Hypatia (2026), 1–25
doi:10.1017/hyp.2025.10054

CAMBRIDGE UNIVERSITY PRESS

ARTICLE

Do Assisted Reproductive Technologies Promote Well-Being?

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(Received 7 February 2025; revised 6 October 2025; accepted 23 November 2025)

Abstract

Infertility and involuntary childlessness are often accompanied by psychological distress. Such distress exhibits gendered patterns: women typically experience greater infertility-related suffering, including while they undergo procedures like IVF, and when such procedures fail. Early feminist critics of reproductive technologies sought to locate and address this suffering in the totality of women's experience under patriarchy. Contemporarily, a liberal approach to this issue emphasizes the importance of an individual's reproductive autonomy to engage in infertility procedures as they see fit. In this paper, I suggest that a hidden assumption within this liberal argument, serving as an operant justification for the development and provision of assisted reproductive technologies (ARTs), is that ARTs promote welfare, or well-being, through the alleviation of infertility-related distress. I explore whether ARTs do appropriately attend to welfare and so meet this justificatory aim. I suggest that IVF, where it is not successful, that is, in the vast majority of cases, does not serve to promote well-being. A comprehensive picture of welfare requires examining the social context in which infertility-related distress operates and in which well-being is thus compromised. Such considerations are essential to forming a holistic picture of well-being and in assessing whether ARTs can meet their welfarist aims.

1. Introduction

Involuntary childlessness is often associated with psychological distress (Lechner et al. 2007; McQuillan et al. 2003), with women[1] experiencing this distress at higher rates than men (Khalesi and Kenarsari 2024). It seems intuitively plausible to claim that assisting those who are unable to conceive by providing access to reproductive technologies (ARTs) such as in vitro fertilization (IVF), or the emerging uterus transplant (UTx), is to relieve this distress and promote their welfare. Indeed, if we think about other kinds of

[1]While not all people with the capacity to become pregnant identify as women, I focus on women in this paper in order to explore gender socialisation and IVF uptake.

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https://doi.org/10.1017/hyp.2025.10054 Published online by Cambridge University Press

justifications that could conceivably ground access to ARTs—such as rights-based[2] or treatment-based arguments,[3] for example—welfare-based considerations seem to be the most plausible. However, I seek to interrogate the extent to which such welfare-based justifications do indeed hold. In answering this question, I conceptualize welfare according to the taxonomy of theories of well-being outlined by Derek Parfit and developed in the wider literature: hedonism, desire-fulfillment, and objective list accounts (Parfit 1984). I then consider whether infertility treatments such as IVF promote well-being on each of these three approaches. My analysis begins at the level of individual well-being, highlighting the psychological distress that typically accompanies such procedures, as well as their minority success rates. After considering the limited sense in which individual welfare seems to be promoted by IVF, I invoke the importance of looking beyond an individualized model to the broader social context and its role in producing infertility-related distress. In doing so, I suggest that assisted reproductive procedures may serve to exacerbate the very distress that generates their demand, through the promotion of social norms that serve to reinforce essentialist ideas about womanhood and childbearing (Lotz 2021). Such considerations seem essential to forming a holistic picture of welfare at large, and thus in assessing whether ARTs can meet their welfarist aims.

In response to the individual and group-based welfarist arguments I make, I consider that respect for reproductive autonomy might require that we permit people to make risky choices that could harm them, or that might not result in their desires materializing. Such respect for autonomy might be taken to be welfare-promoting in itself and should therefore play a crucial role in any welfarist calculation. In response to such a concern, I suggest that the exercise of reproductive autonomy remains constrained by considerations of harm, a maxim that is of particular importance when considering the peculiar harms posed by UTx. Further, proper respect for autonomy, particularly on relational conceptions of the term, involves attending to the social context in which reproductive choices are made, including, in this case, non-ideal conditions characterized by objectionable gender-essentialist norms.

In concluding, I suggest that if the promotion of welfare does not seem to be a straightforward justification for access to ARTs, and other justifications are even weaker, there may be grounds to reconsider how we position ARTs. Holistic approaches to addressing involuntary childlessness should receive greater focus if well-being and the alleviation of infertility-related distress are our primary concerns. Such approaches would contend with environmental determinants of infertility, economic precarity, and gender relations, as well as addressing the social structures that shape kinship and involvement in child-rearing (Weeks 2023; Lewis 2022).

2. Preliminaries

2.1. *Characterizing infertility and childlessness*

While involuntary childlessness may be conceived in terms of medically diagnosed infertility, I employ the term to capture additional cases that are the result of relational

[2]A rights-based justification would hold that ARTs such as IVF are justifiable as there exists a positive right to have children.

[3]A treatment-based justification would hold that ARTs such as IVF are justifiable insofar as they treat disease (infertility). This involves making a pronouncement on infertility's disease status, something that is not so straightforward, as I will suggest.

https://doi.org/10.1017/hyp.2025.10054 Published online by Cambridge University Press

and economic factors, such as not having met the right partner, or lacking the financial means to have a child with security. I do so in order to uncover the social factors that comprise infertility and infertility-related distress, forming a holistic picture of reproductive autonomy and well-being. Such an image is required to comprehensively attend to the question as to whether assisted reproductive technologies (ARTs) can be justified by appeals to welfare. ARTs cannot "treat" the aforementioned social factors comprising infertility, after all. It is recognized that even medically diagnosed infertility often has a social component. For example, delaying the decision to procreate due to facing certain career structures, to a time when it is no longer possible to conceive without medical assistance, makes the subsequent loss of fertility at least, in part, socially determined (McTernan 2015). Further, it may be suggested that "social infertility" resulting from a lack of partner involves the inability to achieve one's vital goals, and so itself qualifies as a state of impaired health (Maung 2019). Medical and social aspects of infertility appear to be co-constituted, therefore. This can also be seen in the way in which anthropogenic environmental pollution and poor nutrition resulting from dominant food systems play a significant role in health and infertility (Sørensen et al. 2024; Wieczorek et al. 2024; Maitin-Shepard et al. 2024). Thus, in focusing my analysis on involuntary childlessness more broadly, and in taking seriously the idea that infertility exhibits social determinants, I consider the ways in which reproductive autonomy and well-being are to be promoted outside of the use of ARTs.

2.2. The assisted reproductive technologies in question

I examine IVF and the emerging uterus transplant in conjunction here, as the alleviation of infertility-related suffering has been provided as a legitimation for both procedures (Guntram and Zeiler 2019; Bozzaro et al. 2023; Warnock 2003). These procedures have also been discussed in confluence in the literature due to the developing status of UTx as an assisted reproductive technology aimed at addressing fertility issues (Cavaliere and Cesarano 2025). However, UTx, which involves the surgical transplantation of a uterus, often from a living donor, presents novel risks and harms. It is therefore worth returning to the question as to whether IVF really does attend to suffering alleviation now that further controversial procedures are being justified using the same logic. That these procedures are so different is precisely why I undertake their joint examination. While IVF is rarely questioned now, its grounding justifications (e.g., welfare and reproductive autonomy) are being applied in emergent contexts where confounding factors might be obscured. It is therefore worth considering the extent to which such a justification ever held in the first instance. In doing so, I also uncover the particular risks associated with UTx, which demand a novel justificatory analysis. The approach taken in this paper, of identifying wider factors to include in a welfarist calculation of ARTs, is of particular importance and urgency when such a calculation is applied to justify access to increasingly risky procedures like UTx.

2.3. Parameters of the argument

It is important to note from the outset that I do not make pronouncements on any state-funding-based implications of this analysis or on whether ARTs should be available at all. These positions would require much further and distinct argumentation. Rather, the aim of this paper is merely to uncover the role of the broader social context in producing infertility-related distress and therefore trouble the assumption that ARTs can relieve

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this distress. There may be other relevant reasons for states to continue with ART provision while also promoting welfare through the kind of societal restructuring I propose. In this sense, my claims are orthogonal to other work on ARTs and infertility that seeks to examine justifications for *funding* such procedures. Mianna Lotz, for example, has critiqued the idea that UTx should be publicly funded, pointing to the way in which arguments for public provision "do not take sufficient account of the complex relationship between state-funded UTx provision and the likely reinforcement of procreative norms that … ultimately serve to reinforce and entrench existing problematic norms and stigma around infertility" (Lotz 2021). While my argument builds upon this idea that ARTs exacerbate certain factors in the wider social context that play a role in infertility-related distress, it does so toward a distinct and more limited end: assessing whether overall welfare is improved by ARTs.

Lotz develops her argument *contra* Stephen Wilkinson and Nicola Williams, who argue that various concerns raised against UTx raised do not establish a case against it, whether publicly or privately funded (Wilkinson and Williams 2016). To be clear, I do not seek to establish a "case against UTx" but, rather, query whether a case based on its promotion of welfare is sufficiently convincing. Following this, I do not take any position on whether ARTs such as IVF or UTx should be publicly funded. The question I explore is somewhat prior to such debates, centering instead on whether ARTs promote welfare. Giulia Cavaliere makes a case for the expansion of fertility treatment provision, arguing that "(reproductive) preferences ought to be taken more seriously when discussing fertility treatment provision … and that not doing so can be costly, especially for women" (Cavaliere 2024). An axiomatic assumption in this argument is that "fertility treatment enables involuntarily childless people to have genetically related children" (Cavaliere 2024). This is what I believe grounds the welfare-based justification of such technologies. However, as I will argue, the success of ARTs in meeting this aim is arguably limited, given around three-quarters of IVF is unsuccessful (HFEA n.d.-b). The accompanying distress, however, is tangibly related to welfare *reduction* (Pasch et al. 2012).

3. Welfarism and ARTs

I begin my analysis by building the case that welfare-based justifications for the development and provision of ARTs are the strongest, through an examination and elimination of alternative, rights-based and treatment-based justifications. Following this, I attend to the core research question: is the operant justification for infertility procedures robust? That is, do ARTs appropriately attend to welfare and meet their welfarist aims?

3.1. Alternative justifications for ARTs

The question as to whether access to fertility procedures could be grounded in rights was taken up by Mary Warnock in her examination of assisted reproductive technologies such as IVF (Warnock 2003). Warnock endorsed a legal positivist position in her exploration of whether there exists a "right" to have children, suggesting that in the absence of a law conferring that right, to claim a right is to employ no more than a rhetorical device (Warnock 2003). On such a view, the law is a matter of what has been posited, and "moral rights" beyond this—such as a right to procreate—are certainly not legally protected and may well be incoherent.

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Until a right is enshrined in law, "you can claim no more than that you ought to have the right, not that you have it" (Warnock 2003). Warnock recognized that this position might seem to give undue authority to the formulation of the law as it is. However, she held that the source of human rights, even as they are enshrined in law, is the concept of *need*, rather than law. Thus, she argued that no such right to children could or ought to exist, because procreation is not a basic need. To say procreation is a rights-generating need for those who desperately want children "would be to erode the distinction between relative and basic needs, and indeed to make it impossible to distinguish between heartfelt wishes on the one hand and entitlements on the other, between wants and needs" (Warnock 2003). Warnock maintained, however, that the infertile who want to conceive remain entitled to expect that they will be given medical assistance to do so (Warnock 2003). She acknowledged that payment might be required and thus was not making a pronouncement on resource allocation decisions. Nevertheless, on her view, access to reproductive procedures, whether or not they are publicly funded, is grounded in welfare considerations, as infertility causes extreme distress, and the medical profession is generally committed to alleviating suffering. Warnock did not substantiate the notion of welfare that she was operating with—this is a task I take up later in this section through a discussion of theories of well-being.

Notable attempts to provide a rights-based approach to justifying policy for reproductive technologies include John Robertson's account of procreative liberty (Robertson 1995). Robertson is concerned with the "right" in terms of both moral and legal duty (Robertson 1995) and he argues for both a moral and legal right to reproduce under the concept of "procreative liberty." However, this primarily entails a *negative* liberty right to engage in activities necessary to achieve the goal of procreation, without interference by the state or others unless the reproduction harms nonconsenting others in specific ways (Robertson 1996). Crucially, procreative liberty does not guarantee positive access to ARTs.

It seems unlikely that a positive conceptualization of rights underscores current state-sanctioned access to ARTs, as such a "right" to these procedures would be too demanding. To claim that A has a negative right to IVF, for example, would be to say that the state may not permissibly interfere in A's decision to undertake IVF. By contrast, a *positive* right to IVF entails a corresponding duty of positive assistance from others. Thus, to say that A has a positive right to IVF is to say that A has a valid claim against another person or the state to fulfill access to IVF. Given the patchy and inconsistent distribution of IVF services in the UK, we can ascertain that there is presently no universal socio-economic right underpinning its delivery, as there is with education, for example. Practicalities aside, if we look closely at precisely what a positive right to IVF would entail, we can see that it demands peculiar goods and duties.

An individual with medical issues regarding ovulation and egg production would require access to donor eggs to undergo successful IVF treatment, for example. For this to be granted to all in need—as a matter of *right*—might be seen as necessitating access to other people's bodies to be able to satisfy the demands of this claim. That is, the fulfillment of such a claim, through the imposition of a positive duty on the state or others, may take us beyond a system of consensual gamete donation. While a negative right to be free to engage in certain fertility procedures may entail no corresponding public duty of assistance, a claim of positive assistance to IVF may be more complex to fulfill.

Such concerns are heightened when we consider what a positive right to other forms of fertility assistance, such as surrogacy, or the emerging uterus transplant, might look

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like. Following Judith Jarvis Thompson's canonical intervention into the debate on foetal value and abortion, we might say that any right to have children can be distinguished from a right to be given access to the means necessary to have children (Thomson 1971). If the means necessary to have children involve invasive access to other people's bodies through surrogacy arrangements, or living uterine donations, this might cast doubt on the reasonableness of such a claim. A positive right to UTx that involved forcible redistribution of reproductive materials or coerced access to reproductive means would of course be straightforwardly in conflict with the negative rights of others, and therefore unsustainable (Barn 2024). A system involving consensual donation would avoid this, but it remains implausible that UTx could be enshrined and guaranteed as a matter of positive right.

Finally, I consider a justification for ARTs centered on the idea that such procedures serve as "treatments" for a "disease." There is much debate concerning whether infertility is appropriately considered a disease (McTernan 2015; Kukla 2022), and of course on the nature and definition of disease itself (Reznek 1987; Kingma 2017, 2010). Through a careful examination of the normativist and naturalist positions on classifying infertility as a disease, Hane Maung argues that there exist deep theoretical disagreements in the literature (Maung 2019). As a result, one cannot uncontroversially justify or undermine claims to infertility treatment by claiming that it is, or is not, a disease. Therefore, a preferable approach to justifying state-funding centers on explicitly addressing the specific ethical considerations raised by infertility, as opposed to one that seeks to determine its disease status (Maung 2019). In making this case, Maung builds upon an approach proposed by Rebecca Brown and colleagues who also move away from debates concerning infertility's disease status, and instead focus on its harms, in particular the quality and extent of suffering it can cause, and how it affects individuals' opportunities to pursue valued life projects (Brown et al. 2016).

In the absence of any forthcoming consensus on infertility's disease status, it seems most productive to take this irresolvable dispute as a starting point, and consider what follows from such an impasse. Implicit in these accounts, however, is the view that infertility treatments are a way to straightforwardly alleviate the suffering in concern. While infertility's disease status remains an open question, another looms large: whether ARTs do indeed mitigate this suffering, or whether they may be inimical to this welfarist goal.

3.2. Theories of well-being

It is important to clarify what is to be understood by welfare. Warnock's account seemed to characterize welfare as the alleviation of suffering, and we might want to expand this notion to map onto well-being more generally. Thus, welfare is to be understood as well-being on various plausible accounts, such as hedonistic, desire-fulfillment, and objective list theories. This taxonomy is not without problems: it does not exhaust the possible views, nor does it establish the theories as counterposed (Arneson 1999). Indeed, it may be a false trichotomy: Parfit himself suggests, at the end of his tripartite analysis, that what is best for people may be a composite of their conscious subjective states and certain objective goods (Parfit 1984). It is beyond the scope of my analysis to engage in a thorough meta-ethical investigation of well-being. Rather, I take these three categories as a useful, well-trodden, starting point to answer the overarching question as to whether ARTs can be said to promote well-being according to said dominant conceptions.

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Theories of well-being center on exploring the fundamental good for human beings: what does human flourishing consist in? What would be best for someone and make their life happiest? According to Parfit, the first candidate theory of the good life, or well-being, is hedonism. A hedonistic account of well-being suggests that our life goes well to the extent that we experience pleasure and the absence of pain (Parfit 1984). A good life, therefore, is one in which pleasurable mental states are either dominant or outweigh painful mental states. However, our desire also seems relevant to these experiences of pleasure and pain. This is because pain can also be rational or morally significant, and so desired. This opens the door towards preference-hedonism—the idea that one of two experiences is more pleasant if it is *preferred*.

Next, Parfit considers desire-fulfillment theories, the most plausible of which he terms success theory. Here, desire is restricted to desires about our own lives, as opposed to, say, the fleeting well wishes we might have for strangers. According to desire-fulfillment theories, what matters for well-being is the degree to which our desires are satisfied. A good life is one in which the agent is able to satisfy their desires, plausibly their most important desires, and where desire-satisfaction outweighs desire-frustration. Success theory differs from preference-hedonism in that the external fulfillment of one's desires is relevant to the former but not to the latter, which is guided by introspectively discernible features of our lives. On preference-hedonism, if we do not have the experience of one of our preferences going unfulfilled, say, through ignorance, then no difference is made to our state of mind and well-being. On desire-fulfillment theories, by contrast, ignorance cannot shield us—if our desires go unfulfilled, this is bad for us, as what makes a good life is having our desires fulfilled, rather than our experience of pleasure and pain. The relevant feature in desire-fulfillment theories is "simply whether or not the states of affairs that are the objects of one's various desires obtain; it is irrelevant whether or not one realizes it, or whether one gets some psychological feeling of satisfaction" (Kagan 1992).

Finally, according to the objective list theory, certain activities are objectively good or bad for people, independently of how they experience them or whether they desire them. According to Parfit, the good activities might include "rational activity, the development of one's abilities, having children and being a good parent, knowledge," while the bad things might include "being betrayed, manipulated, slandered, deceived" (Parfit 1984). Being well off, or happy, therefore, is "simply a matter of one's having the various objective goods" (Kagan 1992). The precise list of objective goods is a matter of dispute and there may be "no uniquely rational way to determine what putative goods qualify as entries on the List" (Bronsteen et al., 2022). Nevertheless, Shelly Kagan observes that, whatever these goods are, there is no reason to think they would be restricted to kinds of mental states (Kagan 1992). Objective list theories can therefore be distinguished from subjective theories of the human good, which make welfare dependent upon mental states. An immediate concern, however, is with the prescriptive nature of the list. "Having children" features on Parfit's list of goods, with the result that childlessness necessarily reduces well-being on the objective list account. However, increasing numbers of people are choosing to go child-free and self-report happiness tied to this decision (Blackstone 2019). Anticipating problems with neglecting the hedonistic focus on experience of one's own life, Parfit responds:

> We might then claim that what is best for people is a composite. It is not just their being in the conscious states that they want to be in. Nor is it just their having knowledge, engaging in rational activity, being aware of true beauty, and the like.

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> What is good for someone is neither just what Hedonists claim, nor just what is claimed by Objective List Theorists. We might believe that if we had either of these, without the other, what we had would have little or no value. We might claim, for example, that what is good or bad for someone is to have knowledge, to be engaged in rational activity, to experience mutual love, and to be aware of beauty, while strongly wanting just these things. (Parfit 1984)

A composite view of well-being, combining subjective desires with objective goods, can avoid the problem outlined above. Richard Arneson, defending an objective list account, notes that entries on the list can be ranked in importance. An objective list theory need not "deny that an individual's attitudes may partly determine what is prudentially valuable for her" (Arneson 1999). Individual attitudes do not *determine* which items belong on the list, but some items "may include requirements concerning her attitudes and opinions" (Arneson 1999). For example, possible items on the list may be that "important life aims be satisfied" and it could involve the subjective ranking of aims. Therefore, childlessness need not necessarily reduce well-being on objective list accounts. It would only do so if "having children" was highly ranked by the agent in question.

There is a lot more to be said about the plausibility of these accounts of well-being and the ways in which they interrelate. For now, the key point is that a welfare-based justification for ARTs can plausibly be mapped onto any of these accounts of well-being. That is, ARTs may be justified according to welfare considerations if they (i) produce pleasure and avoid pain in a way that is preferred/chosen, (ii) satisfy or fulfill people's desires, regardless of whether any feeling of satisfaction obtains, or (iii) result in access to certain highly ranked objective goods. If ARTs do any of the above, they might be seen as promoting well-being. The question that the next section will explore is whether ARTs do indeed promote well-being, on these conceptions. In answering this, I engage in further conceptual analysis of well-being and critical examination of the accounts above.

4. Individual welfare

While Maung and Brown's analyses are attentive to many social and cultural factors that contribute both to infertility and any associated suffering, they do not explicitly center a feminist lens, which I suggest is key here due to the gender-differentiated experiences of reproductive medical interventions and infertility-related distress.[4] Nor do they consider whether the goal of suffering reduction is in fact compatible with a technological solutionism centered on the use of reproductive technologies. Focusing on ARTs and the welfare of an individual, then exploring the impact of ARTs on society more widely, I interrogate the assumption that social welfare is promoted by such technologies. I begin by showcasing research on IVF outcomes that indicates overall success rates to be relatively low, as well as being variable between ethnic communities. This latter finding points to the social determinants of infertility which I suggest need to feature in a welfarist assessment of IVF. Following this, I apply each of the theories of well-being discussed above to an analysis of these outcomes, in order to determine if the operant justification for ARTs as promoting welfare holds. Following this, I consider UTx

[4]They also both address the state-funding of infertility treatments and the most productive ways to justify such funding, but as aforementioned, my focus is different. I am not explicitly concerned with state policy decisions, but rather, the anterior question as to *whether ARTs can be justified by appeals to welfare*.

https://doi.org/10.1017/hyp.2025.10054 Published online by Cambridge University Press

outcomes and the peculiar risks and harms that are to be featured in that welfarist calculation.

4.1. IVF outcomes

Regarding the question as to whether ARTs promote welfare in individual cases, it is important to observe that the efficacy of fertility treatments is frequently disappointing and far from guaranteed (Pandian et al. 2012; Dapuzzo et al. 2011; Sadeghi 2012). ARTs such as IVF plausibly attend to welfare sufficiently if and only if they end in a live birth.[5] This claim will be further substantiated in the analysis of well-being that follows this empirical overview of IVF success rates. Where IVF is not successful, studies suggest the outcome turns out to be decreased welfare (via the incidence of anxiety and depression) (Holley et al. 2012; Pasch et al. 2012; Today.Com 2024; BBC News 2013). There are also significant financial costs associated with both failed and successful cycles, which can impact well-being. Even when successful, treatments remain accompanied by anxiety and depression (Awtani et al. 2019; Wu et al. 2023), although this distress might be traded off against the favorable result in such cases. It is also worth observing that IVF carries certain risks and can lead to serious adverse outcomes in extremely rare cases, such as when the use of fertility drugs to induce egg production causes ovarian hyperstimulation syndrome (Namavar Jahromi et al. 2018). Further, IVF pregnancies are also considered higher risk, requiring more monitoring, and may lead to gestational diabetes, premature delivery, low birth weight, and miscarriage (Kamphuis et al. 2014).

While it is impossible to provide a global overview of IVF success rates within the scope of this paper, I showcase statistics from the UK and US, by way of example. According to the UK Human Fertilization and Embryology Authority (HEFA), around three quarters of IVF treatment is unsuccessful (HFEA n.d.-b). As a snapshot, their most recent figures reveal that the *average* pregnancy rate from IVF using fresh embryo transfers and patient's own eggs was 31 percent. Patients aged 18–34 had the highest pregnancy rate per embryo transferred at 41 percent, compared to 34 percent for patients aged 35–37, and 25 percent for patients aged 38–39. The pregnancy rate differs from the birth rate, the latter being lower and denoting the actual number of live births. The preliminary average UK IVF birth rate using fresh embryo transfers was 25 percent nationally, with 35 percent for patients aged 18–34 and 30 percent for women aged 35 plus. It is just 5 percent for patients aged 43–44. In the US, the live birth rate, per embryo transfer cycle, for women aged 35 is higher at 39 percent. The average age of fertility patients starting treatment for the first time is now over the age of 35 (HFEA n.d.-a). This means that the figures for pregnancy and birth rates for patients aged 35+ are likely to be the most representative in terms of the typical IVF patient.

There also exist disparities between ethnic groups: for Black and Asian patients aged 18–37, the average IVF birth rate per embryo transferred using fresh embryo transfers were 25 and 27 percent respectively, compared to 33 percent for White patients in 2022–23 (HFEA n.d.-c). Possible explanations offered for some ethnic disparities include the fact that Black patients started treatments later than other groups, were more likely to use imported gametes, and were most likely to have faced a decrease in NHS-funded IVF cycles. NHS-funded IVF cycles decreased most among Black patients in recent years, from 60 percent in 2019 to 41 percent in 2021, 49 percent for Asian, and 53

[5]Questions about whether the respect for autonomy exhibited in such procedures is sufficient for promotion of welfare will be discussed later.

https://doi.org/10.1017/hyp.2025.10054 Published online by Cambridge University Press

percent for White (HFEA n.d.-c). Internationally, Black, Indigenous, and other people of color, those living on low incomes, and other historically marginalized communities experience disparate access to infertility evaluation, treatment, and care (Weiss and Marsh 2023; Merkison et al. 2023; Perritt and Eugene 2021). Reproductive justice (Ross and Solinger 2017), therefore, involves taking seriously pre-existing inequalities and social determinants—an issue I return to in the final section.

In addition to the problem of fertility treatments having varying degrees of success in the first instance, and thus lacking in their contribution to welfare, it is also the case that failed treatments are associated with psychological distress. A robust body of research, including a number of meta-analyses, finds that women whose IVF treatment failed were at greater risk of anxiety or depression in the months afterward (Ross and Solinger 2017; Pasch et al. 2012; de Klerk et al. 2007; Fertility Network n.d.; Sejbaek et al. 2013). Male partners are affected too, but incidences of depression and anxiety are notably higher amongst women (Almutawa et al. n.d.; Peterson et al. 2006). Even before an IVF treatment fails to result in a birth, an expanding body of literature shows that women experience heightened levels of psychological distress, most commonly manifesting in anxiety and depression, while undergoing the treatment (Wu et al. 2023; Van den Broeck et al. 2010; Gdańska et al. 2017; Bai et al. 2019). Such anxiety is plausibly tied to the pressure felt by women to ensure the procedure's success, and the sense of responsibility regarding appropriate diet, exercise, and behavior. All of this should lead us to question whether infertility treatments are indeed responsive to infertility-related suffering. If the very process of undergoing such treatments is associated with anxiety and depression, and most treatments turn out to fail, which is in turn likely to lead to further suffering, where is the purported suffering alleviation to be found? Looking at statistical probability alone, it seems plausible to maintain that individual welfare is not improved through the use of such treatments, on average and in most cases.

Of course, in individual successful cases, the benefits are likely to be seen as countering any psychological harms associated with the procedure. However, it remains to be shown that these individualized benefits can outweigh the failures of other cases. In section 5, I will argue that individual successes may not offset the wider harms associated with these procedures and that a focus on individual successful cases feeds into a technological solutionism that itself has negative societal effects.

4.2. Does IVF promote well-being?

Let us now consider in closer detail whether, based on these findings, IVF is likely to promote well-being.[6] To recall, on the hedonistic, or preference-hedonistic account of well-being, one's life goes well to the extent that we experience pleasure and the absence of pain, and that such states are preferred or not preferred. It is likely that, before undergoing IVF, patients experience suffering as a result of a frustrated desire to conceive. As aforementioned, IVF treatments themselves are accompanied by suffering, in the form of anxiety and depression, so painful mental states are likely to increase during the treatment. Most IVF treatments will turn out to "fail" in the sense of not resulting in a live birth. This, as aforementioned, leads to further depression and suffering, particularly amongst women undergoing the procedure. This state is clearly not desired and so is experienced as pain. On the preference-hedonistic account of well-being, therefore, IVF is unlikely to increase pleasurable mental states and is far more

[6]To determine the meaning of the predictive judgment, "likely", I am using statistical probability.

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likely to constitute a reduction in well-being given the dominance of painful mental states. It would seem that the painful mental state of childlessness following a failed procedure outweighs the positive feeling or sense of "trying," if most IVF failures result in *further* measurable depression, as the data suggest.

According to desire-fulfillment theories, what matters for well-being is the degree to which our desires are satisfied. Let us suppose that the desire underpinning IVF is the desire to have a child. To recall, the most recent figures show that the average IVF birth rate using fresh embryo transfers was 25 percent. This means 75 percent of patients undergoing IVF did not have a successful live birth and end up with the child they desired. This is the vast majority of patients with desires going unfulfilled. Desire-frustration significantly outweighs desire-satisfaction, therefore. For most, the states of affairs that are the objects of their desires have not obtained. On a desire-fulfillment theory of well-being, therefore, there are no well-being improvements. Indeed, the results for well-being are even worse on desire-fulfillment theories than on hedonistic accounts. This is because the mere fact that their desires have not obtained is sufficient to mean their well-being is reduced, regardless of how they might themselves feel about it. Even if a portion of the 75% unsuccessful IVF patients do not themselves experience suffering as a result of a failed treatment, their subjective experience is not relevant to well-being on desire-fulfillment accounts. All that matters is whether the relevant state of affairs has obtained, and given there is no successful live birth, the overarching desire to have a child remains frustrated.

It may be objected that the desire underpinning IVF is actually something different. It is directed towards "*trying*" to have a child via IVF rather than towards the *outcome* of having a child. Therefore, the appropriate way to measure desire-satisfaction here is to see how many patients had access to IVF if and when they desired it. Results and success rates of IVF are not relevant to desire-satisfaction, only the very incidence of desired IVF is. If we accept this as the correct way to cash out well-being, and therefore as comprising the justification for ARTs, it seems like a strange way to think about the merits of IVF. If we take live births out of the equation and do not consider the possibility of IVF delivering on its promise in our appraisal of it, justifying it only in terms of its sheer availability, this doesn't leave much room for scientific evaluations, and arguably opens the door toward disappointment and reductions in hedonistic well-being. Intuitively, it seems like outcomes matter when appraising medical procedures.

Further, it may be responded that desires on desire-fulfillment theories *do* seem to be objective-based. This coheres with how we think about desire more broadly. Normally we desire X, where X is an outcome, rather than only desiring to *try to achieve* X. After all, "to try" to achieve X is indeterminate—how would one know when one has tried enough? Whether we are *successful* in achieving X after having tried is one clear way. Returning to Parfit's conceptualization of a desire-fulfillment theory, he supplies the desire for one's children's lives to go well as an example of a desire relevant to well-being. This is quite different from the *desire to try* to make one's children's lives go well. It is hard to see how mere *desires to try* could be clearly fulfilled, if this formula for constructing desires was generalized. Constructing desire in terms of trying to X may make sense in the case of IVF where there is a very specific route involved in this "trying," but it makes less sense with other desires relevant to our lives, such as desiring a promotion, a loving partner, or a stable living environment.

One might take a kind of satisfaction in having tried to have a child via IVF, even if unsuccessful. Whether this satisfaction is accurately considered a welfare improvement is unclear. Strictly speaking, on a desire-fulfillment theory, one's desire remains unfulfilled in

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such a case, and so well-being is not improved. And, as aforementioned, research suggests that hedonistic welfare seems to be reduced in tangible ways after failed IVF cycles, due to the further measurable incidence of depression. Some research on IVF decision regret indicates that having no live births was associated with increased regret, and among those who had unsuccessful IVF cycles, 40 percent had moderate-to-severe regret (Huang et al. 2022). Successful IVF can also be regretted due to its costs, which have a long-term impact, as well as due to associated health risks and impact on the body. Another study found a significantly higher level of regret in those who did not have a live birth (41.74 percent) following IVF compared to those who did (16.78 percent) (Sundaram et al. 2020). Various personal news pieces about IVF includes stories of women who regret trying IVF after it failed (BBC News 2013; Today.Com 2024; Connell 2013). They cite high costs and the psychological and health toll as reasons to regret the decision to try. It is hard to draw too much from these limited sources and studies, and as the analysis in the next sections suggests, it is also hard to disentangle decision-making and feelings of regret from pronatalist and gendered norms surrounding femininity and childbearing. Regret at putting oneself through such a gruelling procedure may be even more present were it not for the norm towards having children.

An additional problem arises if we conceive of the desire underpinning IVF treatments as the desire to try to have a child. There is debate in the literature as to which desires should be taken as fundamental to well-being. Some desires might plausibly be considered inimical to well-being when fulfilled, such as desires related to harmful addictions. As a result, some desire theorists restrict well-being to the satisfaction of the desires one would have if fully informed or rational. If "many desires are hostage to an agent's ignorance or irrationality," then it would seem that their satisfaction "would seem clearly not to make the agent better off" (Bronsteen et al., 2022). John Bronsteen and colleagues call this the idealisation condition: for a desire to be constitutive of well-being, it must be the desire an agent would have when fully informed about "all relevant empirical facts." Similarly, Richard Arneson suggests such desires must "survive reflective critical scrutiny" (Arneson 1999) and must not arise from cognitive error or ignorance. A pregnant person's desire for a steak tartare, for example, may not survive critical scrutiny once they are informed about the toxoplasmosis risk in raw meat, and the harm this poses to the foetus.

On such a reformulation of desire-fulfillment theory, it might be suggested that desires to "try" IVF, with full information about low success rates and risks of further suffering, may not withstand critical scrutiny. One might not have such a desire to try if fully informed about sunk costs and likely failure. Therefore, the desire to "try" having a child via IVF may be excluded from the realm of well-being altogether for not satisfying this idealisation condition.[7] This gives further reason to hold that the desire underpinning IVF treatments is the outcome-based desire *to have a child*, in which case it remains frustrated in the vast majority of cases. IVF cannot be understood as a welfare improvement on desire-fulfillment accounts either, therefore.

[7]To be clear, I am not making the pronouncement that such a desire is indeed ignorant or irrational. Rather, I am suggesting that if the relevant desire here is configured in terms of the 'desire to try', then this could generate the following response in terms of the idealisation condition. The fact that it may seem dismissive or callous to term such a desire ignorant or irrational is indeed further reason to jettison the 'desire to try' formulation and focus on the 'desire to have a child' formulation instead. This latter formulation both better reflects the true substance of the desire and avoids making pronouncements on the agent's critical reflection.

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Finally, objective list accounts hold that an agent's well-being is diminished if the good of having and raising children is highly ranked and has not obtained. Well-being can be promoted by IVF if it realises this good. As the data suggest, objectivist well-being is not promoted in the vast majority of cases where there are no live births, as the relevant good has not obtained. It is worth noting that we might consider other interpretations of the goods on the list. Having and raising children may be seen as speaking to an overarching good of having deep, intimate, relationships, characterised by mentoring and care. It may also pertain to the good of being enmeshed in close and morally significant kinship networks. These other interpretations of the good of having children can be achieved without IVF and, as I will suggest in the next section, may in fact be held back by an approach to reproduction and care that focuses on genetic connectedness and the nuclear family.

4.3. Uterus transplants and the welfarist calculation

I now consider the benefits to an individual in the case of the novel uterus transplant, to establish a rich picture of the kinds of welfarist calculation in operation. There have been significant recent advances in the development of UTx as a procedure to alleviate absolute uterine factor infertility (AUFI). UTx is currently in its experimental phase and both living and deceased donors are used for uterine procurement. The primary aim of UTx is to enable uterus recipients to, following a successful transplant and IVF procedure, experience pregnancy and gestate a fetus to term. The donated uterus is removed after the desired number of successful births in order to suspend the use of immunosuppressants and minimize their long-term side effects (Castellón et al. 2017). UTx is often viewed as a "treatment" for "infertility" (Brännström et al. 2021). As well as this, it has been suggested that UTx can assist in "gender alignment." A qualitative study from 2021, interviewing 21 women undergoing uterus transplants, sought to explore women's experiences of their uterine-related infertility, and the impact of the transplant on their reproductive autonomy (Wall et al. 2022). It was found that UTx made a positive impact on healing the emotional scars of living without a uterus and "enhanced female identity" through allowing these women to participate in previously unobtainable "common female experiences" such as menstruation, pregnancy, and motherhood.

There exist a number of harms associated with this procedure. Indeed, in order to correctly capture the harm at stake, UTx may more appropriately be viewed as a major transplant surgery, rather than, *merely* an assisted reproductive technology. Naturally, all established living donor transplant surgery necessitates inflicting some harm upon both the donor of an organ, and the recipient. Donors and recipients undergo a major surgical procedure that invariably requires time to heal, even if additional associated risks of harm do not transpire. This harm, and risk of harm, are typically viewed as justifiable if all parties have provided valid consent to undergoing the procedure. A further condition is taken to be jointly sufficient with the consent condition: the level of harm and risk of harm should not exceed the overall benefit that is to be produced by the surgery.[8] Donation should not, for example, cause significant and long-term morbidity to, or indeed the death of, the donor.

[8]There is also a deontological constraint on the level or harm that should be permitted by surgery. That is, the harm involved should not exceed a certain threshold, even if the benefit produced by the surgery would, in some corresponding sense, exceed this level of harm. For example, a surgeon would not be justified in

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In order to make this calculation in the case of UTx, it bears observing that UTx is an ephemeral transplant, serving short-term aims only. As aforementioned, the uterus is removed once it has served its gestational purpose: this enables the recipient to stop taking immunosuppressants. Immunosuppressants are required to prevent rejection of the graft, but their use is associated with a number of risks, including infection and cancer (Fishman 2007; Kasiske et al. 2004). An additional peculiarity of UTx as a transplant is that it is life enhancing, as opposed to life saving, or life prolonging. UTx provides no direct *health* benefits to the recipient, and indeed damages health to some degree, causing short-term harm through surgery and the required immunosuppression, as well as enabling a high-risk pregnancy that requires close monitoring and additional support (Jones et al. 2021), as well as posing long-term risks of further harm. Such features appear crucial to the ethical assessment of UTx, raising questions surrounding the acceptability of the risk to donors and recipients.

So, even if there are individual benefits associated with the fulfillment of gender-identity and a desire to gestate a genetically related child, these need to be balanced against patient harms.[9] In considering the extent to which UTx might be considered a "medical treatment," Emily McTernan notes that this would be unusual given that UTx reduces overall functioning:

> in exchange for providing a woman with a chance at reproductive success, we diminish her immune system and leave her at higher risk of death, including a lasting increased risk of certain cancers. That does not constitute a net gain in normal functioning, nor an overall diminishment of medical need otherwise defined. (McTernan 2018)

One study found that six out of 16 (37.5 percent) UTx pregnancies faced major complications during gestation. Preterm births occurred in 10/16 (62.5 percent) UTx deliveries. Pre-eclampsia was the most faced gestational complication, as it was reported in 3/16 (19 percent) of UTx-IVF pregnancies (Daolio et al. 2020). All deliveries were carried out by elective caesarean sections between gestational weeks 31 and 37—a procedure that also carries distinct risks and harms. The individual benefit of such a procedure seems worth questioning, therefore, when the net overall consequence of some treatment is a *diminishment of functioning or health*.

UTx is clearly riskier than IVF, and any conclusive welfarist assessment should consider these procedures separately. The point here was to show the analogous underpinning logic of welfare improvement. UTx seems to have higher success rates in terms of live births (which involve IVF) (Brännström et al. 2021). However, the total data pool is much smaller given it is still in the clinical trials stage. Further, as aforementioned, UTx is associated with heightened and peculiar risk, to both the individuals undergoing the procedure and to living uterine donors. These additional risks and harms ought to be factored into a welfarist calculation. That is, for UTx to be considered a welfare improvement, the harms of living donor surgery and patient risk need to be given due weight.

harvesting the organs of one healthy living donor, in order to save multiple others. Similarly, a surgeon would not be permitted to retrieve a living donor's heart in order to transplant it into someone in need of a heart.

[9]And this is before even considering harm to the living donor, considerations that are important but beyond the scope of this analysis.

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Taking stock so far, on the three conceptions of well-being outlined earlier, it would seem that IVF, where it is not successful—that is, in the vast majority of cases—does not serve to promote well-being. Pain rather than pleasure is the outcome, desires are left unsatisfied, and a crucial object on objective list accounts of well-being is not accessed. Unsuccessful IVF attempts in fact lead to a decline in welfare and well-being. UTx trials might have relatively high success rates, but the procedure exhibits additional harms that ought to feature in the welfarist calculation. A secondary aim of this discussion has been to show that, in relation to individual welfare, a welfarist calculation must consider wider risks and harms. Typically, cost-benefit assessments of medical treatments and other established transplants centre on finding this balance of harm and benefit between donors and recipients, as well as by appeals to the value of respect for individual autonomy (Williams 2016), which I consider next. It might be suggested that, in the case of fertility treatments, *respect for individual autonomy* in the face of such risk of harm and uncertain benefit is playing an excessive, and indeed decisive, role in the calculation.

5. Autonomy and social welfare at large

As a result of the dominant role reproductive autonomy may be playing in welfarist calculations, it is worth exploring the conditions that construct an individual's autonomy to engage in ARTs. In doing so, I take seriously the suffering associated with involuntary childlessness as the starting point of reproductive decision-making and consider possible contributing factors to this suffering. This suffering is not addressable by a myopic focus on ARTs. A range of social factors contribute to the inability to have children, and objectionable social norms plausibly construct and exacerbate the accompanying distress. Taking reproductive autonomy, suffering, and well-being seriously involves confronting the totality of our conditions.

Brown and colleagues note that "clearly not all people will suffer to the same extent or in the same way, and variations can depend on individual circumstances and character, as well as on sociocultural factors (including the response of wider communities)" (Brown et al. 2016). What then, might contribute to this difference in suffering? While it is acknowledged that "sociocultural factors" may have a significant role to play in said suffering, Brown et al. do not develop an analysis of the gendered nature of these norms. I will now turn to do this, drawing out the link between ARTs and the perpetuation of norms surrounding femininity and childbearing. While a procedure such as UTx may allow women to achieve "normalising" experiences such as pregnancy, the question remains as to whether we ought to continue placing such value on a biologically reductive conception of female identity that demands this kind of intervention to enforce alignment. Similarly, the widespread deployment of ARTs in general plausibly contributes to the cultural expectation to mother and the attendant harms of such an expectation. Social norms, through this process of desire construction and the infiltration of our choice architecture, feed back into individual welfare outcomes, and so should be taken seriously in a welfarist calculation.

Let us consider the claim that respecting autonomy might be taken to be welfare-promoting. Thus, respect for reproductive autonomy might be invoked as a justification for permitting access to increasingly risky assisted reproductive procedures. Even if a procedure is risky, experimental or possesses a relatively low chance of success, we should respect the reproductive autonomy of the woman choosing to undergo it. She is the best judge of her interests and should be free to choose any such option available to her. Autonomy, on such a view might be seen as having intrinsic value, perhaps as a

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constitutive element of well-being. On such a view, "a life without free choice is poorer for that very reason" (Hurka 1987). There would therefore be good reasons to limit interference with autonomy. After all, if autonomy is intrinsically good, "any restriction of choice has some morally undesirable effects, and there is always some reason to resist state interference with the self-regarding" (Hurka 1987).

However, the intrinsic value of autonomy, understood broadly as self-government and the capacity to reflect on and endorse one's views, is not straightforwardly apparent, particularly when the outcome of so-called autonomous decision-making is a choice that reduces well-being. Indeed, relational autonomy theorists have been critical of individualist conceptions that equate autonomy with notions of freedom from interference and lend support to minimalist views of state responsibility. Instead, a viable conception of autonomy must be "responsive to the facts of human vulnerability and dependency" and to the idea that "gender and other forms of social oppression can impair individuals' capacities to lead self-determining, self-governing lives" (Mackenzie 2021). Serene Khader suggests we must look beyond autonomy-fetishism as empowerment also requires non-autonomy goods and improvements in conditions external to the agent (Khader 2015).

I am not seeking to pronounce that the decision to use ARTs under conditions of gender socialisation and pronatalism is insufficiently autonomous so as to demand interference and merit the withdrawal of state funding (Cavaliere and Cesarano 2025). As aforementioned, such a claim requires a different argument, and I am also sceptical that a threshold of "genuinely autonomous" decisions can be determined. Rather, in examining the determinants of reproductive autonomy, I am seeking to draw attention to the background context that constructs both procreative decision-making and infertility. In highlighting the following social factors, I suggest that ARTs cannot be responsive to them, and so a holistic picture of promoting reproductive autonomy looks quite different to merely securing the provision of ARTs.

Respect for autonomy, particularly on a relational conception, therefore, might necessitate attending to the social context in which such choices are made. To this end, it is instructive to return to early feminist critiques of assisted reproduction and isolate the elements of their analysis which remain salient. Developments in IVF were initially met with suspicion. Gena Corea argued that ARTs would reduce women to "Matter" and represented a troubling medicalisation of the reproductive process that was poised to harm women (Corea 1985). Janice Raymond pointed to the marketised development of ARTs and the cultural expectation that all women should mother. She saw these factors as constructing women's choice to engage in such procedures, which she emphasised as experimental in nature, advocating caution given the harm previously inflicted upon women by the medical profession, through practices such as forced sterilisation, medically unnecessary hysterectomies, and harmful birth control (Raymond 1995).[10]

Rather than viewing the advancement of ARTs as the solution to the suffering of childlessness, these feminist approaches sought to question why it is that infertility causes such distress, and proposed ways of addressing it that confront the totality of the situation, that is, the situation of women under patriarchy. Infertility-related distress, they argue, is, at least in part, due to "ideal" notions of femininity that permeate our culture and place significant emphasis on motherhood and childrearing. Such recurrent

[10]It should be noted that, like many second wave feminists, Janice Raymond's wider work is considered to be transphobic. The work I cite on reproductive technologies remains worth studying, however, given the peculiar, historical insights it offers into the introduction and development of this industry.

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messaging causes pain when one feels unable to conform to this model. Further, the dominance of the nuclear family unit as our mode of social reproduction is upheld by ARTs, and this limits access to alternative modes of kinship that could provide other options for feeling fulfilled in terms of family life.

Reproductive autonomy may be understood as the capacity to control outcomes relating to reproduction, including having children when one wants to. Infertility is one such barrier to reproductive autonomy. As it has been argued, IVF does not resolve this tension in the vast majority of cases. If IVF can *only* be justified by appeals to welfare and well-being, yet seems to fail on these terms on aggregate, we must consider how else we might improve reproduction-related well-being. Such an improvement might be generated in two ways: (i) by placing greater focus on the social determinants of health and infertility in order to enable people to realise their reproductive goals more holistically and (ii) by amending dominant structures and norms that promote the genetic kinship model and associate womanhood with childbearing. This latter solution could involve expanding the conception of the good of having children on the objective list to include other kinship models, as well as transforming the objectionable norms that play a role in desires. The rest of the section will provide grounding for these solutions.

In terms of improving infertility holistically, it would seem that much of what leads to "infertility" in developed countries is not addressable by IVF. A leading factor is our economic mode of organisation which impedes the ability to start and feel settled in one's life, requires periods of intense study and work, generates a lack of affordable housing suitable for homemaking, and fosters career structures that are hostile to family-making at a lower reproductive age. In addition, environmental factors such as pollution and poor nutrition are well-established causes of poor health and miscarriage. Such factors need to be considered as part of a comprehensive approach towards realising reproductive autonomy and well-being.

I turn now to the contribution of certain social norms to infertility-related distress, and how this bears upon reproductive autonomy. While early feminist critics attributed infertility-related distress to various systemic features of patriarchal society, many contemporary approaches emphasise an individual's reproductive autonomy to engage in infertility procedures as they see fit.[11] Despite the initial appeal of the language of freedom, there is a sense in which making freedom focal obfuscates salient issues related to the harmful context in which choices are made, as well as how they might collectively make an impact beyond individual cases. To illustrate, respect for reproductive autonomy might be invoked as a justification for permitting access to increasingly risky assisted reproductive procedures, as I have outlined. Yet, proponents of a reproductive autonomy-guided approach acknowledge there are limits to when reproductive autonomy can deliver verdicts on the permissibility of reproductive decisions. Potential harms that uterus transplants pose to the live donor, to the recipient and to the developing foetus might constrain an individual's reproductive freedom to undergo UTx, for example. Similarly, one's decision to undergo a uterus transplant might be constructed by oppressive social conditioning and pressures to procreate. However, in response to this latter concern, Laura O'Donovan notes that, generally, we

[11]Reproductive autonomy is an important value—various histories of state-imposed population control showcase the harms that can result from undue interference into individual's reproductive decisions. Correspondingly, it is often taken as axiomatic that reproductive autonomy involves a positive element, grounding access *to* certain services, such as abortion and family planning clinics. In such cases, the value of reproductive autonomy is clear.

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do not seek to influence or curtail an individual's choice in *natural reproduction*. In such cases, we do not seem to question the authenticity of a seemingly autonomous decision. Thus, she suggests, we have no more reason to do so with regard to uterus transplants as a treatment option (O'Donovan 2018).

Yet this general acceptance of all reproductive decisions in the context of harmful, essentialising norms is precisely what Corea and Raymond criticise. They would not view such decisions as an unobjectionable, neutral benchmark from which to permit further reproductive risk. Concerns regarding social pressure come to the fore, and indeed may be heightened, in the context of fertility treatments which pose increased risks. Acknowledging a symbiotic relationship between social norms and individual decision-making need not even involve making a pronouncement on compromised autonomy. Rather, such an analysis can be used to draw attention to salient components of infertility-related suffering in a way that yields a more holistic resolution.

Perhaps as long ago as Plato's diagnosis of the wandering womb as the cause of various psychosexual problems viewed as peculiar to women (Cornford 1997), dominant culture has been permeated by an ideology that ties women to an embodied condition and associates them with their reproductive role. Under such an ideology, what might start as an initial description of sexed reproductive roles serves to give rise to various normative claims regarding the proper or essential role of a woman, resulting, it would seem, in an imperative to align with this characterisation. Far from being relegated to the past, the recent literature on uterus transplants is replete with essentialising accounts that tie womanhood to childbearing. Sometimes this gendered narrative is explicitly used to make arguments for state-funded assistance to access this procedure, on social welfare grounds, pointing to the alleviation of distinctly *female* infertility-related distress that procedures such as UTx aim towards.

Carlo Petrini and others argue that uterus transplants provide "a woman the opportunity for the experience of pregnancy that may be felt as a central expression of her womanhood," thus restoring an "identity" function (Petrini et al. 2017). The legal scholar Amel Alghrani employs a procreative liberty approach to make a tentative argument for state-funded assistance to access uterus transplants, arguing that they allow "cisgender women suffering from uterus factor infertility the opportunity to experience gestation, pregnancy, and childbirth akin to their fertile female counterparts who conceive 'naturally'" (Alghrani 2018). One paper titled "A woman in full" states that "women are more complex than men, because they possess a critically important species-level capacity not available to men, the quintessential characteristic of womanhood: the ability to gestate a fetus and give birth to a living child" (Spillman and Sade 2018).

It seems, at the very least, unclear that UTx could indeed fulfill social welfare goals, due to the way in which such a procedure seems to trade on objectionable social norms that tie womanhood to childbearing. Social welfare and compassion-based calculations for UTx must take into account the promotion of harmful norms entailed by this procedure, which themselves have adverse effects. We should be wary of the way in which assisted reproductive technologies like UTx reinforce the nuclear family unit and the primacy of having genetically related children, entrenching the very norms that generate their demand. As Mianna Lotz convincingly puts it, "there remains a genuine question to be asked about the compatibility of an alleged commitment to undermining problematic norms with an intention to provide treatments to fulfil the very desires that those norms shape and support" (Lotz 2021). The cultural message that abounds goes beyond the idea that reproducing is a fundamental human need or desire. Rather, it is

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touted as a specifically *feminine* purpose. Thus, "century after century, the message seeped deeply into woman: if she cannot produce children, she is not a real woman, for producing children is the function that defines woman" (Corea 1985). The specific group-based disadvantage entailed by such a norm thus needs to be taken into account in considering how and whether to limit its promotion.

On the one hand, there are real social costs borne by women if they are unable to access the "goods" of pregnancy and this conception of femininity. Yet there is a sense in which reifying this norm, through the widespread deployment of ARTs, serves to reinforce the problem, making infertility and involuntary childlessness more painful in continuing to hold women to this biological reproductive role. Such technologies arguably serve to entrench the grip that infertility has on the welfare of people. This is because, in aiming toward this provision, such technology reinforces the primacy of certain contingent cultural ideals. Technology seems to have a determinative effect in shaping future choices and preferences, rather than being a mere additional option. Meanwhile, most societies are not set up to foster alternative kinship architectures. Labor mobility means people often move away from family for work. It is not straightforward to take on a care-giving role with friends' or neighbours' children. Grandparents and older people are forced to work in line with ever-increasing retirement ages. There is a sense in which reproductive technologies limit our imaginations to what has come before. What is instead required is a radical reimagining of the kind of social roles and worlds we want to occupy.

IVF was highly controversial when it was first introduced and is now a widely practiced and established procedure. Indeed, it is so established that a range of UK and US companies offer egg-freezing services to employees. A range of cultural and economic factors have influenced the age at which people reproduce, leading to the increased use of IVF technologies, and plausibly also egg-freezing services. The growth and normalisation of IVF attests to the deterministic nature of such technologies in shaping future choices and preferences, rather than being mere additional options. Far from being neutral, technology has a role in perpetuating certain values and beliefs. It can restructure our physical and social worlds, and so how we live (Winner 2014). We should be wary of the way in which assisted reproductive technologies turn out to reinforce harmful or regressive norms, related to an essentialist notion of womanhood and siloed kinship. Taking social welfare seriously means, as Brown et al. found, facilitating alternative forms of childrearing relationships and tackling the stigma associated with involuntary childlessness (Brown et al. 2016). But it may also mean reappraising the focus placed on infertility treatments, if it turns out they do not alleviate suffering after all.

It may be argued that it remains an open, empirical question as to whether a reduction in various norms, gender-essentialising or otherwise, would in fact reduce suffering related to childlessness. Maybe childlessness is something that would hurt no matter what the prevailing norms dictate. I concede that there is no forthcoming answer here, and it would be conjectural to suggest otherwise. However, it remains that many norms surrounding the family do seem to be socially and historically contingent. This suggests that things could be otherwise, in a manner that might reduce suffering somewhat. Consider, for example, the cultural expectation that women should mother, and be the primary caregiver, "one of the few universal and enduring elements of the sexual division of labor" (Chodorow 1978). The coronavirus pandemic brought these concerns to the fore when it was found that women performed most of the childcare and home-schooling even when both parents were in paid employment (Ford n.d.).

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There is evidence to suggest that the conception of motherhood that underscores the norms from which this empirical inequality is derived is a construction. Shari Thurer argues that the image of the good mother—the "full-time stay at home" mother isolated in the private sphere and financially dependent on her husband—came about as result of industrialisation, which took work out of the home and repositioned the domestic space as an exclusively nonproductive and private realm, separate from the public sphere of work (Thurer 2001). Similarly, Nancy Chodorow argues that capitalist industrialisation removed grown children, grandparents, and nonfamily members from the household and sharply curtailed men's participation in family life (Chodorow 1978). Adrienne Rich outlines this changing history of motherhood in *Of Woman Born*, tracing the change from maternity being a site of power for women, through the early agricultural period when women's powers of maternity began to be contained and controlled, to the domestication of motherhood after industrialisation (Rich 1995).

A maternal role that appears naturalised, therefore, may itself be the result of historically and socially contingent circumstances. In further support of the idea that contingent circumstances and norms shape decision-making, we might want to point to contexts in which increasing numbers of women are shunning procreation. In South Korea, for example, women are declining to engage in traditional family life at high rates, apparently in response to the country's patriarchal culture and economic conditions (Jung 2023). South Korea now has the lowest birth rate in the world, and it continues to be in decline (BBC News 2024). By contrast, Israel has a strong pronatalist culture and extensive ART provision and use, driven at least in part by demographic concerns regarding the maintenance of a Jewish-majority state (Vertommen 2024, 2017). These situations underscore the way in which alternative choices and preferences are formed under different social arrangements.

It also bears observing that there are powerful economic drivers underpinning the promotion of ARTs. Early feminist critics observed that infertility diagnoses rose in tandem with the proliferation of commercially motivated infertility specialists (Raymond 1995). A recent article from *The Lancet* notes that "in most countries, infertility is served by a profit-driven private sector" and that the global fertility market was valued at $34.7 billion USD in 2023 and is projected to grow to $62.8 billion in 10 years (*The Lancet* 2024). In adherence with this profit-motive, clinics use various marketing strategies including offering reduced or free IVF rounds in exchange for the "donation" of gametes, from which they can extract gain (Jacxsens et al. 2024). As an industry, therefore, assisted reproduction operates on real suffering while typically failing on its promise to relieve this suffering.

On the holistic picture of childlessness and suffering I provide, the state may have a duty to alleviate suffering by facilitating alternative forms of childrearing relationships, tackling the stigma associated with involuntary childlessness, and intervening in various social determinants of infertility such as career structures hostile to reproductive autonomy. The state may even have reason to prioritise funding such initiatives over ARTs, if they are projected to be more effective at promoting well-being. Currently, it may be suggested that technological interventions, backed by commercial interests and serving existing structures, are being prioritised, to the detriment of holistic solutions, which would require a fundamental reorganisation of society.

https://doi.org/10.1017/hyp.2025.10054 Published online by Cambridge University Press

6. Concluding remarks

Social welfare tied to the alleviation of infertility-related distress is the operant justification for various ARTs, as opposed to say, procreative rights, or treatment of disease. Thus I have been motivated to explore the extent to which reproductive technologies do indeed mitigate suffering and attend to welfare. I found that IVF, due to its poor outcomes, is not sufficiently likely to constitute a welfare improvement on the three theories of well-being discussed. I have suggested that a comprehensive picture of social welfare requires an examination of the context in which infertility-related distress operates. Being attentive to *why* it is that infertility causes such distress—and indeed why infertility procedures are associated with *continued* distress—is a more productive approach, if welfare is to be taken seriously as our guiding concern. It is at the very least unclear that ARTs can fulfill their social welfare goals if we take seriously the parallel associated harms I have outlined. As well as this, it would seem that promoting reproductive autonomy and well-being requires attending to the social determinants of infertility, which ARTs clearly cannot do, and may even detract from. Further, the determinative impact that technology can have on preference formation casts doubt on the idea that individual successful cases are discretely bounded. The promotion of welfare on an individual level, therefore, cannot be viewed in isolation from its wider effects, such as the perpetuation of harmful norms. Proper respect for autonomy necessitates attending to the social context and the way in which a harmful choice environment contributes to individual welfare outcomes.

Acknowledgments. I am grateful to the reviewers whose careful reading and comments improved this paper. I would also like to thank the participants of the Philosophy and Public Affairs Colloquium at the University of Amsterdam for their engagement with an early draft of this paper.

Funding Statement. Open access funding provided by University of Amsterdam.

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Cite this article: Barn G (2026). "Do Assisted Reproductive Technologies Promote Well-Being?" *Hypatia* 1–25. https://doi.org/10.1017/hyp.2025.10054

https://doi.org/10.1017/hyp.2025.10054 Published online by Cambridge University Press