Presidential Commission *for the* Study of Bioethical Issues

Classroom Discussion Guide on Ethics and Neuroscience

This guide provides discussion questions and topics based on the Presidential Commission for the Study of Bioethical Issues' report, *Gray Matters: Topics at the Intersection of Neuroscience, Ethics, and Society* (*Gray Matters*, Vol. 2), to help instructors integrate ethics discussions into a high school or college science course.[1]

Framing Ethics Discussions in a Science Course

Discussion of these ethical issues does not require previous training in philosophy or ethics. This is true for both the students and the instructor. However, it is a good idea to develop a framework for the discussion to make clear to all participants the goals of the exercise. Potential frameworks include:

1. The class can frame its discussion around two main considerations:
    a. Is the intervention beneficial in and of itself?
    b. What are the potential positive or negative consequences of the intervention?
2. The National Institutes of Health Bioethics Curriculum in "Exploring Bioethics" suggests a step-wise framework based on the following questions:*
    a. What is the ethical question?
    b. What are the relevant facts (scientific and social)?
    c. Who or what could be affected by the way the question gets resolved?
    d. What are the relevant ethical considerations?
3. Alternatively, or additionally, the class might engage in a deliberative process to problem solve or generate a policy recommendation. Classroom deliberation encourages students to share competing views and disagree respectfully, with the goal of arriving at consensus about a resolution that seems best given diverse views and perspectives.**

* National Institutes of Health (NIH). (2009). Exploring Bioethics. Retrieved May 13, 2015 from http://science.education.nih.gov/supplements/nih9/bioethics/guide/pdf/teachers_guide.pdf

** McAvoy, P. and D. Hess. (2013). Classroom deliberation in an era of political polarization. *Curriculum Inquiry*, 43(1), 14-47.

[1] Presidential Commission for the Study of Bioethical Issues (PCSBI). (2015, March). *Gray Matters: Topics at the Intersection of Neuroscience, Ethics, and Society*, Washington, DC: PCSBI. Available at: http://bioethics.gov/node/4704.

Ethics and Neuroscience

In the report *Gray Matters*, Vol. 2, the Presidential Commission for the Study of Bioethical Issues (Bioethics Commission) addressed three topics at the intersection of neuroscience and society that have captured the public's attention.

Cognitive enhancement—efforts to enhance human cognition, including the use of novel neuroscience products—can be controversial. The Bioethics Commission broadened the topic to consider neural modification, which encompasses methods and behaviors that alter the brain or nervous system. It did not distinguish treatment and enhancement, but rather considered various goals for neural modification, including cognitive enhancement. In addition, the Bioethics Commission addressed ethical questions related to neuroscience research with individuals with potentially impaired consent capacity, that is, those who might not be able to understand fully and provide ethical and legal consent to participate in research. Finally, the Bioethics Commission discussed the application of neuroscience to the law and potential concerns about scientific reliability, misapplication and overreliance on a developing science, conceptions of free will, mental privacy, and personal liberty.

Topic 1: Cognitive Enhancement

For the purposes of discussion, students should download and read the following Bioethics Commission materials (reports are available for download on the Bioethics Commission's website at www.bioethics.gov under "Projects"):

> *Gray Matters: Topics at the Intersection of Neuroscience, Ethics, and Society*, pp. 27-45 ("Cognitive Enhancement and Beyond").

Discussion Questions:

1. Should researchers study new ways to improve cognition in otherwise healthy people? Or should they focus research on preventing and curing diseases?

   Discussion topics might include:
   - *Limitations on research funding and how we ought to prioritize resources*
   - *Whether there is an ethical difference between improved cognition achieved through intrinsic effort (i.e., hard work in learning) or achieved externally (e.g., through interventions such as pharmaceutical drugs or devices)*

2. What are some different kinds of cognitive enhancement? Are any more acceptable than others? Is there an ethical difference between "natural" interventions like a

healthy diet and exercise, and "unnatural" measures like using pharmaceutical drugs or devices, and if so, why?

Discussion topics might include:

- *What constitutes cognitive enhancement (e.g., the energy boost from a cup of coffee or tea, benefits of taking dietary supplements, or use of a prescription stimulant drug to boost test performance)*
- *Using certain forms of cognitive enhancement might involve risk*
- *Whether the effect of a cognitive enhancement intervention is short-lived or long-lasting; if short-lived, whether it would be ethical to use cognitive enhancement to achieve a goal (e.g., pass a liscencing exam or gain entrance to an academic program) when the benefit might diminish over time*
- *Whether cognitive enhancement interventions (natural or unnatural) have an impact on what it means to be human or individuals' sense of self*

3. Should we regulate who has access to cognitive enhancement interventions? Should children's and adolescents' access be restricted?

> "Neural modification, including cognitive enhancement, raises questions about reconciling risks and benefits, ensuring justice, and understanding what it means to be human."
>
> Source: Presidential Commission for the Study of Bioethical Issues (PCSBI). (2015, March). *Gray Matters: Topics at the Intersection of Neuroscience, Ethics, and Society*, Washington, DC: PCSBI, pp. 119-120.

Discussion topics might include:

- *Whether various goals of cognitive enhancement are ethically equivalent (e.g., helping individuals with dementia restore some cognitive abilities and boosting student test scores)*
- *Some cognitive enhancers might have risks to individual safety; whether there are any individuals or groups that should be protected from potential harms*
- *Risks associated with certain cognitive enhancement interventions might manifest differently for children and adolescents compared to adults, and long-term effects on the developing brain might be unknown*

4. How can we ensure that access to morally acceptable cognitive enhancement interventions is just? Who should have priority in receiving cognitive enhancement? Does it matter?

Discussion topics might include:

- *Whether using cognitive enhancement interventions gives individuals an unfair advantage*

- *Whether individuals might feel pressured to use cognitive enhancement if others in their profession or peer group do*
- *What equitable access might look like (e.g., equally available to all, equally unavailable to all, or available only to those who can afford to pay for it)*
- *Whether making cognitive enhancement interventions available or accessible to all is sufficient*
- *Might cognitive enhancement be employed to help those with the greatest need (i.e., those with lower baseline cognitive abilities)*

Topic 2: Dementia Patients in Neuroscience Research

For the purposes of discussion, students should download and read the following Bioethics Commission materials (reports are available for download on the Bioethics Commission's website at www.bioethics.gov under "Projects"):

Gray Matters: Topics at the Intersection of Neuroscience, Ethics, and Society, pp. 53-77 ("Capacity and the Consent Process").

Discussion Questions:

1. What is informed consent and why is it important that participants provide fully informed consent when enrolling in research?

   Discussion topics might include:
   - *Obtaining participants' informed consent demonstrates respect for their autonomy*
   - *Examples of harm caused by research in which informed consent was not sought or obtained from participants*

2. What is an essential tension inherent to conducting research about disorders and conditions that can cause impaired consent capacity?

   Discussion topics might include:
   - *Researchers need to include affected individuals responsibly in clinical research to develop effective treatments and interventions for persons with neurological disorders or conditions*
   - *What it means to have consent capacity or impaired consent capcity; consent capacity can fluctuate or diminish over time, or be lost permanently*

> There exists a "challenging tension between the need for rigorous research on important diseases and conditions, and the need to protect individuals who might be vulnerable because of impaired consent capacity."
>
> Source: Presidential Commission for the Study of Bioethical Issues (PCSBI). (2015, March). *Gray Matters: Topics at the Intersection of Neuroscience, Ethics, and Society*, Washington, DC: PCSBI, pp. 5-6.

- *Ways to protect individuals with impaired consent capacity who participate in research from exploitation*
- *Whether one's potentially impaired consent capacity can be supported or bolstered through various ways of communicating*

3. What are some ways to resolve the tension discussed in the previous question? Are additional protections for research participants with potentially impaired consent capacity sufficient or should limits be imposed on research that includes these individuals?

   Discussion topics might include:
   - *Circumstances under which specific additional protections (alone or in conjunction with others) might be sufficient to safeguard the well being of research participants*
   - *Whether acceptable levels of risk vary with the prospect of direct benefit for research participants or with potential research participants' prognosis or stage of disease*

4. Legally authorized representatives (LARs) can give permission for individuals with impaired consent capacity to participate in research. How can an LAR determine what the individual would want to do (e.g., preferences expressed before capacity was impaired, current preferences, or the individual's wellbeing)?

   Discussion topics might include:
   - *Who might serve as an LAR and whether they are aware of the participant's desires*
   - *Whether the participant's previously expressed wishes ought to outweigh her current desires if the two are in conflict*

Topic 3: Neuroscience in the Courtroom

For the purposes of discussion, students should download and read the following Bioethics Commission materials (reports are available for download on the Bioethics Commission's website at www.bioethics.gov under "Projects"):

Gray Matters: Topics at the Intersection of Neuroscience, Ethics, and Society, pp. 86-110 ("Neuroscience and the Legal System").

Discussion Questions:

1. If we could use neuroscience technology to "read minds" in the future, should we use it to interrogate criminal defendants? Why or why not?

   Discussion topics might include:

   - *Whether a "mind reading" technology might violate one's privacy or engender a deeper sense of personal intrusion than more traditional interrogation techniques*
   - *The potential of a "mind reading" technology to increase accuracy in legal decision making (e.g., only punishing those who truly are guilty)*
   - *How to ensure that such technology is sufficiently accurate to justify imprisoning individuals—for example, polygraph evidence was previously employed in court proceedings, but now its accuracy is highly contentious and its use is no longer common practice*

> "A deeper understanding of the human brain, cognition, and behavior on both individual and societal levels might help tailor policies and sentences, determine guilt and innocence, evaluate blameworthiness, and predict future behavior."
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> Source: Presidential Commission for the Study of Bioethical Issues (PCSBI). (2015, March). *Gray Matters: Topics at the Intersection of Neuroscience, Ethics, and Society*, Washington, DC: PCSBI, p. 88/.

2. A man is convicted of a violent crime, and at the sentencing phase of his trial, his defense attorney demonstrates that he has a brain tumor that makes him more prone to violence, aggression, and impulsivity. How should this impact his sentence?

   Discussion topics might include:

   - *Whether we ought to hold him responsible for his actions if his brain "made him do it"*
   - *Whether deciding that an individual could not help but commit a crime would affect our ideas of what it means to have free will*
   - *Reasons for incarcerating criminals (e.g., to protect members of society from future threat or to punish bad deeds); whether notions of fair punishment depend on an individual's ability to control his actions*

3. In the United States, a person must be competent to stand trial. If an individual is deemed not competent to stand trial due to neuroscience evidence demonstrating a neurological disease or disorder, is it ethical to force him to be treated (e.g., with medication) to make him competent to stand trial?

Discussion topics might include:

- *Whether the neuroscience evidence is sufficiently accurate and reliable to constitute medical diagnosis, and whether this is an appropriate use for medical science*
- *Whether it would it be ethical to mandate treatment of a convicted criminal to render him competent to be executed (when, in the United States, it is unconstitutional to execute a person who is legally insane)*