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ARTICLE

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Neuroenhancement: Warning, Autonomax may be Necessary

Sara Waller PhD
Associate Professor of Philosophy, Montana State University
Bozeman, MT, USA

Carmela Epright PhD
Associate Professor
Department of Philosophy, Furman University
Greenville, SC, USA

ABSTRACT

This paper argues that neuroscience has great potential to increase free will rather than condemn us to determinism. If human freedom depends on such factors as: having the intelligence and rationality to understand the physical, social and moral consequences of one's actions; being aware of what choices are available and viable; being without emotional illness and compulsion; etc., then brain based treatments can expand human freedom. We present several hypothetical cases in which treatments appear to increase experienced free will. In the first case, a prescription for *Epistemidol* increases the IQ and information-seeking drive of a woman with initially low normal intelligence. In the second case, a man with Dysthymia is treated with *Optimistimine* and becomes more outgoing and receptive to others. These and other cases suggest that experiential freedom can be pharmaceutically enhanced by an expanded ability to deliberate and understand the nature of choices and their consequences.

Key words: neuro-enhancement; ethics; pharmaceuticals; treatment; free will; determinism.

Introduction

There is no shortage of commentary on the possibility that findings from neuroscience threaten to reduce or eliminate free will in the metaphysical sense (e.g., Gazzaniga, 2005; Tancredi, 2005; Glannon, 2009). We will contend with this possible loss of *metaphysical freedom* by offering a notion of *experiential freedom and an experientially constructed self* that consists in *its range of choices plus the depth of its ability to understand choice making, probable consequences of choices*, and *the relationship between choices, experiences, and the self*. Even if this experienced freedom and the self that emerges from it exists due to deterministic interactions between treatments and the organism, dismissing such freedom as illusory or existentially irrelevant is to miss a very important aspect of our social, intellectual and political lives.

The solution we present is related to Hilary Bok's (2007) characterization of decision-making in a deterministic world. On her view, free will may be illusory, but our efforts are not irrelevant and should not be dismissed. She explains:

> If it is determined that there will be coffee tomorrow morning, then that does not mean that I do not have to make any; it means that it is determined that I will make some . . . If I {grind the coffee beans and put water in the coffee maker} I am not engaging in efforts that determinism has shown to be unnecessary, but {rather} doing what needs to be done in order to have my coffee . . . because my choices, my efforts, my deliberations, and my mental life are part of the natural world, determinism does not imply that they are irrelevant to what ultimately happens, nor that I do not need to bother with them.[1]

This paper highlights the importance of human choice, effort, and deliberation in spite of a possibly deterministic universe. Indeed, we suggest that a deterministic universe removes a coherent notion of a human self, but that an experientially constructed self can replace the metaphysical self; and can, like Dennett's "center of narrative gravity" serve to indivduate agents from one another and from the rest of the causally interactive universe. We will carry out our argument for the thesis that an *experientially constructed self and its concomitant experience of freedom* can be enhanced by

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neuro-chemical interventions through a presentation of several fictional case studies that are not too far-fetched given recent advances in current pharmaceutical science.[2]

Preliminaries: The Self and Free Will

For the purposes of this paper we will distinguish between two conceptions of free will. The first, *metaphysical free will*, requires the absolute ability to control one's own actions, to choose, to decide, etc. It is this form of free will that recent findings in neuroscience suggest could be false. The second conception of free will, *experiential free will*, consists in the experienced, lived ability to choose, to have control over one's actions, and to initiate action – as perceived by the chooser. Experiential free will, we argue, can be expanded via pharmaceutical and other interventions by, for example, increasing intelligence and the capacities for rational thought and impulse control. Such an increase, *ceteris paribus*[3], naturally enhances one's understanding of the likely consequences of actions, increases one's awareness of viable choices, and eliminates compulsion and coercion based on ignorance of options and misunderstanding of consequences. While experiential freedom (and the choices leading up to and actualizing the treatment) may be deterministically caused by drug-brain interactions, this freedom is the foundation for the human self as separate from its environment and thus a human self that can act, think and choose.

A determinist might suggest that experienced freedom is an illusion not worth contemplating. But we argue that experiential freedom is not trivial even in such a deterministic universe. While it is certainly true that experiences may not be veridical, and that I, for example may think, given the right prescription, that I can joyously fly with the condors when in fact my unassisted human body cannot, the possibility that I may be mislead or the victim of illusion does not change the importance of my experience. Descartes, after all, found a rather good argument for his existence upon reflecting on the possibility that all of his thoughts and experiences may be subject to deception. The fact that we do experience the world, even if inaccurately, brings with it individual and personal uniqueness that cannot be found by noting the boundaries between our bodies and the air around us, or our mouths and our food. Experiential freedom changes our experienced self, and we argue in the next paragraph that the experienced self is far more "real" and important than the metaphysical self in terms of individuation and personal identity.

Traditional discussions of free will and decision-making are predicated upon a distinction between a (metaphysical) self that chooses, and a world that then is changed by those choices. A self, according to the tradition, only has free will when it is free of external constraints, for example, one does not freely choose to sign a document with a gun pointed to one's head. The notion of external constraints incorporates an assumption that there are things that are clearly external to the self, that can be acted on, or act upon, the self. But in the deterministic metaphysical world that neuroscience seems to offer us, there is no clear distinction between the internal 'core' self and the environment it supposedly responds to or controls. Given a fully physical, determined system, any additive to the brain becomes part of the brain, and was always fated to become part of the brain. Thus, traditional notions of external and internal freedom or constraints have no basis. The dividing line between the metaphysical self and the rest of the world is ultimately erased entirely. Pharmaceuticals and other treatments have a profound effect on what we would consider to be the self (personality, thoughts, choices, actions, etc.) and if the world is determined, then the metaphysical self is causally bound to take them. That self is deterministically comprised of the materials contained within the prescription even before the prescription is ingested because the self cannot avoid ingesting them at the pre-appointed time. The line causing some things to appear to be external to the self (e.g. medication) and others to appear to be internal to the self (e.g. personality) is an illusion founded in viewing the self from one time perspective (pre-treatment) or another (post-treatment). Thus the notion of an individual metaphysical self that acts on an external world, a self that does, or does not, have free will in the traditional sense, needs to be revised.

In a deterministic world there is no self that chooses in the metaphysical sense. And yet, human contemplate our temporally bound viewpoints on that self in order to re-understand the self as illusory, and humans consider such contemplation important. Humans often take their choices to be a (if not the) unifying factor of the core self – the self that understands and decides upon its actions, responds, chooses and changes in response to various experiences in the world. Thus experienced freedom creates the only self worth having, and even if that freedom is illusory, our individual experience of such deception delineates our boundaries from the boundaries of other creatures and objects in the universe.

Pink (2004) gives us an excellent example of creatures that are, as far as we can tell, lacking the potential for experiential freedom, and so will never build a unifying self. Sharks, like humans, are part of the natural world, and so are fully determined in a metaphysical sense (and, we add, have no real selves that are separate from the features of the environment they are destined to ingest, and the consequent reactions to them). Sharks also (probably) have primitive experiences, beliefs and desires, such as the sensation of blood in the water, felt hunger, and a belief that the food is over here, etc., However, we are still not eager to say that sharks freely choose to do anything. They are not rational; they do not deliberate or weigh their options; they do not learn (much) about their worlds; they do not have a broad, abstract understanding of their lives and how their choices might impact them. Sharks are bound by their drives and do not develop themselves as agents; they do not experience themselves as Dennett's "centers of narrative gravity."

In this paper we suggest that some pharmaceutical treatments can raise some humans above shark-level choice making. The case studies begin with some common notions of the freely choosing self and what most of us take to be its important if not essential components, such as intellect, mood and personality, moral understanding, and self-esteem. If these factors are mutable with pharmaceutical tools,[4] then the core self that makes choices is also changeable. If this is true, then that current neuroscientific assumption that the metaphysical self (defined and delineated by the structural features of the brain and thus predetermined in a strong sense) is the only possible understanding of the self, is false.

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The Cases

Case 1:

Sam has an IQ of about 85 and has not been exposed to many world experiences, or much education. Working with limited cognitive capacity and limited information and experience, he tends to see the world very simply and strictly, and often makes choices about his life based on false dichotomies and a poor understanding of the consequences of his options. He begins a treatment program in which our new drug, *Epistemidol*, which raises his IQ and motivates him to seek information and experiences. New neurons grow, new dendritic branches form, and he finds himself to be both curious and outgoing. His brain is further stimulated by the enriching new experiences, which in turn opens further opportunities for choice and change. Choices before him expand, because he understands more about the world and about himself. Did *Epistemidol* increase his free will?

In an absolute, metaphysical sense, the answer is 'no.' Now, as always, he is comprised of causal relationships between physical elements and chemical reactions in his brain. He is choosing newly and differently only because he is at the end of a causal chain of events that brings him greater capacities for choice. However, if we consider his experience of freedom, the answer is clearly 'yes.' He understands more about choices, choice making, and the consequences of his choices. He has more ability to make rational choices because he is in possession of a greater number of rational faculties (the ability to process facts, knowledge of logic and inference, etc.) It is nearly impossible to deny a change in his experience of freedom, and the illusion has its own causal efficacy in the metaphysical world. For example, it is generally assumed that people with greater capacities for choice are not merely different, but they are more responsible. The notion that those with greater cognitive capacities are more responsible and have greater freedom to either act or refrain is embodied in the laws of many countries. Legally, we consider those who are more knowledgeable and more intelligent to be more responsible for their actions. For example, children are not tried as adults, in part because we believe that they do not understand the world, and the consequences of their actions, in the same sophisticated way that adults do. Likewise, the mentally retarded are (ideally) not held responsible for their crimes in the same way that those of normal and higher intelligence are.

Sam has opportunities to expand himself through his choices that he would not have had without epistemidol. Whether or not he was fated to take it, if it did not exist, his self and life as experienced would be profoundly different. The prescription was a necessary condition for his personal development through the new presentation (and selection) of personal choices available to him. As there is no physically individuated, metaphysically defined Sam, the Sam that matters – Sam as he experiences himself and as he deliberates and chooses, is profoundly different. This is the only "real" Sam there is, and epistemidol was a necessary part of his development.

Case 2:

Marcus has an above average IQ and plenty of life experience, as well as Dysthymic Mood Disorder, specifically manifesting in low energy, low self-esteem, hypersomnia, poor concentration, and difficulty making decisions. These mood afflictions have caused him to lose his job and have reduced the quality of interactions with his family and friends. His depression reduces his interaction with the world, which reduces the choices presented to him. He also has little motivation to make choices and stick to them, and worse, he refuses to consider new choices because he does not have the energy or confidence to see them as live options. He begins to take our new drug, *Optimistimine*, and gains energy, concentration, and the ability to make decisions. He sleeps less, and uses his time to research new options for his life. He becomes more outgoing, and does more things. As a result, his self-esteem rises. These combined factors produce more options in his life, and he actively makes decisions and follows through on his chosen courses of action. Did *Optimistimine* increase his free will?

Again, the experiential answer is 'yes,' because he has more options and more ability to act on them. He is able to rationally consider his choices rather than remain in a state of being undermined by his low self-esteem. So, if he has more choices, is more cognizant of them, understands their relative viability better, and is better able to act on them, it appears that his free will has increased – certainly his domain of action in the world has increased. The experiential self, though constructed by (and ultimately indistinguishable from) physical causal chains, emerges as more in control of its environment, and thus distinct from it. Marcus now has the energy to make coffee, even if he was fated to do so. Indeed, we cannot distinguish the enthusiastic, active Marcus from a combination of Optimistimine, time, and Marcus' brain. We have no method for answering the question "Who is the real Marcus – the depressed withdrawn fellow, or the industrious, cheery fellow?" for Marcus was determined to take *opitimistimine* and so to change his moods and behaviors accordingly.

Case 3:

Charlene is responsible for three aggravated assaults for which she was convicted. She served 16 years in jail for her offenses. She has an explosive temper, and a manipulative personality. She has few friends, and her family avoids her because of her propensities to lie, cheat, steal and threaten others. Given *Eudaimonia*, she is less impulsive, violent, and manipulative and she has developed a sense of empathy. As a result she is less likely to place herself in situations in which she has altercations with others. Her new, more empathic personality helps her to create friendships based on trust and mutual concern rather than manipulation; which in turn helps her to make choices that do not call for lying, cheating, or theft. Unlike our hero in "A Clockwork Orange," Charlene is not rendered helpless by her treatment; she is simply more able to control her impulses and cares more about other people; she can make new kinds of choices.

Have we increased Charlene's freedom? One might argue that this depends upon whether or not one believes that doing the right, socially acceptable action is freer or inherently better than doing evil. However, our point is not to defend a moral system but to suggest that Charlene *is* more free – not because she makes the choices that we want her to make, but because she now *has* choices instead of being determined to act by the anti-eudaimonic processes of her brain. Indeed, it is our view that she is actually experiencing making moral choices *for the first time*. She is finally

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free to manipulate or not, react violently or not, exhibit concern for others or not.

Case 4:

Sophia is a woman of above average intelligence who is seeking a Ph.D. in philosophy. She has a sub-clinical degree of anxiety and depression – her most significant complaint is that she often experiences writer's block. Sophia is reasonably attractive and has a normal social life; she dates occasionally and has an average amount of friends and fairly good access to choices, experiences and opportunities. In short, she is smart enough, happy enough, attractive enough, social enough and engaged enough to have or to construct a meaningful life. However, Sophia learns about *Autonomax* – a drug with the combined features of *Epistemidol*, *Optimistimine*, and *Eudaimonia*, and very much wants to take it.

After two months on this medication her IQ has increased 20 points, she is happier and more confident than she has ever been. She is not only more productive – in this short time she has completed an academic paper and a new chapter of her dissertation – she is more social and engaged. Her confidence and productivity[5] open new doors to social interaction and her empathetic, enthusiastic personality offers her even more opportunities to expand her horizons. Is she freer? Experientially, yes, and those experiences are what comprise the experienced self, the only thing that distinguishes us from the causal events that create and destroy us.

Thus, we claim that human free will as experienced is enhanced by neuro-chemical interventions. While changes in brains, personalities, intellects, decisions, and actions are necessary consequences of the medications discussed, the subjects who have enjoyed increased understanding, motivation, self control, and so on have ultimately enjoyed an increase experienced decision making ability. While it may seem difficult to quantify something like *freedom*, our guess is that measuring it by the sheer number of choices one can *actually take advantage of* in the pragmatic, lived world, is not a bad starting point. This is what makes us more interesting than sharks, and what distinguishes a human life from a causal chain of physical reactions between bodies. By this measure, the treatments have increased freedom, even if they have done so through deterministic causal mechanisms. But this just is an increase in experiential freedom, freedom for which *Autonomax* may be necessary.

Warning

And, yes, this story comes with a warning. Necessary conditions for personal change fit nicely with the deterministic worldview advocated by neuro-scientific findings. While our case studies above were people who, in a deterministic world, needed one chemical in order to have new experiences and transform their inner narratives, we want to point out that in some cases the prescription may be merely sufficient for such transformation, and so it may be replaced by other causes. One can imagine a case in which a very young girl growing up in isolation in an abusive household, a girl who, given those circumstances is quite fated to become socially dysfunctional and a marginal contributor to society, is forcibly abducted by do-gooders, brought to a highly socialized, nurturing environment, and set free. The girl, through the ordinary course of causal mechanisms, grows up to be an emotionally well, highly social neurobiologist, who develops pharmaceuticals such as *Autonomax*. The sufficient condition for her expanded choice set, and her expanded experience of self was fulfilled by abduction rather than prescription. While we delight in her expanded self and vast experiential set of choices, we might do well to hesitate before we legalize abduction and kidnapping, or applaud the blatant disregard of the choices of another, even if the choice set from which they were drawn seems limited to us. What we believe to be a necessary condition for personal growth, and what is a sufficient cause for the same, may be as illusory, and as important, as the selves we experience every day.

End Notes

1. Bok, Hilary. (2007). The Implications of Advances in Neuroscience for Freedom of the Will. Neurotherapeutics. July. pp. 557. (555-559.)

2. We would like to highlight that these case studies are indeed science fiction. We feature, and discuss, what we imagine to be very positive aspects of futuristic pharmaceuticals, and do not discuss potential detrimental or dangerous side effects. Such considerations are important, and worthy of a separate discussion beyond the scope of this article.

3. We will assume that the patient is not suffering from a condition in which expanded choices, or increased knowledge of the world, actually increases his or her anxiety or stress so much that the patient is unable to take advantage of the new knowledge and choices. Thanks to the commentator at the 2009 Brain Matters: Neuroethics Conference for raising this important point.

4. We recognize that the line between remedial, therapeutic use and enhancement is thin, controversial, and perhaps nonexistent. Further, we recognize that the enhancement of some people can radically disadvantage those without access to similar enhancements, and thus, the experiential freedom of large groups of less fortunate people may be compromised if such treatments are not fairly, or even universally, distributed.

5. We note that in our capitalistic culture, productivity *in fact* often opens doors, expands social and career-oriented choices, and makes one feel confident. We do not endorse this as necessarily an ethically good, or right way to live, and are troubled by the common cultural emphasis on the creation of product and the marketability of the self. But we recognize that within such a culture, selves who are marketable and productive will probably be successful, sought after, and thought of as desirable. This indicates a significant danger for pharmaceutical neuro-enhancement: *enhancement* is something that is profoundly relative to cultural values, and if we are all enhanced to succeed in a certain culture, there will be no one left to offer a critique of those values and corresponding enhancements, or to offer other values as viable options. While enhancement may increase freedoms within a specific, value-laden context, it may simultaneously limit

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freedom by making us poorly suited to other contexts oriented around different values.

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Address for Correspondence:

Sara Waller PhD
PO Box 172320
Montana State University
Bozeman, MT, USA 59717-2320
e-mail: *sara.waller@montana.edu*
sarawallerphilosophy@gmail.com

M. Carmela Epright, PhD
Department of Philosophy
Furman University
3300 Poinsett Hwy
Greenville, SC, USA 29617

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