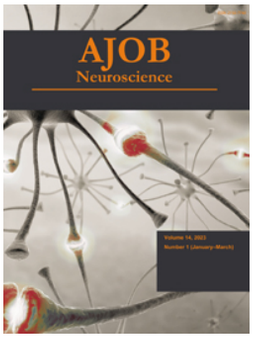

AJOB Neuroscience

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/uabn20

The Normative Evaluation of Neurointerventions in Criminal Justice: From Invasiveness to Human Rights

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To cite this article: Sjors Ligthart, Vera Tesink, Thomas Douglas, Lisa Forsberg & Gerben Meynen (2023) The Normative Evaluation of Neurointerventions in Criminal Justice: From Invasiveness to Human Rights, AJOB Neuroscience, 14:1, 23-25, DOI: 10.1080/21507740.2022.2150714

To link to this article: https://doi.org/10.1080/21507740.2022.2150714

Published online: 16 Dec 2022.

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AJOB NEUROSCIENCE
2023, VOL. 14, NO. 01, 23–25
https://doi.org/10.1080/21507740.2022.2150714

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OPEN PEER COMMENTARIES

The Normative Evaluation of Neurointerventions in Criminal Justice: From Invasiveness to Human Rights

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Medical interventions are usually categorized as "invasive" when they involve piercing the skin or inserting an object into the body. However, the findings of Bluhm and collaborators (2023) (henceforth "the authors") suggest that, when evaluating emerging neurointerventions, people are often willing to understand invasiveness more broadly. For example, the stakeholders they interviewed perceived interventions as invasive partly on the basis of their *emotional* and more broadly *psychological* impact. In addition, neurointerventions can have a broader impact on the patient's life, which the authors refer to as *lifestyle* invasiveness.

The authors suggest that, in light of these findings, ethical evaluations should refer to the *specific* effects of an intervention, rather than describing them as either invasive or noninvasive. They discuss implications for clinical practice and for neuroethical research. In our view, this perspective is also directly relevant to human rights, more specifically to the current debate about strengthening the legal protection of the brain and mind in view of emerging neurotechnologies. In this comment, we briefly explore how considering *different types* of invasiveness distinguished by the authors—physical, psychological, and lifestyle—may be conducive to a fine-grained human rights evaluation of neurointerventions. We will focus on the use of (emerging) neurointerventions in forensic psychiatric and criminal justice contexts to reduce the likelihood of criminal offending—for example by reducing aggressiveness (e.g. Knehans et al. 2022; Sergiou et al. 2022)—since pressing ethical and legal questions arise in this context (Birks and Douglas 2018; Ryberg 2019).

One prominent concern is that, in contrast to the use of neurointerventions in general medicine, their employment in a forensic context may not always be *voluntary*, thus having the potential to infringe and possibly violate human rights (Bublitz 2018; Kirchmair 2019; Ligthart et al. 2021). One right that is particularly relevant with respect to neurointerventions is the right to *bodily integrity* (Bublitz 2018; Douglas 2014). When interventions are *physically* invasive, such as the injection of pharmaceuticals and the application of

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Deep Brain Stimulation—which requires the surgical implantation of electrodes into the brain—their nonconsensual use will indisputably infringe and possibly violate the right to bodily integrity.

Less clear, however, is the extent of the human rights protection against the employment of (physically) "noninvasive" forms of neurointervention, such as transcranial magnetic stimulation (TMS) and transcranial direct current stimulation (tDCS). The bodily interference involved in administering these interventions is often minor, consisting in placing a magnetic coil near the scalp, which delivers low-intensity magnetic pulses to the brain (TMS), or electrodes on the scalp that deliver electrical currents to the brain (tDCS). No break in the skin is required. It is open to debate to what extent minor bodily interferences like these are able to infringe the right to bodily integrity. If they do, the infringement is likely to be of "minor importance" and therefore relatively easily outweighed by the public interest in preventing crime (cf. Ligthart 2022, at 85–86). Accordingly, the right to bodily integrity, in its current understanding, may not offer robust legal protection against "noninvasive" forms of brain stimulation in a forensic context.

However, as the authors highlight, the invasiveness of interventions such as TMS and tDCS need not be merely physical but can also be psychological or related to lifestyle. This raises the question: do these other types of invasiveness have normative implications analogous to those of physical invasiveness? Physical invasiveness is of normative significance in part because of its relationship with the (moral and legal) right to bodily integrity: the physical invasiveness of a nonconsensual intervention is relevant to whether this right is infringed, and perhaps to how seriously it is infringed when it is. Could psychological and lifestyle invasiveness play a similar normative role?

A human rights law analysis suggests that they could. Nonconsensual neurointerventions that are predominantly psychologically invasive, e.g. because they impact the person's mental states or processes, even if not infringing the right to bodily integrity, may raise concerns about a right to *mental integrity*. Although not as well-established as the right to bodily integrity, a right to mental integrity is recognized, for instance in Article 17 of the UN Convention on the Rights of Persons with Disabilities, which prescribes that "Every person with disabilities has a right to respect for his or her physical *and mental* integrity on an equal basis with others" (emphasis added). And in the European context, a right to mental integrity is recognized as part of the right to private life under Article 8 ECHR, next to the right to bodily integrity (Michalowski 2020). Similarly, according to Article 5 of the American Convention on Human Rights, "Every person has the right to have his physical, mental, and moral integrity respected."

Neurointerventions can also be invasive in terms of lifestyle, and perhaps even in a broader sense than described by the authors. Neurointerventions that commit a person to recurring visits to a clinic to receive treatment could interfere with a person's daily routine, and thus their lifestyle. Additionally, neurointerventions are often applied to directly change the *behavior* of a person—especially in forensic contexts—and this can have even more far-reaching impact on a person's lifestyle, which could thus also be considered a form of lifestyle invasiveness. For example, interventions intended to suppress libido in sex offenders may prevent any form of sex life, not only sexual offending (Forsberg 2021). Lifestyle invasiveness, then, may raise concerns regarding rights such as the right to freedom of movement, the right to private and family life, and the broader right to personal autonomy or self-determination, which the European Court on Human Rights defines as "the right to make choices as to how to lead one's own life."[1]

What we are proposing is that the broader and more differentiated understanding of the term "invasiveness" suggested by the authors' study maps on to a broad and differentiated array of rights relevant to the use of neurointerventions in forensic contexts. This array of rights includes those protecting against psychological and lifestyle consequences.

We suggest that it would be fruitful to further develop the as yet underexplored concepts of *psychological* and *lifestyle* invasiveness as well as their relationships to the human rights outlined above. This analysis could seek to specify (i) how each type of invasiveness should be understood, (ii) which rights are implicated by which type of invasiveness, and (iii) how, precisely, the seriousness of each type of rights infringement varies with differences in each type of invasiveness. As well as being theoretically interesting in its own right, pursuing this analysis could, we think, help to guard against the risk that physically noninvasive interventions are treated as *ipso facto* less problematic than physically invasive ones, and regulated less stringently as a result.

FUNDING

SL, VT and GM are funded by the Dutch Research Council (Vici Grant VI.C.201.067). TD is funded by the European

[1] *M. and M./Croatia*, ECtHR 3 September 2015, 10161/13, § 171.

Research Council (Consolidator Award 819757) and the Uehiro Foundation on Ethics and Education. LF is funded by the British Academy (Postdoctoral Fellowship award pf170028) and Uehiro Foundation on Ethics and Education.

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AJOB NEUROSCIENCE
2023, VOL. 14, NO. 01, 25–28
https://doi.org/10.1080/21507740.2022.2150715

OPEN PEER COMMENTARIES

Why Neuroethical Analyses of Invasiveness in Psychiatry Should Engage with Mental Health Service User Movement Knowledges and Considerations of Social In/Justice

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Bluhm et al.'s (2023) qualitative study on psychiatric electroceutical interventions describes several types and characteristics of invasiveness identified by psychiatrists and people living with and without depression. In this commentary, we argue that to fully understand the meaning of invasiveness in psychiatry, neuroethics ought to engage with psychiatric survivor (i.e., mental health service user) movement knowledges that tend to go beyond individualized accounts of concepts such as invasiveness and reflect

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