



Neurorehabilitation of Offenders, Consent and Consequentialist Ethics

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Received: 7 May 2022 / Accepted: 18 October 2022
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Abstract The new biotechnology raises expectations for modifying human behaviour through its use. This article focuses on the ethical analysis of the not so remote possibility of rehabilitating criminals by means of neurotechnological techniques. The analysis is carried out from a synthetic position of, on the one hand, the consequentialist conception of what is right and, on the other hand, the emphasis on individual liberties. As a result, firstly, the ethical appropriateness of adopting a general predisposition for allowing the neurorehabilitation of prisoners only if it is safe and if they give their consent will be defended. But, at the same time, reasons will be given for requiring, in certain circumstances, the exceptional use of neurotechnology to rehabilitate severely psychopathic prisoners, even against their will, from the same ethical perspective.

Keywords Consequentialism · Consent · Biorehabilitation · Psychopathic offenders · Moral enhancement

Increased knowledge of the neural factors that influence criminality and of the possibilities of biotechnology to influence human behaviour are opening a new era in the theory and practice of criminal justice. The

recommendation or prescription by judges of certain biotreatments to facilitate the rehabilitation of the offender is becoming a reality. Thus, in some legal systems, drug addicted prisoners are allowed, in order to avoid recidivism, to follow a methadone treatment that attenuates their addiction [1, 2]. Furthermore, those convicted of rape or paedophilia are allowed or required to be given substances that, by lowering their testosterone level, curb their sexual impulses [3, 4]. It is also foreseeable that biotechnological options will, in the near future, be expanded to intervene directly in the neural system of criminals in order to prevent them from reoffending. I will refer to all of these current and possible interventions as *neurorehabilitation* (hereafter NR).

Although there may be a certain consensus on the justification, under certain conditions, of NR consented to by the offender, the disagreement is open and resounding when it comes to the possibility of requiring the offender to submit to such interventions. This discrepancy is based on an ethical debate characterised by an irreconcilable dichotomy between the criteria of, on the one hand, unrestricted individual freedom and, on the other hand, the best consequences for all.

Authors who appeal to individual freedom do so by opposing mandatory NR from an absolute and extreme defence of the criterion of human dignity and the consequent non-reification of offenders [5–9]. For Shaw ([10: 12–14, 11, 12, 13]), for example, such interventions express a worrying lack of respect for the integrity of offenders, who end up being conceived as mere puppets.

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On the other hand, those who position themselves on this issue from the perspective of ethical consequentialism end up justifying mandatory NR with the postulate, in many cases simplistic, that the deprivation of liberty it would entail could always be compensated by its positive effects with respect to other values that are also important for everyone [14], such as the moral behaviour of those rehabilitated [15]: 367), the welfare and other more basic rights of potential victims [16]: 12–13, 17]), or society's more fundamental 'right' to defend itself against those who threaten it [18–20].

The aim of this article is to contribute to this debate with a proposal that, overcoming the aforementioned dichotomy, defends the exceptional justification of mandatory NR from a more sophisticated consequentialist scheme that does not forget the relevance of rights and freedoms. This theoretical framework will lead me to argue that, although mandatory NR of criminals is not, in general terms, ethically admissible, it could be so in the particular case of some offenders suffering from severe psychopathy.

Indirect Liberal Consequentialism

For consequentialist ethics, what is right is that which results in the best consequences for all. But in order to be clear about the theoretical possibilities of such a postulate, one must always keep in mind the difference between two theoretical-structural questions. On the one hand, what we mean by the best consequences. These must be maximally good, but good with respect to what? What is the conception of good or value on which consequentialism is based? On the other hand, a second important question is what should be the object of consequential analysis: the particular actions? the rules to which they would be subservient? the predispositions which would cause them?

Regarding the first question, consequentialism does not in itself entail the adoption of any particular conception of what are good or bad consequences. It is merely a theory of rightness, which needs to be complemented by a theory of value. It is true that the best-known version of consequentialism, utilitarianism, opts for a conception of the good as welfare or utility, usually understood as the satisfaction of preferences. However, in its pure state, this theoretical path finds it difficult to refute the numerous criticisms that have been formulated regarding its inescapable disregard for individual freedom. In utilitarianism, respect for individual freedom would always be subordinated, in

some way, to its relevance in order to reach an optimal state of general utility [21: 40–41, 22: 81–105, 23: 73–75, 24]. Therefore, it would be advisable to start from a consequentialism accompanied by a theory of value that, instead of opting for welfare or utility, would give priority to freedom of choice. We would then have a complete ethical theory that identified rightness with the promotion of the widest possible freedom for all (Sen [25–27]). In the end, this theory would not stray far from the spirit of utilitarianism either, for it could argue that freedoms, rather than the subjective and unjust welfare that gives the satisfaction of accommodating preferences, are what give people real opportunities to be happy if they so desire [26]: 185–203). I will call this theory *liberal consequentialism*.

At first sight, this consequentialist version might seem to overcome the aforementioned criticisms of utilitarianism for its lack of interest in individual freedoms and, with it, the aforementioned dichotomy from which mandatory NR is usually evaluated. Individual liberties would now take prominence because they are valuable in themselves and determine our consequentialist assessment of what is right in each context. However, this consequentialism still fails to give freedoms the importance that a considerable number of people believe they should have. For many, these are not well understood if they do not function as genuine rights; that is, as normative instances with the power to veto reasons based on consequential good for all [21, 28, 29]. And since in the proposed liberal consequentialism the effects of what we do continue to prevail at all times, individual liberties can be sacrificed whenever it is convenient for the maximisation of the liberties of the greatest number of people. In other words, freedom would be promoted from here, but at the price of not respecting it in each individual case.

However, this is not all that consequentialism can advance in the normative consideration of liberties. New possibilities are generated if we ask ourselves the second question mentioned above, that of what the object of our consequentialist evaluation is to be. The most widespread answer tends to be that what is relevant are the consequences of the possible actions that the agent can carry out in each situation. But, as Mill ([30]: c. 2) already implied and was later developed by many authors [31: 100–106, 113–117, 32: 24–29, 33: 194], this is not an inherent requirement of consequentialism. Nor is it the most convenient in consequentialist terms, given our limited nature as moral agents. We are limited as regards knowing many of the consequences of our actions and, when we do, we tend to disguise subjective preferences with assumed objective predictions. Moreover, our

collaborative or affective commitments would not be viable if we thought that we must always calculate the utility of their occurrence. Therefore, since we are not consequentialist "archangels", excellent and neutral in calculation, we would achieve better consequences if we did not calculate in each situation which of the possible actions before us could produce the best consequences. Rather, it would be preferable, for example, that only at certain moments in our lives, after a corresponding calculation, we would choose to adopt those predispositions for action that would have the best consequences for everyone. Thus, in order to optimise our behaviour, we should regularly behave as if we were not consequentialists, in accordance with certain predispositions that we know are normally useful; in short, with certain rules which, because we have internalised them, we will follow as if they were inviolable (even though we know they are not).

Better with Consent than without any NR at All

From this theoretical perspective, which we might call *indirect liberal consequentialism*, if it turns out that respecting the freedom of each particular individual is the best predisposition, we should assume it as a firm default behavioural guideline (as long as we do not have extraordinary reasons to change our predisposition or to stop and consider the desirability of exceptions to the predisposition). In the particular context at hand, on the use of NR, it would therefore be a matter of analysing the following three predispositions in terms of consequences for freedoms.

Prohibitory NR predisposition (hereafter PP): against the NR of offenders even when it is safe and consented to by them.

Voluntary NR predisposition (hereafter VP): in favour of NR of offenders only if it is safe and consented to by them.¹

¹ It could be argued that since NR is an offer from the judicial authorities in exchange for a sentence reduction or even expungement, there could not really be consent, or that it would not be valid. Consent would not be given in freedom, it is argued, because the alternative to NR would be detrimental: serving the full sentence. This is what Vanderzyl [34], McMillan [35] and Green [36] hold with regard to chemical castration of rapists. It is debatable, however, whether there is actually coercion by the state in these cases. The state does not threaten to violate the rights of criminals, nor does it threaten to leave them worse off than they would otherwise be [8, 37–39].

Mandatory NR predisposition (hereafter MP): in favour of safe NR of offenders even if it is not consented to by them.

To begin with, I will aim to show that if we understand freedom as all those opportunities individuals have to satisfy their (non-perverse) preferences regarding their lives, integrity, conduct and goals, there are many reasons to prefer VP to PP. In the face of the only freedom that PP could guarantee, namely the freedom of criminals who do not consent to intervention, an effective and voluntary NR to relieve criminals from prison would protect the freedom of many more people. In addition to the freedom of non-consenting criminals, the freedom of potential victims of crimes committed by those who, unable to voluntarily submit to intervention, have not been rehabilitated by traditional methods, would also be protected. The freedom of those who consent would also be protected, because in addition to satisfying their desire for intervention, NR would give them the ability to exercise greater freedom in their choice of lifestyle. Moreover, they could be delivered from the psychological damage and lack of meaningful freedom that incarceration entails (replaceable by some other, less traumatic punishment). Prisons are dangerous and depressing places that often cause life-long trauma and mental illness for those who experience them. This would happen even if prisons were less inhospitable places, for they rob human beings of something as precious as freedom and the possibility of being with their loved ones. If NR were efficient and safe, it would allow offenders to be returned immediately to their communities without suffering traumatic incarceration, which would be a more humane and efficient form of rehabilitation. VP would even protect the liberty of the offender's relatives, who could enjoy the emotional and financial benefits that the rehabilitated offender could bring them, especially in the case of dependants, such as partners, children and elderly parents. Finally, VP would protect the freedom of society as a whole. Apart from the benefits of reducing the suffering and deaths of potential victims of repeat offenders, NR would indirectly increase opportunities for many citizens by reducing their obligations to contribute to the costly social maintenance of the prison system.

Why not Maximise Freedom with Mandatory NR?

Ultimately, VP has better consequences in terms of freedoms for all than PP, because while it guarantees

the freedoms of consenting offenders, there will also be third parties who benefit from this consented intervention. But what would be the results of comparing VP and MP? Given that NR achieves so much for the freedoms of potential victims, of family members, of society as a whole, and even, in part, of offenders who will be spared the harmful effects of prison even if they do not consent, and given that many prisoners are unlikely to consent to these interventions, would it not maximise the good if we were to adopt MP instead of VP?

In principle, there are two important reasons for answering this question in the negative. The first would be to argue that the liberty lost by offenders forcibly subjected to NR would be far more important than many of the liberties that MP would also seek to protect to compensate for liberties such as those of family members, taxpayers, or even those that forced offenders might enjoy by not going to prison. The all-important freedom at stake with NR is the freedom of mental integrity, the freedom not to be forced to think and value differently.

The importance of the freedom that would be at stake is best perceived if we compare our intuitions about NR and about incarceration. The imperiousness of the latter is consequently justified because, apart from deterring potential offenders, it prevents those who have offended from continuing to do so and, in theory, seeks their rehabilitation and social reintegration. Because incarceration is so necessary, it does not even occur to us to make it conditional on the consent of the offender. The question then arises as to why we do not maintain the same with NR, which would be a more efficient and less burdensome way of achieving the same objectives of crime prevention and rehabilitation of offenders. Such a different judgement of these two similar interventions is only saved from inconsistency if we argue that the freedoms that would be lost by incarceration, such as freedom of movement, for example, would not be as essential or relevant as that which would be negatively affected by NR: the freedom to choose how to be one's self.

But this freedom of personal integrity is composed of at least two fundamental elements. One is bodily freedom, the opportunity for one to be sovereign over one's physical integrity. This is the freedom that would be violated if NR were to modify the biology of the offender without his or her consent. There is no doubt that this is a very important element of

individual liberty, certainly more so than freedom of movement. But even if personal control over what is done to one's own body is so important, the loss of liberties would not be so severe with the imposition of NR. The harm to bodily integrity can be gradual and, as Douglas ([40]: 114–5) argues, in the mere fact of subjecting someone to an injection or cranial stimulation without health risks, there cannot be significant harm when compared to other violations of the right to physical integrity, such as torture or murder. Douglas asserts that what there would really be is a subjective experience of NR as harmful. He concludes that this experience of harm cannot truly be as strong when there are other similar forms of intrusive interventions on the body that are not experienced as harmful, such as when we submit, against our will, to vaccination programmes.

I agree with Douglas that there can often be an irrational refusal by someone to be subjected against their will to a bodily intrusive intervention when such an intervention may not actually be harmful and may even be beneficial. But I do not think this adequately explains why we can consider mandatory NR to be very serious. We consider it so because with it we modify, without the subject's permission, his or her way of being. We would be undermining a second element of personal integrity, which is the freedom to be mentally integral. This freedom is crucial because, in a way, it is the guarantee of individual freedom as a whole. Therefore, it is the right to mental, rather than physical, integrity that the limitation of movement entailed by incarceration should be compared to [41]. Thus, even if the liberty of prisoners is infringed because their behavioural options have been limited, this does not prevent them, in principle, from continuing to have their right to mental integrity intact. Basically, in prison they could remain as they choose to be, which would not be the case with mandatory NR. It is true that incarceration can lead to structural and functional changes in the brain, resulting in mental illness and personality changes in prisoners. Indeed, some studies associate confinement with hallucinations or paranoia [42]. With such changes in prisoners' cognitive and volitional capacities, incarceration could be equated with NR in its negative effects on mental integrity. However, there are three objections to this. First, that NR carried out in an intrusive and purposeful manner, in many cases to change attitudes that characterise the individual's personality, is likely

to be more permanent than the traumatic and external afflictions of such an adverse environment. Secondly, that, unlike neurointerventions, incarceration does not have alienating effects for all prisoners and many are able to resist the threat to their identity posed by the appalling conditions of prison [41: 115]. And finally, that the threats to prisoners' mental health and integrity are contextual, in the sense that they could be significantly reduced or disappear entirely if prisons change and become truly rehabilitative. The essence of NR is, on the contrary, to modify the personality of the prisoner.

We can conclude then that the type of freedom that NR threatens is of greater severity than other freedoms that would also be at stake if it were not allowed. Now, if we are ultimately seeking to maximise the good, why not go for a predisposition, MP, which, even though it would entail the violation of that very important freedom of offenders subjected to intervention against their will, would nevertheless increase the freedom of many more individuals (potential victims, family members...) Why could such detriment not be seen as compensable by the greater benefits of NR? This is where we need a second argument to defend the preference of VP over MP.

From a consequentialist point of view, the only possible answer can come from a denial of the allegedly greater overall benefits of NR. The first thing that could be argued is that we are not faced with a situation where the only options are NR or no rehabilitation. In most cases, the educational rehabilitation of prisoners is feasible. Against the possible retort that this type of rehabilitation is not effective, it should be noted that while there are countries, such as the United States, where criminal recidivism is as high as 60%, in others, such as Norway, it does not exceed 20% [43]. It is true that it will require more political commitment and will cost taxpayers more, which would mean a reduction in citizens' freedoms, but it should be noted that the most important freedoms of potential victims would be protected alongside the very important freedoms of offenders to be as they want to be.

Therefore, even if MP produced more freedoms overall, when we look at the quality of these freedoms and the existence of possible external rehabilitation, the option to maximise overall freedom would be that of regulating our behaviour according to a predisposition not to accept that NR can be imposed on offenders against their will.

Exceptions to the Rule and the Case of Some Psychopathic Offenders

In the previous section we have evaluated the adoption of three possible predispositions in the face of the problem of consent and NR. But we could ask ourselves why the predispositions or rules to be internalised should be as general and simple as those evaluated. Wouldn't more particularised or complex predispositions have better consequences?

From the theoretical proposal we are starting out from, since we are not perfect consequentialist agents, the most convenient thing is that we do not consequentially analyse all the options presented to us, and that we allow ourselves to be carried away by useful predispositions that are not constantly subjected to scrutiny. These cognitive limitations also condition us to choose rules of conduct that are not complex, so that they can be easily learned and applied. Moreover, they will be more motivating if they are internalised, i. e. they must embody the principles and values of the individual, which are by nature simple and general. But neither the functionality nor the identity-representativeness of the predispositions are at risk if the behavioural predispositions are accompanied by some exceptional clause, which might even add to the usefulness thereof. Would there be a consequentialist improvement of VP in this sense if it allows for some exception to the rule? I will argue from this point forward that the strong tendency towards criminality hypothetically present in some cases involving a strong influence of biology on behaviour could justify this exceptionality. I will take as an example the case of criminals suffering from a certain type of severe psychopathy. In doing so, I will aim to demonstrate the strongest consequential support that a predisposition to action such as the following could receive.

Voluntary NR Predisposition with Exception (hereafter VPE): in favour of NR of offenders only if it is safe and consented to by them, with the exception of inmates conditioned by their biology to be criminals, as in the case of some types of severe psychopaths.

Psychopathy and Criminality

The first thing to say about psychopathy is that there is no unitary conception of it, and that for many current researchers it is a phenomenon that can only be

properly understood by considering its many dimensions [44] and its different subtypes [45, 46]. Moreover, current techniques for diagnosing and measuring psychopathy are inaccurate and therefore unreliable [47], which could lead to the worrying risk of imposing treatment on those who do not need it. Therefore, and for the purposes of argument, I will focus on what would be only one type of psychopathy from a deliberately narrow explanatory approach and on the assumption that it could be reliably diagnosed, therefore meaning that the conclusions of my argument will be limited to individual offenders correctly diagnosed with the type of severe psychopathy that I shall present here.

I will start from the characterisation by Hare [48]—the most physiologically and statistically corroborated example [49]: xiv, [50–53]—which states that three personality traits come together in this disorder: a lack of empathy, high emotional instability, and an absence of fear of the bad consequences of one's actions. The lack of empathy does not stem, as has long been believed, from a failure to distinguish moral rules from conventional ones [54, 55], but rather from a failure to be motivated by moral rules. Let us say that psychopaths are incapable of becoming emotionally concerned with the suffering and harm of others [56: 66, 57]. This needs to be qualified in the light of recent research according to which the lack of empathy on the part of psychopaths is not because they lack the capacity to empathise (in fact, they empathise when instructed to do so or when they imagine something painful happening to themselves) but simply because, due to their limited concern for the suffering of others, they often choose not to be empathetic [47]: 64–5). On the other hand, although one can speak of other types of psychopathy in which individuals will be emotionally stable ("primary psychopathy"), in other types ("secondary", according to the distinction of Mealey [58] and Newman et al. [44] these individuals would be very emotionally unstable and, therefore, would not listen to reason, with the blunt and visceral and sometimes violent reaction, being the usual way of defending their positions [45: 263, 59, 60]. Finally, they are also characteristically reckless in that they have little fear of the possible bad consequences of their actions [61, 62]. It is not that psychopaths do not feel fear—as Hoppenbrouwers, Bulten & Brazil [63] maintain—but that punishment, in the context of the pursuit of other ends, is not normally processed ([47]: 67).

Due to their exaggerated reactions and strong preference for immediate reward, psychopaths—especially those who are intellectually impaired, unemployed and stressed ([64]: 465)—are completely unaffected by the knowledge of what will happen to them if they break the rules and therefore have no fear of punishment [65].

Given these character traits of psychopaths, it can be argued, as a corollary of these, that, at least in these severe cases, there would be a strong tendency towards criminality. The lack of empathy leads them to be very self-centred and arrogant. Also, they feel no remorse if they disobey moral norms. This is because, lacking empathy, the suffering of others protected by these rules does not concern them and, therefore, nor do they care about disobeying them. And if we add to this both the aforementioned lack of impulse control, which is responsible for their aggressiveness, and their disregard for punishment for their bad actions, it should come as no surprise that psychopaths relate to others with disrespect and even contempt. They have no qualms, therefore, about using deception, manipulation or violence to satisfy their own interests and take advantage of others. Such a lack of respect and contempt is also sometimes directed towards their own friends and family. In fact, psychopaths are often distinguished from other criminals because only they are capable of deceiving, stealing from or mistreating family members as easily as strangers [48, 66].

How is it then that this relationship between the character traits of this type of psychopath and his or her tendency towards criminality justifies special consideration as to whether consent is required for his or her NR? Essentially for two reasons. Firstly, because in this case, unlike other criminal profiles, educational rehabilitation is not effective for social reintegration. Secondly, because if NR of psychopathic offenders is carried out according to certain conditions, it is the option that maximises the freedom of all, including the offenders themselves.

Regarding the first, it is a fact that to date offenders suffering from severe psychopathy cannot be reintegrated by relying exclusively on psychosocial methods of rehabilitation, such as therapeutic communities and cognitive-behavioural treatments [67–69]. This could be partly explained by the fact that there is, at least in 'primary' psychopaths, a biological and heritable cause for the personality traits that can lead them

to crime [58, 70, 71]. Thanks to new in vivo neuro-imaging techniques, concordances have been found between psychopathic behaviour and low amygdala activity when processing emotional stimuli [72], in social interaction [73] or in the perception of affection [74], all skills that are highly relevant in the exercise of empathy [75]. Several studies have also been conducted on the involvement of neurotransmitters such as oxytocin and serotonin in the lack of empathy [76–80].

Furthermore, serotonin is also related to another trait of psychopathy: aggressiveness. If the doses of serotonin reaching the orbitofrontal cortex of the brain, the area where emotions are regulated, are not appropriate, the subject may be unable to control his or her violent reactions to provocation [81, 82]. In addition, there are interactions of serotonin with cortisol production and testosterone levels, which are also related to aggressive behaviour [83, 84].

Finally, for some specialists, when individuals do not pay attention to their awareness of the bad consequences of their actions in their decisions, it is due to a dysfunction in the amygdala, which is mainly responsible for our responses to the fear-related stimuli [53, 85, 86]. For others, this inattention to the negative consequences of one's actions responds to the same neurophysiological deficiency in addicts, which prevents them from delaying gratifications, and they always end up choosing the immediate reward. This has become evident in a recent study of psychopathic inmates who, while showing little interest in the long-term effects of their actions, showed abnormal hyperactivity in the ventral striatum of the brain, a region closely connected to the amygdala, which is responsible for the importance of instant gratification of desires in our decisions. Moreover, in contrast to people without psychopathic disorder, in these inmates this brain region is less connected to the prefrontal cortex, which is associated with future-oriented decision making [87].

This biological influence on the behaviour of some psychopaths, together with the lack of effective cognitive-behavioural treatment and sufficient control of certain environmental and affective aspects (child abuse and neglect) that are at times known to influence the development of psychopathic traits [88–90], could explain their high rates of both criminality and criminal recidivism. The tendency towards offending is reflected, for example, in the fact that the

proportion of psychopaths among the prison population is much higher than among the general population. Thus, if psychopathy ranges between 0.2% and 6% of humanity, in prisons it reaches a proportion of between 15%—estimated by Hare [48] from a restricted characterisation of the disorder—and 47%—from the broader interpretation of Fazel and Danesh [91]. This tendency towards criminality and the strong presence of psychopaths in prisons also responds to the higher degree of criminal recidivism of this group of inmates [52, 92, 93].

While there are encouraging developments in this regard (see [45], it is possible that in the short term we may not have purely educational treatments for psychopathy, or that we may be unable to fully control the environments conducive to it. There may also be psychopathic individuals strongly conditioned for criminality. For the purposes of the argument, I argue here that in such cases it might make sense to maintain that these offenders would at least therefore deserve special consideration. If educational rehabilitation is not effective for them, the freedom of their possible future victims could not be protected in this way, unlike the victims of other, non-psychopathic criminals, who could be protected by better prisons. This is therefore an important fact that inclines the consequentialist balance in favour of subjecting them to NR, even against their will. This would for many people protect their freedom to not suffer and even freedom to not die.

NR and the Autonomy of the Psychopath

There is also a second reason for preferring VPE to VP. It would be based on the fact that for some psychopaths, NR, provided it was carried out in a certain way, instead of diminishing the freedom of mental integrity, could provide the means for such psychopaths to acquire that freedom, thus also having more opportunities for reintegration. When could we maintain that NR would be acceptable in the sense that it would provide that freedom of mental integrity? In my opinion, this would be when, as in the case of educational rehabilitation, the intervention is respectful of personal identity and promotes autonomy. Insofar as NR aims to change the behaviour of psychopaths, one would think that this could only be done by modifying their values and thus their freedom and personal identity. This is what leads some authors to

distrust the effectiveness of NR interventions. Thus, Maibom [94] argues that a psychopath can never be treated with drugs that directly modulate brain functions alone. She understands that in the case of such a disorder, where a worldview is involved on the part of the psychopathic individual, treatment must be accompanied by profound and coordinated changes in other aspects of the individual's personality, such as attitudes, judgements and moral beliefs, as these form an inseparable unit with the brain activities to be intervened.²

I argue that this claim to modify individual moral identity by means of NR is not only unfeasible, but also ethically unacceptable. To this end, let us consider different ways of externally influencing people. On the one hand, we could do this by means of moralising discourse. Here, the aim is to influence the behaviour of individuals, using, for example, propaganda or even rational persuasion to inculcate directly in the individual certain values that are alien to him or her. But it is also possible to influence individuals discursively, not by providing them with substantive values, but rather by helping them to rethink the values they assume as their own. The latter is what moral education is all about. In contrast to our attitude towards this, we tend to dismiss moralisation as an appropriate method of modifying the values of other people because we believe that it infringes on the freedom of each individual to choose his or her own values. I argue that this individual freedom of value, which is what should guide authentic moral education, should also be decisive in opposing certain uses of NR that, as a "closed" treatment, seek to directly change the values of individuals in accordance with an ideal that is not their own. But, for the same reasons, neither should we oppose "open" NR interventions that, while safe, aim to facilitate the free moral development of individuals, providing them with useful tools to choose, as autonomously as possible, the values that should govern their lives, and that it would also be more viable because, contrary to what authors such as Maibom [94] maintain, it does not require a change in the worldview of the individual.

This *ethical* type of NR should take the form of interventions that exclusively seek to enhance the

reflective capacities and attitudes of individuals [41, 37], because by providing them with knowledge and good use of the relevant data for deliberation, we prepare them to think freely about the values that they assume as their own. This would also be helped by the biotechnological modification of attitudes or motivations, for example, a greater willingness to be self-reflective, which would be in line with the demand for neutrality that comes with the criterion that treatments should never be closed. The question now arises as to whether the most promising NR treatments for severe psychopaths of the kind we are considering here would really meet this requirement of being open, and could then be conceived as ethically acceptable ways of combating their possible biological determinism with respect to criminality.

Let us start with treatments aimed at correcting the imprudence of the psychopath, which, in my opinion, would be the least controversial. Given the aforementioned knowledge of the neurological causes of psychopathic imprudence, it is foreseeable that we will soon have techniques for bio-enhancement of this moral deficiency. It is already known, for example, that psychotropic substances have a balancing effect on certain neurotransmitters, which could give subjects the necessary willpower to make their actions consistent with their values, reasoning and consideration of all relevant information [96]. This is what Finger et al. [97] have achieved by subjecting adolescents with psychopathic traits to treatments involving the pharmacological modulation of dopamine and serotonin, which have favoured their learning of impulse control in decisions that are potentially harmful to them.

In addition to pharmacology, advances in reducing psychopathic imprudence have also been made in the field of transcranial electrical stimulation. Ruff et al. [98] have discovered, for example, that, if the dorso-lateral prefrontal cortex is stimulated by means of this technique, it is possible to increase obedience towards social norms whose non-compliance may lead to punishment. These findings are so striking that Canavero [99, 100] even goes so far as to explicitly defend transcranial electrical stimulation as the ideal treatment, due to its effectiveness and harmlessness, for the rehabilitation of criminal psychopaths. The question now arises as to whether it is not only effective but also ethical.

At first glance, this type of intervention would not be ethically acceptable because, by allowing the subject greater impulse control, we would be dealing

² A similar position is held by Reimer [95].

with a modification of volitional attitudes rather than cognitive or reflective ones. However, these are motivational treatments that do not in themselves entail a modification of personal identity. Normally, this identity takes the form of preferences that the subject is willing to translate into coherent actions as long as the consequences of such actions do not involve the frustration of other preferences of greater weight for him/her. In the case of the psychopath, he knows that disobeying the law will, in the long run, bring him serious harm. In that sense, it can be said that he prefers to obey and that this is a reflection of his identity. The problem is that, as a matter of strong impulses, he ceases to focus on the long-term consequences of his action and therefore ends up satisfying preferences that will give him immediate gratification by doing what he knows is to his detriment. He does not really want to disobey the law, but his impulses, like those of the addict, cause him not to abide by the will that is more in line with his predominant, but not determining, preferences. We can conclude, therefore, that using biotechnology to enhance the psychopath's willpower, enabling him to better resist temptation and be consistent with his true preferences, can easily be interpreted as a way of making him freer to do what he really wants without affecting his identity.

On the other hand, expectations have also been raised that, in the short term, there will be viable interventions to correct the other two deficiencies of psychopaths: their lack of empathy and their aggressiveness. With regard to the former, the artificial synthesis of oxytocin has made it possible to experiment with it and verify its immediate effects in the enhancement of abilities and attitudes to adopt the perspective of others. Thus, it is already known, for example, that this substance facilitates the identification of emotional states in the faces of others [101, 102], it makes the subject keep looking into the eyes of others [103], or it helps autistic people to better understand affective language [104]. Furthermore, there is scientific evidence that oxytocin is related to the motivation to avoid the suffering of others and the reinforcement of social behaviour [77, 78, 105]. By administering this substance to humans, they sacrifice more for others and become more trusting, reciprocal and generous [76, 79, 80, 106–110]. But oxytocin is not the only neurotransmitter that predisposes us to sociability and cooperation. This is also achieved by

serotonin. Experiments have confirmed that selective serotonin reuptake inhibitors, drugs used for other psychological disorders, can also appropriately regulate the level of serotonin in the body and thus increase the willingness of subjects to cooperate with others [111, 112].

Regarding the other impairment of psychopaths, some studies show how people with impaired serotonin production who undergo treatment with selective serotonin reuptake inhibitors slow down the absorption of serotonin and thus reduce their tendency to aggression towards others [113–119]. Methylphenidate or lithium have also been shown to be effective in this respect, both in young people [120, 121] and in adult criminals [122, 123]. Similar effects have been obtained by giving adolescents with explosive temperament divalproex, a drug normally used to combat epilepsy or bipolar disorder [124, 125]. And if we add to this the aggressiveness-reducing effectiveness of some widely used antidepressants [126], simple and harmless treatments for modifying this psychopathic trait are imminent.

The same expectation is maintained with regard to new technologies that modify human behaviour through electrical or magnetic stimulation of the brain. For example, for the reduction of aggression, deep brain stimulation currently shows promise. With this technique, mild electrical shocks can be produced in the posterior hypothalamus by means of surgically implanted electrodes, which are able to dampen aggressive impulses [127, 128]. Also, in an attempt to combine deep brain stimulation and neuropharmacology, Van Gompel et al. [129] succeeded in implanting in some subjects a mechanism that, by administering substances and/or producing shocks, blocked violent behaviour, anticipated by sensors that measured the neural drivers of such behaviour.

However, the ethical justification of this type of intervention on empathy and aggressiveness is not as easy as in the case of imprudence. To begin with, the consideration of these interventions as *closed* treatments that seek to modify the values and motivations that constitute the identity of the person being treated is even stronger here. They could be seen as attempts to turn someone who is violent or self-centred into a different person, who is peaceful or selfless, respectively. But this possible reading of these interventions only makes sense if we start from an essentialist conception of identity. However, this is

not the only possible such example, nor is it the best founded. We can also understand identity or personal authenticity as something under construction. If we understand it in this way, treatments for the reduction of aggression, for example, could be seen as helping agents who suffer from uncontrolled impulses that prevent them from doing and being what they really want. Such treatments, appropriately graded, could produce something similar to the sense of freedom and authenticity experienced, for example, by patients with attention deficit hyperactivity disorder when taking methylphenidate [130]. With such treatments against aggression, as with those against imprudence, much information, thoughts and reflections that are hidden in the subject would be activated and could be used to make their own decisions. On the other hand, from this same non-essentialist conception of identity, the increase in empathy with the aforementioned biotechnologies could also be a relevant enhancement. By being more easily able to adopt the perspective of others, the modified individual would be better able to know how others see him or her and, after contrasting this with his or her self-understanding, form a more critical and constructive idea of his or her own personal identity.

Apart from this relevance for the shaping of identity, these two types of treatment could also, at times, be considered as open because of their usefulness in increasing the autonomy of the subject. With the reduction of aggression, subjects would be freed, as we have seen, from the slavery of their uncontrolled impulses, allowing them to act on the basis of deliberation. But also, in more practical terms, it would give them the option of, at least, avoiding those actions that entail the serious consequence of criminal punishment. By keeping them away from recidivism, with the attenuation of their aggressive impulses, offenders are presented with the real option of achieving social integration that will allow them to realise their personal projects.

With the second type of treatment, that of increasing empathy, the gains in autonomy could also be significant. Either by making it easier for them to put themselves in the place of their future victim, or by allowing them to put themselves before the result of their actions from an impersonal or fairness perspective, in both cases we would be enabling those being treated to better understand the harm they could cause to others, thus making their decisions more autonomous,

in the sense of better founded. In addition, this other technique also reinforces the freedom to choose not to return to prison and thus aspire to achieve the objectives that the subject has set for his or her life.

However, the NR techniques mentioned above do not always reinforce the freedom to be oneself. In some situations, they could even entail a clear attack on personal identity, even if this is understood as self-creation. This would be when the alteration of the capacity for self-control and empathy is so motivationally significant that it involves the real imposition of values and character traits in which the agent has not participated. It is therefore a question of degree and, in general terms, it is not easy to determine the threshold beyond which a treatment against aggressiveness and lack of empathy entails the imposition of the values of others.

But, also, in our specific case of psychopaths, this difficulty regarding the threshold of permissibility in these treatments becomes less relevant. Given the anomalous character of their moral deficiencies, most treatments to bring these individuals closer to the average degree of human functionality in these areas should be seen as equivalent to therapy³ and, in that sense, should not entail an inadmissible modification of their personality. They would be admissible because, as *normalising* treatments, neurological alterations would not block freedom of choice, in the same sense that individuals who have this average or normal degree of impulse control and empathy are not incapable of changing their values and behaviour once they reflect on them.

Seen in this light, the essential problem would be that the hypothetical psychopath that serves as a reference here would not even be able to reach that common level that allows most people to make

³ Considering psychopathy as an illness that renders one incapable of being minimally autonomous would have important implications in the field of criminal responsibility. However, as Jefferson & Sifferd [131] and Jurjako & Malatesti [132] argue, given the heterogeneity of the group to which the concept of psychopathy refers, a diagnosis in terms of this concept alone cannot serve to exculpate an offender. In order to do so, it would be necessary to test the offender to determine, according to the authors, his or her ability to understand legal and moral rules and to exercise sufficient control over his or her behaviour in order to avoid breaking such laws. These requirements would correspond to some extent with those advocated here to determine the degree of autonomy of psychopaths and the consequent appropriateness of subjecting them to NR.

autonomous decisions based on some knowledge of the circumstances, some control of the will and a minimum degree of empathy. Decisions that allow them, to some extent, to be themselves. The mental disorder would deprive the psychopath of those capacities that allow most people to combine their peaceful and empathic attitudes with moments of being violent or self-interested when they have reason to do so, or vice versa. In the case of our psychopaths, this flexibility in moral decisions is not possible and, in this sense, some form of NR can be interpreted as a set of treatments that will allow them to be at least as deliberate and autonomous as most humans. Moreover, the achievement of this normal degree of autonomy would put criminal psychopaths on the same footing as other inmates in order for rehabilitative educational measures to be effective for them. In that regard, this ethical debate ultimately comes back to a question of equal justice, that of whether it should be accepted that psychopaths, as persons lacking capacities of great moral significance, are entitled to acquire them, at least to that degree which confers essential autonomy on most people without such a disorder.

Conclusion

Believing that in ethics the consequences of our actions have the last word does not necessarily lead to a demand to determine what is right after having calculated the consequences of each of our behavioural choices. From a realistic perspective of how we human beings are, the best thing we can do, in consequential terms, is to not be constantly calculating, and to let ourselves be guided by predispositions that we take on board with conviction precisely because they are the most effective behavioural guidelines for making a better world. A better world above all in terms of freedoms.

From this theoretical starting point, reasons have been given in this article to argue that the world will be better off if we are predisposed to the general guideline of allowing neurorehabilitation of prisoners only when, in addition to being safe, it is approved by these individuals. In this way, in addition to respecting their mental integrity, we would produce more global freedom than if we were predisposed either to prohibit all NR or to force offenders to undergo it.

But predispositions are based on rules which, although internalised, insofar as they determine a personal

predisposition, are nonetheless empirical, contingent on the consequential reasons for, exceptionally, not following them in certain contexts. Thus, in the subject that concerns us, I have posed the hypothetical case of inmates with severe psychopathy who, due to their biological conditioning for crime, can hardly be rehabilitated by socio-educational techniques. Therefore, provided that certain conditions are met, such as that the proposed interventions will one day be feasible and safe, and that adequate neuromodulation will be possible so as not to alter personal freedom and identity, the treatment of the deficiencies of psychopaths could be seen as essential in order to restore a minimal autonomy that would allow these inmates to be on an equal standing with others, to avoid being condemned to recidivism. These consequential reasons have led me to the conclusion that the predisposition to force only such criminals to submit to a safe and *open* NR might be what both respects and maximises the freedom of all.

Acknowledgements This article was written as a part of the research project *Digital Ethics. Moral Enhancement through an Interactive Use of Artificial Intelligence* (PID2019-104943RB-I00), funded by the State Research Agency of the Spanish Government.

Funding Funding for open access charge: Universidad de Granada / CBUA

Declarations

Conflict of Interest No conflict of interest.

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