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Misuse Made Plain: Evaluating Concerns About Neuroscience in National Security

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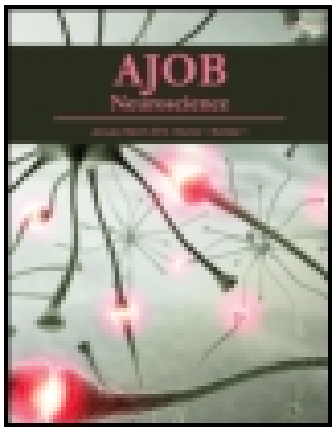

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Misuse Made Plain: Evaluating Concerns About Neuroscience in National Security

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We agree with Marks's (2010) core assertion that science should not be misused for national security ends. We are still left, however, with the big question: What counts as "misuse"? In this open peer commentary, we categorize the possible "neuroscience in national security" definitions of misuse and identify which, if any, are uniquely presented by advances in neuroscience. Ultimately, we conclude that while national security is often a politicized issue, assessing the state of scientific progress should not be.

To define misuse, it is helpful to define what we would consider appropriate use: the application of reasonably safe and effective technology, based on valid and reliable scientific research, to serve a legitimate end. This definition presents distinct opportunities for assessing misuse: misuse is the application of invalid or unreliable science, or is the use of reliable scientific methods to serve illegitimate ends. The assessments of each further depend on the specific context in which a technology is being used. Within the domain of national security, various different contexts exist, each with different standards for evaluating the scientific basis of the technology and whether its use is justified.

SCIENTIFIC VALIDITY AND RELIABILITY

In assessing whether a technology is prematurely applied, a threshold concern is whether the science itself produces sufficiently valid and reliable results for the specific application. For neuroscientific applications to national security, the gaps between research and valid application have already been identified in a recent publication by an interdisciplinary group of experts (see Canli et al. 2007).

Validity and reliability questions are important to assessing the potential use of functional magnetic resonance imaging (fMRI)-based lie detection, where it is presently unclear how reliable the results are outside of the controlled laboratory context (for a review, see Greely and Illes 2007). A concern that Canli and colleagues (2007) articulate is for "study designs that assume experimental control over

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stimulus conditions, subject selection, and participant cooperation that may not exist in field applications." This concern generalizes to Marks's area of interest: How valid and reliable fMRI-based lie detection would be in a high-pressure national security context is far from clear, but is ultimately a scientific question.

Furthermore, how reliable does a technology need to be for national security experts to use it appropriately? Context is central to a complete answer to this question. For example, most U.S. jurisdictions do not permit polygraph evidence to be admitted in court because of concerns about reliability,[1] but a technology need not meet that same standard to be used during an investigation. Police officers, not just military interrogators, regularly use polygraphs as an investigatory tool. Most would hardly consider police use of polygraphs to be "misuse" per se, perhaps because the polygraphed person consented to participate, often after consultation with a lawyer. Thus, a technology that is not reliable enough for use in some contexts might still be acceptable in others without arousing serious ethical concerns.

Marks is a self-described "neuroskeptic," meaning he questions whether neuroscientific technologies can actually do what their adopters claim. His article, however, does not discuss the validity of claims about neuroscientific technologies, nor does it revisit the research-application gaps unique to neuroscientific technologies.[2] Instead, Marks discusses the failings of other tools used in the service of national security: polygraph errors, incorrect interpretations of satellite imagery, and enhanced interrogation resulting in false confessions. With regard to the neuroscientific tools he mentions (neuroimaging and psychoactive drugs), he focuses on how persuasive their results will be, but not on whether those results will be right. Perhaps the views in his paper could be better described as "neuroconcerned": concerned about whether even scientifically reliable neuroscience could be used to cause harm or further harmful ends.

LEGITIMACY OF MEANS

Contexts within national security scenarios will affect whether applying a technology is a misuse. Did the person consent to the procedure? Is it a part of interrogation (see Thompson 2005)? Will it be presented as evidence to decision makers in policy or law? Or, will it be used to justify harsh physical measures for extracting further information, perhaps functioning as a pretext to apply methods that would otherwise be considered illegitimate (see Marks 2007)? These contexts produce different outcomes; one would expect a higher standard of scientific reliability of technology used to produce evidence shown to a decision maker than to produce data that merely create leads in an investigation.

Independent from whether the technology works well enough for a particular purpose, we must also determine whether the technology is inherently harmful. For example, the procedure may be unsafe, painful, invasive, or cause some other harm. Marks draws analogies between the military's exploitation of neuroscience and enhanced interrogation techniques, which he says resulted from the exploitation of behavioral psychology. Regardless of whether enhanced interrogation techniques deployed science prematurely or resulted in false confessions, many people would find them objectionable because they cause a person to be in fear or pain. The neuroscientific technologies Marks discussed are not equivalent to enhanced interrogation techniques in this respect.

Neuroscientific technologies, however, may be considered inherently harmful as means because they are uniquely violative of a person's privacy and perhaps unduly coercive. Strategically intervening in brain processes to create feelings of trust or to extract truthful statements is coercive in a way that undermines an individual's autonomy. Additionally, extracting information about an individual's unspoken thoughts directly invades spaces believed to be the most private. In this respect, applications of neuroscience may be more susceptible to misuse than other types of technology. However, as with validity and reliability standards, how much coercion or intrusion into privacy is appropriate will depend on the context.

LEGITIMACY OF ENDS

Finally, misuse may be found if the ultimate ends that a technology is serving are illegitimate. Offering the results of a scientific analysis to intentionally mislead courts or decision makers would always be a misuse of the technology. When scientific findings are intentionally skewed, however, the problem is not the technology itself, but rather officials who manipulate the truth for political purposes.

Beyond using results to intentionally mislead, it is less clear what purposes should be deemed illegitimate. Who should decide what uses of neuroscience are legitimate, particularly with respect to national security? Marks suggests that we "should empower the public to challenge decisions regarding the development and application of neuroscience, and engage with them in figuring out the road ahead" (Marks 2010, 4). Certainly, we should encourage the public to think critically about scientific findings, but national security uses of science are often likely to be classified and not subject to public debate. Because they are often opaque, such uses of neuroscience in national security may be more susceptible to misuse than in other applications.

Furthermore, what role should the public have in determining the direction of scientific research and technology development? Although much of the funding is collected

1. But 18 states allow polygraphs to be used as evidence if both parties stipulate to their admission. New Mexico is the only state in which polygraphs are presumptively admissible without the parties' stipulation: *State v. Dorsey*, 88 N.M. 184 (1975).

2. Marks may have excluded that discussion because he suspects that the national security enterprise may not care how well such technologies work. For example, Marks described how military interrogators were unconcerned that the manner in which they used polygraphs could not produce reliable results (Marks 2010, 4).

through taxes, relying too much on public opinion about support for research and development may unnecessarily politicize those decisions. Determining what applications of neuroscience are appropriate will not be as simple as determining what uses are popular.

Marks also suggests that the powerful are more likely to exploit neuroscience against the powerless than against themselves, and that society should reconsider neuroscience as a way to help disenfranchised and impoverished persons. Nontherapeutic neuroscience research aims to gain knowledge about the brain, which may be applied in a number of ways, some of which could help marginalized persons. Whether research fits with an overriding political agenda, however, should not be the ultimate test of whether it is appropriate. Certainly, we would be concerned if all neuroscience research must be justified by an overriding national security goal. If it is inappropriate to imbue a field of basic research with a political agenda, switching politics does not remedy that concern.

CONCLUSION

Canli and colleagues mapped the terrain of neuroscience and national security in *The American Journal of Bioethics* 3 years ago. The technologies have moved forward, but the framework they established for considering the issues still applies. Canli and colleagues concluded that neuroscience might be misused in national security, but also that it might be ethically and appropriately used. Marks repeats the first conclusion, by examining risks presented by the persuasive effect of neuroscientific technologies, but does not address the second—and offers no useful path forward beyond a general "neuroskepticism." Skepticism is a useful tool for reaching a balanced and rigorous assessment of a technology and its use, but it is a method, not a conclusion. If neuroscientific technology is used in the service of national security, careful consideration must be given to whether that use is appropriate. What constitutes inappropriate use—misuse—depends much more on the circumstances of use than on whether the technology arises from neuroscience specifically or from another field of scientific research. ■

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From Brain Image to the Bush Doctrine: Critical Neuroscience and the Political Uses of Neurotechnology

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When science is used for a practical purpose it can go wrong in at least three different ways. First, theory can be incorrectly applied. In 1986, NASA had the necessary theory to construct O-rings for the space shuttle that wouldn't deform in the cold, but that theory was incorrectly applied, and the *Challenger* exploded. Second, theory can be correctly applied in the service of an immoral act; the use of the atom bomb provides an obvious example. Third, one can misrepresent or overinterpret scientific theories for immoral ends. Ewan Cameron's notorious experiments in psychic driving were predicated on the theory that psychosis could be cured by reconstructing the mind from the ground up (Marks 1991). Such experiments, clearly immoral from the vantage point of the present, would presumably have been justified in the eyes of some by that theory. In this latter case, a poor theory allowed a psychiatrist—and a political agency, the

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