

How moral bioenhancement affects perceived praiseworthiness

Simon Lucas¹  | Thomas Douglas^{2,3}  | Nadira S. Faber^{2,4} 

¹Institute for History, Theory and Ethics of Medicine, Johannes Gutenberg University Mainz, Mainz, Germany

²Oxford Uehiro Centre for Practical Ethics, Faculty of Philosophy, University of Oxford, Oxford, UK

³Jesus College, Oxford, UK

⁴Department of Psychology, University of Bremen, Bremen, Germany

Correspondence

Thomas Douglas, Oxford Uehiro Centre for Practical Ethics, Faculty of Philosophy, University of Oxford, Oxford, UK.

Email: thomas.douglas@philosophy.ox.ac.uk

Abstract

Psychological literature indicates that actions performed with the assistance of cognition-enhancing biomedical technologies are often deemed to be less praiseworthy than similar actions performed without such assistance. This study examines (i) whether this result extends to the bioenhancement of moral capacities, and (ii) if so, what explains the effect of moral bioenhancement on perceived praiseworthiness. The findings indicate that actions facilitated by morally bioenhanced individuals are considered less deserving of praise than similar actions facilitated by 'traditional' moral enhancement—for example, moral self-education. This diminished praise does not seem to be driven by an aversion to (moral) bioenhancement per se. Instead, it appears to be primarily attributable to a perceived lack of effort exerted by bioenhanced individuals in the course of their moral enhancement. Our findings advance the philosophical discourse on the foundations of praise in the context of moral bioenhancement by elucidating the empirical basis underlying some assumptions commonly employed to argue for or against the permissibility of moral bioenhancement.

KEYWORDS

desert, effort, experimental bioethics, moral bioenhancement, praiseworthiness

1 | MORAL BIOENHANCEMENT AND DESERT

Since its introduction to scholarly discourse in 2008,¹ the subject of moral bioenhancement has engendered substantial controversy.² Roughly, 'moral bioenhancement' refers to the use of biomedical

technologies to morally improve a person's character, motives or behaviour. Advocates of moral bioenhancement have argued variously that it is obligatory,³ desirable⁴ or permissible⁵ that we—either humanity as a whole, or individual people—employ moral bioenhancement technologies.⁶ However, a notable concern is that moral bioenhancement, or attempts to pursue it, would in fact

¹Douglas, T. (2008). Moral enhancement. *Journal of Applied Philosophy*, 25, 228–245; Persson, I., & Savulescu, J. (2008). The perils of cognitive enhancement and the urgent imperative to enhance the moral character of humanity. *Journal of Applied Philosophy*, 25, 162–177.

²For an overview of some of the arguments used in the debate see, for example, Specker, J., Focquaert, F., Raus, K., Sterckx, S., & Schermer, M. (2014). The ethical desirability of moral bioenhancement: A review of reasons. *BMC Medical Ethics*, 15, 1–17.

³Persson & Savulescu, op. cit. note 1.

⁴Douglas, op. cit. note 1.

⁵DeGrazia, D. (2014). Moral enhancement, freedom, and what we (should) value in moral behaviour. *Journal of Medical Ethics*, 40, 361–368.

⁶See, for example, Walker, M. (2009). Enhancing genetic virtue: a project for twenty-first-century humanity? *Politics and the Life Sciences*, 28, 27–47; Rakić, V. (2014). Voluntary moral enhancement and the survival-at-any-cost bias. *Journal of Medical Ethics*, 40, 246–250.

diminish our capacity for truly moral conduct.⁷ One of the most vigorously debated critiques of the attempt to enhance moral attributes through biotechnology has been presented by John Harris, who argues that moral bioenhancement would invariably erode our freedom. For Harris, '[a]utonomy surely requires not only the possibility of falling but the freedom to choose to fall' and the 'sufficiency to stand is worthless, literally morally bankrupt, without freedom to fall'.⁸ Another way of understanding the concern is in terms of moral praiseworthiness.⁹ In the philosophical literature, some scholars have, implicitly or explicitly, suggested that actions performed with the aid of biomedical enhancement technologies warrant less praise than comparable actions performed without the aid of such technological interventions.¹⁰ That is, some philosophers appear to endorse:

Enhancement diminishes praiseworthiness (EDP): Those who perform actions with the aid of biomedical enhancement technologies deserve less praise for those actions, other things being equal, than those who perform similar actions without the aid of such technologies.

In previous work, one of us (Douglas) has distinguished, without endorsing, three arguments for *EDP*.¹¹ The arguments are:

- The argument from immoral means, according to which actions facilitated by bioenhancement are less praiseworthy because the agent realises the action via undesirable means—namely, the use of bioenhancement technologies.
- The argument from diminished effort, according to which bioenhancement makes the performance of the action too easy and hence less deserving of praise.
- The argument from shared responsibility, according to which enhancement diminishes praiseworthiness since it brings it about that some responsibility for the resulting actions lies with others, such as the developer of the enhancement technology.

In other work, Santoni de Sio and collaborators provide a possible justification for *EDP* by proposing that, for a certain class of activities, use of enhancement technologies is incompatible with pursuit of that activity, since the activity is defined in part by the means by which it is pursued. For example, the activity 'running a

marathon' is incompatible with the use of an electric scooter to complete the 42.195 km course.¹² Thus, bioenhanced individuals may deserve less praise for their achievements for the simple reason that they fail to achieve what they set out to achieve.

Elsewhere, Maslen and collaborators argue for a nuanced, multifactorial perspective. They argue that the praiseworthiness of an action depends in part on the exertion of effort—as on the above-mentioned argument from diminished effort—but also on other factors. For example, they suggest that training, prior planning and deliberate strategies employed to overcome weakness of will can increase praiseworthiness even if they reduce the need for effort at the time or shortly before the action is performed.¹³ According to these authors, in determining praiseworthiness, it is crucial to consider both the costliness of the measures pursued and the strength of the agent's commitment to achieving morally desirable outcomes, and an agent's strategic reduction of costliness (e.g., via motivational bioenhancement) can sometimes demonstrate such commitment.

The authors mentioned above were interested in the normative question of whether *EDP* can be justified—whether we *should* endorse this view—but there are separate empirical questions concerning why and to what extent people—including those who are not professional philosophers—in fact *do* endorse the view. Some work has addressed such lay attitudes. For example, Faber and collaborators assessed perceived praiseworthiness in relation to pharmacological cognitive enhancement. They found that lay people generally judge enhanced individuals as less deserving of praise for their academic success, and other rewards that accompany it, than the unenhanced.¹⁴ Psychological reactions like these can make the use of cognitive bioenhancement very costly, leading, it has been empirically shown, to decreased willingness of others to work with bioenhanced individuals,¹⁵ and it has been argued that even general social rejection of bioenhanced individuals is possible.¹⁶ However, it remains to be determined whether these findings would extend to *moral* bioenhancement that is not indirectly achieved via cognitive enhancement.¹⁷

⁷See, for example, Jotterand, F. (2011). 'Virtue engineering' and moral agency: Will post-humans still need the virtues? *AJOB Neuroscience*, 2, 3–9; Harris, J. (2012). What it's like to be good. *Cambridge Quarterly of Healthcare Ethics*, 21, 293–305; Harris, J. (2014). Taking liberties with free fall. *Journal of Medical Ethics*, 40, 371–374; Sparrow, R. (2014). Better living through chemistry? A reply to savulescu and persson on 'moral enhancement'. *Journal of Applied Philosophy*, 31, 23–32.

⁸Harris, J. (2011). Moral enhancement and freedom. *Bioethics*, 25, 102–111.

⁹Douglas, T. (2019). Enhancement and desert. *Politics, Philosophy & Economics*, 18, 3–22.

¹⁰See, for example, Kass, L. R. (2003). Ageless bodies, happy souls: Biotechnology and the pursuit of perfection. *The New Atlantis*, 1, 22; Sandel, M. (2007). *The case against perfection: ethics in the age of genetic engineering* (pp. 25–26). Harvard University Press; Tobey, D. L. (2003). What's really wrong with genetic enhancement: A second look at our posthuman future. *Yale Journal of Law and Technology*, 6, 120–124.

¹¹Douglas considers a more general view on which enhanced individuals deserve not only less praise but also less of other goods. Here, we focus on the implications of enhancement for the degree to which the enhanced individual deserves praise or—as we take to be equivalent—is praiseworthy, Douglas, op. cit. note 9.

¹²Santoni de Sio F., Faber N. S., Savulescu J., & Vincent N. A. (2016). Why less praise for enhanced performance? Moving beyond responsibility-shifting, authenticity, and cheating toward a nature-of-activities approach. In Jotterand F., & Dubljevic V. (Eds.), *Cognitive enhancement: Ethical and policy implications in international perspectives* (pp. 27–41). Oxford University Press.

¹³Maslen, H., Savulescu, J., & Hunt, C. (2019). Praiseworthiness and motivational enhancement: 'No pain, no praise'? *Australasian Journal of Philosophy*, 98, 304–318.

¹⁴Faber, N. S., Douglas, T., Heise, F., & Hewstone, M. (2015). Cognitive enhancement and motivation enhancement—An empirical comparison of intuitive judgments. *AJOB Neuroscience*, 13, 18–20; Faber, N. S., Savulescu, J., & Douglas, T. (2016). Why is cognitive enhancement deemed unacceptable? The role of fairness, deservingness, and hollow achievements. *Frontiers in Psychology*, 7, 232.

¹⁵Sattler, A., Häusser, J. A., & Faber, N. S. (2023). Working with a sleep-deprived or a cognitively enhanced team member compromises motivation to contribute to group performance. *European Journal of Social Psychology*, 53, 1231–1244.

¹⁶Faulmüller, N., Maslen, H., & Santoni de Sio, F. (2013). The indirect psychological costs of cognitive enhancement. *American Journal of Bioethics*, 13, 45–47.

¹⁷There is a growing body of work assessing the attitudes of lay people to moral bioenhancement, but this work has not specifically assessed perceived praiseworthiness. See, for example, Specker, J., Schermer, M. H. N., & Reiner, P. B. (2017). Public attitudes towards moral enhancement: evidence that means matter morally. *Neuroethics*, 10, 405–417; Budić, M., Galjak, M., & Rakić, V. (2021). What drives public attitudes towards moral bioenhancement and why it matters: An exploratory study. *BMC Medical Ethics*, 22, 163.

The present study aims to address this gap by providing empirical insights into the perception of praiseworthiness in relation to moral bioenhancement achieved via the modulation of emotional capacities. By conducting original empirical research, we examine whether judgements concerning the praiseworthiness of a morally desirable action depend on whether the action was performed as a result of (a) moral bioenhancement or (b) traditional, nonbiomedical forms of moral enhancement (achieved, for example, via moral self-education). Preliminary work by others suggests that lay people have greater objections to moral bioenhancement than to other forms of moral enhancement.¹⁸ However, this work does not assess perceived praiseworthiness. Extrapolating from the results found in relation to cognitive enhancement described above, we hypothesise that morally desirable actions will be found less praiseworthy when they result from moral bioenhancement than when they result from traditional moral enhancement.

Further, to explore possible explanations for this hypothesised difference, we also assess perceived praiseworthiness in a range of cases that are intermediate between moral bioenhancement and traditional moral enhancement—namely, cases in which a person's moral psychology is altered by (i) technological but nonbiomedical interventions, (ii) accidental or 'natural' events and (iii) what might be termed 'moral therapy'—the use of biomedical technologies to produce morally desirable behaviour *by treating a disorder*. These intermediate cases have not been explored in existing work.

In addition to their empirical significance, determining whether and why moral bioenhancement diminishes perceived praiseworthiness may have important normative implications, for several reasons. First, insofar as common-sense judgements track the moral 'truth', it may provide support for existing moral views, or suggest new moral hypotheses, regarding what determines the praiseworthiness of an action and, more specifically, which features of the causal history of an action can limit its praiseworthiness. This is an issue of general moral-theoretic interest, but it is also one that has implications for the moral assessment of enhancement interventions since objections to moral bioenhancement often rely, explicitly or implicitly, on *EDP*.¹⁹ Second, even if the judgements of lay people do not track the moral truth, our study may shed light on the moral permissibility of moral bioenhancement and objections to it. This is because these objections sometimes depend on assumptions about how individuals will, in fact, react to enhanced individuals. For example, one notable argument against moral bioenhancement suggests that it could potentially disadvantage those who remain unenhanced by raising the standards of moral praise, making it more difficult for others to be perceived as deserving praise.²⁰ In effect, unenhanced individuals will be outcompeted by enhanced individuals in the race for praise. This objection presupposes that pursuit of bioenhancement will generally aid, rather than impede, the bioenhanced individuals in obtaining

praise. Finally, it has been argued that understanding lay attitudes to bioenhancement is important because it will help societies anticipate and understand the social consequences of policy decisions in this area.²¹

2 | METHODS

2.1 | Vignettes

Participants were presented with five vignettes featuring an individual described as initially unempathetic and selfish who experiences an increase in empathy and, subsequently, performs an altruistic action. While acknowledging that there is disagreement on which psychological transformations constitute moral enhancements, enhancements of empathy leading to more altruistic behaviour are frequently suggested as candidate enhancements.²² Following experimental vignettes employed by Budić and collaborators,²³ which drew inspiration from a thought experiment developed by Savulescu and Persson,²⁴ we utilised a scenario in which John, a senior executive in the banking and finance sector, consistently ignores and avoids a beggar sitting in front of his workplace, refusing any assistance despite his considerable wealth and indulgence in expensive cars and recreational pursuits. However, in a subsequent encounter after the increase in empathy, John alters his behaviour significantly and extends personal assistance to the beggar. A variable paragraph was used in each of the five vignettes to describe different causes of the increase in empathy. The vignettes and variables can be found in the supporting information material. The variables are as follows:

- Traditional enhancement (Scenario 1): The increase in empathy is achieved via deliberate thought processes, educational dialogue, and the exertion of effort. In this way, it contrasts the subsequent vignettes, in which empathy is increased in a 'nontraditional' way.
- Subliminal enhancement (Scenario 2): The second scenario is based on a thought experiment developed by one of us (Douglas).²⁵ The protagonist enhances his empathy by setting up his television so that it regularly displays disturbing and graphic images of the effects of poverty, though for such brief periods that he does not consciously recognise them. The exposure to such subliminal imagery is portrayed to foster increased empathy. Similar to the traditional enhancement, this scenario is both

²¹Schickel, S., Schweda, M., & Wynne, B. (2012). The ethics of 'public understanding of ethics'—why and how bioethics expertise should include public and patients' voices. *Medicine, Health Care and Philosophy*, 15, 129–139; Schelle, K. J., Faulmüller, N., Caviola, L., & Hewstone, M. (2014). Attitudes towards pharmacological cognitive enhancement—A review. *Frontiers in Systems Neuroscience*, 8, 53.

²²See, for example, Persson, I., & Savulescu, J. (2012). *Unfit for the future* (pp. 111–112). Oxford University Press; Savulescu, J., & Persson, I. (2012). Moral enhancement, freedom and the god machine. *The Monist*, 95, 399–421.

²³Budić, et al., op. cit. note 17.

²⁴Persson & Savulescu, op. cit. note 1.

²⁵Douglas, T. (2013). Moral enhancement via direct emotion modulation: A reply to John Harris. *Bioethics*, 27, 160–168.

¹⁸Ibid.

¹⁹For an account of the role of *EDP* in moral objections to moral bioenhancement, see Douglas, op. cit. note 9, pp. 7–8.

²⁰Archer, A. (2016). Moral enhancement and those left behind. *Bioethics*, 30, 500–510.

voluntary and nonbiomedical; however, enhancement is achieved via a nonconscious and nondeliberative process.

- Moral bioenhancement (Scenario 3): In the third scenario, the protagonist enhances his empathy levels by undergoing minimally invasive surgery, implanting an 'empathy pacemaker' into his brain. The overall method is described to be seemingly effortless and the medical procedure to be safe and efficacious. This intervention differs from both Scenarios 1 and 2 in involving the use of biomedical technology.
- Moral therapy (Scenario 4): The same technological intervention is employed as in Scenario 3. Here, however, the intervention is portrayed as a therapeutic option—a treatment for a deficit in empathy—provided by the protagonist's attending physician.
- Accidental empathy increase (Scenario 5): The protagonist experiences an unintended and involuntary increase in empathy after recovering from traumatic brain injury caused by a bike accident. The anatomical causes of his behavioural changes are described to be identical to the other scenarios.

2.2 | Experimental design and participants

Using the vignettes described above, the study had five experimental conditions that were presented to participants in a within-subjects design. Participants were presented with the five vignettes in randomised order. As the main dependent variable, participants were asked to assess the praiseworthiness of the actions described in the scenarios (on a 7-point Likert scale, 1: '*not at all praiseworthy*', 7: '*very praiseworthy*'). As a control measure, in order to investigate whether participants deemed the enhancement procedure effective, they were also asked to assess the empathy level of the protagonist of the scenarios pre- and postenhancement on a 7-point Likert scale (1: '*not at all empathetic*', 7: '*very empathetic*').

A total of 194 volunteers based in Germany completed the survey. Six participants were excluded from data analysis as there was doubt that their comprehension skills were sufficient, or they did not follow the initial instructions given. Hence, a final sample of $N = 188$ served as the basis for the following analyses. We used a convenience sample, mainly consisting of university students and individuals holding university degrees. All participants were adults; 50.5% were female. All participants gave their informed consent to their voluntary participation and to the subsequent use of the data for research purposes. Frequencies of sample demographics are summarised in the supporting information material (Supporting Information S1: Table S1). We acknowledge that the study has several limitations, chiefly due to its use of a convenience sample, which, compounded by its restriction to mostly academically educated participants, may hinder the generalisability of our findings. Additionally, the study's geographical confinement to Germany raises questions about the applicability of its results to a global context, given the potential variation in attitudes worldwide.

2.3 | Research question

Drawing on empirical research in the field of cognitive enhancement reviewed above, we assumed that participants would be less inclined to praise individuals whose empathy had been successfully augmented through biomedical enhancement technologies (Scenario 3), as opposed to those who had undergone traditional moral enhancement (Scenario 1), which involved deliberate thought and the exertion of effort. We also aimed to shed light on the underlying factors that contribute to this phenomenon. To achieve this, a series of carefully designed vignettes was created to investigate various factors influencing perceived praiseworthiness. In these scenarios, our expected levels of praiseworthiness fell somewhere between those for moral education and moral bioenhancement. Although all three scenarios involve a lack of cognitive effort, they vary in terms of other factors such as the involvement of biomedical technologies (Scenario 2), and the distinction between therapy and enhancement (Scenario 4) or voluntariness (Scenario 5).

3 | RESULTS

3.1 | Results: Empathy levels

As a manipulation check, the first question posed in the survey asked participants to assess the protagonist's empathy level pre-enhancement and subsequently in each of the five different scenarios. A schematic overview of the responses is provided in Figure 1 as a diverging stacked bar chart. Percentage values on the bars represent the share of responses for the Likert items of a 7-point scale from 1: '*not at all empathetic*' to 7: '*very empathetic*'. Bars with no percentage values are <5%. For example, pre-enhancement, 42% of participants assessed John to be '*not at all empathetic*', while after the enhancement, in Scenario 1 (traditional enhancement), 19% thought that John was '*very empathetic*'. Numbers in circles represent the average degree of empathy in each scenario (mean values, M). A one-way analysis of variance (ANOVA) comparing the ascription of John's pre-enhancement empathy ($M = 2.02$, $SD = 1.13$) with the mean of all enhancement Scenarios 1–5 averaged ($M = 4.61$, $SD = 1.54$) showed that participants perceived enhancement of empathy to have taken place ($p < 0.001$). Hence, the experimental manipulation of enhancement was successful.

We also tested the effect of the specific means via which empathy was increased in the vignettes on John's perceived empathy. A one-way ANOVA with the scenario number as the independent variable and assessed empathy as the dependent variable was conducted. We found a significant effect of the scenario number on the perceived empathy levels ($F(5, 1122) = 103.03$, $p < 0.001$). Interestingly, traditional enhancement (Scenario 1) resulted in a level of empathy ($M = 5.06$, $SD = 1.45$) that was significantly higher than after subliminal enhancement (Scenario 2, $M = 4.37$, $SD = 1.40$, $p < 0.001$), moral bioenhancement (Scenario 3, $M = 4.43$, $SD = 1.63$, $p < 0.001$) and moral therapy (Scenario 4, $M = 4.51$, $SD = 1.61$, $p = 0.005$). No statistically significant difference was found

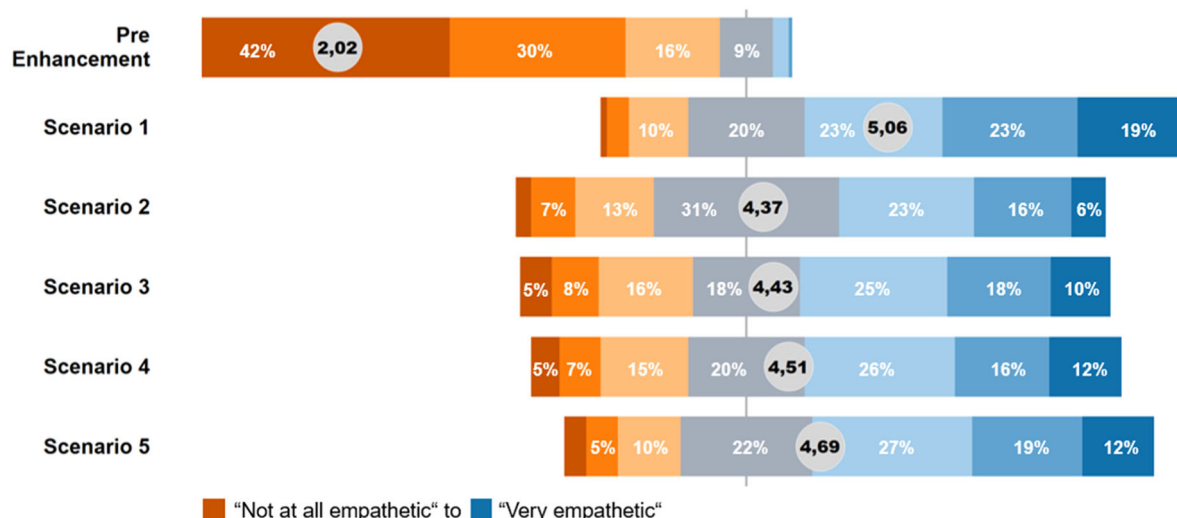


FIGURE 1 Response overview for the degree of *empathy* as a diverging stacked bar chart. Percent values on the bars represent the share of responses for the Likert items of a 7-point scale from 1: 'not at all empathetic' to 7: 'very empathetic'. Bars with no percent values are <5%. Numbers in circles represent the average degree of empathy (mean values, *M*) in each scenario.

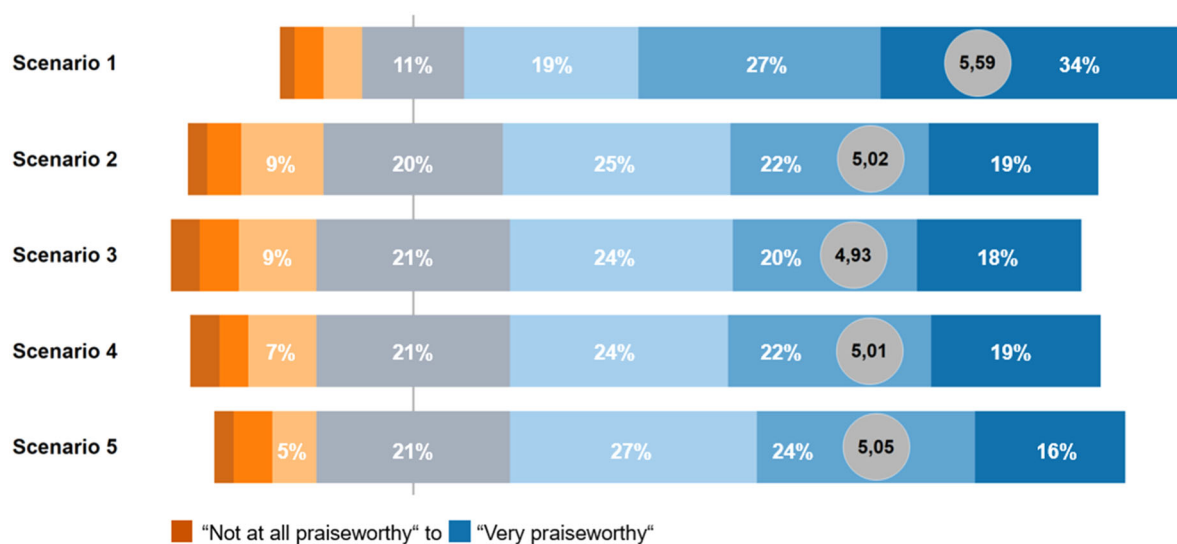


FIGURE 2 Response overview for the degree of *praiseworthiness* as a diverging stacked bar chart. Percent values on the bars represent the share of responses for the Likert items of a 7-point scale from 1: 'not at all praiseworthy' to 7: 'very praiseworthy'. Bars with no percent values are <5%. Numbers in circles represent the average degree of praiseworthiness in each scenario.

between the empathy levels in Scenarios 1 and 5 (accidental empathy increase, $M = 4.69$, $SD = 1.52$, $p = 0.21$). Nor were there significant differences among Scenarios 2 through 5.

3.2 | Results: praiseworthiness

The second and main question posed in the survey asked how much praise John deserves for performing an altruistic action (i.e., helping a beggar) in the five scenarios in which John underwent an increase in

empathy. A schematic overview of the responses is provided in Figure 2 as a diverging stacked bar chart.

A one-way ANOVA showed a significant effect of the cause of the empathy increase on perceived praiseworthiness ($F(4, 935) = 6.12$, $p < 0.001$). Bonferroni-corrected post-hoc analysis revealed a significant difference between the praise that John who underwent traditional enhancement (Scenario 1, $M = 5.59$, $SD = 1.45$) received and the amount of praise granted to John in Scenario 2 ($M = 5.02$, $SD = 1.48$, $p = 0.002$), Scenario 3 ($M = 4.93$, $SD = 1.54$, $p < 0.001$), Scenario 4 ($M = 5.01$, $SD = 1.43$, $p = 0.002$) and Scenario

5 ($M = 5.05$, $SD = 1.42$, $p = 0.004$). There was no statistically significant difference in praiseworthiness from Scenarios 2 through 5 (all $p = 1.000$). Overall empathy and praiseworthiness were found to correlate positively (Spearman's $\rho = 0.563$, $p < 0.001$).

3.3 | Summary

The survey results can be summarised as follows: Participants were convinced that John's empathy had been increased in all scenarios; his postintervention empathy was rated significantly higher than the preintervention empathy across all surveyed vignettes. The manner in which empathy was increased in the different scenarios exerted a notable influence on the amount of praise attributed to John. Traditional enhancement resulted in a significantly higher amount of perceived praiseworthiness (and also empathy ascription). For example, John's altruistic action of helping the beggar was deemed significantly more praiseworthy in a scenario of traditional enhancement compared to a scenario of moral bioenhancement. Furthermore, similar outcomes can also be observed in cases of 'non-biomedical' technological moral enhancement (via subliminal imagery), moral therapy and accidental empathy increase. In each of these scenarios, perceived praiseworthiness was lower than in the traditional moral enhancement scenario, but not significantly different from that in the moral bioenhancement scenario. This indicates that the difference in judgements concerning the traditional moral enhancement scenario and the moral bioenhancement scenario is not substantially explained by features specific to the moral bioenhancement scenario, such as the deployment of biomedical technology for enhancement purposes. Rather, the higher levels of perceived praiseworthiness observed in the traditional moral enhancement scenario may be explained by the involvement of conscious thought, the involvement of rational processes, the exertion of cognitive effort or the 'unnaturalness' or 'weirdness' associated with the other scenarios. A potential alternative explanation would be that judgements about praiseworthiness were driven by judgements about empathy; the protagonist's empathy may have been judged highest in the traditional moral enhancement scenario because this was also perceived as the most effective in raising empathy.

4 | DISCUSSION

4.1 | Does moral bioenhancement affect perceived praiseworthiness?

The primary objective of the present study was to investigate whether and why individuals ascribe less praise to actions when they were performed with the assistance of moral bioenhancement. Our results provide evidence that moral bioenhancement significantly alters the perceived praiseworthiness of altruistic actions. We found that the action of helping a beggar was assessed to be significantly

less praiseworthy when facilitated by moral bioenhancement than when facilitated by traditional moral enhancement.

Our results indicate that this decreased level of praiseworthiness is not unequivocally tied to moral bioenhancement. We found that the perceived praiseworthiness remained consistently low for all cases that deviated from the traditional enhancement scenario. Interestingly, similar to all other scenarios involving physical brain alterations through surgery or trauma, an equally diminished level of praise was observed in a scenario where behavioural changes were induced solely through exposure to subliminal imagery (Scenario 2). This observation challenges the view that biomedical moral enhancement is deemed to diminish praiseworthiness primarily due to the involvement of biomedical technologies or purely biological (not psychological) modes of action.

Moreover, there was no significant difference in perceived praiseworthiness between the moral bioenhancement and biomedical moral therapy scenarios (Scenarios 3 and 4). This suggests that the therapy/enhancement distinction was not playing an important role in driving perceptions of praiseworthiness. Again, this observation departs from what one might anticipate based on both philosophical deliberations and common intuitions. There are different perspectives within scholarly discourse regarding the moral significance of the distinction between enhancement and therapy. While some thinkers argue that the distinction is not morally significant or is even conceptually confused,²⁶ the conventional view in philosophy has been that biomedical enhancements, including those of moral traits, are, at least typically, problematic in ways that biomedical therapies are not.²⁷ Our observation that the therapy/enhancement distinction does not influence perceived praiseworthiness also departs from what one might expect based on recent experimental findings, which reveal that participants tend to view therapeutic interventions as morally preferable to (physical, cognitive, mood or cosmetic) biomedical enhancement interventions.²⁸ It is, however, important to note that in all our scenarios, the protagonist was described as morally deficient rather than morally average. This may have led participants to view all five interventions as forms of moral therapy, rather than enhancement.

Finally, praise scores rank equally low in case of an unintended and involuntary increase in empathy due to a traumatic brain injury. This suggests that the lower perceived praiseworthiness in Scenario 3 (moral bioenhancement) compared to Scenario 1 (traditional enhancement) is not primarily driven by the employment of unfamiliar or 'weird' technologies in Scenario 3, since these are absent in Scenario 5 (enhancement via brain trauma). Caution is required here, however; it could be that employment of unfamiliar or 'weird' technologies does diminish perceived praiseworthiness, but that the

²⁶Juengst, E. T. (1997). Can enhancement be distinguished from prevention in genetic medicine? *Journal of Medicine and Philosophy*, 22, 125–142.

²⁷See, for example, Agar, N. (2014). A question about defining moral bioenhancement. *Journal of Medical Ethics*, 40, 369–370; Wiseman, H. (2014). Moral enhancement—"hard" and "soft" forms. *American Journal of Bioethics*, 14, 48–49.

²⁸Martin, D., Rueda, J., Earp, B. D., & Hannikainen, I. R. (2023). Normality and the treatment-enhancement distinction. *Neuroethics*, 16, 13.

voluntary pursuit of moral enhancement increases it. If these two considerations balance one another out, this would explain why Scenarios 3 and 5 are assessed similarly. It is also important to note that responses to Scenario 5 cannot necessarily be extended to other types of cases in which an individual experiences an increase in empathy that is, from their perspective, unintended and involuntary—for example, to scenarios where a moral bioenhancement is imposed on one by others. Such scenarios have sparked vigorous debates within the literature. For example, Persson and Savulescu have argued that moral bioenhancement should be compulsory, provided it can be proven safe and effective.²⁹ In contrast, Rakić has contended that it should remain entirely voluntary, asserting that 'compulsory moral enhancement deprives humans not of a degree of their free will, but of their (experience of) free will in general. As a free will is a key component of our humanity, compulsory moral bioenhancement lowers our moral status'.³⁰ Furthermore, Rakić has championed the concept of involuntary enhancement, which may involve technologies like genome editing of unborn individuals.³¹ However, it is important to note that, within the scope of the present study, these specific nonvoluntary subsets of moral bioenhancement have not been investigated. In our moral bioenhancement vignette, the enhancement was presented as voluntary, and though we did include a scenario in which empathy was increased in an involuntary way (Scenario 5, involving the bike accident), this did not involve imposition of an enhancement by a third party, as in the case of compulsory moral bioenhancement.

4.2 | Why does moral enhancement diminish perceived praiseworthiness?

Overall, the experimental data indicate that moral bioenhancement affects perceived praiseworthiness. Bioenhanced individuals receive significantly less praise for altruistic actions than their traditionally enhanced counterparts. However, the same holds for nontraditional means of moral enhancement, moral therapy and psychological change due to accidental events, suggesting that intuitions regarding praiseworthiness are not driven by a particular objection to bioenhancement, or more generally by an instinctive response against new and unfamiliar biomedical technologies (whether therapeutic or enhancing).³²

What explains the 'praiseworthiness discount' associated with moral bioenhancement *vis-a-vis* traditional moral enhancement? Here, we will briefly explore to what extent our results align with

the arguments and perspectives identified in the philosophical and psychological literature.

We begin with the three arguments distinguished previously by one of us (Douglas): the arguments from immoral means, diminished effort and shared responsibility.³³ All four Scenarios 2–5 plausibly involve less exertion of effort on the part of the protagonist than the traditional moral enhancement scenario. Indeed, none of these vignettes features characteristics such as voluntariness, deliberate thought-process or the exertion of mental effort, suggesting that the view that praiseworthiness requires the exertion of (necessary) effort may explain at least part of the praiseworthiness discount. On the other hand, only the scenarios involving subliminal enhancement and moral bioenhancement plausibly fall within the scope of the argument of immoral means. It seems uncontroversial to assert that neither a medically necessary surgical procedure nor a bike accident involves the deployment of immoral means. Likewise, intuitions about shared responsibility do not seem to be relevant in the case of unintended and involuntary empathy increase as no moral agent besides the protagonist is involved in producing the increase in empathy in this case. There is no enhancer who would bear responsibility for the enhanced individual's praiseworthy behaviour.

Consider next a psychological perspective, which regards praise as a functional means for fostering cooperative alliances and relationships.³⁴ On this model, praising prosocial behaviour serves a dual purpose of rewarding desired behaviour and anticipating future prosocial actions. In this way, praise both reinforces the displayed behaviour and fosters a stronger bond between the giver and the recipient of praise. According to this perspective, praise is expected to demonstrate sensitivity towards characteristics that reflect trustworthiness and an ongoing commitment to engaging in prosocial behaviours. For example, when help is offered willingly versus begrudgingly, lay people often find the emotional expression accompanying the behaviour more informative than the mere quantity of the behaviour, and the display of emotions holds greater influence on how the individual performing the prosocial behaviour is positively or negatively assessed.³⁵ Similarly, lay people tend to assess the moral character of others more positively when they arrive at moral decisions quickly, presumably because this signifies certainty in the decision-making process, suggesting that the behaviour is driven by unambiguous motives.³⁶ The influence of effort on moral praise has been investigated in an experimental study by Bigman and Tamir, who found that '[a]gents who exerted high (vs. low) effort in performing immoral behaviours were judged as less moral, whereas agents who exerted high (vs. low) effort in performing moral behaviours were judged as more moral. Perceived effort amplifies

²⁹Persson & Savulescu, op. cit. note 1; Persson, I., & Savulescu, J. (2014). Should moral bioenhancement be compulsory? Reply to Vojin Rakić. *Journal of Medical Ethics*, 40, 251–252.

³⁰Rakić, V. (2017). Moral bioenhancement and free will: Continuing the debate. *Cambridge Quarterly of Healthcare Ethics*, 26, 384–393.

³¹Rakić, V. (2019). Genome editing for involuntary moral enhancement. *Cambridge Quarterly of Healthcare Ethics*, 28, 46–54.

³²Kass, L. N. (1997). The wisdom of repugnance: Why we should ban the cloning of humans. *New Republic*, 216, 17–26.

³³Douglas, op. cit. note 9.

³⁴Anderson, R. A., Crockett, M. J., & Pizarro, D. A. (2020). A theory of moral praise. *Trends in Cognitive Sciences*, 24, 694–703.

³⁵Krull, D. S., Seger, C. R., & Silvera, D. H. (2008). Smile when you say that: Effects of willingness on dispositional inferences. *Journal of Experimental Social Psychology*, 44, 735–742.

³⁶Critcher, C. R., Inbar, Y., & Pizarro, D. A. (2012). How quick decisions illuminate moral character. *Social Psychological and Personality Science*, 4, 308–315.

moral judgement, by serving as an index of goal importance, such that a moral or immoral behaviour is perceived as more important to agents who exert more effort in performing it'.³⁷

Our five scenarios did not explicitly differ with respect to the speed with which the beneficent action is performed, the agent's willingness to perform it or the intention for which the action is performed. However, it is possible that study participants may have arrived at different conclusions regarding these variables across the scenarios. Likewise, the protagonist demonstrates an equal amount of effort *subsequent to the empathy increase* in all scenarios. However, assessments of the praiseworthiness of the protagonist's action may have depended in part on the effort that he was perceived to have exerted *in the course of* the empathy increase, which, as indicated above, plausibly differs across the scenarios; for example, the traditional enhancement (Scenario 1) plausibly requires greater cognitive effort than the bioenhancement (Scenario 3). The greater cognitive effort perceived to be exerted in Scenario 1 may partially or even wholly explain the greater praiseworthiness ascribed to the protagonist's action in that case. An alternative explanation could be provided based on the evaluation of empathy levels, where the traditional enhancement in Scenario 1 was deemed more effective at enhancing empathy than the bioenhancement in Scenario 3. This may have led lay people to perceive the resulting action as more praiseworthy, for example, because the agent performing it is assumed to be more empathetic and thus more virtuous.

Maslen and collaborators argue, contrary to the dominant narrative that effort increases praiseworthiness, that deliberate effort avoidance should be recognised as praiseworthy, as it exemplifies a strong commitment to achieving a desirable outcome. By strategically minimising the effort required to attain a desired result, individuals demonstrate their dedication and resourcefulness in pursuing their goals. Their interpretation of praiseworthiness suggests that both subliminal enhancement and moral bioenhancement (variables 2 and 3) portray an individual who makes serious commitments and prioritises the cultivation of empathy, which ought to be praised. However, the absence of a notable difference in praise intuitions between individuals who show strong commitments, as evidenced by the aforementioned variables, and those who experience an accidental empathy increase, as depicted in the brain trauma scenario (5), where dedication or commitment is apparently lacking, indicates that these factors alone do not substantially determine the level of praise bestowed upon enhanced individuals.

The deliberations above are not intended to represent a quantitative analysis of the experimental data but instead aim to qualitatively unravel some of the factors that can help to explain differences in praise attributed to moral actors in different situations. Taken together, it seems that certain features perceived to confer praiseworthiness are present to a higher degree in 'traditional' moral education than in various nontraditional routes to increased empathy. Both philosophical considerations and findings from experimental

psychology suggest that perceived effort (or perhaps more generally the display of character traits indicating the reliability of a potential cooperative partner) may be one of these features. While the willingness to pursue any moral enhancement method could arguably be seen as an indicator of cooperativeness and pro-sociality, our findings could be explained by a perception that traditional enhancement methods are better indicators than nontraditional methods. It has been shown for the case of cognitive bioenhancement that lay people ascribe the users of cognitive bioenhancement less positive character traits and are less willing to work together with them than with unenhanced others, potentially even in cases where the use of cognitive bioenhancement benefits the whole group.³⁸ This finding may extend to moral bioenhancement as well, and, if so, that could, on a psychological understanding of praiseworthiness, help to explain our results.

Our research advances the philosophical discourse on the foundations of praiseworthiness. For example, insofar as the views of participants in our experiment can be regarded as having evidential value—as indicating what in fact determines praiseworthiness—our results count against the view that, in scenarios involving moral enhancement, the employment of biomedical technologies or immoral means are important determinants of praiseworthiness. On the other hand, our results are consistent with effort being a major driver of praiseworthiness in these cases. Our research also has implications for the moral assessment of moral bioenhancement. For example, it suggests the moral hypothesis that, if moral bioenhancement is objectionable in part by virtue of its effects on praiseworthiness, other nontraditional forms of moral enhancement—for example, those employing subliminal imagery—may be objectionable for similar reasons.

Our findings also have implications for objections to moral bioenhancement that depend not on how much praise morally bioenhanced individuals *deserve*, but on how much they will in fact *receive*. An example of this is the argument that widespread use of moral bioenhancement would raise the standards for praise, creating greater challenges for unenhanced individuals to perform actions deemed praiseworthy.³⁹ Our findings complicate this objection. On the one hand, if widespread moral bioenhancement led to an increase in the moral desirability of behaviour across a population as a whole, that might be expected to raise the standards for praise: it would be more difficult to perform morally remarkable actions. On the other hand, our findings suggest that those who employ moral bioenhancements—as well as some other nontraditional forms of moral enhancement—would receive less praise than others who perform actions that are similarly morally desirable. This would in one way reduce the competition for praise experienced by those who do not employ such enhancements. Whether unenhanced individuals are disadvantaged overall, in terms of the praise that they receive, would depend, among other things, on the balance between these factors. However, some individuals would arguably suffer a clear disadvantage: those who do not employ moral bioenhancements but are perceived as having done so. These individuals might receive a

³⁷Bigman, Y. E., & Tamir, M. (2016). The road to heaven is paved with effort: Perceived effort amplifies moral judgment. *Journal of Experimental Psychology: General*, 145, 1654–1669.

³⁸Sattler et al., op. cit. note 15.

³⁹Archer, op. cit. note 20.

double disadvantage: less praise, because it is more difficult to perform a morally remarkable action, and less praise, because they are perceived as having employed moral bioenhancements.

5 | CONCLUSION

The experimental data reported in this article demonstrate that 'bioenhanced' moral agents are deemed significantly less praiseworthy than 'traditionally' morally enhanced agents. However, this praiseworthiness discount associated with moral bioenhancement is also observed when the same psychological transformation is produced via technological-but-nonbiomedical moral enhancement, moral therapy or accidental natural events. Hence, we postulate that the perception that users of moral bioenhancement deserve less praise than those who employ traditional moral enhancements is not primarily driven by a specific aversion towards moral bioenhancement or biomedical technologies. Instead, our findings suggest that it is predominantly ascribed to the lack of specific elements associated with moral education, such as the exertion of cognitive effort for the purposes of moral improvement. In addition to their empirical significance, the findings presented in this study hold value by contributing to our understanding of prevailing notions of praiseworthiness and to the ongoing discussions surrounding the permissibility of moral bioenhancement. For instance, our research suggests that objections to moral bioenhancement based on its influence on praiseworthiness might similarly apply to other unconventional approaches like subliminal imagery. In addition, our findings challenge objections to moral bioenhancement that hold that bioenhancement will raise the standards for praise. While widespread use of bioenhancement might tend to raise praise standards because bioenhanced individuals perform more desirable actions than they would have done without the bioenhancement, it might also in another way tend to lower those standards, since bioenhanced individuals can be expected to receive less praise than others, holding fixed the moral desirability of the actions that they perform. As a consequence, individuals who are incorrectly perceived as using enhancements might face a double disadvantage in terms of praise.

ACKNOWLEDGEMENTS

The authors would like to thank Robert Sparrow, Nils-Frederic Wagner, Eva Klein, Brian Earp, Jon Rueda and two anonymous reviewers for *Bioethics* for their comments on or assistance with earlier versions of this article. All opinions expressed and defects in the article are attributable only to the authors. Thomas Douglas received funding from the European Research Council (grant number 819757) and the Uehiro Foundation on Ethics and Education.

CONFLICTS OF INTEREST STATEMENT

Simon Lucas is employed by Merck KGaA, Germany, but the present work has been pursued independently at the University of Mainz and does not represent the viewpoint of the company. Thomas Douglas has received funding for other work from Merck KGaA, Germany. Nadira S. Faber declares no conflict of interest.

ORCID

Simon Lucas  <http://orcid.org/0009-0006-7467-0113>

Thomas Douglas  <http://orcid.org/0000-0002-6788-3608>

Nadira S. Faber  <http://orcid.org/0000-0001-9373-9549>

AUTHOR BIOGRAPHIES

Simon Lucas holds the position of Lead Expert Bioethics and Digital Ethics at Merck KGaA, Germany. He has a strong interest in translating ethical reasoning into actionable practices within corporate domains, with a specific focus on areas related to novel biotechnologies and digital solutions. Alongside, Simon pursues independent academic work in applied ethics.

Thomas Douglas is Professor of Applied Philosophy and Director of Research at the Oxford Uehiro Centre for Practical Ethics, University of Oxford. His research lies in applied and normative ethics and much of it addresses the ethics of employing biomedical technologies for nonclinical purposes, such as cognitive and moral enhancement, and behavioural control and prediction.

Nadira S. Faber is Professor of Social and Economic Psychology at the University of Bremen (Germany) and associate researcher at the University of Oxford's Oxford Uehiro Centre for Practical Ethics. Her research lies on the intersection of psychology and philosophy, investigating lay people's views on moral issues, including topics in bioethics like cognitive and moral enhancement.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Lucas, S., Douglas, T., & Faber, N. S. (2024). How moral bioenhancement affects perceived praiseworthiness. *Bioethics*, 38, 129–137.
<https://doi.org/10.1111/bioe.13237>