resentful. I just feel like the way the world is now, by the time, as women, that we're really ready... in a good marriage or relationship, and financially we can do it, and all of our ducks are as much in a row as they can be... we're 42... And so I think it's not fair'. Some, such as this man, perceived risks to the mother and/or potential child and did not want to 'press their luck' by having additional children at their age: 'When we thought about the second child, then the same thing came up again... We were very lucky to have a very happy, normal child. Is the second one gonna be like that?'

Others made no additional attempts at children due to self-perceptions of being too 'old,' concerns about the increased physical

and financial demands of having more than one child and the potential stigma to their children of having older parents. This woman described their decision-making process: 'When we are 60 [our son] will graduate from high school or college. It's a very different perspective than when you are a younger parent. So we are conscious. For [Husband] that was the reason not to get a second child because then he and I will be even older'. Men generally did not report dissatisfaction with family size.

### Anticipating age stigma

Almost a fifth of men but fewer women expressed concerns about future stigma for themselves and their children due to age. Women in particular remarked that they 'look young' and stay active so people cannot tell their chronological age from their appearance. Nonetheless, they did anticipate that as their children get older their age as parents would become more visible and their children would be stigmatized as a result. This woman imagined: 'I think now maybe people don't think, 'That's an older parent.' The older we get, and then he will be in high school, it will be more apparent.' A theme cited by women and especially men was anticipation of being over 60 when their children graduated from high school, which for many was emblematic of the wider generation gap as older parents. For example, as this man predicted: 'When my son is graduating from high school I'm going to be about 60 years old, and that's probably a lot older than the other dads... I'm going to be getting near a period of time where I'm wanting to retire and he's just going to college. So it just concerns me that I don't want to be old when he's still that young'.

### Optimal age for parenting

Overall, our participants concluded that the advantages of later parenting clearly outweigh the disadvantages. Nevertheless, approximately two-thirds of both men and women expressed the opinion that the optimal age for having children was ~5–10 years younger than they had conceived and only 10% concluded that the optimal age was over 40. The responses to the question addressing the optimal age to have children are presented in Table IV. Most acknowledged that they could not or would not have made a different child-bearing decision given their individual and unique life circumstances. However, in retrospect, many women stated that they would have wanted to have children earlier if they had met their partner sooner; as this woman put it: 'I think if I could have written out the story of my life, I would have met him younger, and I probably would have had children maybe at 35... My life trajectory would

**Table IV** Perception of optimal age for first-time parenting by gender.

	Women (n = 64), (%)	Men (n = 36), (%)
20s	11	19
Early 30s	41	31
Mid-30s	17	14
Late-30s	22	25
40s	9	11

have been totally different. But I think having them in your mid-30s is probably ideal because there's a lot less fear about the decline in fertility'. Some felt that younger parenting is better biologically, particularly for women, while older parenting is better socially; for example: 'Your body's made to have kids between 14 and 24, but financially, emotionally, intellectually, I'm way better off now'. Yet the majority of participants also endorsed the concept that the timing of childbearing is an individual and contextual undertaking and that the best time to have children is 'when you are ready for them'.

Very few men but over a quarter of women reported that they would have changed their childbearing age because of age-related infertility. This man noted: 'I think for a woman maybe mid-30s so you don't necessarily have to jump through all the IVF hoops, and I think for man it could be older'. When discussing the optimal age for women to have children, both men and women cited the age range of 30–35 as optimal for both biological and social reasons; as this woman summarized: 'I think for both men and women . . . . Let your 20 s be about figuring out who you are and enjoying life and hopefully figuring out your career a little bit. And then 30 to 33 seems like the right time to really try to have kids'. Another woman noted: 'Anything after 35, there starts to be both [fertility] statistics, and also energy drops. So, yeah, early-mid 30s, it gets really optimal'. Generally parenting too young or too old was perceived as undesirable. Younger parents were often characterized as unprepared; as this woman noted: 'I think younger parents in their 20 s, they are stressed out, financially stressed out, work stressed out, time-wise stressed out.' Conversely, having children near retirement age was considered irresponsible, as this man explained: 'If you're going to be dead whenever your kid is out of high school, that's probably too late. It's not a biological thing; I don't think it's great for the kid to have so much of their life without that parent'.

## Discussion

Among our cohort of first-time parents after age 40, participants evoked many of the commonly acknowledged reasons for 'delayed childbearing', i.e. career development, accumulating financial resources and finding an appropriate partner (Heck *et al.*, 1997; Hammarberg and Clarke, 2005; Ryan *et al.*, 2005; Benzies *et al.*, 2006; Lampic *et al.*, 2006; Tough *et al.*, 2007; Willett *et al.*, 2010). Becoming established in careers before childbearing enabled participants to accumulate financial resources and workplace flexibility which then provided more time to focus on their children, which supports findings in other studies of motherhood and career and finances (Joshi, 2002; Amuedo-Dorantes and Kimmel, 2005; Browning, 2007). The men in this study who had second families reported higher levels of engagement and enjoyment of parenting compared with earlier in their lives when they were more focused on career building.

Our participants cited their relationship with their partner as an advantage in later parenting, due in part to their having chosen partners who they imagined would be willing to co-parent, reflecting a gender equity family model (McDonald, 2000; Simpson, 2009). While this expectation of partner engagement may serve to validate their partnership trajectories, Bornstein *et al.*'s (2006) detailed psychological study of first-time mothers in the USA ranging from age 13 to 42 did find that while older mothers had less familial support for

parenting than younger mothers, they had greater partner/spousal support.

Both men and women described their accumulation of experience, self-knowledge and emotional preparedness as girding them against any possible regret resulting from the change in lifestyle perceived as accompanying childbearing. This notion that people timed their childbearing in order to first achieve a foundation of self-realization and fulfillment has been explained as reflecting a post-materialist values framework (Proudfoot *et al.*, 2009; Simpson, 2009). This framework posits that people organize their lives according to individual ideals of fulfillment in place of community or religious mores. Our cohort embraced ideals of self-realization as also providing benefits to their children. Both men and women contended that their maturity and life experiences made them better parents than they could have been earlier in their lives, and contributed to their enjoyment of most aspects of parenting. In fact, their later disappointment in having less anticipated lifetime with children may confirm the degree to which they appreciated their parenting experiences.

By design, participants in our cohort had successfully conceived children following infertility, so no couple remained childless. Despite their success, the major disadvantages of later parenting cited by women were infertility, the need to utilize IVF and the risk of having been biologically childless (Browning, 2007). Awareness of age-related infertility was low despite the advanced education levels among this group (Friese *et al.*, 2006). A related disadvantage was smaller family size resulting from age-related infertility or from choosing to have fewer children due to physical and social effects of aging. In the USA, most families desire and have two children (Hagewen and Morgan, 2005), in contrast to our cohort who did not achieve their desired family size. Such relinquishment of fertility intentions has been associated with distress (White and McQuillan, 2006).

Other drawbacks to later parenting were less total lifetime available to be with their children, a perceived lack of energy compared with their younger selves, and anticipated future stigma from being older parents to children in high-school. Browning also found concerns about lack of energy and staying healthy (Browning, 2007). In her qualitative study of first-time mothers over age 30, Shelton described narratives of personal 'loss' and 'isolation' alongside those about 'personal growth' and 'maturity' (Shelton and Johnson, 2006). In contrast, themes of loss among our cohort revolved more around limitations on family size and reduced lifetime spent with children than on personal constraints. The experience of infertility and the 10-year age difference between cohorts may explain these differing interpretations of loss and the relative happiness of our older parents with the parenting experience.

The citation of advantages of later-parenting by both men and women far outweighed the percentage referencing disadvantages. Yet when asked about the optimal age for parenting, all but 10% of men and women identified an age 5–10 years earlier than they had conceived. Approximately, three-quarters of men and women imagined that first-time parenting in the 30s offered many of the benefits of older parents such as career flexibility, experience and financial security, but would avoid the disadvantages of later conception, particularly age-related infertility and resulting smaller family sizes. Many parents made a distinction between a biological age that is optimal for having children (younger than 30) and a social age that is optimal for parenting (older than 35). Similarly Dion's psychological

study of expectant mothers emphasized a split between 'physical' and 'psychological preparedness' of younger and older parents (Dion, 1995). Many participants stated that, biologically, men's optimal age for parenting could be later than for women (Balasch and Gratacós, 2011), but nonetheless recommended men also begin childbearing at a younger age due to the physical and energetic demands of parenting.

Most participants strongly believed that childbearing later in life made them better parents than they would have been earlier. The available literature on effects of later-parenting supports our participants' belief that waiting until age 30 has psychological or social benefits for parents and their children (Joshi, 2002; Mirowsky and Ross, 2002; Bornstein et al., 2006). However, literature also contrasts our participants' expectations that they were even better parents after age 40, citing either no improved effects beyond age 30 or negative psychological and health effects (Bewley et al., 2005; Mirowsky, 2005; Balasch and Gratacós, 2011). Infertility and the subsequent use of IVF to conceive may have had a positive impact on parenting experiences in our cohort compared with these studies. Feelings of being 'lucky' to conceive at all and their greater 'appreciation' for their children may contribute to their unexpected enjoyment of parenting and reported positive family dynamics.

Due to the self-selected cohort and the specific eligibility criteria of our study, the ability to generalize these findings may be limited. It also may be possible that couples with a positive experience of late parenting were more likely to be willing to participate. We intentionally recruited parents who had their first children both at the outer reproductive age limits and after IVF in order to explore the full implications of 'delayed parenting'. The resulting cohort consisted of two-parent households and single mothers with a relatively high socio-economic status. Their demographic descriptors are consistent with others who use IVF in the USA (Hammoud et al., 2009). However, their median income was 3–4 times higher than the average US family, which may bias their largely positive parenting experiences. In addition, the study was described to participants as a study of 'later parenting'. This may have influenced participant responses to the questions; as adult aging is generally stigmatized in the US (Palmore, 2004) participants may have framed their responses more positively in an attempt to deflect any anticipated age-related stigma on the part of the research team. Finally, the average age of first children was 3 years and the oldest child resulting from IVF was age 10; thus participants were mostly parents of young children whose experiences may significantly change as time passes.

## Conclusion

While the expected benefits of later parenting such as career flexibility, financial stability, maturity and committed co-parenting, did in fact materialize for this cohort, there were drawbacks that had been unanticipated prior to becoming parents. These disadvantages had enough impact on the conception and parenting experience that the majority of participants in hindsight identified an optimal age for parenting that was 5–10 years earlier than they conceived their first child. Parenting in their 30s was imagined to reflect a compromise that maximized the financial and emotional advantages of later parenting while minimizing the risks of age-related infertility, smaller-than-desired family sizes, lack of energy, less lifetime spent

with their children and the potential for age-related stigma. New or follow-up research with first-time parents over age 40 via IVF who have teen-age or older children and from a demographic sample closer to the socio-economic US median would help complete understandings of the range of experiences as both the children and parents age.

## Authors' roles

K.M.D., Y.B. and R.D.N. were integral to the conception and design of the research, the analysis and interpretation of the data, drafting and revising the article and had final approval of the published version. K.M.D. also contributed to acquisition of the data.

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## Conflict of interest

R.D.N. from the University of California, San Francisco was the principal investigator and Y.B. was the co-investigator.

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