

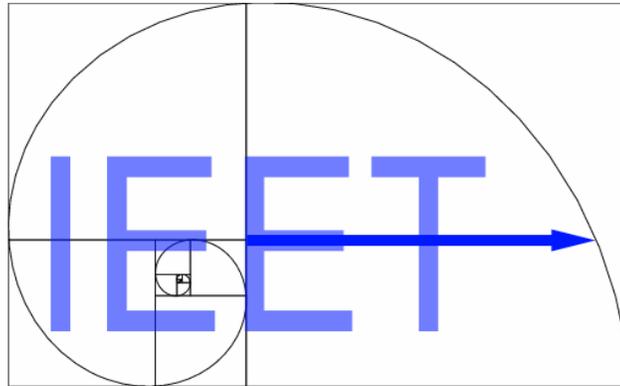
In Praise of Bio-Happiness

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1. Introductory

In the last half-century or so there has been a veritable revolution in our understanding of the biology of “happiness”. It is well established, for example, that pharmacological agents such as anti-depressants as well as “illicit” drugs like “Ecstasy” can affect our mood to such an extent that many report a level of well-being never experienced before. There is also mounting evidence that genes play a significant role in individual differences in happiness. So, science and technology are opening up new frontiers in happiness: both in our understanding of the biology of happiness as well as the possibility of directly manipulating the biological roots of happiness.

Most of us agree that, other things being equal, our lives and our world are better if we are happier, and so linking the moral goal of greater happiness with our biological understanding of happiness seems obvious. Let us think of the position that it is permissible for individuals to make this linkage—to use pharmacology and other technologies in the service of increased happiness—as the ‘bio-happiness’ proposal. Conceivably, several different technologies might be used in pursuit of this goal, e.g., pharmacological agents (“happy pills”) might be developed, or pre-implantation genetic diagnosis (PGD) to select embryos with genes associated with a high level of happiness, or genetically engineering embryos for happiness.

After speaking with numerous people, my impression is that most people reject the idea of bio-happiness. Indeed, many recoil in horror at its prospect. Despite this opposition, I want to argue that there is a moral imperative to develop bio-happiness.

Most of the paper is devoted to defending bio-happiness against criticisms. The field of which may be characterized as follows:

- (1) Happiness is not of moral importance.**
- (2) Bio-happiness cannot increase our happiness.**
- (3) Bio-happiness will come at too great a cost to other moral values.**

Under (1) we will consider objections based on the role of happiness in our moral theorizing. Under (2) we will consider both the idea that it is technologically impossible to increase our happiness, and the objection that technology will not allow us to achieve true happiness. Under (3) we will consider the idea that bio-happiness will interfere with proper emotional responses, and if we were to use bio-happiness we would achieve less. I will conclude by making the positive case for bio-happiness based on claims of justice and good social consequences.

Before proceeding, a few points about the scope of the argument are in order. First, for the most part, we will concentrate on the idea of using pharmacological agents as the technical means to pursue bio-happiness. The reason for this is that the other two technologies mentioned, PGD and genetic engineering, raise issues about the use of such technologies in connection with children, which are best avoided here. So, with respect to the idea that bio-happiness is ‘permissible’, we will say that competent adults should be able to make use of bio-happiness procedures. The idea is certainly not that people would be compelled to use bio-happiness. To say that its use is ‘permissible’, then, might be compared with the claim that it is permissible for adults to use the Internet: they may or may not at their own discretion.¹ Secondly, it should be clear that when we are speaking about bio-happiness, we are thinking about using it not simply for treating the profoundly depressed, but also cases where there is no indication of clinical depression. Most agree that, at least in the cases of therapeutic interventions, bio-happiness is sometimes appropriate. Even the President’s Council on Bioethics (2003) and Fukuyama (2002) who offer staunch criticisms of bio-happiness, allow that it is appropriate at least in some cases to use pharmacological agents to treat some forms of depression. Bio-happiness says that such interventions are permissible, but, in addition, “normally happy” persons should be able to use bio-happiness to be “better than well”. That is, even those that do not fall in the “clinically unhappy” range should be permitted to use bio-happiness to enhance their happiness. It is the prospect of enhancing the happiness of “normally happy” people that invokes the strongest reaction, and it is this claim we will focus on.

Happiness

The first step in our argument is to get clear about the target of bio-happiness. The short answer of course is ‘happiness’, but ‘happy’ and its cognates are notoriously ambiguous; so, we will need to disambiguate. For our purposes, it is worth thinking about five different senses of ‘happiness’:²

[1] Happy About: One use involves an intentional object. I might say, for instance, “I am happy about the recent UN resolution on global warming”. The intentional object here is the state of affairs about which I am happy, specifically, the recent UN resolution on global warming. To say that we are happy about something is more or less to say we have a positive attitude towards some state of affairs, and to make a cognitive judgment about the state of affairs: we judge it in a positive light.

[2] Feeling Happy: In a second sense happy might mean ‘feeling happy’ which refers to some relatively short duration of time, e.g., I woke up this morning feeling happy. In this sense it refers to a mood that one experiences for a certain period of time. The opposite here is of course a feeling of sadness where we might find ourselves feeling “blue” or “depressed”. “Feeling happy” refers to a feeling and, unlike “happy about”, it does not necessarily have an intentional object. Sometimes I may feel happy as a result of some specific event, e.g., a job promotion, winning the lottery or the birth of a child, but feeling happy may not have an external cause. Sometimes I might feel extra happy even though it is not traceable to any specific event or cause. I may awake one morning realizing the day is like most days, yet I just feel extra happy. Psychologists refer to this sort of state as ‘positive affect’ meaning the experience of positive emotions such as joy (Lyubomirsky, King and Diener, 2005).

[3] Happy Disposition: A third sense is having a happy disposition or personality. To possess a ‘happy disposition’ means that one is often happy. Unlike “feeling happy”, which refers to a relatively short period of time, a “happy disposition” refers to a long-term characteristic. Someone with a “happy disposition” is the sort of person we might describe as “generally happy”. Of course people who are generally happy can be unhappy on occasion, e.g., when their dog dies or they lose a job. To have a happy disposition is to experience positive moods a large portion of the time. Life has its vicissitudes, and so most people’s positive moods will wax and wane, but a person with a happy disposition is one who weathers the storms of life experiencing more positive moods than others. Psychologists refer to the disposition to be happy as ‘chronic positive affect’ meaning the tendency to experience positive emotions over an extended period of time (Lyubomirsky, King and Diener, 2005). In terms of experiential quality, no difference here is assumed to exist between the second and third sense of happiness at any given moment, rather, a happy disposition implies something about the duration and frequency of one’s positive moods.

The empirical measurements of a happy disposition suggest that it can be characterized by a normal curve (World Value Survey Group, 1994). This means that very few people will be described as being among the happiest. Almost all of us experience at least some short-term positive moods. Those who would be described as having the happiest disposition will have more frequent and (or) longer periods of positive moods.

[4] Happy About One’s Life: Like the first sense, “happy about one’s life” has an intentional object. Here, however, the object is not something about others or the world, but about one’s own life. To say that one is “happy about one’s life” is to have a positive attitude towards one’s life, that is, one’s life measures up favourably to one’s expectations. Psychologists refer to this sense as ‘subjective well-being’, one in which individuals judge the overall quality of their lives as favourable (Veenhoven 1991, 1993).

The third and fourth senses of ‘happy’ are clearly at least logically distinct: the third sense refers to a subject’s mood, while the fourth refers to a cognitive judgment about a subject’s life. We can well imagine that one might judge the overall quality of one’s life in a favourable manner, yet lack a happy disposition. For example, an artist who experiences moods that are generally down might be characterized by psychologists as one who experiences chronic negative affect; nevertheless, perhaps because she judges her life mainly in terms of her artistic accomplishments, she might view her life in a favourable manner. Conversely, someone who does not judge her life in a favourable manner, for example someone enslaved, might nevertheless be characterized as experiencing positive chronic affect. The thought here is *not* that one might be a “happy slave” in the sense of being happy *about* being a slave, but that this person might experience many positive moods even though she is a slave.

While there is a logical possibility of a radical divergence between the degree to which subjects might be characterized as experiencing chronic positive affect (the third sense of ‘happy’) and cognitive judgments about how well one’s life is going, not surprisingly, there is a fairly robust correlation between the two, e.g., among undergraduates the correlation is in the .40 to .50 range (Lucas, Diener and Suh, 1996).

[5] Ideal Happiness: A fifth sense combines both the third and the fourth sense, what we might think of as “ideal” happiness: where one has a “sunny disposition”, combined with a cognitive attitude of positive approval with respect to the standards of one’s life. With “ideal”

happiness, both our mood and our cognitive assessment of our lives coalesce on the most positive ratings.

Which of these five senses should be the target for bio-happiness? It may seem obvious that we should target ideal happiness. This may be the goal for most people (we will consider possible exceptions below). But even so, there may be ethical differences in using bio-happiness to pursue one or the other. To help us think about this, suppose in the future scientists develop two pills: one that directly affects mechanisms underlying our moods, and so provides us with a means to brighten our moods; and a second pill that affects the mechanisms for making positive life assessments, and so provides us with a means to increase a person's life satisfaction score. What ethical differences are there between taking the mood enhancing and the satisfaction enhancing pills?

One thought is that there may be little ethical difference here if the secondary effects of taking the two different pills are very similar, for as noted, there is a high correlation between high life satisfaction ratings and high ratings of positive affect. Without knowing the arrow of causation here we might suppose that increasing a person's life satisfaction will increase their positive affect rating, since one source of negative affect may be dissatisfaction with their life. Conversely, persons with a brightened mood may well assess their lives in a more positive fashion. Indeed, as far as we know, this may in fact be the case: the same genes and neurochemistry may underlie both mood and life satisfaction. If this is the so, then in the typical case, improving one will result in the raising of the other, just as exercise typically improves both the functioning of the heart and the lungs. On the other hand, if the two aspects of happiness are completely causally independent (which seems unlikely), then we should look to emulate those who are ideally happy: those that experience both chronic positive affect and life satisfaction in situations where high life satisfaction is appropriate. If the two are separable, and neuropharmacological agents can be made for both, then the liberal position would suggest that both forms of bio-happiness should be made available for adults.

Given our current understanding, it seems that the most empirically plausible research program would focus on the disposition for a happy mood, for our best evidence from contemporary uses of pharmacological agents, such as anti-depressants, suggests that pharmacological agents would most directly affect our mood, that is, our 'positive affect' (Healy 2003, Barondes 2003). In what follows we shall assume that pharmacological agents will work to directly raise the average level of positive affect, and noting the correlation mentioned above, this gives us some reason to suppose that the average level of life satisfaction ratings will rise as a consequence. In other words, it looks like our best hope is to direct bio-happiness research to increasing the third sense of happiness noted above. The conjecture is that this will also increase the fourth sense of happiness as well, and so contribute to increased ideal happiness.

Objection: Happiness is not morally valuable

Bio-happiness raises the question of the value of happiness, for example, if happiness is not a positive moral value then it might seem that the thesis that we have an obligation to realize bio-happiness is implausible. However, the role of happiness in our lives and in an adequate ethical theory is a large issue and so I will confine myself to a few remarks.

First, there is fairly broad support for the idea that happiness is morally valuable. As noted above, the “common sentiment” seems to be that our world would be morally better if (other things being equal) we were happier. At just about any bookstore, one can find dozens of books in the “self-help” section devoted to ways of making one’s life happier. Whatever we think about the advice offered, very few of us would disagree with the goal. Certainly in our own case this is often true, and most of us would like to see our loved ones happier.

Even amongst ethicists, where so much is contested, there is broad support for the idea that happiness is ethically valuable. This is perhaps nowhere more evident than with utilitarians where happiness takes centre stage. Utilitarianism, of course, is the doctrine that happiness is the supreme value to which all our ethical actions are to be directed. In the famous words of Mill, utilitarianism is “the creed which accepts as the foundation of morals, Utility, or the Greatest Happiness Principle, holds that actions are right in proportion as they tend to promote happiness, wrong as they tend to produce the reverse of happiness” (1998). For Mill, happiness is to be identified with the experience of pleasure, and unhappiness the experience of pain, and so it seems that Millian utilitarians ought to greet with open arms the prospect of using technology to reduce negative moods and increase positive moods. The reason of course is that by and large positive moods are experienced as more pleasurable than negative moods.

While the connection with utilitarianism seems obvious, it would be a mistake to think that utilitarianism is the only moral theory that values happiness, and so the only moral theory that ought to be interested in the bio-happiness proposal. For example, Aristotle argues that “happiness” is the goal of human life and the “master” concept in ethical theorizing. Of course a certain amount of caution is in order here because Aristotle’s conception of ‘happiness’ is much broader than that of standard conceptions advocated by utilitarianism, e.g., Aristotle holds that virtue and wisdom are necessarily part of an agents’ happiness, and the value of these cannot be simply cashed-out in utilitarian terms of promoting pleasure (Sumner, 2002). Even though Aristotle’s conception of ‘happiness’ encompasses more than that of the utilitarians, nevertheless, Aristotle holds that pleasure and positive moods are important components of ‘happiness’ or eudamainon (1985). Even Kant holds happiness in high regard. This may seem surprising when we think of the thumbnail sketches of Kant’s position where we are told that he is concerned with duty as opposed to happiness. Modern scholarship has shown that it is simply wrong to say that Kant is not concerned with happiness (Engstrom, 1996). What this formulation leaves out (among other things) is that Kant believes that we have a duty to make others happier (1998).

Not all ethical theories value happiness. As Wayne Sumner argues (1992), historically the two main rival ethical theories about the good life are welfarism and perfectionism. For welfarists, what is important for the good life is “subjective well-being”, e.g., with utilitarianism this might be the experience of pleasure or the person whose life it is judging that his life is going well.³, Perfectionism enjoins us to develop our mental and physical characteristics and eschews the utilitarian value of our subjective states. Subjective well-being or happiness has no intrinsic moral worth for perfectionists (Sumner, 1992; Hurka, 1993). So it would seem that perfectionists would not, and should not, have any interest in bio-happiness. However, this conclusion is a bit hasty, because although perfectionists do not value happiness *intrinsically*, that is, for its own sake, perfectionists may value happiness *instrumentally*. To value something instrumentally is to value it because it helps realize some other value. For example, if happy persons tend to achieve greater mental or physical excellence, then perfectionists can value happiness instrumentally

because it leads to the intrinsic value of perfection. So quite consistently, perfectionists can value happiness, not for its own sake, but for the fact that it will help realize something that perfectionists believe to be of intrinsic or ultimate value, namely, perfection. The relevance of this for our purposes is that one of the interesting empirical results that we will review is that happiness does lead to greater mental and physical excellence, so even perfectionists should be interested in the bio-happiness proposal.

At this stage we can be content with a rather modest conclusion: bio-happiness ought to be of interest to an extremely wide-range of ethical theorists including Aristotelians, Kantians and Utilitarians.

Objection: Bio-happiness cannot increase our happiness.

In this section we will consider objections based on the idea that bio-happiness is impossible. We will look first at technical obstacles to its realization, and then to a conceptual obstacle.

3.1 Technical Obstacles to Bio-happiness⁴

To focus our discussion it will be helpful to look at several different empirical approaches that might be taken to achieve bio-happiness, starting with “Ecstasy”. “Ecstasy” is the “street name” for methylenedioxymethamphetamine (MDMA). Ecstasy rose to national media attention in the 1990s from a number of reports of its use during “raves”—all-night dance parties. Its affects on the human psyche have been known for some time. For example, in 1976 one of the early investigators of MDMA, Dr Shulgin, recorded the following in his lab notes on experiencing Ecstasy for the first time:

I feel absolutely clean inside, and there is nothing but pure euphoria. I have never felt so great or believed this to be possible. The cleanliness, clarity, and marvelous feeling of solid inner strength continued throughout the rest of the day and evening. I am overcome by the profundity of the experience...(Shulgin and Nichols 1978).

Shulgin’s description of the drug’s effect describes a common experience among MDMA users. Unlike “psychedelics” such as LSD, psilocybin and mescaline, Ecstasy does not cause hallucinations; indeed, many users report a heightened awareness of the environment. In addition, users typically report an increased feeling of their own well-being as well as satisfaction with their lives. Mathew Klam describes this in his *New York Times* article devoted to Ecstasy:

The first time I took Ecstasy, I was in my room in Sigma Beta fraternity, second floor, facing the street. My girlfriend, Carol, and a bunch of friends had gathered to try it. We put on the Beatles' "white album" and swallowed the pills; after a while the effect trickled

in. The six or seven of us were talking as though we hadn't had a chance to see one another in a year. I felt happier than I'd been 10 minutes before. A half-hour later a feeling came over me somewhere between the looseness that follows a good workout and the euphoria of winning the Publishers Clearing House Sweepstakes. I sat there rubbing my arm and thought, "This is the softest sweater in the universe." (In that first wave, as the drug comes on, sensory awareness balloons.)

Inside the gerbil treadmill that is my brain, I stopped and blinked, exhaled and looked around. My mind was clear. "I am so happy," I thought. Although I wouldn't have rushed to operate heavy machinery, I didn't feel stoned or daydreamy. Unlike classic psychedelics, MDMA -- or, as it's known to scientists, methylenedioxymethamphetamine -- doesn't disrupt your basic sense of who you are. You barely even feel weird. Also, it doesn't scramble your external perceptions, except that soft things feel softer, music sounds better. It was in no way hallucinogenic. With Ecstasy, I had simply stepped outside the worn paths in my brain and, in the process, gained some perspective on my life. It was an amazing feeling (Klam, 2001).

From a social perspective, one of the positives of MDMA is that it increases sociability leading to it sometimes being referred to as the "hug-drug". (Anyone who has seen violence perpetuated as a result of alcohol consumption—and I assume that this is the vast majority of us—can only welcome this aspect of MDMA's effects). Our knowledge of the biochemical effects of MDMA supports such experiential accounts. MDMA causes a massive release of serotonin into the synapses of the brain. Research suggests that serotonin is correlated with feelings of well-being and sociability (Gershon, 1998).

While Ecstasy may be indicative of what pharmacological agents might do for our feelings of subjective well-being, it has some large limitations and associated complications. For a start, like most psycho-reactants, MDMA has variable effects on users. The reactions of Shulgin and Kamm are typical, but not universal. In part this may be due to our limited knowledge of brain chemistry. As an analogy, when blood transfusions were first attempted, the results were quite variable: sometimes they would save a patient's life, other times they would lead to a quick death. Once we learned about different blood types this variable reaction was largely mitigated. Perhaps the same might apply with the use of pharmacological agents.

However, there are larger obstacles to the proposal that Ecstasy could be a major player in bio-happiness. Some of the problems are connected with the fact that the effects of MDMA are short-lived. The peak feelings of positive euphoria typically last approximately 90 minutes, although feelings of increased well-being and energy can last for hours (hence the all-night raves). Assuming supply issues can be resolved, it might be thought that "more drugs" is the answer here, but this meets two objections. First, people tend to become habituated to MDMA, so that the same dose will have less of an effect. And while there is no conclusive evidence that taking MDMA in small doses several times a year is harmful, the continuous consumption of large doses of MDMA that would be necessary to sustain the feeling of well-being are almost certainly harmful. Our understanding of the biochemistry supports this. MDMA appears to work mainly by causing a "dump" of existing serotonin, it does not produce new serotonin. This is further supported by the "Ecstasy hang-over" that typically occurs 48 hours later: studies show that consumers undergo a dip in the serotonin levels as the body attempts to re-establish its

normal levels of serotonin. So, unfortunately, it appears that one has to pay for one's good feelings, much like alcohol. In terms of the different senses of 'happiness' discussed earlier, it seems that the best case for MDMA is that it might serve to help with the second sense, that is, episodic feelings of happiness. If bio-happiness is to help with our long-term feelings of positive affect we will have to look elsewhere.

The problems of habituation and possible negative health outcomes with large, frequent doses is characteristic of a wide variety of substances including marijuana, psilocybin and LSD. (Of course some of these other drugs have other effects that many find undesirable for long-term use, e.g., the distortion of experience). This suggests a certain amount of pessimism for the prospects for bio-happiness assisting with anything other than a short-term boost of subjective well-being.

At least some of this pessimism may be waylaid by one of the most dramatic examples of how technology can affect subjective experience: the direct stimulation of the brain with an electrical impulse. Over half a century ago, researchers found the so-called "pleasure centre" in the mammalian brain. In a classic experiment, Olds and Milner (1954) inserted electrodes into the brains of rats. By pressing a lever rats could self-administer stimulation to the pleasure centre and would do so more than 6000 times an hour. The overwhelming compelling nature of this electrical stimulation of the pleasure centre was demonstrated by experimentalists Routtenberg and Lindy (1965). Rats would choose to press a bar for stimulation of the pleasure centre rather than choose to consume food or water to the point of death. The fact that rats would find the stimulation so rewarding, even more so than food or sex, was a surprising result, as was the fact that there did not seem to be any satiation point. Conventional wisdom tells us that sensual pleasures have diminishing returns. The pleasures of sex or food are good only to a certain point, after which they lose their ability to provide us with pleasure for a time. No matter how starved for food or sex one is, there quickly comes a point where one is full or exhausted and further food or sex does not only fail to provide additional pleasure, it can be downright unpleasant. Not so with the electrical stimulation of the brain: rats find it as rewarding after several days as after several minutes.

Certainly, the neurophysiology of these feelings of pleasure is not entirely understood, but much as been learned. Electrical stimulation of a number of areas of the brain produce similar "pleasure responses" in rats, but it was soon apparent that there was a common neural pathway centred on the medial forebrain bundle as part of a "pleasure system" rather than "pleasure centre" (Olds, 1977; Bozarth, 1994). Stimulation of other areas not directly connected to this system will produce pleasure responses, but it is this system that evokes the greatest reward response. At the level of neurochemistry, dopamine seems to be the most important neurotransmitter for activation of the pleasure system (i.e., the medial forebrain bundle system) (Fibiger and Philips, 1979; Wise, 1978 and Bozarth, 1994).

Human pleasure responses are more complicated than that of rats, but human experience with direct brain electrical stimulation seems remarkably similar. One obvious difference for researchers is that with humans we can obtain verbal reports of what such stimulation feels like—with rats, of course, we can only guess. Human subjects report feeling profound sensations of pleasure and some human subjects have likened the experience to that of intense orgasm (Heath, 1964). After three hours of "wire-heading" one patient pleaded and begged not to be taken off. Interestingly, there are anecdotal reports that some patients that have been wired for pleasure have developed a strong romantic attraction to the researchers performing the

experiments (Bozarth, 1994). (One can only speculate about the possibilities here, from marriage counselling to outright manipulation).

While the evidence here is limited: only a few humans have been subjects in wire-heading experiments, and, as noted, laboratory rats have not been forthcoming in their verbal reports, there is at least some evidence that the previously mentioned problems, short-term duration and habituation, are overcome. Yet, portable wire-heading units for all is hardly the answer: the main problem with wire-heading is that the affected subjective states seem too narrow to count as feeling happy. It may be difficult to articulate the difference, but there is undeniably a difference between a general feeling of well-being, of feeling elated or even euphoric, and the feeling of intense pleasure with (say) orgasm. Of course such experiences of pleasure can contribute to feelings of well-being, but generally most people hope for more than just the raw sensation of pleasure. So wire-heading is far from ideal.⁵

In terms of current technologies for increasing positive affect, perhaps the best known and the most used is the broad family of pharmaceuticals known as ‘Serotonin Selective Reuptake Inhibitors’ (SSRIs). These are sold under such trade names as ‘Prozac’, ‘Paxil’, ‘Zoloft’, ‘Celaxa’, ‘Lexapro’ and ‘Effexor’. The number of people currently taking SSRIs is subject to some debate but a figure of one in eight adults in the U.S.A is one of the more conservative estimates (World News). If it was thought that SSRIs should be universally prescribed for the depressed then they may be underprescribed because up to 20% of Americans suffer from depression (President’s Council on Bioethics, 2003, Chapter 5, note 16). Certainly for some patients, taking SSRIs have made all the difference: lives marred by oppressive and ubiquitous depression have been turned around with the use of SSRIs. One only needs to read any number of case studies where individuals find relief with the use of SSRIs that years of therapy never succeed in providing.⁶ Even critics of bio-happiness agree that SSRIs can be of enormous therapeutic value (President’s Council on Bioethics, 2003; Fukuyama, 2002).

The issue of how SSRIs affect those seeking therapeutic interventions for depression are relevant, but not our main concern, for we are interested in enhancing the happiness of “normal” or “healthy” people. Unfortunately, there is limited investigation as to how the SSRIs affects this group. Of the limited knowledge we have of the effects on normal or healthy volunteers, perhaps none is more striking than a famous study by Dr. David Healy. Healy had healthy volunteers—mostly from the medical profession—try two anti-depressants in a “cross-over” study. One of two anti-depressants, Zoloft and Reboxetine, were randomly (and blindly) given to participants for two weeks, followed by two weeks off where subjects took nothing, then concluded with participants taking the other anti-depressant for two weeks. Healy describes one of the surprising findings:

Our focus group met two weeks after the study ended. We already knew that almost everyone preferred one of the two drugs. But two-thirds rated themselves as “better than well” on one of the two drugs. Although this was a study of well-being, antidepressants weren’t supposed to make people who were normal feel “better than well”. Not even Peter Kramer had said this. The argument of his famous *Listening to Prozac* was that people who were mildly depressed claiming to be in some way better than normal (Healy, 2003:267).

The fact that two thirds of these “normal and healthy” volunteers felt “better than well” sounds like good news for bio-happiness. Indeed it is, but the news is certainly not all good. For a start, the use of SSRIs is somewhat hit and miss. In the study mentioned by Healy, two-thirds of the volunteers felt better than well, so the effects of the drugs were not uniformly positive. And indeed, some subjects felt better on one anti-depressant and not on the other, indicating that the effects of the drugs are quite variable. Of course, in itself this is not a decisive criticism, it simply suggests that at worst some experimenting might have to be done by normally happy individuals before they found an appropriate pharmacological agent. However, anti-depressants have unwanted side effects for some individuals including reduced interest in sexual activity, nausea, constipation, and weight gain. The most disturbing result of Healy’s “healthy volunteers” study is that Zoloft dramatically increased the risk of suicidal ideation. (Two of the healthy volunteers began to have thoughts of suicide when on Zoloft (Healy, 2003)).

The foregoing suggests that there is no technology available at the present that could be used to achieve bio-happiness: there are severe limitations to each of the technologies mentioned. However, this pessimism should be tempered with the knowledge that we are only at the beginning of the bio-happiness revolution. Many of the current stable of anti-depressants were discovered accidentally (Barondes, 2003). With increased knowledge of neurochemistry and genetics we may be able to develop drugs in the future without such serious side effects. We should note too, that there has in fact been almost no research into attempting to increase the positive affect of “healthy” or “normal” volunteers. The fact that we know that some anti-depressants can make some normal volunteers feel better than well relied on a double-dose of serendipity. As noted, it was good fortune that led to the discovery of the current anti-depressants in the first place, and the study on normal volunteers was not intended to investigate the possibility of feeling better than well.

Keeping these facts in mind should remind us that it would be premature to conclude that bio-happiness is impossible. Further grounds for optimism stems from behavioural genetics. Of all the surprising results discovered about happiness in the last century (some of which we will canvass below) perhaps none is more surprising than the discovery that genes account for a large amount of the happiness or unhappiness that individuals experience. Heritability estimates for happiness are as high as 80% (Lykken and Tellegen, 1996; Lykken 1999) while others are in the 50% range (Braungart et al. 1993, and Tellegen et al. 1988).⁷ To get some idea of what this means, consider research on identical twins adopted by different families at birth. Since the twins will have very few environmental influences in common, if genetics has no effect on happiness then we should predict that the level of happiness experienced by the twins ought not be any closer than that of any other person in society. A correlation of 0.5 to 0.8 is considered high by the standards of the human sciences and it tells us that a very good predictor of an identical twin’s level of happiness is the happiness level experienced by a twin raised by a different family. What this means is that in the typical case, a large measure of one’s happiness over the course of a lifetime depends on how one fares in the “genetic lottery”. The point is put quite dramatically by Lykken and Tellegen: “The reported well-being of one’s identical twin, either now or 10 years earlier, is a far better predictor of one’s self-rated happiness than is one’s own educational achievement, income, or status” (1996). In other words, suppose you are asked to predict the happiness of Jill, someone you have never met. You are told that Jill is an identical twin, and you are allowed to make your prediction based on knowledge of either (a) the happiness score of her twin Lil’s ten years prior, (b) Jill’s current educational achievement, (c) Jill’s income, or (d) Jill’s marital status. My experience is that asking those that do not have

acquaintance with the empirical research on this matter say that the best predictor of Jill's happiness is, in order, (c), (d), (b) and last (a). The fact that it is (a) should strike us as quite surprising. After all, it is not something about Jill that is the best predictor of her happiness but something about another individual ten years prior.

The fact that genes are responsible for such a large share of our level of happiness has revolutionary implications for the view that people are responsible for their own happiness or that they deserve whatever happiness or unhappiness they experience. Think about an analogous case: our height. The height we eventually obtain as adults clearly has a genetic and an environmental component. Persons who grow up in times of limited food will tend to be shorter. This is no more evident than in instances where families emigrate from places where nutrition is in short supply to where supplies are adequate: the first generation that has access to adequate nutrition will tend to be much taller than the previous generation suggesting that the environment has some effect on height. But obviously genes also have a large effect. The existence of people who are short in stature but grow up in environments where there is adequate nutrition will often be explained in terms of genetics. Think about what we might say to persons who are short in stature, but who wish to be taller. It would be empirically absurd, and morally cruel, to say to such persons: "you should have done more as a child to grow up taller". Beyond what they have done, receiving adequate nutrition and otherwise maintaining their health, one has little control over one's height. Such persons did not have the genetic lottery turn out as they might have hoped. For them this seems unfortunate, but they are certainly not to blame for it. Similarly, much of the happiness a population experiences will be influenced by a large genetic component. For this aspect of our positive affect, it would be empirically absurd, and morally cruel, to say that we should be happier: genes affect how tall we grow and how happy we might be.

The fact that there is a large genetic component for happiness suggests a research methodology to advance the cause of bio-happiness, which we will now briefly outline. Knowing that happiness is variable, psychologists could seek to identify the happiest people among the general population. This set of people, "the hyperthymic", will fall at the far end of the normal curve from those that are characterized as "depressed". This group has not been extensively studied but their lives seem very enviable. Friedman (2002), for example, relates the case of a woman that came to him seeking advice in connection with the loss of her husband. Within the last year the woman had lost her husband to cancer and had lost her job. Despite the terrible circumstances, the woman had not sought out Friedman as a patient but for advice about her son who was having a difficult time coping with the loss of his father. Friedman says that he was intrigued by the woman's ability to cope with her circumstances:

Despite crushing loss and stress, she was not at all depressed - sad, yes, but still upbeat. I found myself stunned by her resilience. What accounted for her ability to weather such sorrow with buoyant optimism? So I asked her directly.

"All my life," she recalled recently, "I've been happy for no good reason. It's just my nature, I guess." But it was more than that. She was a happy extrovert, full of energy and enthusiasm who was indefatigably sociable. And she could get by with five or six hours of sleep each night.

Once members of the hyperthymic subpopulation have been identified by psychologists, geneticists can investigate their genomes looking for genes associated with hyperthymia. Looking for associated genes will likely not be a simply task. Hyperthymia is almost certainly not a single gene characteristic that follows Mendelian laws of inheritance. For example, some genetic diseases, such as Tay Sachs, are single gene recessive, and so for a child to suffer from Tay Sachs he must inherit both recessive genes from his parents. Since hyperthymia is likely not a single gene characteristic, grounds for optimism cannot be based on success in finding single gene diseases as was done in the case of Tay Sachs.

Rather, optimism for success can be based on the optimism which underlies the search for genes associated with psychiatric disorders that are not single gene. These are known as 'multiple gene disorders' or 'complex genetic disorders'. For example, research shows that persons who share half their genes with a person diagnosed with schizophrenia have about a 11% chance of developing schizophrenia, which is about 11 times the average rate for the general population. Children share half the genes of each parent, and siblings share half their genes, so someone with a sibling or a parent who is schizophrenic is at eleven times the risk of developing schizophrenia. This is well below the 25% one would expect if schizophrenia were associated with a single gene. Of course, shared environmental influences may explain some of this higher incidence, but there is widespread consensus for a large genetic influence (Report of the National Institute of Mental Health's Genetics Workgroup, 1999). Researchers have found two possible candidate genes, neuregulin-1 (Stefansson et al., 2002) and dysbindin (Straub et al., 2002) that might explain some of the incidence of schizophrenia. One of the main difficulties in attempting to work out the genetics of complex genetic disorders is that different genes may cause the same condition, and the mere presence of some genes does not inevitably lead to the condition. If hyperthymia turns out to be a "complex genetic characteristic", influenced by a number of genes and environmental conditions, then progress in finding genetic correlates will not be straightforward. But the fact that some progress has been made with complex genetic disorders like schizophrenia provides some optimism that progress could be made.

Imagine for the moment that genes associated with happiness were discovered. How could this knowledge be applied to make ourselves happier? Three possibilities, associated with the three aforementioned technologies, suggest themselves. The most straightforward, at least from a technical rather than an ethical perspective, would involve pre-implantation genetic diagnosis. PGD is a procedure that is presently being used to a limited extent. Couples having difficulty conceiving will use IVF technology to create embryos in the lab and then implant one or more embryos. Often the embryos are genetically tested for genetic diseases such as Down's Syndrome. Couples may choose not to implant such embryos. Some IVF clinics offer prospective parents the chance to choose other embryos for non-therapeutic reasons; for example, some offer prospective parents the chance to choose embryos on the basis of gender. At the point where genes are identified with happiness, parents could potentially choose to implant embryos that have genes associated with happiness. Of course it would be the crudest form of genetic determinism to think that parents have ensured the future happiness of their child. Choosing genes associated with high potential for positive affect is merely to open the first of a number of doors that will have to be opened, e.g., not experiencing trauma in utero, and positive experiences during early years of development are other doors that will have to be open. So, opening the first door, that is, making a genetic choice, does not guarantee the remaining doors will be open, but given the role of genes in our happiness, not choosing to open the first door may well affect the prospects for future happiness.

A second possibility is to use genetic engineering to alter genes associated with happiness. Unlike PGD, germline engineering is a technology whose development lies in the future. Still, if we could identify genes associated with happiness, and we had a safe and reliable method for genetic engineering, then this would be one route to bio-happiness.

A third possibility is to use our knowledge of genetic correlates of happiness to develop pharmacological agents that could be used to turn those in the normal range of happiness into hyperthymic individuals. In some ways this project is more complex than either using PGD or genetic engineering. With PGD and genetic engineering, it is sufficient to merely note the correlation in order to increase happiness. To develop pharmacological agents requires us to understand how genes contribute to hyperthymia. For example, if it is discovered that the hyperthymic have genes that result in increased levels of certain neurochemicals such as serotonin, then pharmacological agents might be developed to mimic these effects. There is, of course, no guarantee that we can discover the genes, their function, or mimic their effects pharmacologically. Again, some optimism that this might be possible comes from current research into the genetics of mental disorders like Alzheimer's disease and schizophrenia. To treat these afflictions requires overcoming the same sorts of obstacles, namely, identifying the associated genes, understanding the causal role of the genes in manifestations of Alzheimer's and schizophrenia, and finally developing pharmacological agents to overcome these genetic influences. Since the same obstacles stand in the way of generating pharmacological agents to create hyperthymia, we ought to be similarly optimistic (or pessimistic) about the technical possibility of creating pharmacological agents for hyperthymia as we have been for the prospects of treating these devastating diseases. Since many researchers are optimistic about the prospects for developing pharmacological agents to treat schizophrenia and Alzheimer's based on genetic knowledge, we should hold out similar optimism for this approach to bio-happiness.

While the technology to provide us with enhanced feelings of well-being is not with us yet, I have argued that we should be optimistic about the possibility of creating pharmacological agents to make hyperthymic those who choose to be. However, in order to focus on the ethical rather than the technical problems let us suppose that a pill will be developed that will increase scores on subjective well-being tests in non-therapeutic contexts to mimic test scores that are similar to they hyperthymic. Further, let us assume that the "hyperthymic" pill has no adverse physiological side-effects such as those associated with anti-depressants, e.g., nausea, decreased sexuality, constipation, weight gain, etc. Our question then is what reasons might we have to resist taking such a pill or prohibiting others doing so.

4.2 Objection: Bio-happiness cannot bring true happiness

One concern sometimes expressed is that by taking a pill one would achieve only a "false happiness", not the "genuine happiness" that most seek. Imagine, for example, someone who is not clinically depressed but feels that she would like to experience greater levels of subjective well-being. After taking the pill she says, "I feel happy, extremely happy in fact. But I feel this way because of the pills I take. If I did not take the pills I would not be so happy, and so the happiness I experience is not genuine. I would like to experience authentic happiness: happiness that is not due to a pill but a happiness that originates with me." The same point is made by the

President's Council on Bioethics (2003) in connection with therapeutic uses of anti-depressants. They say that patients receiving pharmacological therapy

worry about using artificial means to change their psyches, a concern that springs ultimately from their desire that feelings and personalities not be artificial and false but genuine and true. Their worry, also widely shared, about having one's experiences of the world mediated by a drug is, at least in part, a worry about having one's real experience distorted. Even the expressed concern over "taking the easy way out" may involve not so much an opposition to ease, but a concern about distortion and self-deception (President's Council on Bioethics, 2003).

Why do patients feel that their experiences are "distorted", not "genuine or true"? It is not known exactly how all anti-depressants work, but in general they seem to alter the neurochemistry of our brains. This seems to support the worry about distortion and self-deception. However, we know that even without pills our experiences are mediated by neurochemicals in our brains. Without neurochemicals we would have no experiences at all, e.g., if all the serotonin, norepinephrine, dopamine, etc. were to dry up in our brains, we would have no experience at all. We would be brain dead. So, why think that pills make all the difference? The President's Council on Bioethics suggests an answer: "While such drugs often make things better—they often help individuals achieve some measure of the happiness they desire—taking such drugs may also leave many of the same individuals wondering whether their newfound happiness is fully *their own*—and in this sense, fully real" (President's Council on Bioethics, 2003). So, the answer seems to be that the neurochemistry of my brain not affected by pills is my own, whereas a brain affected by pills is not fully real.

This seems to be the answer offered by the President's Council on Bioethics, but why should we accept it? After all, universalized, such a judgment seems fairly harsh. It would say that anyone who takes SSRIs or other drugs are not genuinely happy: their happiness is distorted and not fully their own. Thus this would mean that people who take SSRIs for debilitating depression never experience genuine happiness. Here the President's Council on Bioethics seems ambivalent. They want to say that those who do suffer from debilitating depression can experience genuine happiness with SSRIs, but they do not explain why someone of a normal level of subjective well-being who uses pills to enhance his or her happiness is not similarly genuinely happy.

Not only does the President's Council on Bioethics not have an answer; but also I think this line of criticism hides a crucial ambiguity. To see this, consider a parallel with sex-change procedures. Imagine Chris undergoes plastic surgery and hormone replacement therapy in order to change from being male to female. After these procedures (let us concede) there is a clear and undeniable sense in which her looks are "not genuine and true": her morphology is to some extent artificial in the sense of not being entirely the product of the usual genetic and environmental influences that contribute to human sexual dimorphism. But I believe that many of us would accept that there is a sense that Chris' post-sex-change appearance is truer or more genuine. The reason that we might say this is that her new appearance is an expression of the sorts of looks she believes are more appropriate. In other words, plastic surgery can (in some

cases) be seen as an expression of the person you want to be, and therefore more authentic, than the looks provided by the environment and genetics.

What this indicates is that there are two distinctions at work here: artificial versus natural, and authentic versus inauthentic. The first might be understood along the lines of bodily integrity: “the natural” happens in and to the human body (including the brain) on its own, whereas, “the artificial” is when intervention breaks the bodily boundary, as in surgery or pills.⁸ ‘Authentic’ in this context means reflecting the individual’s priorities, values and decisions, while ‘inauthentic’ means not doing so. Applying this to Chris, we should say that her looks are artificial (and so not ‘genuine’ or ‘true’ in this sense) but authentic (and so genuine and true in the other sense), since they reflect her values and her self-understanding. So, there is no contradiction in saying that Chris’ looks are artificial (created by plastic surgery) and authentic (chosen by her to represent her understanding of herself).

Applying this distinction to taking a hyperthymic pill we might say that someone who chooses to do so will experience artificial happiness, but the happiness might also be authentic. Although the pill is modeled on natural analogues, specifically, those that are naturally hyperthymic, the pill would artificially create hyperthymia in those with normal levels of happiness. Again, there is a parallel with plastic surgery: someone may have their appearance artificially changed by surgery; others might have the good fortune of obtaining their attractive features through winning the genetic lottery. We could also say that those taking the hyperthymic pill are authentically happy, because their happiness would be more in line with their own self-understanding of the person they want to be. Someone whose genetics are relevantly different from the naturally hyperthymic might say that they would like to be the sort of person who is generally in a positive mood, and so the hyperthymic pill allows them to be the sort of person they would like to be.

The point of course is not that greater happiness *necessarily* leads to a more authentic realization of one’s self, any more than plastic surgery *necessarily* leads to a more authentic realization of one’s self. Many people are satisfied with their looks, including those who do not fit societal norms of beauty. For such individuals, there is not a great divide between what they are naturally and their authentic looks. To force those who are happy with the looks they have received through genetic inheritance into plastic surgery, designed to make them “more beautiful” with respect to some social norm, would be to create looks that were both artificial and inauthentic. Again, we say ‘artificial’ because plastic surgery is (by assumption) artificial, and ‘inauthentic’ because such a change does not reflect the priorities and self-understanding of the individual. Similarly, surreptitiously adding a hyperthymic pill to a normally happy person’s diet would be to create artificial happiness that is inauthentic.

A final example that vividly demonstrates how authentic versus artificial can be distinguished is by considering a case where someone is naturally very happy. Let us imagine Suzie was born with the genes associated with hyperthymic persons, and was raised in an environment that allowed this genetic predisposition to be realized. Suzie, then, is hyperthymic but finds herself wishing that she experienced more negative moods. It seems that she believes she would be a better artist if she could experience negative affect to a much greater extent. This is based on her belief that her artistic hero, Edward Munch, experienced powerful negative emotions and this contributed to his great art. In this case we might say that Suzie’s very high chronic positive affect is natural but not authentic: she does not identify with the positive emotions that she experiences. Indeed, if we could make a pill for chronic negative affect then she might take the

pill to artificially introduce into herself the negative emotions she ascribes to her hero. If she did so, then her chronic negative affect would be authentic and artificial.

The upshot here is that proponents of bio-happiness would do well to concede to the critics that artificially creating happiness will not lead to authentic happiness for all. For if we understand ‘authentic’ as meaning ‘in accordance with the values, goals and beliefs of the person’, then it is clear that for some authentic happiness means living within whatever constraints one’s genome dictates. But if the “not real happiness” objection is to apply to every single individual that might seek to improve positive affect through technological means, it must be the case that every use of technology to compensate for how one fares in the genetic lottery results in an inauthentic happiness. It is this judgment that we have said cannot be supported. Even if we allow that technology introduces an artificial happiness, at least in some cases there is good reason to suppose that the resulting happiness is authentic, and so in this sense, the happiness is real.

5. Objection: Bio-happiness comes at too great a cost.

In the previous section we considered objections that concluded that bio-happiness could not realize the goal of make people happier. Here we want to concentrate on objections that allow that increased happiness might be achievable, but at too great a price.

5.1 Loss of emotional appropriateness

One such objection is the idea that bio-happiness will distort emotionally appropriate responses. When our loved ones are coping with injury or imminent death, it seems entirely appropriate to grieve and be worried. When we hear about children and innocent civilians dying from an errant bomb, we do, and should, feel sad. A world of bio-happiness, so the objection goes, precludes such emotionally appropriate responses. A world where we are happy in the face of tragedy seems to be a world where we have lost something of great importance. As the President’s Council on Bioethics notes, there is something wrong with attempting to achieve total psychic tranquility. Feelings of shame, remorse, horror and disgust are appropriate in certain circumstances: “an untroubled soul in a troubling world is a shrunken human being” (President’s Council on Bioethics, 2003).

There are three things that might be said to this. First, there is an assumption here that pharmacological agents will necessarily produce a one-dimensional emotional response. Perhaps what critics have in mind here is the soma taken by denizens of the Brave New World, which does seem like a one-dimensional drug. However, there is no reason to suppose that all neuropharmacological agents would have this effect. Indeed, there is some evidence that some of the current generation of anti-depressants belie this claim. In the aforementioned study on healthy volunteers, Healey found:

Chasing the question of whether Zoloft caused emotional blunting, half the group said it had given them “a nothing bothers me” feeling. Reactions were split about this: some liked the effect: others found that it made them emotionally dead. Reboxetine, in contrast,

didn't seem to make anyone feel indifferent—calm, perhaps, but not indifferent. Its effects were better described as energizing—again, good for some but not for others.” (Healy, 2003:268-8).

So even with the current stable of drugs, the loss of emotional appropriateness or “emotional blunting” is not a universal side effect, since it seems not to apply to half of the study group when taking Zoloft, and to none when taking Reboxetine.

Second, it should be recalled that our model is hyperthymic people, and there is no indication that the hyperthymic are emotionally one-dimensional. The hyperthymic woman described above was saddened by the death of her husband, but not overwhelmed by this emotion. Recall too that she was empathic: she understood that her son was having a difficult time coping with the loss and so was in the doctor's office on her son's behalf. Also, there is good statistical evidence that the hyperthymic experience negative emotions. For example, as Lyubomirsky, King and Diener (2005) note, the top 14% of those completing the World Value Survey (1994) reported experiencing negative emotions or moods within the last few weeks. Similar results were found by Diener and Seligman (2002) among college students: the happiest students, that is, those who experienced positive moods the most, also had the full range of positive and negative moods.

Third, there is the general question of how much negative emotion or mood is appropriate for the good life, or, to put the point in the terms of the President's Council on Bioethics, how do we know when we have become “shrunk human beings”? In particular we might ask about the hyperthymic: are they shrunk human beings or not? Most of us, I think, would say that the hyperthymic are not “shrunk human beings”. It is good for both the woman and her son that she was not devastated by negative emotions and a loss of well-being after losing both her husband and her job. Being able to cope emotionally with such a situation seems like an enviable attribute. Of course we are not saying that the woman is happy about losing her husband or her job, rather, she seems admirable in the way that she is coping with the loss: she is able to stay positive despite these negative events. If part of the explanation for why she is able to cope so well lies in genetic correlates for happiness, then this gives us some reason to think that if we could compensate others with a pill to mimic these effects, then this too would be a good thing.

So there is nothing to suggest that the hyperthymic have a smaller range of emotions than others, or that their experience of emotions is inappropriate. For most people seeking bio-happiness the model of the hyperthymic should seem ideal: the possibility of experiencing both positive and negative emotions, but with a greater preponderance of positive affect.

5.2 Loss of Achievement

Perhaps the most serious objection to bio-happiness is the thought that using genetics or pharmacology to increase happiness will mean that we will have to sacrifice much of what is important in human flourishing or “the good life”. To put the point negatively: human flourishing seems to consist in more than “feeling good”. Nowhere is this more poignantly made than in Aldus Huxley's *Brave New World*. It is true that the citizens of Huxley's dystopia experience much more positive affect when compared with our world. Indeed, if we were to compare the two worlds on this single value, then the Brave New World wins hands down. But if

we compare the two worlds on other values that we might think are relevant to human flourishing, such as friendship, marriage, work success and prosocial behaviour, the Brave New World is seriously lacking. For instance, relations between individuals in the Brave New World are, by and large, shallow and transitory. The Brave New World is socially engineered to exclude marriage and deep lasting friendships. The workplace is carefully managed to keep people occupied rather than to foster any sense of achievement, and the population for the most part seems oblivious to any of the prosocial virtues like caring for others. Understood through a philosophical lens, Huxley's work in effect offers us a dilemma: either we choose our world where there is the possibility of serious achievement but considerable unhappiness; or, we use technology to make ourselves happy with soma and other technologies, but forego serious pursuit of achievement, that is, excellence in the pursuit of intellectual, cultural and social goals. Given this choice, most readers come away thinking that our world is morally better. Now one might seriously question whether this is in fact the best choice here. Certainly we can imagine utilitarians, for example, arguing that part of our negative reaction to the Brave New World is its unfamiliarity.⁹ Perhaps if we were to live in the Brave New World for a few years, our own world would seem unbearable.

I do not propose to enter into the question of which horn of Huxley's dilemma we should endorse, rather, I want to question the dilemma itself. What if we had a third choice here? What if, in addition to the two alternatives offered by Huxley, there is the possibility of a world with both greater happiness and greater achievement than our own world? If we were to imagine writing a sequel, the *Braver New World*, where the choice is between our world, Huxley's *Brave New World*, and a world where people are significantly happier and achieve more than our world, then I think the last is (other things being equal) the obvious choice. In fact, the sequel would be terribly boring because unlike the *Brave New World*, the third possibility here does not ask how much we would be willing to sacrifice for happiness. Rather, the third possibility offers us even more of human flourishing: happiness and serious achievement.

I think most people are not likely to take the third possibility seriously because of the common assumption about the arrow of causality between happiness and achievement. Specifically, it is a common assumption, both in "folk psychology" and among professional researchers on happiness, that achievement causes happiness (Lyubomirsky, King, and Diener, 2005). The thought here is that, e.g., winning an award at work, getting married, or developing friendships may cause us to be happy. Conversely, being unhappy or dissatisfied with our lives is sometimes the spur to action: if we were happy then we would have no reason to achieve at work, get married or develop friendships. It is certainly true recent success can cause us to be happier in the second sense we distinguished above: short-term positive affect. Winning an award at work, getting married or meeting new friends can cause at least a temporary spike in our happiness. But our question is this: does achievement lead to an increase in *chronic* positive affect? If the prevalent view that unhappiness is the spur that causes greater achievement on average, then those that experience lower positive affect should on average achieve more than those who have higher levels of positive affect. A massive recent meta-study by Lyubomirsky, King and Diener (2005) indicates that the preponderance of evidence is that chronic positive affect (our third sense of happiness) can cause increased achievement. That is, the arrow of causation is bi-directional: it is not simply that achievement causes happiness, but happiness may also cause achievement. If this is the case then we have good reason to reject Huxley's dilemma. If we develop an appropriate technological means to increase average positive affect then we should boost average achievement. In a slogan: to be successful, be happy. So, given this arrow

of causality, there is no reason to suppose that bio-happiness would force us to choose between happiness and achievement. Huxley offers us a false dichotomy.

Here I will briefly summarize some of the research by Lyubomirsky, King and Diener that supports this claim. Part of the case these authors make is based on correlation studies between happiness and achievement. The authors are well aware that correlation is not sufficient to establish a causal relation, but it is a necessary condition.¹⁰ A second area of research surveyed involved longitudinal studies. The basic methodological procedure involves measuring subjects for positive affect and achievement at time T1 and a later time T2. If unhappiness causes achievement then we should predict that those who are unhappier at T1 will achieve more than their happy peers by T2, whereas if happiness causes achievement we should predict the opposite. A third area involved laboratory research. Here the basic methodology is to boost positive affect in subjects and then see if this boosts achievement. Obviously in the laboratory setting it is not possible to investigate the effects of long-term boosting of positive affect, but the thought is that these short-term laboratory studies provide some evidence of what might happen in the long-term case.

The results of the meta-survey of hundreds of previous studies converge on the view that happiness can cause achievement in the three broad areas: work life, social relations, and health.

Table 1: Positive Affect Increases the Probability of Achievement in a number of areas

Work	Social Life	Health
Securing job interviews	Having a greater number of friends	Better physical health
Being evaluated in a positive manner by supervisors	Having a greater quality of friendship	Better mental health
Exhibiting superior performance and productivity	Participating in a successful marriage	
Succeeding in managerial jobs	Developing favourable opinions of others	
Secure better jobs	Cooperating with others	
Satisfied with one's job	Exhibiting greater pro-social behaviour	
Earn a higher income	Performing greater charitable behaviour	
Assist co-workers		
Developing abilities within an organization		
Being more creative		

The authors construct a powerful case that happiness can cause achievement. The robustness of this result is underscored by the fact that the authors looked at 225 papers by hundreds of different researchers (Lyubomirsky, King and Diener, 2005: 806) to make their case. Several points about these results are worth mentioning.

First, to say that happiness causes achievement or success does not preclude causal influence in the opposite direction. As the authors note, there is evidence that success can also cause happiness. The influence of success on happiness is not surprising: as noted above, this is the common assumption of folk psychology and (previously) the most prevalent view among professional researchers on happiness. What is surprising is how strong the influence of happiness is on achievement.

Second, this research ought to put to rest once and for all the view that happy people are complacent and that unhappiness is the spur to action and success. The evidence reviewed shows this is false for an individual's personal accomplishments, and happy persons are not necessarily satisfied with the social and political environment (Andrews and Withey, 1976).

Finally, to pick-up on a point made earlier, even perfectionists who do not hold the value of happiness in high regard, ought to take notice of this research. For happiness leads to something that perfectionists value, namely: achievement. That is, happiness leads to the physical, social and intellectual achievements that perfectionists value, and so perfectionists should value increased happiness for what happiness can cause. This is particularly important for perfectionists like Hurka (1994), who value autonomy as a perfectionist value. A social policy, for example, that forced people to develop their excellences would compromise the value of autonomy, so perfectionists of this sort should welcome bio-happiness as a means to promote but not force increased perfection. In other words, bio-happiness offers a means to increase perfection, including excellence in an agent's exercise of autonomy.

6. In Praise of Bio-happiness

For the most part we have been deflecting criticisms of bio-happiness. In this section we will make two positive arguments in support: one based on justice and the other on good social consequences.

6.1 Justice and the Deserved-Self

The primary argument for why individuals should be able to use bio-happiness is based on a principle of fundamental justice: it is unfair to prohibit the use of bio-happiness, for to do so is to prohibit individuals from obtaining what they might in terms of two important goods, namely, happiness and achievement.

The largest obstacle to appreciating this point about justice is the pervasive assumption that an individual's level of positive affect is deserved, and thus fair. By this I mean the assumption that one is responsible for his or her happiness or unhappiness. This poor thinking is so common it deserves a name, which we might designate as the "fallacy of the deserved self". This fallacy is readily apparent once we realize that the idea that there is some 'self' or 'personality' that floats

free of all genetic influences is a myth. And as we see this myth for what it is, we can fully appreciate how unfair being born with certain genes can be. Take a concrete example: Alexis is not very happy. She is not clinically depressed by any stretch of the imagination, but unhappier than most. The fallacy of the deserved self says that if she is unhappy she must be responsible for this. We can predict with almost apodictic certainty that those who know Alexis will make the following sorts of remarks: “Alexis never pursued opportunities for further education or training, and so it is not surprising that she is now stuck in a job that does not make her happy. And Alexis never seems to make friends or develop deep and intimate relations with others. We have talked to Alexis about this, yet she does not seem prepared to make the changes in her life that might bring her increased happiness. Her unhappiness is due to the life choices she has made, and the fact that she is not prepared to make positive changes, so she deserves whatever unhappiness she is experiencing.”

The first thing we might ask is whether it is true that people always deserve whatever happiness or unhappiness they experience. Consider that people are likely to revise an assessment of fairness in light of information about strong environmental influences. In Alexis’ case, suppose it is discovered that she was brought up in an appalling environment: her father was physically and sexually abusive and her mother was cold and unsupportive. Most, I think, would reverse the judgment that she deserves her unhappiness, for if at least some of the reason for her unhappiness is caused by factors that she had little influence over, she can hardly be said to be responsible for these influences. If we accept that at least part of her current unhappiness is explained by the traumatic events she experienced growing up then it is impossible to say that she deserves so much unhappiness. What we can conclude from this is that it is not always the case that a person can be said to deserve his or her happiness.

If we grant this in the case of environmental influences then it seems we ought to, on pain of inconsistency, say the same about the strong genetic influences upon positive affect. Thus, if it turns out that Alexis has a strong genetic predisposition to low chronic positive affect it would be just as wrong to say that she deserves her unhappiness anymore than we say that she deserves her unhappiness in the case where her parents failed to adequately provide for her.

This is only the first step of our argument, for it would be premature to say that in cases where happiness or unhappiness is undeserved, it is also unfair. It is true that we might say that if Alexis grows up with abusive parents there is good reason to suppose that Alexis’ unhappiness is undeserved and unfair, but it is wrong to argue that the same reasoning will apply to genetic influences upon happiness. In other words, imagine it was argued as follows: if we suppose that Alexis in fact grew up in a stable and nurturing environment, but that she inherited genes that influenced her low positive affect, then here too we would have to say that her unhappiness is unfair. The reasoning here is faulty because of a crucial difference between the two: in the case where Alexis’ environment causes her low positive affect, there are agents to whom we can attribute responsibility, namely, her abusive parents. In the case where Alexis inherits genes that contribute to her low chronic positive affect, there are no agents to whom we can attribute moral responsibility. True, she inherited her genes from her parents, but her parents had little control over what genes their child’s genome.¹¹ A more apt analogy might be as follows: imagine Hira is a young child involved in a multi-car accident caused by a mudslide in a remote area. Over twenty people died but Hira was miraculously thrown clear. Since it was assumed for good reason that Hira died along with everyone else, Hira was forced to fend for herself for a number of years living off the land as a “feral child”. Years later Hira is found by hikers and undergoes a

battery of tests by psychologists. Psychologists conjecture that her happiness, while in the normal range, probably would have been in the hyperthymic range if she had a nurturing environment in her formative years. In this case, her condition is not attributable to the culpable actions of anyone: no one was responsible for the mudslide, and there was every reason to suppose that she died in the car accident. In effect, Hira lost the “environmental lottery”. The strongest position for critics of bio-happiness is to say that while Hira’s happiness, while less than it might have been, is not deserved; it is not unfair (because no one is to blame). The reason then is that it is possible to argue by analogous reasoning, that although individuals who lose the genetic lottery in the sense that they inherit the genetic pre-disposition for low chronic positive affect cannot be said to be responsible for this aspect of their unhappiness, nevertheless, it does not follow that it is unfair. All we can say is that they lost the genetic lottery—there is no one to blame for this, and so no injustice was committed.

Proponents of bio-happiness may accept this line of reasoning because it does not touch the main point: the injustice is not that some win the genetic lottery and some lose the genetic lottery, but that critics of bio-happiness would want to maintain the results of the genetic lottery even if compensatory mechanisms, such as a hyperthymic pill, could be developed. Thinking about the example of Hira, an analogous injustice would occur if we insisted that Hira be prohibited from taking up an offer of special counselling to help her compensate for the impoverished environment she experienced. The injustice here is not that she lost the “environmental lottery”, but that she is prohibited from using a compensatory mechanism. Similarly, with bio-happiness the injustice is not that some win and some lose the genetic lottery, for there is little we can do about that (at this stage), but that it is unjust to enforce the effects of the genetic lottery. The strong genetic component to positive affect means that most people will experience a level of positive affect that they do not deserve. Given the value of happiness and achievement in an individual’s life, we have a compelling *prima facie* reason to think that it would be unjust to prohibit individuals from using bio-happiness to pursue these important goals.

There are only two objections that seem weighty enough to overcome the case for bio-happiness: that it will harm the individuals that use bio-happiness, or that it will incur enormous social costs.

In effect we have already dealt with the objection that bio-happiness will harm those individuals who choose to use it. We have assumed that it will not have adverse physiological consequences, and it will contribute to the pursuit of what most consider of great value in life: happiness and achievement. The latter point says that the interests of the individual must sometimes be curbed in the interests of society as a whole. To this objection we now turn.

6.2 Social Goods

At least in some cases, individual interests clash with societal interests. An obvious case is recent legislation to curb the freedom of individual smokers for the sake of public health. However, for the most part, bio-happiness does not ask us how to balance the interests of the individual against societal interests, since the individual goods promised by bio-happiness: increased happiness and achievement, are also social goods.

Given the goal of increased happiness for society, nothing on the immediate horizon promises us such dramatic results in terms of social policy as allowing hyperthymic pills. In fact,

the only serious contender considered by Western policy makers for making nations happier is economic expansion, that is, it was often thought that if our society were to become wealthier then people would be happier. One of the surprising results from happiness research is that increasing incomes of societies has little correlation with happiness, e.g., even where average per capita income doubles, there is often little or no rise in per capita happiness (Easterlin, 1995). If we think about what material prosperity might await us in the twenty-first century, there is little reason to suppose that doubling our income again will contribute much to happiness, yet there is every reason to suppose that bio-happiness will contribute to our happiness. If policy makers are serious when they say they are concerned with the prospects for making a happier society, then they should look to invest in bio-happiness as the most viable means to obtain this end.

This same conclusion can be reached when we think of two of the most discussed social imperatives of our time: halting the destruction of the environment and ending third world poverty. One of the sad facts about these problems is that it looks like we could solve them in fairly short order but for the fact that humans as a whole do not exhibit more pro-social behaviour. So, part of the difficulty here is how to get individuals and society to exhibit more pro-social behaviour. Educational programs have had some success here: certainly people are more aware and do more for the environment than thirty years ago when I was a child, yet the environment is still harmed: air and water pollution continue, species go extinct every day as a result of human activity, etc. We should consider whether part of the solution here would be to make people happier, for, as we have said, there is evidence that happier people are more likely to exhibit pro-social behaviour. I am not suggesting that resources now devoted to poverty relief or environmental concerns ought to be redirected to bio-happiness—there are so many other areas that we might choose to redirect resources (see below)—rather, the suggestion is that bio-happiness offers *some* answer to these problems. In other words, these problems are likely surmountable if we were to exhibit more pro-social behaviour, and bio-happiness can help raise the average level of pro-social behaviour. So, bio-happiness deserves some consideration as one of the prime social imperatives of our time.

7. Conclusion

There is no doubt that there is an empirical (and falsifiable) component to the bio-happiness thesis. So, of course, a certain amount of caution and careful review of the empirical results are necessary. But in terms of making our lives and our world better the benefits are staggering: in one fell swoop we could be happier and achieve more.

Given how much we could gain, we should put an Apollo program type push on bio-happiness. By this I mean the massive mobilization of resources that were devoted to a single goal: landing people on the moon. Even to this day it is remarkable to think that in the twelve years from 1957 until 1969 humanity went from being almost earthbound to landing people on the moon. The promise of bio-happiness demands finding similar resources. To illustrate this point I will concentrate on the distribution of academic resources, although the point is more general than this. I will assume that the ultimate point of academic research is to make our world and our lives better. (If this is not the ultimate point, then it is hard to see why it should be publicly funded). Some academic research makes an easy target in terms of its practical potential to make our lives and our world better: those researching the history of button making in

England in the 19th century, or the theoretical activities of physicists spinning out different versions of string theory that offer no apparent prospect of empirical testing are obvious marks. Still, it would be difficult to argue that such pursuits do not have at least some value, since it may well be that knowledge is intrinsically valuable, and these activities may yield knowledge. So, arguably these activities do make our lives and our world better. Yet, whatever value these pursuits have, they pale in comparison with the value to be gained should bio-happiness be realized. Thus, if the ultimate point of academic research is to make our lives and our world better, then research into bio-happiness will almost certainly do more to achieve this goal than contemporary research into the history of button making or string theory. We should, then, put academic research emphasis on bio-happiness. If it is retorted that there are few public dollars available for new research then at least some of our academic resources should be redeployed. Historians of button making should be reassigned to do the photocopying and coffee fetching for psychologists investigating happiness, and theoretical physicists could be reassigned to do something useful like crunch some of the statistics for behavioural geneticists. It might be a safe prediction that this is not likely to happen, but this does not touch on the question of whether it should happen. In any event, the question of public funding of research aside, the prospects for bio-happiness might be quite rosy if a clear message were sent to the private sector that society approves of the use of hyperthymic pills. After all, there is a huge potential market here—most people are neither clinically depressed nor hyperthymic.

It is obviously a false dilemma to say that we ought to put all our resources into the biological component of happiness or do nothing. We noted that, on the socialization side, the largest experiment to make people happier involves the effects of economic growth. This we said has been largely a failure for nations once a certain minimal amount of economic prosperity has been reached (Oswald, 2005; Layard, 2005). However, this is not to say that all socialization attempts to improve our positive affect will fail. For example, in terms of public policy it has been suggested that economic policies that minimize unemployment may do much more for aggregate happiness than policies that favour economic growth (Oswald, 1997). The reason is that unemployment, or the fear of unemployment, can have a large negative impact on happiness, whereas, as mentioned, increased economic output (above a certain minimum) does not have much effect on happiness. Another policy to consider is whether more funding should be devoted to mental health issues. Poor mental health can have a dramatic negative effect on happiness, often much more so than poor physical health, and yet as a percentage of health care, mental health is drastically under funded (Layard, 2003). In terms of helping individuals increase their happiness, Sonia Lyubomirsky and colleagues have begun to deploy the resources of experimental and quantitative psychology to this problem, and have had some interesting results (Lyubomirsky, Sheldon and Schkade, 2005). The argument here supports the idea that research into “nurture”, both in policy and for the individual research, too ought to receive more attention and support. This is because bio-happiness will fail to have maximum effect without a proper environment for people to develop happiness.

Without bio-happiness, massive amounts of human potential will go unrealized. While there are a number of *explanations* why people might resist bio-happiness: complacency, fear of change, etc., there is, I submit, no good moral *justification* for standing in the way of bio-happiness. We have every reason to suspect that if we were to increase the average positive affect with bio-happiness, people would be more satisfied with their lives, achieve more in the workplace, have better relations with others, and have better health outcomes. By and large, we

all win when others in society are happier, and achieve more. This is why we have an obligation to see bio-happiness realized.

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¹ I will ignore questions of coercion caused by others using technologies. Consider that, although we say that it is permissible to use the Internet, increasingly it is difficult not to. Think how difficult it is if you don't have an email address: this was hardly a problem ten years ago, now it almost cuts one off from civil society. Also, to say that accessing bio-happiness is permissible does not commit to any view of the just distribution of bio-happiness. For example, we think that it is permissible to seek medical treatment for a broken arm here in Canada and the U.S.A. In Canada health resources are publicly distributed, in the U.S.A. it is often up to the individual. Personally I would like to see public distribution of bio-happiness, at least for the economically disadvantaged, but the argument made here is neutral on this aspect of distribution.

² My discussion here is indebted to Sumner (1996), who in turn says that his disambiguation of 'happiness' follows common distinctions in the philosophical literature on happiness.

³ Utilitarianism then is ambiguous between the third and fourth sense of happiness we noted above. Mill, for example, seems to endorse something like the third sense, whereas Sumner develops an account of happiness that is closer to the fourth sense.

⁴ My thinking in this section has been heavily influenced by D. Pearce's groundbreaking work (2003).

⁵ To say that wire-heading is not ideal is not to say that it should not be permitted. I take no position on this issue in this paper.

⁶ For examples of such case studies see Kramer (1997) and Barondes (2003). For some skepticism about the efficacy of SSRIs in treating depression see Healey (2003)

⁷ I have followed the practice of some psychologists to lump these various measures of heritability together. As Lykken (1999) explains, the higher estimate of 80% heritable is based on an average level of happiness, rather than a single measurement of happiness. The higher estimate is in fact more in keeping with the target of boosting chronic happiness, because it is based on an average rather than a single episodic measurement.

⁸ There are obvious problems (Glover, 1980) with drawing the distinction in this way, e.g., laser eye surgery then counts as an unnatural change. However, the point developed below is that even if we grant such a distinction to opponents of bio-happiness, it is not sufficient to support their position.

⁹ Glover (1980) explores this line of thought.

¹⁰ We will assume that there are no confounding third variables here.

¹¹ Of course this may well change in the future with the possibility of genetically engineering for positive affect. We will ignore this complication here.