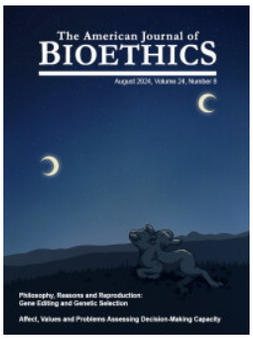

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From CRISPR to Conscience: Ethical Dilemmas in Gene Editing and Genetic Selection

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2001) and procreative non-maleficence (Saunders 2017). We assert that directive genetic counseling and laws prohibiting clinics from implanting embryos are justified in situations where the four criteria we discussed are clearly met. This is also compatible with McMahan and Savulescu's views about directive counseling. Acceptance of this view therefore warrants reconsideration of reproductive care and its ethical principles.

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From CRISPR to Conscience: Ethical Dilemmas in Gene Editing and Genetic Selection

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The burgeoning field of genome editing technologies such as CRISPR-Cas9 has led bioethicists to engage in profound moral inquiries regarding their application in reproductive contexts (National Academies of Sciences Engineering and Medicine 2017). Discussions have focused on genetic modification of embryos to prevent disease or disability and ostensibly improve future quality of life. The potential permissibility or even necessity of such interventions (Savulescu and Kahane 2009) has sparked concerns about the unintended consequences of gene editing compared with the seemingly more ethical alternative of embryo selection (Lanphier et al.

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2015). The central ethical dilemma thus shifts from a binary choice—whether to use such biotechnologies—to a nuanced choice between available biotechnologies.

McMahan and Savulescu (2024) shed light on this debate by arguing that decisions regarding technological options should be based on two distinct ethical reasons: person-affecting and impersonal. After showing that neither category alone can fully address the ethical desirability of gene editing or embryo selection, they propose the "two-tier" view comprising both lines of ethical considerations. In this view, person-affecting reason should take precedence over impersonal reasons, thereby reconciling ethical tensions by recognizing that gene editing may benefit embryo-derived individuals, whereas selecting against a disability-causing embryo may be ethically objectionable for impersonal reasons.

This commentary explores McMahan and Savulescu's insights, connecting their arguments to philosophical discourse on disability and well-being. We first present two variations of the "two-tier" view, before illustrating how the two variations yield different ethical implications when causing a particular disability is detrimental for some and beneficial for others. Finally, we respond to the objection that such a subject-dependent value profile would not work at the embryonic stage by revisiting McMahan and Savulescu's claim that gene editing could benefit embryos on a person-affecting basis.

LEXICAL AND NON-LEXICAL PRIORITY

Suppose a couple deliberately attempts to have a child with an impairment. For discussion's sake, assume that this impairment is detrimental to the bearer's well-being. Two options are available: they can have their non-impaired embryo edited to make it impaired or they can abandon the non-impaired embryo and have an impaired one. Which of these options is ethically preferable?

McMahan and Savulescu (2024) highlight the distinction between two classes of ethical considerations, with different implications for the relative desirability of gene editing and embryo selection. The first is "person-affecting" reasons, which focus on the benefits and harms for specific individuals. The second is "impersonal" reasons, which disregard such individual benefits and harms, aiming to produce the best outcomes in terms of, for example, the sum of well-being. After showing that neither type of ethical outlook can account for our intuitive judgment on the ethics of gene editing and embryo selection, they propose a hybrid "two-tier" view. In this view, both person-affecting and impersonal considerations matter in ethical deliberation, with the former taking precedence over the latter.

We can further elaborate on the "two-tier" view, clarifying the gist of their hybridization strategy. One possibility is to assign *lexical* priority to person-affecting reasons, which means that we should first evaluate person-affecting ethical considerations alone to determine whether an intervention is ethically preferable to another. Sometimes, however, we are left undecided between two interventions in person-affecting terms, only in which case do impersonal ethical considerations come into play. That is, in such lexical hybridization, the role of impersonal perspectives is confined to tie-breaking when two options are equal in their person-affecting ethical profile. Another possibility is admitting weaker, *non-lexical* priority to person-affecting reason, where impersonal reasons play a substantial role in ethical judgment despite being discounted against person-affecting factors. For instance, an option is *pro tanto* undesirable insofar as it is undesirable for impersonal ethical reasons, even if it is otherwise desirable, all things considered, thanks to its significant positive value in person-affecting terms.

Thus, lexical and non-lexical interpretations of the "two-tier" view differ in the normative significance ascribed to impersonal considerations. This divergence is vividly illustrated in the following situation in which person-affecting and impersonal ethical considerations give contradictory stories.

SUBJECT-DEPENDENT PRUDENTIAL VALUE OF DISABILITY

Not all disabilities are equally detrimental to well-being. Let D_M denote a moderate impairment, such as color blindness, and D_S denote a relatively severe impairment, such as cystic fibrosis. Suppose that neither D_M nor D_S usually make one's life unworthy of living. In this situation, it might be reasonable to say that, *ceteris paribus*, D_S is more welfare-detrimental than D_M. Some might even call D_M a "mere difference" (Barnes 2016). Now, imagine an artist, P, who is recognized for her bright-colored work. Physical impairment might have little effect on her preferred way of life when reasonable accommodations are available, whereas color blindness can pose a serious obstacle to her flourishing. Contrary to the overall trend, D_M is more detrimental to P's well-being than D_S. In general, an impairment can be a mere difference for some and a dreadful disadvantage for others, depending on their aspirations (Ishida, Sasaki-Honda, and Sawai Forthcoming).

What would happen if D_M were less welfare-detrimental than D_S, impersonally speaking, and simultaneously more welfare-detrimental than D_S in person-affecting terms regarding the individual developing from the embryo?

Consider the lexical two-tier view, wherein person-affecting factors have lexical priority over impersonal considerations. In this framework, "editing in" D_M to an embryo should be more problematic than "editing in" D_S, as the former would harm the individual more severely. This is the decisive ethical judgment for the lexical two-tiered view of the ethics of gene editing, in which impersonal viewpoints hold no sway.

Now, consider the non-lexical view. As in the previous paragraph, "editing in" D_M should be more problematic than "editing in" D_S in person-affecting terms. However, impersonal reasons also matter in this framework, though discounted against person-affecting factors. Impersonally speaking, "editing in" D_M should be less problematic than "editing in" D_S. The overall ethical verdict would thus be nuanced depending on the relative strengths of the two considerations. This admits the possibility—albeit slim—that impersonal ethical considerations, although discounted, could outweigh person-affecting considerations.

The difference between lexical and non-lexical interpretations has a real bite regarding the ethics of gene editing. We would have reasons to prefer the non-lexical variant to the lexical one to the extent that we find it plausible to respect impersonal ethical considerations regarding individuals with an unorthodox welfare profile.

PRUDENTIAL VALUE FOR EMBRYOS?

Some argue that such a subject-dependent welfare profile is unworkable at the embryonic stage. In realistic situations, we cannot precisely predict what type of individual an embryo would grow into. Thus, the previous section might be misleading, as if an embryo would be determined to be an individual for whom one particular impairment is worse than another.

To circumvent such speculations about the future, we should assert that something—for example, an intervention or impairment—is good *for the embryo*, not the individual it will become. However, this stance is untenable, as prudential value presupposes a minimal capacity for evaluation, that is, a viewpoint from which something is good or bad (Lin 2022). No serious theorist would insist that embryos possess such viewpoints. Notably, merely exhibiting species-typical functioning does not indicate well-being in the relevant sense, even though the equivocal phrase "good for" can denote it. Some physiological conditions can be beneficial "to an embryo," but are unlikely to give rise to person-affecting ethical considerations pertinent to this context.

Although this challenge sounds compelling, what does it suggest? If nothing contributes to an embryo's "well-being," and if speculation over the embryo-derived future individual's aspiration is ethically irrelevant, it turns out to be less self-evident that an intervention for embryos can be good or bad in person-affecting terms. Thus, the distinction between person-affecting and impersonal reasons, while thought-provoking, may appear unavailing in determining the ethical desirability of gene editing.

CONCLUDING REMARKS

In this commentary, we elaborate on McMahan and Savulescu's insights into the desirability of various reproductive biotechnologies, revisiting their strategy of hybridizing person-affecting and impersonal ethical considerations. Our conclusion is tentative, leaving several questions unanswered, such as the relative advisability of gene editing and embryo selection without recourse to person-affecting reasons. Should we disregard the "identity" of embryos? This is a further challenge in our discussion, the answer to which must wait for another paper.

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