

Health, Happiness and Human Enhancement—Dealing with Unexpected Effects of Deep Brain Stimulation

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Abstract Deep Brain Stimulation (DBS) is a treatment involving the implantation of electrodes into the brain. Presently, it is used for neurological disorders like Parkinson’s disease, but indications are expanding to psychiatric disorders such as depression, addiction and Obsessive Compulsive Disorder (OCD). Theoretically, it may be possible to use DBS for the enhancement of various mental functions. This article discusses a case of an OCD patient who felt very happy with the DBS treatment, even though her symptoms were not reduced. First, it is explored if the argument that ‘doctors are not in the business of trading happiness’, as used by her psychiatrist to justify his discontinuation of the DBS treatment, holds. The relationship between enhancement and the goals of medicine is discussed and it is concluded that even though the goals of medicine do not set strict limits and may even include certain types of enhancement, there are some good reasons for limiting the kind of things doctors are required or allowed to do. Next, the case is discussed from the perspective of beneficence and autonomy. It is argued that making people feel good is not the same as enhancing their well-being and that it is unlikely—though not absolutely impossible—that the well-being

of the happy OCD patient is really improved. Finally, some concerns regarding the autonomy of a request made under the influence of DBS treatment are considered.

Keywords Deep brain stimulation · Enhancement · Goals of medicine · Well-being · Autonomy

Introduction

Deep brain stimulation (DBS) is a treatment involving the surgical implantation of two or more electrodes of about 1.27 mm diameter, which send electrical impulses to specific parts of the brain. DBS has been used successfully in the treatment of neurological illnesses such as Parkinson’s disease, tremor and dystonia. To date more than 35,000 patients around the world have had DBS electrodes implanted for these conditions [1]. DBS is currently also being explored as a treatment for psychiatric disorders such as major depression and obsessive-compulsive disorder (OCD). So far, only a very limited number of patients worldwide have received experimental DBS therapy for psychiatric disorders. Since 1999 about 60 to 100 OCD patients have been treated with DBS, and in February 2009 the FDA approved a DBS device for chronic and severe OCD under the Humanitarian Device Exemption program [1, 2]. For the near future it is likely that application of DBS will expand to other indications such as obesity, anorexia nervosa

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and addiction. Moreover, it might even turn out to be possible to use it to enhance cognitive functioning, mood, or other mental functions, a prospect that raises significant controversy [4, 10].

Presently, DBS mainly raises neuroethical concerns regarding the protection of vulnerable research subjects, especially in experiments with psychiatric patients, and concerning the side effects of the treatment [2, 3]. Side effects of DBS depend on the target sites and indication, and include speech disturbances, memory impairment, aggression, (hypo)mania, hypersexuality, depression and increased suicide risk [5, 6]. It also has the ability to change certain aspects of a patient's personality and behavior. Neurosurgeons Gabriels and Nuttin, for example, describe a case of a 39 year old woman who suffered from OCD. A week after the start of the stimulation the changes in her behavior were so marked that her parents concluded: "If she had made a pilgrimage, we would have thought a miracle had happened" [7]. To date, there has been little systematic research into these effects on personality and behavior. Only a small number of authors have discussed the ethical implications of the potential effects of DBS on personality of patients, on their behavior and their sense of self. It is generally concluded that these effects can be quite serious and may not have been recognized sufficiently enough until recently. Glannon discusses how the physiological benefits of DBS (in the case of neurological disorders) should be weighed against the psychological harm [8]. Bell and Racine also discuss a number of effects on cognition, behavior and the 'self' and state that these have not received broad attention yet, but point to an important set of issues concerning personhood, narrative and identity [9]. They rightly conclude that more research into the cognitive, behavioral and personality effects is needed. Synofzik and Schlaepfer point out that effects on personality are often too easily classified as risks or unwanted side effects [10]. The fear that DBS will change one's personality or personal identity seems to be paramount.

It is clear that DBS can have unexpected and unwanted side effects, not only physical but also psychological. In this article I will discuss a case in which the psychological side-effects were unexpected but were actually welcomed by the patient. I will discuss the case of an OCD patient who felt really happy with the DBS treatment, even though her

symptoms were not reduced. I will discuss how doctors should deal with this phenomenon and explore how this relates to the potential for DBS to be used for human enhancement.

The Case of the Happy OCD Patient

In an interview with a Dutch newspaper Damiaan Denys, psychiatrist and pioneer in the application of DBS for psychiatric disorders, describes some of the dilemmas he encounters in his work with DBS treatment for patients who suffer from Obsessive Compulsive Disorder. He recounts: "This is an example from our practice: we operated on a young woman. Her compulsive complaints do not diminish directly after the procedure. However, with those specific stimulation settings, she suddenly did feel very happy. She said: 'could you please leave the settings as they are now, because I finally feel well!' I answered: 'I am sorry, but my job is to rid you of your complaints, not to make you happy. I'll put the device off.' This may sound harsh, but I feel that as a profession we should not wander off on such a dangerous road. This would imply that we were in the business of trading happiness, instead of the relief of suffering." [11] Denys' main argument in this case was that the treatment team did not succeed in finding the right stimulator parameters to relieve the symptoms of this patient. The patient felt better and happier but the objective symptoms of her OCD were not diminished. Therefore, Denys argued, the goals of the treatment were not achieved and so the stimulator was turned off.

One of the moral questions this case raises is whether or not the psychiatrist was right in turning off the device. Or, as Denys formulates it elsewhere: "What attitude will the doctor take when a patient feels fine with a certain adjustment but the symptoms have not decreased objectively?" [1: 427] If unexpected changes occur in a patient's disposition, emotional state or personality, and the patient favors these effects and requests the doctor to keep them, what should the doctor do? One could easily imagine other similar cases. What if, for example, a patient who is experimentally treated for obesity suddenly finds that with a certain setting of the DSB, his memory and learning abilities have improved (as in [12]) and asks his doctor to maintain the experimental

treatment for this reason? What if the patient experiences and appreciates a sense of “sudden calmness or lightness,” or a “sense of heightened awareness, increased interest and connectedness” (as in [13])?

The next question presenting itself would be whether patients or even healthy people could request a DBS treatment to have such effects brought about on purpose, and whether doctors should or should not comply with such requests. This raises a whole set of questions that are well-known from the debate on human enhancement. Although at present it may not seem a realistic option to use DBS for enhancement purposes [10], two considerations ought to be taken into account. First, even though researcher may not aim at the development of this technology for enhancement purposes, as in other fields, e.g. cognition enhancing drugs or anti-ageing medicine, enhancement of healthy people may become possible as a spin-off from clinical research [14]. In fact, the above mentioned examples are illustrations of this.

Second, even though at first sight the invasiveness and risks involved in a DBS procedure may seem to be conclusive arguments against ‘frivolous’ use for enhancement, it should be taken into consideration that technological developments go fast [37]. Miniaturization and the use of nanomedicine may reduce the operation risks of DBS, while ongoing research into the functions of specific brain areas will probably reduce the unwanted side-effects of the treatment. Therefore, it is wise to keep these potential future uses in mind in discussing the present case of the happy OCD patient.

To Treat, Not to Enhance

The first argument that can be advanced in favor of turning off or taking out the stimulator in the case of the happy OCD patient, is the argument given by Denys: as doctors, our goal is to cure disease or alleviate symptoms, not to promote happiness. It would be a dangerous road to take, if doctors would start ‘trading happiness’ instead of dealing with health and illness. In a more general form this argument says that doctors should limit themselves to treating disease and not wander beyond that into the realm of enhancement. This is also the stance of some professional groups and guidelines. An ethics code drafted by the Neuromodulation Society [16:519]

fiercely declines the use of DBS for enhancement purposes. It states that: “the surgery should be performed only to restore normal function and relieve patients’ distress and suffering.”

Much has been written already on the difficulties of maintaining a strict distinction between treatment and enhancement. If enhancement is defined as “improving form and function beyond what is necessary to restore or sustain good health” [15:29] enhancement and treatment become two separate things by definition. A problem with this definition is that it relies on concepts of health and disease that are contested themselves. Moreover, most theories of health and disease agree that definitions of disease involve normative considerations and are therefore not ‘objective’ and morally neutral [17, 18]. While one can give examples of cases that clearly involve treatment of disease and restoration of health (e.g. chemotherapy for cancer) and others that clearly involve the enhancement of healthy people (e.g. cosmetic surgery), there are also interventions that are more ambiguous and not so easy to classify, like the use of growth hormone in children of short stature, or the treatment of shift-work induced sleep problems with modafinil. In this so-called grey area it is difficult to say where and how to draw a line between treatment and enhancement. However, the fact that practical concepts such as health and disease always have fuzzy boundaries, does not nullify the meaning of the distinction altogether. The fact that there is a penumbra between day and night does not mean that day and night are useless concepts, nor that we cannot distinguish between the two. The same goes for disease and health, and for treatment and enhancement. In a general way, we can distinguish between treating disease or enhancing healthy people, although borderline cases may remain contested.

The point of making a distinction between treatment and enhancement, however, is not merely descriptive. The distinction is often used in a normative sense, to try to determine what falls on either side of the line between good and bad, between what doctors ought to do and what they should not do, and between what should be reimbursed in a collective healthcare scheme and what by individuals themselves. As has already been pointed out by various authors, descriptive classifications of treatment and enhancement cannot do this normative work. Judgements about the moral acceptability of

certain interventions cannot be made by solely referring to their status as either treatments or enhancements; other arguments are needed. Some definitions of enhancement therefore try to avoid the contrast with therapy or treatment. If enhancement is defined as ‘improvement’ [19, 20], treatment becomes simply one form of enhancement, and it becomes difficult to see why there would be anything morally wrong with enhancements per se. However, this move does not solve the question of whether specific enhancements are morally good or bad or, phrased differently, whether specific interventions really count as improvements. Nor does it answer the question of what type of improvements doctors should or should not be involved in. In order to give answers to those questions we need independent arguments.

Goals of Medicine

The argument against continued treatment of the happy OCD patient can also be formulated as a statement regarding the goals of medicine: promoting happiness is not—and should not be—one of the goals of medicine, and therefore doctors should not be concerned with it. If a treatment fails to alleviate symptoms or cure disease, it should be abandoned, even if it improves certain aspects of the patient’s life. The type of improvements that physicians should be concerned with are those that have to do with health and not with other aspects of life.

On a plausible account of the goals of medicine, these include the cure of maladies, the relief of suffering caused by maladies, and the promotion of health [21].¹ Whether or not promoting happiness can somehow be part of the goals of medicine thus defined depends on the concepts of disease, malady and health used. According to the theories of Boorse and Daniels, for example, health is understood as species typical normal functioning and the goal of medicine is to restore the patient to normal functioning. If we grant that obsessive-compulsive behaviour is indeed a form of deviation from normal functioning, then according to this theory, treatment clearly

falls within the goals of medicine. However, making a patient happier without curing the disease, diminishing the symptoms and restoring the patient to normal functioning equally clearly falls outside of them.

Other current theories of health and disease are not so unambiguous, however. The theory of health as proposed by Nordenfelt, states that: “a person is completely healthy if and only if he is in a physical and mental state which is such that he or she is able to realize all his or her vital goals given a set of accepted circumstances” [22:6].

This broader definition makes health dependent on the “vital goals” of the person him or herself and thus allows for considerable subjectivity in determining what counts as health and what belongs to the goals of medicine. If being happy belongs to the vital goals in the OCD patient’s life—and this is not such a strange or unusual goal—then a medical intervention that makes her happy may contribute to her health. This definition has the potential to draw many ‘enhancements’ into the realm of medicine. This can be illustrated by the example of Lily, the athlete who has a vital goal of becoming an accomplished high-jumper but does not succeed [23]. On Nordenfelt’s definition she would be unhealthy and giving her enhancing drugs or muscle strengthening gene-therapy would then constitute a treatment and therefore belong to the goals of medicine.

An even wider definition of health is the one employed by the WHO that understands health as a condition of ‘complete physical, mental and social well-being’. This definition has been widely criticized for including too much in the concept of health and thus extending the medical domain to cover all of life. This definition seems to imply that happiness is a part of health and therefore doctors should promote happiness when and where they can. It might even be concluded that this implies that the happy OCD patient is healthier than she was before even though her disorder has not been cured and her symptoms persist. Therefore, it might be argued, the DBS treatment in this case fits the goals of medicine. Actually, holding on to this definition of health, almost any enhancement would fit the goals of medicine.

It is therefore not self-evident that the goals of medicine exclude the promotion of happiness; on the contrary, the quality of life and the well-being of the patient are central values in medicine, and definitions

¹ According to Bengt Brülde [24], there are two underlying ‘final goals’ of medicine. The first is to save and prolong life, and the second is to improve the quality of life. The other goals of medicine are ‘instrumental’, that is, medicine should only try to realize these goals when they are expected to have positive effects on the length and/or quality of life.

of health that go beyond strict biological criteria appear to allow for at least some ‘enhancements’.

Can the Goals of Medicine Set limits?

In the literature on enhancement, it is frequently argued that the ‘goals of medicine’ are not suitable as a normative guideline or criterion in determining what physicians should or should not engage in. First, it is argued, a clear unambiguous and universally agreed upon set of goals does not exist. This is true, but it is also true that we do have some articulations of goals of medicine that are rather widely accepted [21, 24]. These goals should not be understood as providing a set of strict and uncontroversial criteria to judge all specific interventions or individual cases, but they should be used as point of departure for an ongoing normative discussion on what we want medicine to be and to do. In this sense, they can give some guidance.

Secondly, it is often argued that it is already common practice for doctors to use their knowledge and skills for not strictly medical ends. They prescribe beta blockers for people with stage fright, they perform body modifications for aesthetic reasons and they perform abortions, for example. We do already allow things like circumcisions, cosmetic surgery, or the use of growth hormone for non-medical reasons and mostly leave it to the discretion of individual physicians to decide whether or not to engage in such activities. Therefore, it could be argued, it would be inconsistent not to allow doctors to use DBS if patients—or even healthy people—requested it for purposes they value, assuming it would be reasonably safe and effective. The argument that physicians should only use DBS for ‘strictly medical’ purposes is therefore untenable, it can be argued. However, the fact that doctors already do some things that may fall outside the goals of medicine, does not prove that this is right. There are still moral discussions going on about, for example, the role of doctors in cosmetic surgery or non-medical circumcision.²

This indicates again that the goals of medicine are not a fixed set of criteria, but rather form a field of normative discussion in which notions like health,

disease and well-being or quality of life are central concepts. It is important to understand that the ‘goals of medicine’ are not static; they are not written in stone but are instead changeable and adaptable, although the core values remain rather constant. So, even if certain enhancements or improvements would not be considered to belong to the goals of medicine at present, this might change over time. We can, for example, currently witness a cautious shift regarding the acceptance of neuro-enhancements: the Ethics, Law and Humanities committee of the American Academy of Neurology has stated that neuro-enhancements do not fall within the core goals of medicine, but are nevertheless acceptable and do not undermine the profession’s core values [38]. Brody and Miller speak of evolution of the so called ‘internal morality’ of medicine. “Our evolutionary view of the internal morality of medicine makes a somewhat complicated debate mandatory, since one cannot enjoy the luxury of simple reading off the conclusions of the IMM from a fixed Platonic essence of medicine’s goals and duties” [25: 595].

An important question is who gets a say in determining how the goals of medicine should evolve and how they should be adapted to the challenges of new technological possibilities and societal change [26, 27]. Should this be the privilege of the medical profession itself? Should the medical profession follow society’s demand? I believe medicine is part of and intertwined with society and societal goals and values. There is a strong interaction between medical professional ethics and the common morality in society but the profession can and should bring its own perspective, experiences and core values to this discussion.

Although some enhancements may well fall (or come to fall) within the goals of medicine, there are, I believe, some good reasons for limiting the kind of things doctors are allowed or required to do. The most important moral limit lies of course in the best interest of the patient which should always be protected and served. A second important moral consideration is that of justice. Since medical skills and knowledge are scarce resources, they ought to be used fairly and not squandered on frivolous goals. While some non-medical ends that require medical skills may be worth pursuing, others may not. This means that we should look for criteria to determine which goals *are* worth pursuing by medical means. Neil Levy has suggested

² The Royal Dutch Medical Association recently took a stance in this debate and argued that doctors should strongly discourage non-medical circumcisions (see www.knmg.nl).

to introduce an “importance of intervention test” [28:103]. On such a test, I suspect, using DBS to make a person happier would be rated as far less important than using this expensive and highly skilled technique to improve the situation of seriously impaired and suffering patients. Who should in practice decide about the importance of interventions will depend on the healthcare allocation system—it may be a government body, insurance company, hospital or professional organization.³ Even if patients/clients would pay for themselves, however, the justice argument might withhold a neurosurgeon to spend his time and skills on a non-medically indicated intervention.

There are also some practical arguments in favor of limiting the kind of interventions that doctors are morally required to do. The first is that it would simply be asking too much of doctors if they were made responsible for all kinds of misery in the world. It would simply be unreasonable to claim that medicine should try to improve the quality of life in any respect, or by any means [24]. One reason for this is that medicine has specific skills and knowledge and is simply not capable of improving many aspects of quality of life. A closely related argument is that doctors are unqualified and not trained to make judgments or advice people about their life goals and well-being in a broad sense. Making risk-benefit evaluations about medical treatments may not be in principle (on a philosophical level) very different from making risk-benefit evaluations about other choices in life, but in practice it is. We do not ask doctors to advise us about what house to buy, whether or not to undertake a dangerous but exciting mountain-climbing trip, or whether or not to have children. There are limits to what doctors *as doctors* are knowledgeable on and have expertise in.⁴ This implies that when medical means are used for non-medical ends, the expertise of the doctor is far less obvious and his role is less clear than in clinical encounters. Overstepping his expertise may also have

undesirable implications for the public trust in the profession as a whole.

Finally, there is one important point that is often overlooked in the enhancement debate: physicians may be morally *allowed* to engage in certain activities, but this does not mean that doctors are morally *obliged* to do so. I believe this is an important distinction, which also again shows that some interventions are more important and closer to the heart of medicine than others. A doctor who refuses to perform a appendectomy is different from a doctor who refuses to perform a nose-job. Perhaps doctors may use DBS for improving mood or enhancing memory, but it is not at all clear that they are obliged to do so in the same way as they are obliged to use it for the treatment of patients with severe Parkinson’s disease.

The Happy OCD Patient Reconsidered

I will now return to the case of the happy OCD patient and directly address the question of whether the psychiatrist was justified in turning the DBS off. The arguments against the continuation of the happy OCD patient’s DBS treatment I discussed above—that making people feel good constitutes a kind of enhancement and/or falls outside the goals of medicine and should therefore not be practiced by doctors—are not fully convincing. They leave some discretionary room for doctors to decide about the best course of action in specific cases.

If we look at the happy OCD patient’s case as an ‘ordinary’ case of clinical medicine, we can use the moral principles of respect for autonomy, non-maleficence and beneficence to help answer these questions. Even if we consider this to be an example of enhancement (and assume that enhancement is not categorically wrong or prohibited) this approach offers a useful evaluative framework.⁵

³ In the Netherlands, the government organization CVZ advises on which interventions are to be covered under the basic national health insurance; in the UK NICE has a similar function.

⁴ This argument actually plays an important role in the Dutch discussion about the role of doctors in assisted suicide for people who are ‘tired of living’ but do not suffer from any well-defined medical condition.

⁵ With regard to cognitive enhancing drugs, it has been argued that request from patients should be evaluated by doctors according to the same principles and along the same lines as in the case of treatment decisions [38]. According to the American Academy of Neurology: “Neurologists should respond to a request for neuroenhancement as they would respond to a chief complaint” and “the medical principles for prescribing medications for neuroenhancement are identical to those for prescribing medications to treat medical conditions” [29: 1408]

Happiness and Well-Being

The first question to be answered is whether continuing the DBS treatment in the case of the happy OCD patient would be an act of beneficence. Does it contribute to her well-being or her quality of life? An interesting aspect of the case of the happy OCD patient is that her happiness appears to be mainly a subjective mental state, a feeling of happiness. This feeling is produced ‘mechanically’ as it were, by the electrical stimulation of certain parts of her brain.⁶ It can be questioned whether this feeling of happiness can be equated with well-being, whether it can be a true ‘vital goal’ in a person’s life, or whether it really constitutes an ‘improvement’. The case of the happy OCD patient makes it clear that we need to spell out exactly we mean with these terms.

In the philosophical literature, well-being is understood as the all encompassing assessment of how well life is going for the individual whose life it is. It is common to distinguish between three types of theories about the nature of well-being: objective theories, mental state theories and preference theories. Objective theories hold that some things are good for people whether they recognize this or agree with this or not, and whether they desire or enjoy them or not. Preference- or desire-theories, on the other hand, hold that well-being is constituted by the fulfillment of a person’s subjective preferences or desires. Most preference theories recognize that it is too simple to state that everything a person actually happens to desire is therefore good for him. People can be mistaken about what they believe will be good for them, and the fulfillment of their actual desires can sometimes make them worse rather than better off. On more sophisticated accounts, therefore, preferences or desires are required to be corrected for several distorting factors. For example, preferences only ‘count’ if they are fully informed.

⁶ It may be argued that this feeling of happiness as reported by the patient is actually a symptom of mania. Manic symptoms are a known side effect in patients who are treated with DBS for Parkinson’s disease. Enhanced mood may also be interpreted as the improvement of co-morbid depression. However, by interpreting her feelings in this way, they are turned into pathology, which makes it easier to dismiss them. It seems quite possible, however, that DBS would elevate one’s mood without turning into full-blown mania.

Both objective and subjective preference theories of well-being hold that the well-being of a person depends at least in part, on actual states of the world. By contrast, mental state theories hold that all that matters for well-being is the mental states of a person, i.e. how the person himself experiences his life. In the classical utilitarian version of hedonism, the only intrinsically good mental states were pleasure and the absence of pain. In contemporary theories these are sometimes replaced with notions like enjoyment, happiness or satisfaction, and the absence of suffering, but they still refer exclusively to internal mental states of the person. According to hedonism, the happiness of the OCD patient would really contribute to her well-being. Feeling happy, tranquil, satisfied or blissful, would make her life better, even if these feelings were caused by the DBS and not by any real state-of-the world.

This account of well-being has received strong criticism, however. One of the most famous critiques is especially suitable for the case under consideration. In a thought experiment known as the Experience Machine, Robert Nozick [30] asks his readers to imagine a machine that can be directly attached to the brain and can provide any kind of experience one wants. Would people choose to be hooked on to such a machine for the rest of their lives, guaranteeing a life consisting of their preferred experiences? According to Nozick, people would not want this, because they do not only want to experience certain things but also to *do* things, to *be* a certain kind of person and to live in *contact with reality*. With this thought experiment Nozick aims to show that it is not merely good or happy experiences that make life worthwhile; real well-being is not only ‘in the mind’ but also ‘in the world’. As compared to the experience machine, a DBS system with happiness-inducing parameters is a rather crude and simple device. It does not give one full-fledged experiences but merely a certain feeling or emotional state; in this sense it may be compared with certain drugs that enhance mood. Nozick’s critique still holds, though (and may actually even be stronger with regard to feeling happy as opposed to having certain fulfilling experiences): well-being is not merely constituted by mental states but should have a relation with states of the world.

A different way to make the same point would be to say that happiness is only true or meaningful if it is a reasonable reaction to one’s circumstances in the

real world. In other words, if it has a reason and not merely a cause—be it chemicals, electrical impulses, magnetic fields or other mechanical devices (cf [31]).

In the case of the happy OCD patient, her emotional state clearly had no relationship to her real condition in the world. Her symptoms had not diminished but apparently they were felt to be less bothersome or invalidating than before. On an objective evaluation, however, she was probably still as incapacitated by her compulsions as before. If her compulsions and obsessions still kept her, for instance, from getting a job, from maintaining meaningful relationships, or from engaging in otherwise meaningful activities, one could argue that her well-being had not really improved—even if she felt much better.

A purely objective evaluation, however, leaves too little room for the patient's own point of view. A more convincing and helpful theory, which combines preference theory and hedonism, is the *authentic happiness* account of Sumner [32]. Well-being, according to Sumner, consists in “authentic happiness”, understood as the informed and autonomous judgments of people about their own life-satisfaction and fulfillment. The term happiness must be understood very broadly here, as overall life satisfaction, not as a subjective feeling of happiness. Being happy, according to Sumner, means having a certain kind of positive attitude towards your life, which has both a cognitive and affective component. The cognitive aspect of happiness consists in a positive evaluation—an affirmation or endorsement—of the conditions and circumstances of your life; “a judgement that, on balance, your life is going well for you” [32:145]. But there is also an affective component: you must also experience your life as satisfying or fulfilling. According to Sumner, a person's own account of her overall life satisfaction is not infallible but can need correction. “The theory I defend does not simply identify well-being with happiness; additionally, it requires that the subject's endorsement of the conditions of her life, or her experience of them as satisfying or fulfilling, be authentic” [32:139]. The conditions for authenticity, in turn, are twofold: being informed on the true conditions of your life, and having values and goals that are truly *your own*.

On this account it is unlikely, although not impossible, that the DBS treatment enhances the happy OCD patients well-being. If she is informed

of the fact that her happy mood is caused by the DBS and is aware of the fact that her compulsions and the impairments they cause have actually not diminished, she is likely to conclude that this does not really contribute to her life's satisfaction. Living with a DBS-caused happy mood but without freedom from her compulsions seems like living an illusion. In terms of Nordenfelt's account of health, one could say that such a condition could not reasonably belong to a person's ‘vital goals’ in life.

It is, however, not completely unthinkable that the happy OCD patient might prefer the DBS to continue anyhow, because for her the alternative of being both disabled *and* depressed and anxious due to her disorder, may be even worse. If she is well informed and her over-all judgment is that her life goes better for her with the DBS than without it, it must be concluded that it does enhance her well-being.⁷ There may be cases in which ‘artificial’ happiness is to be preferred over realistic misery. Assuming that all alternatives had been exhausted, and all risks and side effects taken into account, wouldn't it be paternalistic of the doctor to say that the patient ought to continue to suffer, because he believes the DBS induced happy state is not valuable enough?

Autonomy and Paternalism

A possible argument in favor of continuing the DBS in the happy OCD patient draws on respect for autonomy. It states that the doctor ought to continue the DBS because of the patient's own request. But would this really mean the doctor has to comply with the patient's demand? Not necessarily.

First of all, it could be argued that the request of the happy OCD patient was not really autonomous, and therefore need not be respected. Since DBS influences brain function it may also affect the cognitive and affective capacities that are necessary to make a sound judgment, and it can therefore affect

⁷ The only way to avoid this conclusion would be to deny that her values and goals are truly hers, either because they were influenced by the desperate state caused by her disorder, or directly, by the DBS treatment. I do not believe that adapting one's goals and preferences to one's disorder makes these goals in-authentic or non-autonomous; that would set requirements for autonomous preference formation too high. I'll come back to the influence of the DBS on preference formation in the next section.

the capacity for autonomous choice. As in the case of the Parkinson patient described by Leentjes [33] and discussed by Glannon [8], the DBS treatment might render the patient incompetent to decide. From the case description it is not obvious that the patient lacked cognitive capacities, however. If we assume that the happy OCD patient was able to understand and weigh the relevant information and to base her decision on it, then on many accounts of competence, she would be considered competent to decide.

However, in this special case we should also consider whether the elevated mood and her more positive outlook induced by the DBS might have a negative impact on her competence to decide. The changes brought about by the DBS might influence her preferences and her outlook in such a way that they should be considered inauthentic—not really hers.⁸ This, in turn, would undermine her autonomy and the autonomy of her choice.

This point touches upon a whole philosophical discussion regarding the autonomy and authenticity of changes in personality and identity. Here, I will not go into that debate in too much detail, but I will follow the lines of argument set out by DeGrazia and Bublitz and Merkel [34–36]. This implies that changes in personality traits, or outlook on life, can be deemed authentic and autonomous if the person in question herself identifies with her new traits, that is: is positive about the changes in her personality, and is aware of the way in which they have come about and approves of this. So, she must not be forced or unknowingly manipulated into these new traits, but understand their genesis. If she identifies with her new traits or outlook, they are authentic and choices and actions based on them are autonomous. According to Bublitz and Merkel, and DeGrazia, this implies that a person's retrospective judgement of changes in her personality traits or outlook on life is authoritative, not her prospective judgement.⁹ I tend to agree

⁸ Note that on the account of well-being that I have used, this would also undermine the claim that she was really (authentically) happy. If her values and goals were influenced by the DBS in such a way that they were not 'really her own' anymore, this would affect her own evaluation of her life as a whole in a way that would make it 'inauthentic', according to Sumner. That would imply the DBS did not really improve her well-being.

⁹ In Merkel et al. [37] it is argued that personality changes can only be deemed authentic if the patient approves of them before the change takes place, so prospectively.

with this point of view. Of course, in practice it would be reassuring if the patient would approve of the changes both before *and* after they occurred, or with the DBS on *and* off, but for autonomy it would suffice if she identified with them afterwards. It follows that under these conditions the happy OCD patient's desire to have the DBS continue can be considered autonomous and, assuming her cognitive capacities were sufficient, she would be competent to decide about continuation of the treatment.

Secondly, however, even a request of a competent patient is not in itself sufficient to perform or continue a treatment. Respect for autonomy does not support a 'claim right' but is intended to protect the patient from unwanted intrusions. An autonomous patient's wish is not by itself enough reason for the doctor to act—that would turn the doctor into a mere means for the satisfaction of the patient's desires. The doctor has his own professional responsibility to use his skills and knowledge responsibly and in the best interest of the patient; as discussed above, the doctor also has some discretionary space to decide where he draws the line with regard to the goals of medicine and his professional duties.

Conclusion

The case of the happy OCD patient raises questions about the moral justification of continuing or stopping a treatment that has unexpected side effects on the psychological state of the patient, that are actually welcomed by the patient—even though the symptoms of the disorder have not decreased. Although a final assessment can of course only be made with full information about the details of the particular situation, in general it can be argued that discontinuing the treatment seems justified. Mood enhancement brought about by DBS does, in most cases, not really improve well-being (understood as the all encompassing assessment of how well a life is going for the person whose life it is). The fact that DBS can affect both affective and cognitive brain functions is a reason to carefully assess the competence of the patient who makes such a request, but the mere change in mood or outlook does not necessarily cause incompetence, I have argued. Moreover, because there is reasonable doubt about the limits of medicine in this case the doctor can use his own view on his professional role

and obligations ('making people feel better without actually treating their symptoms or disease goes beyond the limits of my professional goals'). Finally, beyond the individual doctor-patient relationship, trust in the medical system could be compromised if doctors started to do things that seem so obviously out of line with their usual business—especially with an experimental treatment.

A second issue raised by the case of the happy OCD patient is whether DBS should ever be used for purposes of enhancing healthy people. While the analysis of the effects of mood enhancement by DBS on overall well-being casts doubt on the possibilities for DBS to improve or enhance people by affecting their mood, it is not completely impossible that DBS may contribute to enhancement in other ways (e.g. improving certain cognitive capacities or personality traits). I have argued that it is not self-evident that enhancement falls outside the goals of medicine, if we agree that medicine should aim at well-being, quality of life, or fulfilling vital goals. Moreover, the goals of medicine do not function as a static set of aims and limits, but as a normative framework for discussing what we as a society want and expect doctors to do. This could well come to include certain enhancements (like cosmetic surgery), but there are some good reasons for limiting the kind of things doctors are required or allowed to do. These include moral reasons such as the best interest of the patient, and justice with regard to the use of scarce medical resources, but also more pragmatic reasons such as the limits of medical knowledge and expertise.

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References

- Denys, D., and M. Mantione. 2009. Deep brain stimulation in obsessive-compulsive disorder. In *Progress in brain research*, vol 175, chapter 26, eds. J. Verhagen, et al., 419–427.
- Kuhn, J., W. Gaebel, J. Klosterkoetter, and C. Woopen. 2009. Deep brain stimulation as a new therapeutic approach in therapy-resistant mental disorders: Ethical aspects of investigational treatment. *European Archives of Psychiatry and Clinical Neuroscience* 259: S135–S141.
- Rabins, P., B.S. Appleby, J. Brandt, et al. 2009. Scientific and ethical issues related to deep brain stimulation for disorders of mood, behavior and thought. *Archives of General Psychiatry* 66: 931–937.
- Mendelsohn, D., N. Lipsman, and M. Bernstein. 2010. Neurosurgeons' perspectives on psychosurgery and neuroenhancement: A qualitative study at one center. *J Neurosurgery* 113: 1212–1218.
- Clausen, J. 2010. Ethical brain stimulation—neuroethics of deep brain stimulation in research and clinical practice. *The European Journal of Neuroscience* 32: 1152–1162.
- Gisquet, E. 2008. Cerebral implants and Parkinson's disease: A unique form of biographical disruption? *Social Science & Medicine* 67: 1847–1851.
- Gabriëls, L., P. Cosyns, B. Nuttin, et al. 2003. Deep brain stimulation for treatment refractory obsessive-compulsive disorder: Psychopathological and neuropsychological outcome in three cases. *Acta Psychiatrica Scandinavica* 107: 275–282.
- Glannon, W. 2009. Stimulating brains, altering minds. *Journal of Medical Ethics* 35: 289–292.
- Bell, E., G. Mathieu, and E. Racine. 2009. Preparing the ethical future of deep brain stimulation. *Surgical Neurology* 72: 577–586.
- Synofzik, M., and T.E. Schlaepfer. 2008. Stimulating personality: Ethical criteria for deep brain stimulation in psychiatric patients for enhancement purposes. *Biotechnology Journal* 3: 1511–1520.
- Slob, M. 2007. Uitschakelbare dwang. [Compulsions that can be turned off] *NRC Handelsblad* 28 July.
- Hamani, C., M.P. MacAndrews, Cohn, et al. 2008. Memory enhancement induces by hypothalamus/fornix deep brain stimulation. *Annals of Neurology* 63: 119–123.
- Mayberg, H.S., A.M. Lozano, J. Volkmann, et al. 2005. Deep brain stimulation for treatment-resistant depression. *Neuron* 45: 651–660.
- Schermer, M., I. Bolt, R. de Jongh, and B. Olivier. 2009. The future of psychopharmacological enhancements: Expectations and policies. *Neuroethics* 2: 75–87.
- Juengst, E. 1998. What does enhancement mean? In *Enhancing human traits*, ed. E. Parens, 29–47. Washington: Princeton University Press.
- Nuttin, B., J. Gybels, P. Cosyns, et al. 2002. Deep brain stimulation for psychiatric disorders. *Neurosurgery* 51: 519.
- Kushf, G. 2007. An agenda for future debate on concepts of health and disease. *Medicine, Health Care and Philosophy* 10: 19–27.
- Daniels, N. 2000. Normal functioning and the treatment-enhancement distinction. *Cambridge Quarterly of Healthcare Ethics* 9: 309–322.
- Harris, J. 2007. *Enhancing evolution*. Princeton: Princeton University Press.
- Synofzik, M. 2009. Ethically justified, clinically applicable criteria for physician decision-making in psychopharmacological enhancement. *Neuroethics* 2: 89–102.
- Hastings Center. 1996. The goals of medicine. Setting new priorities. The Hastings Center Report 26 Nov–Dec Special supplement: S1–27.

22. Nordenfelt, L. 1998. On medicine and health enhancement—towards a conceptual framework. *Medicine, Health Care and Philosophy* 1: 5–12.
23. Schramme, T. 2007. A qualified defense of a naturalist theory of health. *Medicine, Health Care and Philosophy* 10: 11–17.
24. Brülde, B. 2001. The goals of medicine. Towards a unified theory. *Health Care Analysis* 9: 1–13.
25. Miller, F., and H. Brody. 2001. The internal morality of medicine: An evolutionary perspective. *The Journal of Medicine and Philosophy* 26: 581–599.
26. Veatch, R.M. 2001. The impossibility of a morality internal to medicine. *The Journal of Medicine and Philosophy* 26: 621–642.
27. Dwarswaard, J., M. Hilhorst, and M. Trappenburg. 2007. Is er een dokter in de zaal? Over de bron van de medisch-professionele ethiek. *Filosofie & Praktijk* 28(5): 6–18.
28. Levy, N. 2007. *Neuroethics: Challenges for the 21st century*. Cambridge: Cambridge University Press.
29. Larriviere, D., M.A. Williams, M. Rizzo, and R.J. Bonnie. 2009. Responding to requests from adult patients for neuroenhancements. Guidance of the Ethics, Law and Humanities Committee. *Neurology* 73: 1406–1412.
30. Nozick, R. 1974. *Anarchy, state and utopia*. New York: Basic Books.
31. Schermer, M. 2007. Nothing but the truth? On truth and deception in dementia care. *Bioethics* 21: 13–22.
32. Sumner, W. 1996. *Welfare, happiness, and ethics*. Oxford: Oxford University Press.
33. Leentjes, A.F.G., V. Visser-Vandewalle, et al. 2004. Manipulation of mental competence: An ethical problem in a case of electrical stimulation of the subthalamic nucleus for severe Parkinson's disease. *Nederlandsch Tijdschrift Voor Geneeskunde* 148: 1394–1398.
34. DeGrazia, D. 1995. *Human identity and bioethics*. Cambridge: Cambridge University Press.
35. Schermer, M. 2009. Changes in the self. The need for conceptual research next to empirical research. *The American Journal of Bioethics* 9(5): 45–47.
36. Bublitz, J.C., and R. Merkel. 2009. Autonomy and authenticity of enhanced personality traits. *Bioethics* 23: 360–374.
37. Merkel, R., G. Boer, J. Fegert, et al. 2007. *Intervening in the brain. Changing psyche and society*. Berlin: Springer.
38. Larriviere, D., M.A. Williams, M. Rizzo, and R.J. Bonnie. 2009. Responding to requests from adult patients for neuroenhancements. *Neurology* 73: 1406–1412.