Viewpoint

Procreative beneficence: do we have a duty to improve our offspring?

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Procreative beneficence (PB) is a term that has been offered as a guide to the use of emerging reproductive technologies, in which the genetic information of the embryo can be known and used to have the best possible child. The principle of procreative beneficence has been stated as: "Couples, or single reproducers, should select the child, of possible children they could have, who is expected to have the best life, or at least as good a life as others, based on the relevant, available information" [1].

In the further description of the principle, "best life" is defined as the life with the "most well-being". Though it is conceded that there are varying – sometimes irreconcilable – conceptions of what constitutes a "best life", the contention is that this principle remains relevant regardless of what the "best life" is determined to be. Importantly, the principle is claimed to apply not just to disease genes, but also to non-disease ones, since both have the propensity to impact life in important ways. The conclusion is that we have grounds to utilize all available genetic information in our reproductive decision-making in order to promote the benefit of our offspring.

In particular, Savulescu claims ([1], 413):

(1) "some non-disease genes affect the likelihood of us leading the best life;

(2) we have reason to use information which is available about such genes in our reproductive decision-making;

(3) couples should select the embryos or fetuses which are most likely to have the best life, based on available genetic information, including information about non-disease genes" (such as genes for intelligence and sex selection).

So the impetus of PB is providing our children, where possible, not just with health, but with characteristics that would equip them to live their best life. In an era where human embryo gene editing may be a real possibility in the not-too-distant future, selection could easily, and perhaps more relevantly, be supplanted with the provision of similar non-disease characteristics by gene editing techniques.

Although the principle of PB, coupled with our increasing technological capacities, may look rather convincing at first, there are several issues that merit a closer look. While beneficence is integral in parental decision-making, the form which this beneficence should take and

whom we should direct it to has proven contentious. Since there is consensus neither on what the 'best life' is (the goal of PB), nor on what makes a life go well (the goal of selecting traits that contribute towards living the 'best life'), critics contend PB as a guiding principle would be ineffectual [2, 3].

Suggested permutations of PB [4, 5] propose that beneficence should be more outward looking, directed instead to the entire family (such as sibling-oriented PB – as a parent's responsibility is not merely to benefit one child, but to ensure the best interests of all their children are met), or to the general population (such as general PB – so that a child can contribute beyond themselves towards the greater good). Others have argued that selection raises the bar of expectations towards perfection, and suggest the "principal of acceptable outlook" may be more appropriate – where a decision of whether to carry or terminate a pregnancy is based on whether the potential child would reach a minimal acceptable standard of living [6]. These suggestions in themselves host a hive of ethical issues, which cannot be explored here in detail.

A morally acceptable approach to guide embryo selection is increasingly relevant as both assisted reproductive technologies and genetic technologies become more developed and accessible, especially with the introduction of genetic editing. Our options may evolve from choosing between future possible children (whose characteristics are fixed and unalterable – i.e. choosing which given combination of characteristics is likely to lead to the 'best life') to potentially altering a given child (i.e. actively choosing to introduce or remove characteristics that would affect a given child's life). Faced with having to choose in some sense – whether that choice is not to use these technologies at all or how to use selection technologies in reproductive medicine – it may be worthwhile to reflect on PB in a more practical sense, translating it from its present form as a theoretical concept and critically analyzing its potential contribution to guiding policies surrounding prenatal decision-making.

Much of prenatal testing and, by extension, prenatal decision-making to this day has centered around the avoidance of disease and disability. Curiously, we have neither a clear nor unanimously accepted definition of what is meant by health, disease or disability. What is clear is that disease and disability have a real propensity to reduce quality of life in measurable and under-

standable ways. Although we defend the rights of the disabled, and admire the strength of the diseased, a parent is not likely to wish either on their children. A reasonable parent would not wish to see their children suffer through daily dialysis and the complications of chronic renal disease, or suffer through chemotherapy and other trying cancer treatments. This is so even if the experience of disease could prove beneficial in terms of developing empathy and fortitude, and in gaining insight and maturity. Daily parenting actions also reflect a tendency to minimize exposure to potential pain and suffering – both in themselves, and in relation to disability. For example, a prudent parent would teach their children to cross roads safely to avoid road traffic accidents and its debilitating consequences. An avoidance of disease and disability allows our children the chance of a normal trajectory of growth and life experiences. It is understandable then, that given a choice, many parents would prefer allowing their child an equal chance at life by selecting for a lack of disease and disability.

This is quite different from imposing a non-disease characteristic on a child. It requires we know the value of a certain characteristic, and that we make a judgement call on these characteristics in relation to each other. Is it better, or more valuable, to be an exuberant and joyful person, in contrast to a quiet and thoughtful person? Savulescu, for example, singles out the benefits of having a good memory, characterizing it as having a high instrumental value, and suggests that we should choose this for our children if we could. While the ability to remember better may seem useful at first glance, forgetfulness has complementary advantages. In the same way that a good memory may prevent us from inefficiency by allowing us to remember the necessary and important, forgetfulness may aid that efficiency by pruning our memories such that only the useful and meaningful are remembered and we are not burdened by irrelevant information. At the same time, it would be traumatic for us to remember every painful, difficult or embarrassing memory, memories that we would prefer to put behind us so we can continue on with building a healthy life. We do not actually know how seemingly good characteristics would affect a life in relation to other aspects of ourselves and our external environment. Indeed, it would be presumptuous of us to claim otherwise. In actuality, as in the case of memory, we would not know if we were in fact imposing harm where harm would not otherwise exist. In practice, the principle of PB would also mean reinforcing the prejudices of positional goods if this was advantageous to a child (for example, selecting for a fair-skinned child where dark-skinned people are discriminated against). Making these kinds of value judgements forces us unkindly to disparage some characteristics, and, by extension, disparage the people who identify primarily with them, creating instead a society less accepting of human diversity and an environment counterproductive to human flourishing.

Savulescu further adds that choosing non-disease characteristics in pursuit of the best life for an individual could mean choosing characteristics that position that individual above others, sometimes at the expense of causing injustice, harm and suffering [7]. The alternative to this individualism is a utilitarian approach to reproductive choice, in which the aim is the achievement of maximal good for society as a whole. For us to take a utilitarian approach would require a grandiose claim: that we can predict all possible outcomes of our genetic choices, and that we are in a position to determine which genetic profile would lead to a life of greatest well-being.

Given our recent past in relation to eugenics, the utilitarian notion of genetic selection or editing for maximal communal good is also deeply problematic. Savulescu recognizes this, and defends PB against eugenic notions by emphasizing the role of individual choice and supposed reproductive autonomy in what he terms an "essentially private enterprise", in contrast to the state-driven initiatives of the past. It is important to understand, especially when choosing non-disease genes as opposed to disease ones, that our perceptions of what would be advantageous to our children are influenced at least in part by socio-political preferences and by established structures of power within our societies. These preferences are amplified when we sanction them with our reproductive choices, and unjust social norms and systems of power are reinforced rather than challenged. In this way, the consequence of multiple individual choices in the spirit of procreative beneficence would in important ways lead us to a ground-up initiative reminiscent of state-driven eugenics, even though it is not overtly termed as such.

While it would be almost impossible to rank characteristics without considering social and cultural context, even just focusing on some biological features does not actually absolve us from the accusation of eugenics. Perhaps, the person with perfect human genome would have the corresponding pigmentation of a skin that does not burn and protects from skin cancers, while allowing sufficient UV rays through for adequate vitamin D production. Perhaps, this person would have a memory good enough to remember the important and necessary, while being able to blissfully disregard the trivial and traumatic. There would be a balance of characteristics, useful to all humans such that they would be able to adapt to all environments and hence be "useful to any plan of life", as Savulescu quotes Buchanan [8]. This proposition is in fact steeped in eugenics.

Although it is unlikely that parents would prefer such a standardized genome over their own naturally conceived progeny, the decision of whether or not to allow for the diversity and imperfections of nature may be influenced not by personal conviction, but by external

pressures. Rather than promoting reproductive autonomy then, a principle or even moral obligation of PB in practice is deeply anti-liberal. If PB is accepted as a moral obligation, it may be considered negligent and shameful not to actively improve offspring. This may manifest socially by labelling such parents as irresponsible, or institutionalized, for example by insurers charging premiums for children who have not been optimized, or by limiting career opportunities for such children. Parents may be compelled to practice PB by selecting, correcting or enhancing their offspring, and hence accept the implicit practice of eugenics, contrary to their own beliefs – not with the intention of enabling the best possible life, but to prevent disadvantaging their child from leading an ordinary but fulfilling life.

PB overburdens future parents, creating duties to aim at speculative results that we cannot take full responsibility for. Reproduction is a highly personal matter. PB encourages us to sacrifice the value of procreative autonomy for a social experiment – creating the perfect genetically fixed progeny adept at grasping for the best life has to offer. It purports a quick and easy 'technological fix' to the deficiencies of diverse human societies. As with most easy fixes, it should be met with sound skepticism. The possible capabilities of technology are likely more modest than PB suggests it to be, and our understanding of what makes a life go well even more lacking. In Shakespeare's *King Lear*, the Duke of Albany warns: "Striving to better, oft we mar what's well." That the perfect may be the enemy of the good may forewarn our attempts at perfecting our prospective children's genomes. Before rushing to trim our embryos to fit in with our society driven by performance and competition, we should at least think twice: well-intentioned is not necessarily well-done.

Conflict of interest: None to declare.

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