

The Justifiability Of Memory Dampening Pharmaceuticals

An Ethical Assessment Of Pharmaceuticals Used To Emotionally Dampen Ordinary Narrative Memories

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Abstract

Emotional memory dampening technologies are emergent technologies that can diminish the negative emotional impact related of emotionally laden memories. Such technologies seem as of now especially promising in helping people that suffer from posttraumatic stress disorder to alleviate their suffering by diminishing the extreme emotional arousal that accompanies their traumatic memories. However, a more speculative potential future use of memory dampening technology lies in the emotionally dampening of non-traumatic ordinary narrative memories, such as the emotional memories attached to a bad breakup. This everyday use of memory dampening technology poses pressing ethical issues, among which the issue of the persistence of identity. In this thesis, we look at this specific ethical issue of persistence of identity

We focus on one memory dampening agent that has been the subject of recent research in particular - the drug propranolol. In this thesis, we will try to answer the question whether the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified when the discussion is placed specifically within the contours of the debate surrounding memory dampening technology and the persistence of identity.

First, we will provide a distinction between traumatic memories and ordinary narrative memories as well as a theoretical-technical explanation of propranolol. Second, we will discuss the philosophical concept of personal identity and a quasi-memory based psychological-continuity answer on the question of persistence of personal identity over time. Third, we will discuss the psychological concept of narrative identity . Fourth, recent empirical research data regarding memory loss and persistence of identity is discussed. Fifth and finally, the strength of three ethical viewpoints extracted from recent ethical arguments found in the ethical debate surrounding memory dampening technology and identity is determined by applying the theory of wide reflective equilibrium to test the coherency of these ethical views. The conclusion is that in the specific context we argue from, the everyday use of propranolol to emotionally dampen ordinary narrative memories can indeed be ethically justified.

Keywords: ethics, non-traumatic ordinary narrative memories, memory dampening technology, propranolol, personal identity, persistence over time question, narrative identity, wide reflective equilibrium

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Chapter 1

Introduction

1.1 Emotional Memory Dampening Technology, Propranolol

In recent years, the use of memory dampening technologies as an effective method to help treat patients suffering from Posttraumatic Stress Disorder (PTSD) has been a popular research subject, with specific attention given to propranolol as a promising memory dampening technology (Debiec, 2012, Gardner & Griffiths, 2014, Schwabe et al, 2012, 2013, Wichert et al, 2012). Research has found that PTSD is associated with hyperactivity in the noradrenergic systems (Krystal & Neumeister, 2009). Animal studies have shown that noradrenergic systems act in the lateral nucleus of the amygdala to establish and strengthen emotional memories (McGaugh & Roozendaal, 2009). Furthermore, animal models of PTSD that used fear conditioning showed that reactivated traumatic memories are susceptible to noradrenergic modulation in the lateral nucleus of the amygdala (Debiec et al, 2011).

Further findings were that postreactivation blockade of noradrenergic receptors impairs reconsolidation of fear memories in the amygdala (Ibid.). By providing a noradrenergic blockade, the reconsolidation of traumatic memories is disrupted, which leads to an amelioration of traumatic memory (Debiec, 2012). Propranolol, then, seems to be an effective drug to block noradrenergic receptors during the reconsolidation process of traumatic memories and thus lead to diminished effect of traumatic memories on an individual and in that way might be an effective way to help treat patients suffering from PTSD (Schwabe et al, 2012, 2013).

As with all emergent technologies, memory dampening technology is not without its potential ethical issues. Already in 2003 The President's Council of Bioethics published a work exploring the ethical and social consequences of emergent biotechnical developments, among which memory dampening technology (The President's Council of Bioethics, 2003). Since then, the ethics of memory dampening technology has been the subject of much debate (Aoki, 2008, Kolber, 2006, 2011, Wasserman, 2004, Robillard & Illes, 2016). While a lot of discussion has already taken place about the ethics of memory dampening technology as a way to help treat patients suffering from PTSD, there has been less discussion about a potential different future use of memory dampening technologies such as propranolol, namely that of the everyday use of memory dampening technologies to emotionally dampen non-traumatic memories.

Although the development of propranolol as an effective way to emotionally dampen memories either traumatic or non-traumatic in nature is still at a research stage, it is important to look at the future and to have a proper ethical debate about this more everyday use of memory dampening technology as well. The ethics of memory dampening technology need to be properly discussed before it becomes readily available to be easily used by any consumer with a desire to emotionally dampen their emotionally negative non-traumatic memories. This is because this way the development of propranolol and policies made for the use of propranolol can be steered in a morally satisfactory manner, whilst any debate that happens after the technology has already been made widely available might become a case of 'too little, too late'. Therefore, this thesis looks at the ethics of the everyday use of memory dampening technology to emotionally dampen non-traumatic memories.

This thesis does so with a very specific focus. The memory dampening technology discussed is propranolol because it, as discussed above, is a seemingly promising drug to emotionally dampen memories. Memory dampening technology and thus propranolol offer a wide variety of potential ethical issues to be discussed, but in order for an in-depth analysis to take place this thesis will focus only on one very specific potential ethical issue of propranolol, namely the ethical issue of the discontinued persistence of identity that propranolol might lead to. This issue is widely prevalent within the ethical debate surrounding

memory dampening technology (Wasserman, 2004, Kolber 2006, 2011, Henry et al, 2007, Aoki, 2008, Bell, 2008, Philips, 2008, Robillard & Illes, 2016). By focusing on this issue specifically, this thesis provides a clear overview of the arguments and ideas surrounding identity used in the ethical debate concerning memory dampening technology. The main question this thesis asks is whether the everyday use of propranolol to emotionally dampen non-traumatic ordinary narrative memories can, when the discussion is placed specifically within the contours of the ethical debate surrounding memory dampening technology and identity, be ethically justified.

1.2 Procedural Roadmap and Research Method

In order to answer this question in a satisfactory manner, we will have to go through several steps in this thesis. We will first need to establish a clear distinction between traumatic memories and non-traumatic memories. In providing this distinction in chapter two, we will define non-traumatic memories as ordinary narrative memories that are available to conscious awareness and can be recalled at will (i.e. are fully verbally accessible), are mostly true to the original experience, can be verbalized in a clear narrative structure that is not distorted, fragmented or only recalled in sensory form and that, furthermore, do not impair or influence the memory processes of the amygdala and hippocampus (McPherson-Sexton, 2006).

With this distinction and definition in mind, we can move on to a thorough technical explanation of the noradrenergic blocker propranolol in chapter three. We will discuss how exactly propranolol works as well as offer a defense for the choice for propranolol as the memory dampening technology to focus on. We will see that the use of propranolol before the reactivation process of memories leads to the possibility of emotional memories being made comparable to neutral memories once consolidated. Propranolol, in other words, effectively dampens the emotional impact of negative emotional memories when administered before memory reactivation (Debiec, 2012, Debiec & LeDoux, 2004, Gardner & Griffiths, 2014, Schwabe et al, 2012, 2013, Wichert et al, 2012).

We will furthermore see that the choice for propranolol as the memory dampening technology to focus on has a threefold reason. First, propranolol seems to still be able to impair emotional enhancement for emotionally negative memories after some lengths of time after the initial experience (Debiec & LeDoux, 2004, Gardner & Griffiths, 2014). Second, propranolol seems to only have an effect on emotionally negative memories stemming from emotionally negative experiences whilst not having an effect on neutral memories (Schwabe et al, 2012, 2013). Third, whilst recent research on propranolol as an effective way to emotionally dampen memories has one disadvantage in that some promising research uses emotionally disturbing images to substitute for traumatic experiences and that these images are not on the same level as actual traumatic experiences (Debiec, 2012), this can actually prove an advantage in the discussion of propranolol to emotionally dampen non-traumatic memories because non-traumatic memories are closer in nature to these types of disturbing images than traumatic memories are. These three reasons will be explained and argued for in detail in the corresponding sub-sections.

With the necessary technical background explanations in mind, we will move on, in chapter four, to a philosophical-theoretical discussion of the concept of personal identity and the wide persistence question over time, which asks what it takes for a person as an entity to persist over time (Daniels, 2016). We will focus on a psychological-continuity understanding of personal identity and the persistence of a person over time, namely the quasi-memory based psychological-continuity theory of Derek Parfit (Parfit, 1984) which claims that the continued persistence of a person lies, partly, in one's continuity of quasi-memory. This continuity of quasi-memory is provided by overlapping strands of strong connectedness and this strong connectedness in turn is reached if the number of direct quasi-memory relations in an individual is at least half the number of direct quasi-memory connections in most actual lives (Ibid.). We focus on a psychological-continuity answer to the wide persistence over time question because it agrees with the commonsense view that is held by many, which entails

that what we believe to be us is included in the brain and its mental contents and is not included solely in the body (Nichols & Bruno, 2010).

Because the wide persistence over time question has not been conclusively answered and this theory is merely one of many possible answers to this question we will, for the sake of fair representation, also look at one argument in favor (Unger, 2000) and one argument against (Mackie, 1999) such a psychological-continuity theory. We will then argue that from the point of view of this specific theory, personal identity will not be fundamentally altered and persistence will not be discontinued if propranolol is used to emotionally dampen ordinary narrative memories because this theory only requires the act of remembrance itself to serve as the basis for quasi-memory continuity, whilst not basing its requirements of the persistence of a person over time on any emotional attachment to memories (Parfit, 1984). As such, it will be argued that from the point of view of this theory propranolol used to emotionally dampen ordinary narrative memories poses no serious danger to the persistence of personal identity.

Next, we will look at recent arguments used in the ethical debate surrounding memory dampening technology and identity to see whether the same conclusion is reached in this debate. We will see that authors within this debate reach different conclusions than we do, because they use a different concept of identity. Instead of the philosophical concept of personal identity, they use the psychological concept of narrative identity (Aoki, 2008, Bell, 2008, Kolber, 2006, 2011, Philips, 2008, Robbillard & Illes, 2016). Narrative identity, unlike the philosophical concept of personal identity, concerns itself with the narrow question of persistence over time, which asks what it takes for a person's qualitative identity to persist. That is, the question asks what it takes for a person to remain the same sort of person one is over time. We will thus provide an explanation of the psychological concept of narrative identity, which entails that we constitute our individual qualitative identity by forming a narrative self-conception, a narrative life story of who we are (McAdams, 2001, 2011, Schechtman, 2007).

We will then look at recent empirical research data regarding memory loss and the persistence of qualitative identity as to better be able to determine the strength of arguments used in the ethical debate surrounding memory dampening technology and identity. We will see that recent research suggests that an impairment in (autobiographical) memory does not necessarily lead to a discontinuity of one's qualitative individual identity (Naylor & Clare, 2008, Stohminger & Nichols, 2015, König et al, 2016, Batra & et al, 2016). We will argue that if memory deletion does not necessarily lead to a discontinuity of one's qualitative individual identity, a discontinuity of one's qualitative individual identity is even less likely to be the case for the merely emotional dampening of one's memories.

When then moving back to the ethical arguments offered in the ethical debate surrounding memory dampening technology and identity, we will find that the arguments used therein base their normative claims on the seemingly false assumption that qualitative narrative identity would be necessarily changed in either a positive or a negative way due to the use of memory dampening technology (Aoki, 2008, Bell, 2008, Kolber, 2006, 2011, Philips, 2008) and that these argument thus lose a considerable amount of strength. We will propose an alternative ethical argument or view which entails that one's qualitative narrative identity is likely not going to be changed in any significant way due to the use of memory dampening technologies and that the memory dampening agent propranolol will thus just be one of the many ways in which we are constantly altering the (autobiographical) memories we use to constitute our life story. We will therefore conclude that propranolol will most likely not lead to any (noteworthy) change in either the philosophical concept of personal identity or in the psychological concept of narrative identity.

Because this conclusion itself is not enough to serve as the base for a proper normative judgment, we will in chapter five enlist the help of the ethical theory of Wide Reflective Equilibrium (WRE) (Daniels, 1979, 2016, Doorn, 2009, Doorn & Taebi, 2017, Rawls, 1971, 1993) to answer the question whether the everyday use of propranolol to emotionally dampen ordinary narrative memories can, when the discussion is placed

specifically within the contours of the ethical debate surrounding memory dampening technology and identity, be ethically justified.

By applying the theory of WRE, we will find that we can distinguish between three ethical views within the ethical debate surrounding memory dampening technology and identity. These views are the Identity Loss View (which argues that the everyday use of propranolol to emotionally dampen ordinary narrative memories cannot be ethically justified based on the claim that this would lead to a loss or discontinuity of one's narrative identity), the Identity Strengthening View (which argues that the everyday use to emotionally dampen ordinary narrative memories can be ethically justified based on the claim that the voluntary aspect of using propranolol to emotionally dampen certain memories would lead to a strengthening of one's narrative identity) and the Unchanging Identity View (which argues that the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified based on the claim that the use of propranolol would not lead to any significant changes in one's narrative identity). We will furthermore see, through our application of the theory of WRE, that both the Identity Loss View and the Identity Strengthening View are not able to provide a satisfactory answer to the question whether the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified, whilst the Unchanging Identity View is able to provide a satisfactory answer to this question.

We will thus, after having gone through this step-by-step process in this thesis, conclude in chapter six that, when placing the discussion specifically within the contours of the ethical debate surrounding memory dampening and identity (and more particular, the persistence thereof), the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified. Lastly, we will discuss the benefits and the limitations of the specific approach used in this thesis, as well as provide recommendations for future ethical research regarding the everyday use of memory dampening technology.

Chapter 2

The Distinction Between Traumatic Memory and Non-Traumatic Memory

To discuss the ethics of using memory dampening technology, or more specifically the drug propranolol, when learning to cope with non-traumatic memories, we need a clear understanding of what non-traumatic memories are exactly. It is especially important to develop an understanding of the distinction between traumatic memories on the one hand and non-traumatic memories on the other hand. This distinction will be made via four special mechanisms at work regarding traumatic memories which show a clear difference between the two types of memories. In this chapter, we will give an explanation of the differences between the two types of memory. The baseline author for this chapter will be McPherson-Sexton. The reason for this is that she provides a clear concise overview of research in the field of traumatic memories from which it is easy to go into as much detail as needed to explain individual parts of the overview more in-depth.

We will follow the distinction, based on four special mechanisms at play for traumatic memories, between traumatic memories and non-traumatic memories suggested by McPherson-Sexton and use other research to explain each facet of this distinction more in-depth and more clearly. McPherson-Sexton discusses the difference between “ordinary (narrative) memories” and traumatic memories. In the remainder of this thesis, whenever the term ‘non-traumatic’ or any substitute for that term are used, it refers to this concept of ordinary narrative memories. McPherson-Sexton explores research into the special neurological mechanisms at work in the formation of traumatic memories compared to the formation of ordinary memories. She discusses four such neurological mechanisms, but also states that the four mechanisms that are discussed are most likely not the only mechanisms at play, as “there are many more avenues in this field left to explore.” (McPherson-Sexton, 2006, p. 77) Nevertheless, with knowledge of four special neurological mechanisms that apply to traumatic memories and their recollection, a clear distinction between traumatic memory and ordinary (narrative) memory can already be made.

One such mechanism is the method of storage and retrieval of memories. There is a difference in how ordinary experiences and how frightening or otherwise non-ordinary experiences are stored into our memory and how both types of memory can be retrieved. Ordinary experiences are, as explained by McPherson-Sexton, easily integrated into memory with little conscious thought involved. Non-ordinary experiences, on the contrary, may prove harder to be integrated into memory and our memory might sometimes even be entirely unable to accommodate those experiences, which makes them be stored differently altogether by way of impaired memory processes of the hippocampus and amygdala. The details of the impaired memory processes for traumatic memories in the amygdala and hippocampus will be discussed later in this chapter. Aside from traumatic experiences being stored differently compared to ordinary narrative memories, these traumatic memories are also not always readily available for retrieval because they may become dissociated from conscious awareness, in turn making them no longer able to be entirely voluntarily remembered (Brewin et al, 1996).

Instead, traumatic memories may be recalled automatically when a situation arises that is similar to the original traumatic situation that was the cause for the traumatic event (Ibid., Schooler & Eich, 2000). Brewin termed this ‘situationally accessible knowledge’ (Brewin, 1989). Ordinary narrative memories are ‘verbally accessible’ because they can, in principle, be deliberately retrieved. Traumatic memories are mostly also partially verbally accessible, but have, in contrast to ordinary memories, also parts that are only situationally accessible (Ibid.). The situationally accessible traumatic memories, then, can continually

influence someone's behavior and perceptual states and persons who "allow traumatic memories to bypass their conscious awareness frequently begin to suffer from repression and cannot experience a full range of emotions" (McPherson-Sexton, 2006, p. 68).

This repression is also an important part of traumatic memories. Authors such as Freyd and Terr have argued that repression is a psychological defense mechanism that traumatic experiences can trigger and that is used to restrain the conscious awareness of the traumatic experiences that are the cause of related traumatic memories. (Freyd, 1996, Terr, 1994). Freyd provides the example of repression in victims of childhood sexual abuse. These victims may first be unable to recall repeated instances of abuse, even showing psychogenic amnesia for the original traumatic experiences. At a later point in time, they may remember the original traumatic experiences even though they were unable to recall the experiences before (Freyd, 1996).

Before we move on to a possible explanation of the cause of repression of memories as discussed above, it is important to note that the concept of repression of memories concerns queries that as of yet have no conclusive scientific answers. In fact, there are authors who argue that there is no concrete evidence for the existence of repressed memories and that they are thus just a myth (Loftus & Ketcham, 1996). However, due to there not being any conclusive research results, answers or arguments for either position, we will for now focus on the position which maintains that repressed memories do exist and we will do this because doing so allows us to more closely follow McPherson-Sexton's proposed workable distinction between traumatic memories and ordinary narrative memories.

With that being said, let us move on to a possible explanation for the cause of the repression of memories. The repression of traumatic memories is likely caused by disassociation experienced by a person during the original traumatic event, meant to numb the traumatic experience (Spiegel & Cardena, 1991). An example of such disassociation is described by Hillman (1981). Hillman uses the example of correctional officers that were held hostage during a violent prison riot. During this riot, the officers were badly beaten. These officers described that, during these beatings, they felt removed from their bodies and felt that time became distorted and that they felt dazed. (Ibid.). Now then, when a person experiences such dissociation during a traumatic experience, the traumatic experience may be stored outside of conscious awareness and, as was explained before, thus may become unable to be voluntarily remembered as well as possibly being remembered not entirely true to the original experience (Brewin et al, 1996).

An easy way to explain this phenomenon a bit more clearly is as follows. One can imagine being lost in thought ('zoning out') whilst cycling or driving home on a familiar road after a long day of work. Then, snapping back to attention because of an external reason (like for example a person directly in front of you suddenly and unexpectedly braking thus forcing you to do so as well), you realize you have no active recollection of what has transpired for the past ten or so minutes. Your mind was dissociated from the actual experience during that time. You do not remember what has transpired, or, at the very least do not remember what has transpired entirely correctly or only vaguely, without much detail. This example is of course a rather innocuous one and the triggering factors are entirely different in this example compared to the triggering factors of a traumatic experience, but the example does demonstrate the basic concept of dissociation clearly. In a similar manner to the person in the example above not being able to voluntarily remember fully what has transpired during a part of their trip home, so too might a person who dissociated from a traumatic experience (e.g. a severe beating) not be able to fully voluntarily remember his or her traumatic experience. For traumatic experiences in particular, such dissociation might be triggered automatically to numb the traumatic experience (Spiegel et al, 1991).

The method of retrieval is not the only process that is different for traumatic memories, however, as the different storage mechanism of traumatic memories also leads to different experiences of a traumatic memory when they are recalled. As McPherson-Sexton explains, a "traumatic memory is experienced non-verbally, with mainly sensory components of the traumatic event present in a fragmented form." (McPherson-Sexton, 2006, p. 67). Instead of providing a sort of 'storyline' of the past like ordinary memories do, they are

experienced in fragments and focus primarily on sensory components (e.g. sounds that were heard during the original traumatic experience). Ordinary memories, on the contrary, can be verbalized in a clear narrative structure. Traumatic memories do not have a narrative-like structure: "Traumatic memories are well preserved in implicit memory such as vivid images, sensations, and feelings, but not in explicit memory as a narrative that one can later verbalize" (Shobe & Kihlstrom, 1997, p. 72).

This distortion and fragmentation of traumatic memories making them non-narrative is most likely caused by atrophy of the hippocampus during memory consolidation (Bremner, 2002). As Bremner points out, there are several replicated studies in multiple populations of traumatized patients showing atrophy of the hippocampus. Atrophy of the hippocampus means that there is a decrease in hippocampal volume. The hippocampus is damaged and thus has less volume than a healthy hippocampus has. This damage is most likely caused because of the high levels of stress that traumatic experiences bring with them. During periods of intense stress, cortisol levels increase (Rose et al, 1968, Seeman et al 1995). Cortisol is a stress hormone belonging to group of glucocorticoids (Bremner, 2002). The increase in levels of cortisol during periods of intense stress was demonstrated by Howard et al when they researched the cortisol levels of soldiers in the Korean War. Soldiers that underwent artillery bombardments had increased levels of cortisol and the highest level of cortisol were found in those soldiers that were in the greatest danger (Howard et al, 1955). Hippocampal damage is associated with exposure of glucocorticoids to the hippocampus (Sapolsky et al, 1990).

Furthermore, an administration of a commonly used therapeutic dose of cortisol on healthy human subjects resulted in impairments in declarative verbal memory function (Kirschbaum et al, 1996). In addition, Starkman et al found that people suffering from Cushing's Disease, a disease which involves immoderate release of cortisol over long periods of time, have deficits in verbal declarative memory that are correlated with a decreased hippocampal volume (Starkman et al, 1992). In short, it is likely that intense levels of stress cause hippocampal atrophy or damage via excessively increased levels of cortisol, which in turn leads to a deficit in verbal declarative memory, making affected memory fragmented.

Another brain region at play in memory consolidation is the amygdala. The amygdala modulates long-term declarative memories and non-declarative forms of emotional memory. It is activated during emotional experiences or events and modulates declarative memory through stress hormones. (Buchanan & Adolphs, 2002.). The amygdala has a role in the "enhancement of memories for emotionally significant material" (Ibid., p. 21). A study by Hamann et al tested this particular role of the amygdala. They did so by showing subjects multiple categories of pictures, ranging from emotionally pleasant to emotionally unpleasant and also including a category of pictures with emotionally neutral but nevertheless memorable or otherwise pronounced pictures (such as a chrome rhinoceros). The results from this study showed that these particular pictures were indeed remembered better four weeks after encoding than neutral pictures, but that this enhancement was not related to amygdala activity associated only with emotionally unpleasant and emotionally pleasant stimuli (Hamann et al, 1999).

This means that the amygdala activity that is specific to memory for aversive and pleasant stimuli was not at work here. The pictures were remembered better, but the amygdala did not show the same activity that it shows when dealing with emotionally unpleasant and emotionally pleasant stimuli. If the amygdala is involved in general memory enhancement, the amygdala activity for these neutral but memorable pictures should have been the same as the amygdala activity associated with emotional stimuli. However, the results of this study showed that this was not the case and the amygdala thus seems to have a role specific to emotional stimuli (Buchanan & Adolphs, 2002).

Furthermore, a fMRI study by Canli et al showed that greater emotional intensity leads to greater amygdala activity (Canli et al, 2000). In their study, Canli et al gathered ten female volunteers and exposed them to a selection of emotional neutral and emotionally negative pictures. While exposed to these pictures, the fMRI response for each picture was

recorded. In addition to being exposed to these pictures, the volunteers had to rate their emotional response to the picture on a scale from 0 to 3, where 0 indicated that the picture was 'not emotionally intense at all' and 3 indicated that the picture was 'extremely emotionally intense'. An analysis of the fMRI response found that amygdala activity was correlated with higher ratings of emotional intensity. The higher the volunteers rated the emotional intensity of a picture, the more activity of the amygdala was recorded. (Ibid., 2000). Three weeks after the initial test, the volunteers were asked to partake in a memory test. The volunteers had to specify whether they were certain they remembered a slide, whether a slide merely seemed familiar or whether they did not remember a slide at all. The results were that the slides that were originally labeled with a higher level of emotional intensity were remembered better to a significant degree than those labeled with lower levels of emotional intensity (Ibid.). Moreover, results also showed that pictures that produced the greatest amygdala response were the ones that were remembered most often (Ibid.).

In short, it seems likely that the amygdala has a role in modulating and enhancing specifically memories with a higher level of emotional intensity, both of emotionally pleasant and emotionally unpleasant nature. The research discussed above also seems to imply that the amygdala activity increases as the emotional intensity increases. Traumatic memories, then, are instances of exceptionally high emotional intensity. Functional neuroimaging studies on PTSD patients imply that when these patients are faced with trauma-related stimuli, there is amygdala hyperresponsivity (Protopopescu et al, 2005, Liberzon et al, 1999, Rauch et al, 2000). In other words, the amygdala seems to become excessively active in these patients when they are confronted with stimuli related to their original traumatic experience. As previously mentioned, the amygdala is involved in emotional memory enhancement and shows increased activity when there is increased emotional intensity, leading to increased strength of memory and recollection of original stimuli. The hyperactivity of the amygdala for traumatic memories may thus be part of the reason why traumatic experiences are sometimes remembered so strongly.

When the results of the discussed research on dissociation, repression and the impaired memory processes of the hippocampus and the amygdala are taken together, they suggest that traumatic events may be remembered strongly (as per the amygdala's memory enhancement) but in a fragmented way (as per the hippocampal atrophy leading to deficits in verbal declarative memory) and mostly not able to be voluntarily remembered, rather being in parts situationally accessible, activated during situations similar to the original traumatic experience.

In conclusion, following McPherson-Sexton, we can distinguish four special memory processing mechanisms that occur for traumatic memories compared to ordinary memories:

- 1) Traumatic memories are prone to repression and are not readily available to conscious awareness and are recalled automatically under specific circumstances whilst ordinary memories are not repressed and are readily available to conscious awareness, being able to be recalled at will. Traumatic memories are partially only situationally accessible, while ordinary narrative memories are fully verbally accessible.
- 2) In contrast to ordinary experiences, the mind dissociates from a traumatic experience which can alter the way the original experience is perceived in memory and also causing the memory to be stored outside of conscious awareness. The traumatic memory is experienced strongly, but not necessarily true to the actual traumatic experience
- 3) Traumatic memories are fragmentary and distorted in nature. They are recalled in sensory form (sounds, visions et cetera) and mostly do not have explicit representation. They cannot be recalled in a coherent narrative while ordinary (narrative) memories can be recalled in such a manner. McPherson-Sexton claims this distinction is one of the main distinctions between traumatic memories and standard narrative memories (McPherson-Sexton, 2006).
- 4) The memory processes of the amygdala and the hippocampus are different for traumatic memories than they are for ordinary memories. The amygdala shows hyperactivity for traumatic memories whilst excessive levels of cortisol during intense periods of stress lead to

hippocampal atrophy. The normal memory process functions of the amygdala and the hippocampus are in this way impaired.

Again, as McPherson-Sexton claims, these four special mechanisms are likely to not be the only special mechanisms at play as there is still much left in the field to be explored (*Ibid.*). However, these four special mechanisms already form a clear picture of a distinct difference between traumatic memories and ordinary memories.

This is important as this thesis focuses on ordinary narrative memories that, while of negative emotional nature, are not traumatic. Whenever the terms 'ordinary narrative memories', 'non-traumatic memories' or any version thereof are used in this thesis, they thus refer to memories that are available to conscious awareness and can be recalled at will (i.e. are fully verbally accessible), are mostly true to the original experience, can be verbalized in a clear narrative structure that is not distorted, fragmented or only recalled in sensory form and that, furthermore, do not impair or influence the memory processes of the amygdala and hippocampus.

Chapter 3

Propranolol, A Technical Explanation

Before the ethical issue of identity that propranolol potentially faces can be tackled, first an understanding of what exactly propranolol is and how it works is needed. In this chapter, the β -adrenergic antagonist propranolol will therefore be discussed. First, we will give an informative explanation of what propranolol is and how it works.. This explanation will directly tie into and lead to the reasoning for why the drug propranolol was chosen as the memory dampening technology to focus on in this thesis. As will be seen in this chapter, the current research on the uses of propranolol as a memory dampening technology is promising, both for the treatment of traumatic memories as well as, more importantly for this thesis, for the dampening of ordinary narrative memories.

3.1 Explanation Of The Workings Of Propranolol

Propranolol is already available as a prescription drug and is used to “treat high blood pressure, control heart rhythm, relieve chest pain caused by angina, prevent migraines, reduce shaking or tremor, and help with medical conditions involving your thyroid and adrenal glands.” (University of Illinois-Chicago Drug Information Group, 2017). It is available in different forms, such as oral tablets and extended release capsules. It is as of yet not clearly and fully understood how exactly propranolol's beta blocking properties help treat the aforementioned problems.

More importantly for this thesis, it has been found that propranolol interferes with the memory reconsolidation process and that the beta-adrenergic blockade it causes during reactivation of memories makes emotional memories comparable to neutral memories (Schwabe et al, 2013). In this last sentence, a couple of important concepts were introduced. They will be explained individually in order to understand how exactly propranolol works and why, because of the way it works, it is the memory dampening technology of choice for this thesis.

Firstly, the process of memory encoding, consolidation, reactivation and reconsolidation will be explained. Memory encoding happens when sensory input is integrated into our memory system. In order for this to happen successfully, the ‘form’ of the sensory information needs to be changed during the encoding process (McLeod, 2007). There are three main ways in which the form of the sensory information can be changed and encoded: Visual (pictures), acoustic (sound), semantic (meaning). McLeod provides the example of different ways of remembering a telephone number looked up in a phone book to illustrate these different ways. If one remembers the telephone number as a picture of the full number in your mind, visual encoding has been used. If one is repeating the number to oneself (saying it out loud for example), one is using acoustic, sound-based encoding. Semantic encoding, then, is used when a meaning is attached to the initial input (Ibid).

Consolidation is the process that happens after the process of encoding. During consolidation, memories are stabilized and become part of long-term memory (Dudai, 2004, Wichert et al, 2013). There are two types of consolidation. The first is synaptic consolidation, which takes places within hours of the original sensory input or learning. This process occurs in “the neuronal circuit(s) that encode(s) the experience-dependent internal representation, i.e. the memory” (Dudai, 2004, p. 54). This synaptic consolidation depends on cross talk between synapses and their cell body and nucleus (Dudai & Morris, 2000). A second type of memory consolidation is called system consolidation. This memory consolidation can take great lengths of time, even years, to be accomplished (Dudai, 2004). It involves reorganization, over time, of the systems that originally encoded the memory. The memory trace may lead to new locations in the brain as well as becoming non-dependent of “parts of the circuits that have subserved its acquisition” (Ibid., p. 55).

While for a period of time it was believed that memories, once consolidated, became stable and resistant to change (Ibid.), later findings suggested that memories may become unstable again when reactivated (Hardt et al, 2010). The possibility of reconsolidation was discovered by Walker et al using a finger-tapping task (learning a particular sequence of taps) (Gardner & Griffiths, 2014). Participants had to learn two finger-tap sequences. Learning the second sequence only had an effect on the recollection of the first sequence if it was learned immediately after the learning of the first sequence and did not have such an effect anymore after learning it six hours after learning the initial sequence. Consolidation of the first sequence had thus taken place in that time. What Walker et al's research also found, however, that this consolidation could be tampered with. When participants partook in a brief rehearsal of a first sequence learned a day before immediately before learning a second sequence, their performance of the first sequence on the third day was decreased significantly. This result suggested that reactivating the memory of the first sequence made the memory malleable once again (Ibid.).

Stable, consolidated memories can be reactivated which renders those memories unstable again. When they are once again unstable, a process of reconsolidation is needed to stabilize them again (Dudai, 2006). Reconsolidation is summarized by Dudai by use of the following four descriptions:

- 1) Reconsolidation is a temporarily altered state of a memory trace following memory reactivation. The altered state has increased sensitivity to amnesic agents.
- 2) Reconsolidation is widespread but likely not universal and is constrained by both retrieval and post-retrieval conditions.
- 3) Reconsolidation is not the same as a repeat of original consolidation. It shares mechanisms with consolidation, but it also has some differences. Such a difference is, for example, different cellular processes. Lee et al found that consolidation involves brain-derived neurotrophic factor (BDNF) but not the transcription factor Zif268 whilst reconsolidation uses Zif268 but not BDNF (Lee et al, 2004).
- 4) Reconsolidation does not 'disintegrate' a retrieved memory trace, forcing it to be constructed again. Reconsolidation instead can "augment, weaken or otherwise alter the memory item and its associations" (Dudai, 2006, p. 176). A new memory trace is not created, but the existing memory trace is altered after retrieval during the reconsolidation process.

During this reconsolidation process memories can be updated by integrating new experiences or can be modified by amnesic agents (Schwabe et al, 2013). The manipulations of the memories during the reconsolidation process provide an opportunity to change unwanted memories.

This changing of unwanted memories, however, proved to be somewhat limited without the use of a drug like propranolol. It has been shown that, for example, older fear memories were immune to erasure by methods not involving a drug like propranolol (Eisenberg & Dudai, 2004). This meant that only memories of recent negative experiences could be modified. While helpful in its own right, this does not really help in the treatment of traumatic memories, especially for those traumatic memories of traumatic events that happened some time ago in a person's life. Other 'boundary conditions' for memory reconsolidation without the use of a technology have also been found. One such boundary condition is memory age and strength. Younger and weaker memories are more easily reconsolidated than older and stronger memories (Suzuki et al, 2004). At the same time, research also suggests that the modifying of memories by reactivation can be done multiple times: "These experiments showed that the influence of new learning after reactivation disappeared neither after one nor after three additional reactivations completely, indicating that even after multiple reactivations memories remain sensitive to modifications during reconsolidation" (Wichert et al, 2013, p. 38).

Now then, these last two paragraphs pertained purely to reactivation, modification and reconsolidation of memories without the use of a drug like propranolol. The use of propranolol offers new possibilities in the modification process. These new possibilities

offered by propranolol are the main reason for choosing it as the memory dampening technology to focus on in this thesis and will thus be explained further on in this chapter. First, a short explanation of how exactly propranolol works will be given.

Schwabe et al were the first to demonstrate alterations in brain activity in humans following interference with memory reconsolidation processes using propranolol (Debiec, 2012). In their research, Schwabe et al held an experiment in which they presented participants with two kinds of images: emotionally neutral images and emotionally disturbing ones. These images, after consolidation, were then recalled in a magnetic resonance scanner which measures brain activity. Furthermore, Schwabe et al administered propranolol before the recall of the learned material (Ibid.). The results suggested that propranolol impaired memory for the emotionally disturbing images but not for the neutral images on the following day. The administration of propranolol “abolished the emotional enhancement of memory and made emotional memories comparable to neutral memories” (Schwabe et al, 2012, p. 384). These results are similar in multiple different tests done by Schwabe et al (2012, 2013). We will use the research Debiec is referring to (Schwabe et al, 2012) and later research from 2013 (Schwabe et al, 2013) to explain just how propranolol works. This will be important in sub-chapter 3.2.

One caveat to the research done by Schwabe et al is offered by Debiec. Debiec, rightfully, claims that “clearly a frightening picture cannot recreate the experience of a life-threatening event.” (Debiec, 2012, p. 285). The research by Schwabe et al was based on pictures and not on actual experiences. Why the use of pictures that do not compare to real experienced events does not matter and is to the benefit of propranolol as the memory dampening technology of choice in this thesis will be discussed sub-chapter 3.2.

Moving on to how exactly propranolol functions. Propranolol works by blocking the modulatory influence of the amygdala on the reconsolidation of emotional episodic memories (Schwabe et al, 2013). Noradrenergic arousal is, according to Schwabe et al’s research results, required for both the initial formation of lasting and vivid memories as well as for the reconsolidation of emotional memories after reactivation. During reactivation, the amygdala becomes active. When, via use of propranolol, noradrenergic arousal is blocked during reactivation, the amygdala can no longer “exert its modulatory influence anymore and emotional memories are restored (i.e. reconsolidated) in the same manner as neutral ones.” (Ibid.). In other words, by using propranolol before the reactivation process, emotional memories can be made to be comparable to neutral memories once reconsolidated. Propranolol in this way effectively dampens the emotional impact of negative emotional memories when administered before memory reactivation.

3.2 Defense For The Choice Of Propranolol As Memory Dampening Technology of Focus

In this sub-chapter, we will discuss three reasons for why propranolol has been chosen as the memory dampening technology to focus on in this thesis.. The first of these reasons is that propranolol seems to be effective for impairing emotional enhancement of older memories stemming from experiences that have not happened in the recent past.

An example of this is seen in research on adult male Sprague-Dawley rats which showed that propranolol was “effective in blocking post-retrieval reconsolidation 2 months after learning indicates that pharmacological blockade of noradrenergic transmission affects old as well as recent memories.” (Debiec & LeDoux, 2004, p. 271). This is in contrast with the discovery by Eisenberg & Dudai (2004) mentioned earlier that suggested that older memories might be immune to erasure or modification. Because of the use of propranolol, the time frame of the possibility for modification seems to have been lengthened. It has to be mentioned, though, that the research done by Debiec & LeDoux was, as mentioned, done by testing propranolol on Sprague-Dawley rats. Human testing will be necessary in order to solidify this claim. At the same time, however, Gardner & Griffiths argue against the use of propranolol immediately after experiencing a trauma, instead arguing for its use as a part of a trauma-focused psychological therapy at a later time (Gardner & Griffiths, 2014). This does seem to imply propranolol’s potential to be used for the modification of memories at times

further along in the future than immediately or very recently after the original negative experience.

This is especially of importance for the topic of this thesis, as the focus is on the potential future 'everyday use' of propranolol to modify or dampen negative ordinary narrative memories. Unless, in this potential future scenario, someone has some propranolol tablets lying around and were to use them in an impulsive moment, it will most likely be used at times later than immediately after or soon after the original experience. That propranolol seems to work after some time has passed since the original experience, makes it better suited as the memory dampening technology to focus on in this thesis.

Another reason for choosing specifically propranolol as the memory dampening technology of choice is that research suggests that its effect is specific for emotional negative memories. It does not seem to affect neutral memories. This is seen in research by Schwabe et al previously mentioned wherein results were that emotional memory enhancement was not affected by either memory reactivation alone or by administering propranolol without memory reactivation, instead only being affected by both administering propranolol and reactivating memories. This suggests that propranolol does indeed impair emotional memory reconsolidation. (Schwabe et al, 2012). The claim is further strengthened by more tests done by Schwabe et al. The results of the Schwabe et al 2013 research imply that propranolol does not affect neutral memories, as their experiment "revealed that propranolol before reactivation affected specifically the memory for negative pictures [...] whereas memory for neutral pictures remained unaffected" (Schwabe et al, 2013, p.229).

That propranolol seemingly only has an effect on memory for emotional experiences is important for its potential future 'everyday use' that is the focal point of this thesis. If a memory dampening technology were to also have an effect on memories of neutral experiences (possibly diminishing or erasing them for example), then it would most likely never be allowed to be used on a widespread basis as the danger of (partially) losing memories one would not want to lose would most likely be seen as an unacceptable risk or side-effect. Because research suggests that propranolol does not seem to have such a problem, its potential future widespread use is already more realistic.

The last reason for choosing propranolol to focus on specifically harkens back to the claim about Schwabe et al's research made by Debiec, which was discussed in sub-chapter 3.1. As was discussed, Debiec claimed that a frightening picture does not compare to an actual life-threatening event (Debiec, 2012). This claim is not problematic as, indeed, it can be assumed that seeing a picture, however disturbing it may be, is not the same as actually experiencing a life-threatening or otherwise traumatic event. Schwabe et al's research therefore is as of yet not conclusive on whether propranolol is useable as a treatment for traumatic memories, even though the results so far seem to be promising.

However, the focus of this thesis is not on traumatic memories stemming from traumatic experiences, but on ordinary narrative negative memories stemming from non-traumatic but nonetheless emotionally negative experiences. While emotionally disturbing pictures may not be fully representative of traumatic experiences, they are much closer to non-traumatic negative emotional experiences. Both the ordinary narrative memories that are the focus of this essay and the emotionally disturbing pictures used in the Schwabe et al research share their property of being non-traumatic. Therefore, the results of Schwabe et al's research regarding propranolol's capabilities are even more promising for use of dealing with ordinary narrative negative memories than they are for use of treating traumatic memories, as they are closer to the type of memories that we focus on in this thesis. This is another reason for focusing on propranolol as the memory dampening technology of choice in this thesis.

To summarize, the reasons for choosing propranolol as the memory dampening technology to focus on are threefold. Firstly, propranolol seems to be able to impair emotional enhancement for emotionally negative memories after some lengths of time after the initial experience, which would likely be the main application for everyday use of propranolol. Secondly, propranolol seems to only have an effect on emotionally negative memories stemming from emotionally negative experiences, which is important as the

feasibility of everyday use of propranolol would be severely diminished if it were to also have a (strong) effect on emotionally neutral images that one does not want to be impaired. Lastly, the apparent disadvantage of research done so far using emotionally disturbing pictures that are not the same as actual traumatic experiences proves to in effect be an advantage in the particular case of this thesis as the emotionally disturbing images are closer to the non-traumatic experiences that are discussed in this thesis. The results of these studies, therefore, whilst perhaps not fully applicable to the treatment of traumatic memories do seem to be promising for the 'treatment' of the non-traumatic memories discussed in this thesis.

Taken together, these three reasons form a sufficient basis to defend the choice for propranolol as the memory dampening technology to focus on in this thesis.

Chapter 4

Memory Dampening Technology and the Ethical Issue of Identity

In the previous chapters the necessary technical and technological backbone of this thesis was provided. First, we provided a definition of what is meant with ordinary non-narrative, non-traumatic memories and then we provided a technological explanation for what propranolol is, how it works and how it could be used in the future as a everyday use memory dampening technology.. With these technical concepts in mind, we can move on to the more philosophical-ethical part of the thesis, starting with an elaborate discussion of personal identity and how memory dampening technology can potentially prove to be a great ethical issue if its use could be able to fundamentally change one's personal identity.

To answer the question whether propranolol can potentially pose such an ethical issue, we will discuss the topic of personal identity and the persistence over time thereof in great detail. We will do this by focusing on one philosophical account on the persistence over time of one's personal identity specifically, namely a version of a psychological-continuity view. The reason for the choice to discuss a psychological-continuity view is that research suggests such views are in line with our commonsense ideas of personal identity. The theory agrees with the basic commonsense intuition that is held by most people: experimental evidence suggests most people feel immediately drawn to psychological continuity views (Nichols & Bruno, 2010). This does of course not mean that it is necessarily true or that no strong arguments can be held against it as we will see later on, but because of the intended audience of this thesis (i.e. policy makers and designers regarding memory dampening technology), a theory that agrees with the public commonsense view might be of more direct use and interest than one that does not.

After the thorough discussion of the psychological-continuity view put forward by Parfit, we will look at recent arguments about the ethics of memory dampening technology that discuss the potential issue of personal identity change and judge whether the arguments used either in favor or against memory dampening potentially changing identity are satisfactory.

Before we go into any further exploration of personal identity and the potential ethical issue it could mean for the use propranolol as a memory dampening technology in everyday use, however, it is vital to explain why this topic is important at all for this thesis and, more specifically, the research question posed therein. The research question posed in this thesis asks whether the everyday use of propranolol to emotionally dampen ordinary narrative memories can be, within the specific contours of the ethical debate surrounding memory dampening technology and identity, be ethically justified.. Taking a look at the recent ethical debate, we can see the issue of identity (and the potential for memory dampening to change it) discussed a multitude of times (Wasserman, 2004, Kolber 2006, 2011, Henry et al, 2007, Aoki, 2008, Bell, 2008, Philips, 2008, Robillard & Illes, 2016).

Thus it suffices to say that within the ethical discourse of memory dampening technology the ethical issue of potential identity change is a pertinent issue. Therefore, if we want to answer the research question posed in this thesis properly, we should take the issue's importance in the debate to heart and discuss the issue in such a way that the discussion does justice to the ethical debate surrounding memory dampening technology that the thesis is partaking in.

An added benefit to this in-depth analysis is that it provides an opportunity to garner a clear overview of the arguments and ideas surrounding personal identity used in the ethical debate concerning memory dampening. As we will see, through our analysis, authors in the debate seem to focus on the narrow persistence question of personal identity, even though they do not specify this in any way. This might pose problems for the strength of their

arguments when viewed through the lens of the philosophical personal identity debate. This will become clear in sub-chapter 4.3, which discusses the recent ethical debate surrounding memory dampening and identity.

Finally, it is important to note that this chapter will be an informative one in which we will discuss all aforementioned subjects on an informative, explanatory basis and that we will not start our actual ethical assessment of propranolol used to emotionally dampen ordinary narrative memories until chapter 5.

4.1 Personal Identity and the Persistence Question, An Introductory Explanation

Personal Identity has been a topic of debate within philosophy for a long, long time. Even so, most questions regarding personal identity have no conclusive answers as of yet. Personal identity is not a singular problem, “but rather a wide range of questions that are at best loosely connected” (Olson, 2015, section 1). These questions include but are not limited to the question of personhood (what qualifies something as being a person, what makes a person special compared to nonpersons?), the question of persistence (what does it take for a person to persist from one time to another?), and the question of who one is (what makes one the person one is, what personality features define someone as a person?).

It is important to note that within the philosophical discourse, the term personal identity is used in a different way than it is often used in everyday language. In everyday language, personal identity is generally used to refer to certain properties or characteristics to which someone feels a “special sense of attachment or ownership” (Ibid., section 1). In this sense, personal identity in everyday use is a collection of features that define someone as a person or make someone the person that one is. For example, my personal identity is made up of features like being a philosopher, being a nerdy type who likes video games and comic books, liking certain types of music and disliking others and so on. Put otherwise, personal identity in everyday language refers to how persons see themselves, to as what kind of person they see themselves. This is also known as a person’s qualitative identity.

Philosophers, especially in recent times, however, tend to focus on one question of personal identity in particular, namely the question of persistence over time or the persistence question in short (Ibid.). To discuss that question they have to use the term and concept of personal identity in a different way than it is used in everyday language. To explain this, let us first explain the question of persistence. The persistence question asks what it takes “for a person to persist from one time to another – continue existing rather than to cease to exist” (Ibid., section 1)?

An easy to understand example is that of old photographs. Say, in a nostalgic mood, you take an old photo book from deep inside your storage closet and open it up. You point at an old family photo from back when you were just around ten years old, point to a child in this picture and exclaim that the child you are pointing at is actually you. Why is that particular child you, what makes that child you, why are you not the other child in the picture, why are you sure that that other child is really your brother when he was younger? Both your body and personality have changed greatly, you might indeed not look anything whatsoever like the child and your tastes, beliefs and opinions might be totally different still. So why is that child in the picture of the past still you? This is what the persistence question asks.

Again, we have to be careful here to not confuse different ways of using the concept of personal identity. To answer the questions asked above could be viewed as “questions for what it takes for someone to *remain the same person* from one time to another” (Ibid., section 2). This is invoking the everyday language use of personal identity, as the idea here is that you would, for example, no longer be the same person you were before if personality features of you were to alter in certain (drastic) ways, say through loss of big parts of your memory.

These are not the same problems or questions as the purely philosophical persistence question and questions about either type of identity can even have different answers: let us say that you do change in such a way that you become a different person because numerous of your personality traits have (drastically) changed. We would then have to answer negatively when asking whether you are the same (qualitative) person as before.

However, the persistence question would ask whether you still exist after these drastic personality changes and the answer to that question would be positive – you would indeed still exist, you would have the same numerical identity, you would just exist as a different sort of person, have a different qualitative identity. So, when we say that someone has changed to be a different person, we are saying that she still exists but has changed in her personality in a way deemed important. This everyday language use of personal identity question thus has to do with the question who one is and discusses what sort of changes would make someone change as the sort of person she is and is therefore strictly different from the philosophical persistence over time question (Ibid.) Let us reiterate here for clarity's sake: the persistence question concerns numerical identity, whilst the other questions concern qualitative identity.

Because this distinction will become important later on in the chapter, we will explain it more clearly still. Mackie argues that the question of persistence over time has two versions, a 'wide' version (which he calls the wide question) and a 'narrow' version (which he calls the narrow question) (Mackie, 1999). The wide question of persistence over time asks: "What is the relation between a Person at one time, and something at another time, which make these (numerically) identical – one and the same thing?" (Ibid., p. 225). The narrow question, on the other hand, asks: "What is the relation between a Person at one time, and a Person at another time, which makes these (numerically) identical – one and the same Person?" (Ibid., p. 225).

Mackie, when using Person with a capital P, refers to the everyday language use of what a person is, i.e. someone's individual personal identity (in other words, someone's character). Now then, Mackie argues that the philosophical debate is always discussing the wide question as authors from multiple sides in the debate all make claims about one's persistence over time "full stop, not about my (your, their) persistence-as-a-Person" (Ibid., 226). This distinction between the narrow everyday language use of personal identity question of persistence and the wide philosophical language use of personal identity question of persistence will be important to keep in mind throughout this chapter as we will see that recent memory dampening ethics authors seem to be primarily concerned with the narrow question and this does have a strong influence on the answer to the question whether memory dampening can change one's identity and in that way pose a serious ethical issue. The reason for their focus (and in turn my focus) on the narrow question of persistence lies in its societal relevance. The wide question of persistence is philosophically interesting, but is not as directly relevant or important as the narrow question of persistence to the public and therefore to policy makers involved in creating policies regarding memory dampening pharmaceuticals. The narrow question of persistence is more directly relevant and important to these parties because it deals with a concept immediately understandable and relatable to them: the persistence and possible disruption of their (everyday) character. Because this thesis is also (partially) placed within this more directly societal relevant debate, I will later on also shift my focus to the narrow question of persistence.

For now, let us further explain the philosophical debate surrounding the wide persistence question. There are two primary lines of thinking to answer the wide persistence question that are the most popular in recent debate (Olson, 2015) and that we will focus on – the psychological-continuity view and the brute-physical or biological view (Ibid.). These two views will be explained in-depth in the next sub-chapters, so a short summary will suffice for now. The psychological-continuity view claims that the requirement for a person to persist lies in some sort of psychological relation between a being at multiple points in time. In the psychological-continuity view "you are", as Olson puts it, "that future being that in some sense inherits its mental features – beliefs, memories, preferences, the capacity for rational thought, that sort of thing – from you; and you are that past being whose mental features you have inherited in this way" (Ibid., section 3).

The brute-physical view, on the other hand, claims that the persistence of a person lies in something altogether different, namely in some brute physical relation. According to this view, one is "that past or future being that has your body, or that is the same biological organisms as you are, or the like" (Ibid., section 3). A popular version of the brute-physical

view is that of Animalism, a theory which entails the claim that we are organisms of the species *Homo sapiens* and that we have the same persistence requirements as other animals (Blatti, 2014).

With these concise introductory summaries of these views on the answer to the wide persistence question that are dominant within the philosophical debate, we can move on to a more in-depth discussion of a psychological-continuity view – and whether memory dampening technology could change's one's personal identity when taking that particular view of personal identity persistence over time into account.

4.2 The Quasi-Memory Based Psychological-Continuity View on Personal Identity and Potential Fundamental Personal Identity Change Through Use of Propranolol

There are multiple different versions of the psychological-continuity view.. The view we will be focusing on is the view originated by John Locke and later expanded upon by Derek Parfit. This particular version of the view has a specific focus on memories, or more specifically, quasi-memories as the base for psychological continuity between persons at different times and thus leading to one persisting over time.

4.2.1. The Quasi-Memory Based Psychological-Continuity View Explained

For ease of explanation, it is best to start with Locke's original thoughts and ideas and from there move on to Parfit's 'updated' version of the concept of memory at the base of psychological continuity. In his *An Essay Concerning Human Understanding* Locke claims first that in order to understand wherein personal identity consists, we must first understand what a person is (Locke, 1975). According to Locke, a person is "a thinking intelligent being, that has reasons and reflection, and can consider itself as itself, the same thinking thing, in different times and places; which it does only by that consciousness which is inseparable from thinking, and, as it seems to me, essential to it" (Ibid., p. 335).

We can see that Locke here puts special focus on consciousness as a necessary condition for a person to be able to be labeled as a person. Locke then goes on to claim that consciousness always accompanies thinking and that someone's specific consciousness is what makes one a particular self distinguished from all other thinking things (Ibid.). My consciousness is, for example, different than the consciousness of my brother and therefore we are two distinct rational beings.

Locke furthermore claims that the material substance one is composed of does not matter at all for personal identity (Ibid.). He claims that being the same consciousness that makes one oneself is the only thing that matters for personal identity. That consciousness can even be continued in several substances. He gives the example that if a person's consciousness were to change substance (i.e. a body), that same consciousness in a different substance would be no more two people than someone is two different people if one wears different clothes from day to day (Ibid.). What matters for personal identity is thus only having a specific consciousness, no other conditions have to be met to be a distinct person.

This makes clear Locke's view of what personal identity consists of, what makes one oneself. The next step, then, is to look at Locke's ideas of what makes a person stay the same person over time, i.e. his ideas on the question of persistence over time. As has been mentioned, Locke seems to think memory is important as the base for persistence over time. We can see this when he claims that the identity of a person reaches back as far as that person's consciousness can be extended backwards towards any past thought, action or belief (Ibid.). In other words, a person's identity reaches as far back as that person can remember her past ideas, beliefs and actions performed. Similarly, a future person is in this way the same entity you are if that future person can remember your current ideas, beliefs and actions performed.

Memory being essential to one's persistence over time is often called the memory criterion of persistence over time (Olson, 2015). The criterion has been severely criticized. A famous criticism made against it is that of the inherent circularity in the memory criterion idea put forth by Joseph Butler (Butler, 1984).

Butler claims firstly that memory connection does indeed same like a possible criterion of personal identity as we can remember only our own experiences (Ibid.). We can, however, seem to remember experiences or actions that are not our own and memories of fake experiences (such as, for example, held by a person suffering from hallucinations) can naturally not be a proper basis for personal identity. If we want to make the claim that memory connection is what lies at the base of persistence over time, we will need a way to make a distinction between actual experienced memories and fake, illusionary memories. We can make such a distinction, Butler claims, but that distinction will inevitably lead to circularity: the distinction we could make is that real memories are memories of experiences held by a person who did actually have those experiences. But to then know whether a memory is truly real, we already would need to know whether someone is the same person. We must already have a criterion of personal identity before we can judge whether one's memories are true or false (Ibid.).

The memory criterion thus needs to be expanded upon in order to be a satisfactory account of persistence over time. This is what Parfit tried to do, and we will discuss his proposed solution to this problem now. Parfit lays out his version of the memory based psychological-continuity view by first stating preliminary definitions. The first of these definitions is that of direct memory connections. Direct psychological connections are connections between a memory and an experience of which it is a memory, that between an intention and the later act in which it is carried out, and the persistence of a belief, desire, or other psychological feature (Parfit 1984).

The second definition is that of continuity of memory. Parfit claims that even if there are no direct memory connections, there still may be a continuity of memory between two persons at two points in time. This is the case when there are overlapping chains of direct memories: "In the case of most adults, there would be such a chain. In each day within the last twenty years, most of these people remembered some of their experiences of the previous day" (Ibid., p. 205).

Now then, Parfit claims, when there are sufficient direct connections, there is strong connectedness. He furthermore claims that when the number of direct connections is at least half of all existing connections at that point in time, that is a sufficient amount of direct connections to enable strong connectedness. Parfit then uses this concept of strong connectedness and the concept of the continuity of memory (as opposed to direct connections) together to formulate his psychological criterion for personal identity:

"The Psychological Criterion: (1) There is *psychological continuity* if and only if there are overlapping chains of strong connectedness. X today is one and the same person as Y at some past time if and only if (2) X is psychologically continuous with Y, (3) this continuity has the right kind of cause, and (4) there does not exist a different person who is also psychologically continuous with Y. (5) Personal identity over time just consists in the holding of facts like (2) to (4)" (Ibid., p. 207).

This is the basic understanding of personal identity by Parfit. This version, however, is still not able to deal with the circularity criticism put forth by Butler as defining personal identity by a continuity of strong connectedness (that is, strong direct memory connections) still presupposes a criterion of personal identity. This is because even if we move from direct memory connection to continuity of memory, we would still need to be able to distinguish between fake and real memories that, in this case, would lead to continuity of memory, which would lead to the same problem of circularity as we would be unable to do so without already presupposing personal identity.

Parfit acknowledges this and thus works to further revise his theory as to be able to deal with the circularity criticism. He does this by introducing a wider concept of memory which he calls quasi-memory (Ibid.). The concept of quasi-memory works as follows: I seem to remember having an experience. Someone at one point in time did in fact actually have this experience. My apparent memory is causally dependent, in the right kind of way, on that past experience (Ibid.). This way, according to Parfit, we can make a distinction between memories that are real and illusionary (illusionary in the sense that it is not a memory of an experience actually had by an individual that has this memory and who falsely believes she

has actually had that experience) and which ones are thus relevant to personal identity. It therefore circumvents the need to already presuppose an understanding of personal identity to define memories to be either real or illusory.

To sum up this quasi-memory based view of psychological-continuity as defining personal identity, we can turn to the revised psychological criterion as discussed by Parfit. The revised psychological criterion holds that one's mental life consists of countless quasi-memories of past experiences. These past experiences and quasi-memories "overlap like the strands in a rope" (Ibid., 222).

Let us now move back to the concept of strong connectedness. There is, in this revised psychological criterion, strong connectedness of quasi-memory if, over each day, the number of direct quasi-memory connections is at least half the number of direct quasi-memory connection in most actual lives. Furthermore, overlapping strands of strong connectedness provide continuity of quasi-memory. The unity of each person's life is, in part, created by this continuity. Since the concept of quasi-memory and the continuity thereof does not presuppose personal identity, it may be part of what constitutes personal identity and thus may be part of what makes one now and one at different times one and the same person (Ibid.). This is the quasi-memory based psychological-continuity answer to the persistence over time question.

4.2.2 A Critical Reflection On Psychological-Continuity Views

There are no conclusive answers to the persistence over time question yet. The quasi-memory based psychological-continuity view certainly has its merits because, as was discussed in the introduction to this chapter, the theory agrees with the basic commonsense intuition that is held by most people. However, being in line with what is held as a common does not mean that a theory is necessarily true. Multiple proponents of psychological-continuity views have therefore provided arguments in favor of such theories, and multiple opponents of such views have provided arguments against such views. For the sake of fair representation, we will now shortly discuss one argument in favor and one argument against psychological continuity views.

One argument provided in favor of psychological-continuity views is provided by Peter Unger (Unger, 2000). Unger uses two thought experiment tests, the 'Avoidance of Future Great Pain Test' and the 'Sparing From Future Great Pain Test' (Ibid.) Both tests deal with the hypothetical situation in which brain transplants have taken place. An entity's brain is transplanted to the body of another entity. These tests then make clear that whenever one is put into the situation wherein one will have to choose which entity will receive future great pain (for example, when one has to choose whether the entity that will end up with your brain or the entity that will end up with your body after the brain transplant will receive great pain after the operation), one will always choose for the entity that ended up with the original's body and not its brain to experience great pain (Ibid.). Unger claims that we will always want the entity that inherits our brain to be spared from great pain, because that is who we believe will still be us after the brain transplant (Ibid.). These thought experiments therefore suggest that what we believe to be us is included in the brain and its mental contents and not in the body. Therefore, a psychological-continuity view seems strong and agrees with our commonsense view.

Moving to the other side of the spectrum, we can formulate arguments against a psychologically-continuity account of persistence over time. One of the strongest arguments against psychological-continuity views is that of the problem which asks what happens to one's persistence of identity after one dies. Is the dead person still the same person as before? If psychologically-continuity is indeed what makes a person remain one and the same person (as a thing or entity) from one time and another, what does this mean for dead persons? Are these dead persons then persons in the wide question definition of person or are they not? Psychological-continuity view still struggle with this question and therefore the theory is not able to provide, as of yet, a final conclusive answer in the personal identity debate.

One such argument centered on psychological-continuity views' inability to satisfactorily answer the question concerning the numerical identity-status of dead people, namely the Death Argument formulated by David Mackie (Mackie, 1999). This argument can be neatly summarized into four steps: "1) In some cases of death, what is left behind after the death is a dead person. 2) In at least some such cases, the dead person is not psychologically continuous with the earlier living person. 3) In such cases, the dead person is identical with the earlier living person. Therefore 4) psychological continuity is not necessary for personal identity" (Ibid., p. 219). If psychological continuity is not necessary for personal identity, a psychological-continuity view cannot be a fully true account of personal identity.

Mackie defends all of these premises and after having defended the premises of the Death Argument, he concludes the following. If premises 1) through 3) are all sound, as has been defended, then premise 4) automatically follows: psychological continuity is not a necessary requirement for personal identity and psychological-continuity views can thus be rejected and be deemed an unsatisfactory answer to the question of one's persistence over time (Ibid.).

A weakness of the Death Argument is that in his defense of the third premise, Mackie takes Animalism as a brute-physical view to be true and instead of defending it in the article, he refers the reader to "excellent defenses of Animalism that have been presented by others" (Ibid., p. 229). This means that the argument will only really retain its strength if Animalism is true. Because this is contested, one could simply say that one does not agree with the third premise's implication that Animalism is the right way to look at personal identity and the Death Argument falls apart. However, even if we take this into consideration, the Death Argument still provides an excellent example of illustrating a huge problem that any psychological-continuity view can as of yet not satisfactorily answer.

4.2.3 Potential Fundamental Personal Identity Change Through the Use of Propranolol

Now that we have provided a fair discussion of the quasi-memory based psychological-continuity view in which we thoroughly explained its concept of personal identity as well as looked into a problem that it struggles with in an in-depth fashion, we can move on to the next question of this chapter, namely the question whether personal identity would be fundamentally changed by everyday use of memory dampening technology on ordinary narrative memories if we take the quasi-memory based psychological continuity view to be true.

Fundamental change here would mean that after the use of memory dampening technology on ordinary narrative memories, the changes to memories would make the resulting person no longer be the same person as before. In order for fundamental personal identity to change in this view, then, memory dampening technology used in such a way would have to lead to psychological-discontinuity. If psychological-continuity is not maintained, the person before the use of memory dampening technology would in this view be a different thing or entity than the person after the use of memory dampening technology.

I argue that this is not the case. I argue that personal identity would not be changed and that psychological continuity would be maintained if one were to use memory dampening technology for ordinary narrative memories and therefore a person before and after the use of memory dampening technology would have persisted and still be one and the same person-as-a-thing. My argument is based on the claim that the merely emotionally dampening of one's memories would not be a sufficient condition for psychological discontinuity in the quasi-memory based psychological-continuity view.

This claim is best illustrated via a variation of a thought experiment introduced by Parfit, namely his the thought experiment of Jane and Paul (Parfit, 1984). To quickly summarize this thought experiment: Jane has had an implementation of some of Paul's memory traces and she therefore can quasi-remember experiences had by Paul. These apparent memories are not delusional because they have actually been experienced by someone (i.e. Paul) and Jane does also not necessarily have the belief that these experiences belong to her – she knows that the experiences belong to Paul and the apparent memories therefore do not come with the belief that they are hers. An example of an

apparent memory held by Jane as a quasi-memory of an experience had by Paul is that of being in a storm in Venice and seeing the bell tower of San Giorgio struck by a bolt of lightning.

What Parfit does not discuss at all here is the emotional context of the experience, apparent memory or quasi-memory. We could, however, imagine that Paul was frightened during this storm and that his level of excitement peaked when the lightning bolt hit the bell tower at which point he got very scared indeed. Because Paul got away from this storm safely and did not fear for his life the event was not traumatic for him and did not lead to a traumatic memory. It was merely a very frightening experience and whenever Paul thinks about the experience, it still sends a shiver down his spine.

In order to defend my claim, we need to alter this scenario a bit. We are removing Jane from this example and are focusing purely on Paul at two points in his life. At the first point envisioned Paul still has the quasi-memory of his frightening Venice storm experience. In the second point envisioned Paul only has a vague quasi-memory of this storm in Venice, it is slowly fading from his memory bank. There is in this case still a continuity of quasi-memory because Paul can still remember the first point in time at which he did remember the frightening storm, there are still overlapping strands of strong connectedness. Because there is continuity of quasi-memory, there is psychological continuity and Paul's personal identity is maintained even though he no longer remembers the original frightening experience.

Now then, we can discuss two further scenarios. The discussion of these two scenarios will make clear that psychological continuity is maintained and personal identity is not fundamentally changed with the use of memory dampening technology because even with the use of memory dampening technology in such a way, the psychological criterion proposed by Parfit will not be violated.

The first envisioned scenario is as follows. Paul has this experience of the storm in Venice (which we have added was a very frightening but not a traumatic one) and forms a memory of it. He, at a later point in life, only retains a vague quasi-memory of the storm and whilst he still get some hints of previously experienced fright, a chill no longer runs down his spine every time he thinks of the storm. He can, at the same time, still vividly remember himself at a past time where he did have a vivid memory of the storm. As was explained above, even though Paul does not vividly remember the experience anymore, he is still the same person by virtue of the continuity of quasi-memory leading to psychological continuity.

Our second envisioned scenario is similar, but now takes place in a world where memory dampening technology to be used for ordinary narrative memories is readily available at a local pharmacy. Paul, after having returned home from his troubled visit to Venice, struggles with the memory of the storm. He sometimes, when hearing a loud noise, gets a rather uncomfortable feeling in his stomach. Because the event was not traumatic, he can (easily) live with this memory, but the periodically bouts of uncomfortable moments lead him to decide that he will take some propranolol to dampen the emotional reaction of fright associated with the storm. Afterwards, whenever Paul thinks of the storm, he does so in a neutral manner. No shivers run down his spine, no hints of fright arise and he experiences no uncomfortable feelings.

At a later point in life, Paul only vaguely remembers the experience and the memory does not cause any emotional reaction whatsoever. He does still remember the time in the past where he took the propranolol and where he still had a vivid memory of the event, albeit emotionally dampened. Whilst there are no emotions involved at this point in time and barely any emotions involved at the point in time after the use of propranolol, there still seems to be continuity of quasi-memory. Old Paul's apparent memories are still causally dependent, in the right kind of way, on past experiences and overlapping strands of strong connectedness still exist.

If we take these two scenarios in mind, we will see that the only real difference seems to be the emotional level of the quasi-memories. Apart from that emotional level, everything can still be described in the same way. Paul still quasi-remembers the exact same things, sans emotional reaction. Furthermore, the psychological criterion of the quasi-memory based psychological continuity view does not go into any emotional context and talks only about the

fact of quasi-remembering (via direct connection of quasi-memory and continuity of quasi-memory) itself.

For the psychological criterion, therefore, it does not matter whether Paul would have taken propranolol or not: the same conditions would apply and Paul would be psychologically continuous in both cases, which in turn means that Paul would in both cases remain the same person-as-a-thing as before. Paul's personal identity, in other words, would not be fundamentally changed were he to use propranolol to emotionally dampen his memory of the frightening storm in Venice. It follows that even if Paul were to use propranolol to emotionally dampen a multitude of unpleasant memories, his personal identity would still not be changed because it is not the emotional reaction but the act of remembrance itself that determines psychological continuity in this view.

In short, the everyday use of propranolol to emotionally dampen unpleasant ordinary narrative memories in this sense poses no serious philosophical issue in this particular instance. Any argument claiming that the deletion of memory via technology could potentially change one's personal identity fundamentally are not relevant to this thesis' question as it is purely and solely focused on dampening of memory, not deletion of memory. The question is, however, an interesting subject and worthy of further discussion and research beyond this thesis.

4.3 Recent Ethics of Memory Dampening Technology Identity Discussions and Arguments

We have thoroughly explored the quasi-memory based psychological-continuity view and came to the conclusion that, on a philosophical level arguing from the point of view of that view, propranolol as a memory dampening agent would most likely not lead to the fundamental change of one's identity. Thus, from this philosophical point of view, propranolol does not seem to raise an ethical issue in this sense. It is therefore worth it to look how this conclusion compares to conclusions found in the recent ethical debate surrounding memory dampening technology that focuses on identity. Have authors come to the same conclusion as we have regarding personal identity change and memory dampening?

We will see that there are multiple answers to this question. At first sight, some authors seem to agree with this conclusion whilst others seem to disagree with this conclusion. However, when taking a closer look, we will see that none of these authors actually deal with the same concept of personal identity that we have done so far. They focus, instead, solely on the narrow persistence over time question, even though this is almost never explicitly stated. Furthermore, they focus on a specific kind of personal identity, namely psychological qualitative 'narrative identity'. In other words, they focus on the question whether a person will have a continuity of character. These last two claims made here will be defended in the next sub-section.

From the philosophical personal identity debate point of view, therefore, their arguments are not that relevant. However, from a more practical personal identity debate point of view focused on the narrow persistence over time question (which may in fact be the question that would interest potential policy makers more), their arguments are relevant. Therefore, we will discuss their arguments and determine their strength within the context of that more practical debate. To do this, we will need to explain the concept of narrative identity that they use. Additionally, we will look at some recent empirical research results regarding the influence of Alzheimer's Disease / dementia, because these insights will help us determine the strength of the arguments discussed.

4.3.1 Preliminary Look at Identity Arguments in Recent Ethics of Memory Dampening and Deletion Technology Debates

As mentioned in sub-section 4.1, recent arguments in the ethics of memory dampening debate seem to deal with a concept of personal identity more closely related to the narrow persistence over time question than the wide persistence over time question. To defend this claim, let us take a look at how the term '(personal) identity' is used in some of these recent arguments.

Cynthia Aoki (Aoki, 2008) refers directly to McAdams's life story theory of identity (a psychological account of personal identity), which states that individuals form autobiographical narratives which link the past, present and future aspect of a self (Ibid., McAdams, 2001). In addition, the theory claims that individuals build their interpretations and understanding of the world based on autobiographical memories. Already when at a young age, individuals make personal life stories that include and identify important characters, important turning points and potential future scenarios in their lives (Ibid.). These personal stories at the foundation of narrative identity, then, are not a result of one's identity but rather a constitution for the primary means by which individuals both shape and understand their identities (Ibid.). We will go into McAdams's narrative identity theory more in a more in-depth fashion in the next sub-section, as the other authors to be discussed all use a version of this concept of narrative identity.

Kolber (2006, 2011) discusses identity as well, but always does this by referring to one's sense of identity, which relates to personal life stories. As was already discussed earlier, a personal life story account of identity uses a narrow question concept of personal identity. This is even more the case if one is talking about individual's sense of identity, which clearly refers to one's sense of who one is as a person. Robillard & Illes (2016) similarly discuss people's notions of self in relation to the ethics of memory dampening. Philips (2008) and Bell (2008) also talk specifically about life stories and narrative identity when discussing the ethical debates surrounding memory dampening technology.

In short, a lot of recent arguments in the ethics of memory dampening debate seem to focus not on the philosophical debate of personal identity about the wide question of persistence, but on the more practical debate of personal identity about the narrow question of persistence. As was mentioned in the previous sub-section, this debate is very much relevant as it is likely the more interesting debate for policy makers that have to make decisions about memory dampening technology. We will thus determine the strength of the arguments in this debate based on a narrative identity conception of personal identity.. Before we can do that, however, we need a clear definition of what they refer to when they use the term 'narrative identity'.

4.3.2 Narrative Identity, An Explanation

In this sub-section we will explore the psychological concept of narrative identity put forth by McAdams. Narrative identity relates specifically to the narrow persistence over time question, which can be concluded from its focus on life stories forming one's individual identity, of forming who one is as a person. That this is the case is clear from the following quote: "To a certain degree, then, identity is a product of choice. We choose the events that we consider most important for defining who we are and providing our lives with some semblance of unity and purpose" (McAdams, 2001, p. 110). Choosing certain events that we consider to define who we are is clear-cut language: it relates to the question of who we are as a person, to the question of what makes one the same person at one time and the other, i.e. the narrow persistence question. With this in mind, we can move on to an explanatory discussion of the concept of narrative identity.

Narrative identity is "the internalized and evolving story of the self that a person constructs to make sense and meaning out his or her life" (McAdams, 2011, p. 99). This story, then, is a reconstruction of the autobiographical past and a narrative anticipation of the imagined future. It is selective (an individual chooses certain events to play a more prominent role and also edits memories, they are never truly one hundred percent accurate) and serves to explain, for oneself and for others, how a person thinks one came to be the way they are now and where one's life may be going. Because it is a construction of self-defining life stories, people are 'inspired' quite heavily by "prevailing cultural norms and images, metaphors, and themes that run through the many narratives they encounter in social life" (Ibid., p. 99). If one could 'see' an identity, McAdams claims, it would look like a story: an internalized tale that evolves over time, has multiple characters (main characters and side characters), plots that intersect, certain important plot points or key scenes and even an

imagined ending to the story. This life story based identity represent how a person has reconstructed the past and anticipates the future (Ibid.).

Schechtman, who also discusses narrative identity, calls this a self-constituting narrative (Schechtman, 2007). We constitute ourselves (that is, our individual identity, who we are as a person) by forming a narrative self-conception. This narrative self-conception lies at the base of how we experience and organize our lives (Ibid.). The self-conception is mostly implicit and happens automatically: we are socialized in human culture and therefore we are thought to live with a “background conception of ourselves as continuing individuals, leading the lives of persons” (Ibid., p. 162). This means that we always experience the present as being part of a greater life-narrative. If we want to have a relevant narrative self-conception, we need our experienced past and anticipated future to condition the significance and character of present experiences and actions. Because we have a self-constituting narrative that is part of a bigger life-story, what happens to us is always interpreted as part of an ongoing story and never as a purely isolated incident (Ibid.).

Schechtman’s concept of narrative identity is based on two claims. The first is that in order for someone to constitute oneself as a person (here, again, referring to the narrow question sense of person) one must implicitly organize experienced had by one according to a life narrative that recognizes that past and future experiences are one’s own. This means that one has to see that the past has implications for one’s situation and choices in the present and that one sees that the present can and will have similar implication for one’s future (Ibid.). The second claim is that one needs to have a narrative in which, in the strong sense, one experiences past and future as part of a bigger whole life narrative (Ibid.). This concept of narrative identity is selective as well, as it is a construction of a life story which does not use all available memories and edits memories to fit the narrative better (Ibid.).

Views like these fit within the narrative identity view answer to the narrow persistence over time question and it is this narrative identity that arguments in favor or against memory dampening technology potentially changing one’s personal identity in the recent ethics debates surrounding memory dampening technology and identity are based on.

4.3.3 Empirical Research Results Regarding Influence of Alzheimer’s Disease / Dementia on Individual Identity

Before we go back to the ethical arguments to determine their strength, we will first look at some recent empirical research results concerning identity and memory loss through Alzheimer’s Disease / dementia. The research data that will be focused on ranges from publishing dates between 2008 and 2016, meaning that the results found in the research are at the current forefront of what is empirically known about identity and memory loss through the aforementioned afflictions. Whilst this thesis is focused solely on the emotional dampening of memories and not their deletion, we will see that the research results still prove relevant for the discussion at hand.

This is because research suggests that identity can be maintained in some cases, even after severe memory loss (Naylor & Clare, 2008, Stohminger & Nichols, 2015, König et al, 2016, Batra & et al, 2016). If that is the case, then arguments in ethical debate surrounding memory dampening technology and identity based on the discontinuity of identity by memory deletion are diminished in power. This is even more so if the debate is shifted from memory deletion to emotional dampening, a less severe phenomenon. Therefore I argue that exploring recent research as described above is an interesting excursion for this thesis.

Let us take a closer look at one such empirical study which results suggest that identity can be maintained even after (severe) memory loss. An interview-based study developed to explore the narrative self of participants that had moderate to severe dementia caused by Alzheimer’s Disease showed that these participants still showed evidence of self-reference even though there were evidently losses in explicit memory (Batra et al, 2016). These participants showed, in a similar way to healthy participants, an understanding of their role in relationships and, also in a similar way to healthy participants, showed clear preferences regarding experiences and activities. (Ibid.). Results did show some differences

between healthy participants and participants with dementia in some aspects of narrative identity. For example, in describing events, participants suffering from dementia were less detailed in their description than healthy participants (Ibid.).

Still, participants with dementia were able to describe their own personal character traits and express pride or regret about those traits (Ibid.). An interesting observation was that none of the participants with dementia associated their dementia with themselves (Ibid.). All in all, the results from this study indicate that multiple elements of the self are “consistent across person with and without dementia” (Ibid, p. 1274). The conclusion the authors of this research make therefore is that the loss of self that is frequently attributed to persons suffering from dementia is not supported by the results of this study (Ibid.). A more modest interpretation of the research results could be that loss of memories (in this case via dementia) might not have as big a role in the diminishing of the sense of self as is often thought.

Similar results can be extracted from other studies concerning memory loss and identity (Naylor & Clare, 2008, Stohminger & Nichols, 2015, König et al, 2016). The results of these studies imply that an impairment in (autobiographical) memory might not necessarily lead to an impairment or discontinuity of one’s individual narrative identity. While more research into this subject still needs to be done before any hard claims can be made, especially since there is also research that suggests that autobiographical memory impairment can indeed lead to a decreased sense of self (El Haj et al, 2016), it suffices to say that no hard claims can or should be made for the opposite. That is, these research results show that one cannot make any hard claims about autobiographical memory impairment necessarily leading to a loss of narrative individual identity and one needs, therefore, to be wary of using such claims to support any argument in the ethics of memory deletion or memory dampening technology debate.

4.3.4 Determining Strength of Identity Arguments in Recent Ethics of Memory Dampening and Deletion Technology Debates

With a clear understanding of narrative identity and some important empirical research results concerning identity and memory impairment in mind, let us move on, or rather back, to the discussion of several arguments used in the ethics of memory deletion and dampening debate.

Aoki (2008) reasons directly from McAdams’ narrative identity and, based on that concept of individual identity, argues that the artificially dampening of autobiographical memories could lead to a person becoming unable to form a coherent or comprehensive self-narrative in of her life (Ibid.). By dampening one’s autobiographical memories, one could willingly or unwillingly and consciously or unconsciously create a psychological gap in one’s autobiographical life story because the formation of important events that would serve as the base for important ‘chapters’ in one’s life stories could be circumvented (Ibid.). Memory dampening technology could in this way tamper with one’s narrative identity. Therefore, by altering our narrative identities via memory dampening technology in this way we “may ultimately lose our autonomous ‘selves’ in an array of manipulated memories that can no longer be accurately integrated into our coherent autobiographical life stories” (Ibid, p. 357).

These claims can, based on the empirical research results on memory loss and persistence of identity from sub-section 4.3.3, be questioned. While dampening of memories could potentially indeed lead to psychological gaps as is claimed by Aoki, we saw from the research results that this does not necessarily have to impair one’s life narrative. The research actually suggests that self-referential identity is maintained even after severe memory loss. Merely emotionally dampening memories would, I argue, likely not cause any psychological gaps large enough for a discontinuity in identity to be caused. What could, however, potentially do happen is that a comprehensive life story would be impaired as the argument claims. Still, I believe that with the research results regarding total deletion of memories and persistence of narrative identity in mind, this is not likely by just dampening memories. If the more severe notion of memory deletion does not seem to have a strong effect on one’s narrative identity, then surely dampening would have even less of an effect as

in the latter case one could still remember the dampened memories, albeit with less emotional attachment. I therefore claim that this argument is unsatisfactory.

On a more positive note, one could argue that the deletion of memories could strengthen one's narrative identity precisely because it is voluntary (Wasserman, 2004, Kolber, 2006). One could argue that when we choose which (autobiographical) memories we want to keep instead of (autobiographical) memories staying or being lost due to "the vagaries of neurobiology" (Wasserman, 2004, p. 14) or bad luck and mistakes (Kolber, 2006) would permit us to shape our life-stories with more direct control. In this view, we would not only be able to write our life stories via initial memory selection, we could also rewrite them by memory deletion (Wasserman, 2004). Add to that the fact that we already naturally edit and select certain memories in order for our life story to be formed (Kolber, 2006) and this claim seems more likely still. Artificially, voluntarily making adjustments to mental processes by deleting certain unwanted autobiographical memories can therefore be perceived as bolstering self-identity (Ibid.).

This claim, however, is, I argue, not satisfactory and is definitely not so when moving the discussion to memory dampening technology specifically. As we have seen, recent research suggest that one's sense of self and individual narrative identity can persist after memory loss. This means that, just like with the contrary argument that memory deletion would impair narrative identity, a change of identity through artificial memory deletion is not likely to take place (unless, of course, nearly all of one's memories would be deleted). Just like artificial memory deletion would likely not impair narrative identity, so will artificial memory likely not strengthen narrative identity either. In other words, the loss of memory, be it artificially induced or naturally occurring, is not likely to lead to a change in one's narrative identity. If there is no change in the persistence of one's narrative identity, we cannot speak of either a loss or a strengthening of one's narrative identity. Research suggests that there is simply no significant change to speak of, and both the ideas of loss of narrative identity and strengthening of narrative identity imply and are based on the concept of a change in narrative identity (be it negatively changed or positively changed). They thus imply and are based on a seemingly false concept. We can use the same line of thinking already used before to make the steps from deletion to emotionally dampening: if deletion would likely not result in a strengthened narrative self-identity, then emotional purging would do this even less likely and, lastly, emotional dampening would strengthen narrative self-identity less likely still.

In short, these arguments either in favor or against the concept of memory deletion or dampening changing one's identity seem, with recent research results in mind, unsatisfactory. A possible explanation for this might be that most of these discussed articles were published before the recent research results discussed were published and that the discussed arguments therefore rely on the seemingly mistaken idea that a loss of autobiographical memories would necessarily lead to a change in identity. This change of identity made voluntary by way of memory deletion technologies is then argued to be either a positive or negative development. However, as the premise that identity would be necessarily changed by memory loss seems to be mistaken, these arguments lose a considerable amount of strength. When we then move the discussion from total deletion to total purging of emotion of a memory to merely emotional dampening of memories, this becomes the case even more so.

A better view, I propose, acknowledges these recent research results and claims, based on those results, that artificial memory deletion does not necessarily change one's identity and is furthermore far less likely to do so with only the emotional dampening of memories. One's personal narrative identity in this view is likely not going to be changed by the use of memory dampening technologies. Instead memory dampening technology, and in the case of this thesis, propranolol will just be one of the many ways in which we are constantly altering the memories we use to constitute our life story.

To sum up, as one argument puts it, "if one remains concerned about the ethics [focused on narrative identity] of using propranolol, his or her concern cannot reside in the fact that propranolol impacts memory function and alters out 'true' identity ... but in the ways

we do so" (Bell, 2008, p. 4 of 4). Personal narrative identity is not necessarily changed via deletion of memory and therefore not likely at all to be changed via the emotional dampening of memory. While memories may have diminished emotional attachment after the use of memory dampening technology, this would thus not mean that any significant changes to one's personal narrative identity would take place. This, in turn, means that any arguments either in favor or against memory dampening technology based on the underlying idea that personal narrative identity would necessarily be changed via its use are inadequate when discussing the ethics of memory dampening technology.

One objection to this claim could be that the comparison between persistence over one's individual identity after (severe) memory loss from the effects of dementia at a later point in one's life and the deletion or dampening of memories at an earlier point in one's life is not one we can make. In the former, a narrative identity or life story has already been established strongly as one is at the last chapters of one's life whilst in the latter one is still in the 'middle' of one's life story, meaning that any tampering with memories could lead to a different resulting life story or narrative identity. That new resulting narrative identity would then, in accordance with the research results, indeed likely not be changed in any significant or noteworthy way if propranolol were to be used at that point in a person's life, but that does not change the fact that the resulting narrative is a different one than that would have been formed if no memory dampening technologies were used, meaning that there is in fact potential narrative identity change in that sense.

This objection could strictly speaking be true, albeit in an irrelevant way. If one thinks in terms of the existence of one's 'true' identity, in which using a memory dampening technology would deviate one from one's true identity because autobiographical memories that shape one's life story could be altered then, yes, there could be a change in one's true identity. As we have seen, however, there is no such thing as someone's true identity because we continuously already select, alter and edit our memories naturally. Enabling us to artificially voluntarily do this very same thing as we naturally do would thus be just one more way in which we do so. Strictly speaking, a different personal narrative identity could in this way be created and there could thus be a change in personal narrative identity, but not in any pertinent or relevant way.

Lastly, such a claim is high impossible to make based on any empirical data, as we simply cannot test whether one's personal narrative identity would be different at a later point in one's life after the use of memory dampening technology than it would have been had no memory dampening technology been used. This goes around the other way too, of course, as it would be equally impossible to determine whether one's personal narrative identity after the use of memory dampening technology would be the same as it would have been had no memory dampening technology been used. Because such a claim, then, is equally as difficult to prove when claiming that personal narrative identity would be different as it is claiming that personal narrative identity would not be different, I argue that such claims are of no real use in this particular debate.

To put it briefly, when we take together the extreme difficulty in proving such a claim and the fact that it is based on the mistaken idea of the existence of a person's unedited 'true' identity, I reject this potential objection to my argument.

4.4 Concluding Remarks

Based on our observations in this chapter, we can conclude the following. Firstly, it seems to be the case that no matter what concept of personal identity one uses, be it the philosophical wide persistence question definition of personal identity or the narrow persistence question definition of personal identity (that is, narrative identity), one's personal identity is most likely not going to be fundamentally altered from the use of a memory dampening agent like propranolol. Both from a more theoretical philosophical debate on personal identity point of view and from a more practical psychological debate on personal identity point of view, this suggest that any fear that one's personal identity would be fundamentally changed by using propranolol would be unwarranted and therefore this particular potential ethical issue is one

we can safely put aside when discussing specifically the emotionally dampening of ordinary narrative memories.

This does not mean, however, that we can make a proper ethical normative judgment based on this conclusion alone. In order for us to properly make an ethical normative claim about propranolol used to emotionally dampen ordinary narrative memories, we need a more thorough ethical analysis which enlists a satisfactory ethical model or theory. This will be the subject of the next chapter, in which we will discuss Rawls' Wide Reflective Equilibrium and use that theory to formulate a normative judgment of propranolol when used to emotionally dampen ordinary narrative memories.

Chapter 5

The Justifiability of Propranolol: A Wide Reflective Equilibrium Analysis

In the previous chapter, we looked at the philosophical concept of personal identity and the persistence over time question. We also looked at the recent ethical debate of memory dampening technology and identity and saw that arguments within that discussion are focused not on the philosophical concept of personal identity that tries to answer the wide question of persistence over time, but rather on narrative identity, which deals with the narrow question of persistence over time. We saw, after delving into recent empirical research regarding narrative identity and memory loss (specifically (severe) memory loss stemming from Alzheimer's Disease and dementia), that the arguments offered in the ethical debate of memory dampening are based on the seemingly false assumption that narrative identity would change after memory loss or dampening.

We therefore claimed that these arguments are unsatisfactory. We also claimed, however, that we would have to provide a more thorough ethical analysis to formulate a normative judgment of the use of propranolol on ordinary narrative memories and that in order to provide such a thorough ethical analysis we would need a satisfactory ethical model, namely Rawls' theory of Wide Reflective Equilibrium (WRE from here on out) (Daniels, 1979, 2016, Doorn, 2009, Rawls, 1971, 1993). In this chapter, we will enlist the help of the WRE-theory to answer the question whether the use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified, focusing specifically on the issue of identity and the potential change thereof through memory dampening.

5.1 Defense For The Use Of The Theory of Wide Reflective Equilibrium

Before we can delve into a theoretical explanation of the theory of WRE and a subsequent application of the theory to our specific case of propranolol, it is important to first defend the use for the theory of WRE as the base to provide an ethical assessment. The choice for the theory of WRE lies in two reasons. Firstly, its inclusion of practice-based principles and intuitions when ethically assessing an issue is ideal within the ethical debate of memory dampening technology. To explain, let us look at what type of ethical theory the theory of WRE is. WRE is a theory of coherence, as opposed to a theory of foundationalism (Daniels, 2016, Strong, 2010). Foundationalism is the view that some moral beliefs, propositions or intuitions are privileged in some sense and that serve as a basis for the justification of other moral judgments (Strong, 2010).

In other words, foundationalism claims that there are certain moral intuitions and the like that are especially important and can and should not have to be revised or be ignored. In other words, these moral intuitions can be described as universally valid and serve as foundations of moral ideas. A theory of coherence (such as WRE), or coherentism (Ibid.), on the other hand is a non-foundational view which claims that there are no moral intuitions and the like that are privileged in some sense and that should thus be taken as the 'set in stone' foundational base for further moral judgments (Ibid.).

Because of this, foundationalist theories do not take practice-based principles and moral principles into account, because these practice-based principles and intuitions are contextual and dependent on a specific practical situation. These specific practice-based principles are not universally valid and can therefore not serve as basic or foundational moral principles, which leads to them being excluded from a foundationalist ethical analysis. Theories of coherence, however, do take such practice-based principles into account. This means that WRE, as a theory of coherence, can make use of practice-based principle and in that way provide an ethical assessment which is closely linked to actual (scientific) practice.

This is a significant advantage when discussing the ethics of propranolol and the issue of identity because, as we have discussed in the previous chapter, empirical data can severely diminish the strength of an argument if the empirical evidence suggests that certain arguments are based on seemingly false assumptions. Because the theory of WRE does not take a position in which it gives authority to either moral theory or empirical data, but instead integrates moral theory and empirical data to reach a normative conclusion (Doorn, 2009), it allows us to take into consideration the important empirical research results which we have discussed in the previous chapter. Therefore the theory of WRE is better suited as the theory to provide a satisfactory ethical assessment of propranolol used to emotionally dampen ordinary narrative memories than foundationalist moral theories would be.

In addition, when there is a clear division in normative views within a debate, such as there is, as we have demonstrated, in the ethical debate surrounding memory dampening technology and identity, WRE allows us to still reach a moral agreement in such non-conclusive debates because it includes the views and considerations of all parties within the debate (Ibid.). No one specific principle from a specific view is deemed to be more important or 'better' than a principle of another view, there is no already established criterion against which the other principles have to be checked (Rawls, 1993).

Therefore, the outcome of the WRE-theory can be called fair to all involved parties (Doorn, 2009). Because we are working with a divergent ethical debate in which there contrasting normative judgments and ethical views, WRE allows us to test the coherence of each ethical view within the debate and in that way allows us to provide a satisfactory and fair normative claim. It is therefore ideally suited as the theory of choice to provide an ethical assessment of propranolol used to emotionally dampen ordinary narrative memories.

Taking the two previously discussed reasons into mind, I argue that the theory of WRE is the most suited theory to provide a thorough, proper and satisfactory ethical assessment of propranolol used in an everyday manner to emotionally dampen ordinary narrative memories. Through the use of the WRE theory, we will be able to provide a fair and satisfactory answer to the question of whether the use of propranolol to emotionally dampen ordinary narrative memories can, within the contours of the identity issue debate specifically, be ethically justified.

5.2 Theoretical Explanation of Rawls' Wide Reflective Equilibrium

Before we can move on to the application of the theory of WRE, we first need to understand how exactly the theory works. In this sub-chapter, we will provide a theoretical explanation of WRE. The particular version of WRE we are focusing on and using in this chapter is the one put forward initially by Rawls (1971), later expanded on by Daniels (1979) and recently discussed, researched and used by Doorn (Doorn, 2009, Doorn & Taebi, 2017). After the theoretical explanation of the theory of WRE, we are ready to apply the theory in the next sub-chapter.

Let us start with an explanation of the concept of a 'reflective equilibrium', after which we will go into the subsequent explanation of the wide version of reflective equilibrium, contrasting it with a narrow reflective equilibrium. The theory of reflective equilibrium "consists in working back and forth among our considered judgments [...] about particular instances or cases, the principles or rules that we believe govern them, and the theoretical considerations that we believe bear on accepting these considered judgments, principles, or rules, revising any of these elements wherever necessary in order to achieve an acceptable coherence amongst them" (Daniels, 2016, section 1).

This theory is deemed a success, Daniels goes on to explain, when we acquire an acceptable coherence among these beliefs and thus achieve a reflective equilibrium. An acceptable coherence, then, has two requirements. Firstly, our beliefs have to be consistent with each other. Secondly, some of our beliefs have to provide support or a satisfactory explanation for others. Furthermore, aside from revising beliefs we already had, it is also possible for us to add new beliefs to take into consideration as well. It is important to note here that a reflective equilibrium is not (necessarily) stable, we may in fact have to modify it as we change our way of thinking.

Reflective equilibrium can be and has been used, Daniels explains, as a coherence account of justification. The most important aspect of reflective equilibrium as the base for justification is that it tests various beliefs against other beliefs we hold. This testing consists in looking how some of our beliefs support each other, seeking coherence among the widest set of beliefs, and revising or refining beliefs at all levels when said beliefs challenge or contradict others. We can provide a clear overview of the multiple different levels of beliefs and considerations mentioned in the previous sentence by displaying them in the following way specified by Daniels (1979) and Doorn (Doorn, 2009, Doorn & Taebi, 2017):

- 1) (sets of) considered moral judgments about particular cases or situations;
- 2) (sets of) moral principles;
- 3) (sets of) descriptive and normative background theories.

A general example of a justified moral principle or moral judgment in this view of justification is a moral principle that is coherent with the rest of our beliefs about what a right action is “on due reflection and after appropriate revisions throughout our systems of beliefs” (Ibid., section 1).

To put it concisely, reflective equilibrium aims at coherence between (sets of) beliefs or considerations. The coherence can be reached by testing our (sets of) beliefs against each other and revising any (sets of) beliefs that challenge others. We can call the result an equilibrium if the (sets of) beliefs or considerations cohere and are not mutually exclusive (Doorn, 2009). We can call this equilibrium reflective if it was reached by going back and forth between the different (sets of) beliefs or considerations (Ibid.). This is the basic theory of reflective equilibrium.

We can now focus on an explanation of wide reflective equilibrium specifically, which we will provide by contrasting it with narrow reflective equilibrium. Rawls claimed that a reflective equilibrium can be either narrow or wide (Rawls, 1974). To explain the difference between narrow and wide reflective equilibrium, we will look back at the display of the three levels of considerations. If coherence is reached between only the first two levels, the considered judgments and moral principles, we speak of a narrow reflective equilibrium, a two-tiered view (Doorn, 2009).

Daniels has argued that this two-tiered narrow reflective equilibrium is not suited to provide a proper basis for justification because coherence between our considered judgments and moral principles does not rule out the possibility of an arbitrarily prejudiced view (Daniels, 1979, Doorn 2009). By not including (moral) background theories in the reflection, not being open to revising (moral) background theories, the narrow reflective equilibrium that one would arrive at would be based on fixed (moral) background theories (Doorn, 2009). It is thus not suitable as a theory of justification, but could rather be seen to be a theory of description, making explicit an individual’s particular underlying moral conception or sense of justice (Kelly & McGrath, 2010).

In order to be able to be called a satisfactory theory for justification, we thus need to move from a narrow reflective equilibrium to a wide reflective equilibrium. Looking back at the three levels of considerations, we can speak of a wide reflective equilibrium, a three-tiered view, when coherence is reached between all three levels of considerations (Doorn, 2009). Rawls argued that this wide conception of reflection allows one to take into account moral conceptions held by others, which provides these other moral conception to influence one’s own convictions (Rawls, 1999). This is important because the end result of the WRE theory strives to be a fair justification. By incorporating moral convictions endorsed by others, the result of the WRE theory will be a more fair justification (Doorn, 2009). This is Rawls’ idea of justice as fairness (Ibid.).

A wide reflective equilibrium thus seeks coherence between these three levels of consideration and in trying to achieve that coherence does not, as previously mentioned, give priority to either one or the other abstract (moral) theory or one or the other particularity of a case. No one aspect from any one level is given priority or deemed as a foundation against which to test other considerations from any one other level. It is important once again

to stress the revisionist essence of WRE. All of the elements used as 'input' in the theory of WRE are open to revision: "if the considered judgments, moral principles, and background theories do not cohere, any of these elements may be revised to seek a more coherent set of considered judgments, moral principles, and background theories" (Doorn & Taebi, 2017, p. 7).

Similarly to narrow reflective equilibrium, each instance of a WRE is an individual-specific instance of a WRE. Because each individual has different sets of initial background theories, moral principles and considered judgments that will be tested against each other (as well as against moral convictions held by others) to try and achieve WRE, each individual will likely end up with a different WRE (Ibid.). Daniels points to this aspect as well when he claims that the theory of wide reflective equilibrium is "an attempt to produce coherence in an ordered triplet sets of beliefs [wherein each set corresponds to one of the three levels we already discussed] held by a particular person" (Daniels, 1979, p. 258).

The underlying idea of the theory of WRE relies on these different personal WREs and can be said to be "that an outcome, statement, or decision can be considered morally justified if all people involved are able to fit into their own personal WRE; that is, if it coheres with the other, more abstract layers in the WRE" (Doorn & Taebi, 2017). This will be important in sub-chapter 5.4 where we will take this idea into consideration when formulating the method in which we will apply the WRE theory. This concludes our theoretical explanation of the WRE theory, its goal, its workings and its underlying idea.

5.3 Providing A Preparatory Foundation To Be Used For The Application Of The Theory of Wide Reflective Equilibrium

Before we can start to apply the WRE theory on the normative views extracted in the previous sub-chapter, we will first need to lay down a foundation which can serve as the basis for the application of the WRE theory. To do so, we firstly need to establish identity as an ethical value. This means we need to make clear the normative dimension of the discussed arguments in the debate in order to be able to, also in sub-section 5.3.1, formulate the normative views we can distinguish in the debate. These views will then allow us, in sub-section 5.3.2, to be able to extract the considered moral judgments, moral principles and relevant background theories from these normative views. These elements are all required to later determine the coherence of the normative views, which is in turn needed to be able to conclude which view is the most satisfactory.

5.3.1 Establishing Narrative Identity As An Ethical Value and Formulating Normative Views

To take narrative identity as an ethical value, I will make clear that the arguments discussed in chapter four are rooted firmly within a normative ethical debate on memory dampening technology and serve to make normative judgments about memory dampening technology. These arguments, specifically focused on narrative identity and the potential change thereof through use of memory dampening technology, take narrative identity as a value. This means that they take narrative identity as a concept which has moral or ethical importance. The different sides we can distinguish have differing opinions about whether the potential change of one's narrative identity can be seen as a potentially negative development (Aoki, 2008), a positive development (Kolber, 2006, 2011, Wasserman, 2004) or not being that different from the way we already naturally alter the quality of our memories (Bell, 2008, Phillips, 2008) but they all have the underlying, implicit idea that a person's narrative identity, that what makes someone the type of person he or she is, is an important concept to take into consideration when discussing the ethics of memory dampening technology.

They thus take narrative identity as a strong value within the debate which needs proper discussion. This is because every party agrees that a negative change or loss of one's identity can lead to harm for the person whose identity was negatively changed or lost as well as lead to harm for people in the (direct) social circle of the person whose identity was negatively changed or lost. Thus, because of the potential harm that could occur from a negative change in one's identity, identity is taken as a (moral, normative) value.

All of the discussed authors agree that in order for memory dampening technology to be ethically justifiable, its use cannot lead to one losing one's identity (or to an otherwise negative change of one's identity) because of the harm this would potentially cause. One side claims that a negative change or loss of identity will indeed happen by the use of memory dampening technology (Aoki, 2008), whilst the other side claims that memory dampening technology can strengthen a person's idea precisely because it allows someone to choose which memories to have more or less of an emotional impact on one's identity, instead of this just being left to random chance, bad luck or past mistakes (Kolber, 2006, 2011, Wasserman, 2004).

To provide further evidence that these ideas and arguments discussed are located within an ethical normative debate in which identity is taken as a strong value and that thus have normative implications, we can look at the normative conclusions or statements that follow the claims and arguments centered around identity and the possible change thereof through the use of memory dampening technology.

Let us start by looking at the argument which claims that narrative identity would be changed due to the use of memory dampening technologies and that this is a negative development (Aoki, 2008). After the claim is made that memory dampening technology can lead to a person unwillingly and unconsciously circumventing the formation of important autobiographical memories which can in turn lead to creating psychological gaps in one's life story (Ibid.), the normative claim is made that the costs of using memory-dampening agents significantly outweighs the potential benefits (Ibid.). Later, the conclusion follows that if we start taking memory dampening technology, it becomes questionable whether we can be truthful to ourselves and it may cause us "to lose our autonomous 'selves' in an array of manipulated memories that can no longer be accurately integrated into our coherent autobiographical stories" (Ibid., p. 357).

In other words, it is argued that the use of memory dampening technologies is potentially very dangerous and therefore has potential significant negative ethical implications. The normative claim (implicitly) found here is that the use memory dampening technology to emotionally dampen memories should be significantly limited. If we then move from the more general discussion of memory dampening technology and identity found in argument to the specific topic of everyday use of memory dampening, it is no stretch to claim that this position would most likely advocate not using memory dampening technology at all.

If the argument claims that the risks of emotionally dampening memories already far outweigh the potential benefits when discussing the emotional dampening of memory in general, it would surely make this an even stronger point of attention when we are talking about the emotionally dampening of ordinary narrative memories, where the potential benefits would likely be smaller than they would be if emotionally dampening more extreme emotional memories. The normative claim we can thus extract from this argument regarding the emotional dampening of ordinary narrative memories is that, due to the potential risks significantly outweighing the benefits, in such cases memory dampening technology should not be used at all.

Arguments in favor of the idea that memory dampening technology could be seen as strengthening one's narrative identity instead of making one lose one's narrative identity (Kolber, 2006, 2011, Wasserman, 2004) subsequently claims that a person's life could be better and richer, as well as not making it less coherent or less interesting (because there are now less emotionally impactful memories in the life story of that person) if memory dampening technology is used to dampen emotionally negative memories (Kolber, 2006, 2011, Wasserman, 2004). The normative implication of this is that, when talking specifically about the value of narrative identity, the use of memory dampening technology can be ethically justified because it could make the lives of people better and richer as they would be less hampered by emotionally negative memories having an effect on their identities due to a process outside of their control.

By allowing one to use memory dampening technology, one could thus make one's life better, making its use ethical justifiable. Kolber (2011) makes a direct successive normative claim following his claim that narrative identity could be strengthened instead of

lost due to the use of memory dampening technology by arguing that researchers should, instead of being prohibited or heavily regulated, be encouraged to explore pharmaceutical methods to help people cope with negative memories (Ibid.).

The last argument from chapter four which has normative implications and takes narrative identity as a value is argument put forth by me in the previous chapter. In chapter four, I argued that the position we should take within the ethical debate on memory dampening technology and identity is a position which acknowledges recent research data on memory loss and persistence of narrative identity and subsequently claims, based on those results, that artificial dampening of emotional memories most likely does not lead to a change in one's personal narrative identity. Instead, memory dampening technology, and in the case of this thesis, propranolol, will just be one of the many ways in which we are constantly altering the memories we use to constitute our life story.

The normative implication of this position put forth by me is that, when talking specifically about memory dampening technology and narrative identity, the use of memory dampening technology to emotionally dampen memories is, regarding this specific issue not dangerous. If there is no potential narrative identity change, there is no potential danger of losing one's identity and there is therefore no potential ethical issue.

All three of these discussed types of arguments thus are rooted firmly within the ethical debate surrounding memory dampening technology and all have normative implications or provide normative claims. These normative claims, then, are based around the value of narrative identity and the persistence thereof. The argument making the normative claim that the use of memory dampening to emotionally dampen memories should be not be used at all does so based on the notion that narrative identity would be changed and that this is an unacceptable consequence. The persistence of one's narrative identity is thus seen as a strong ethical value that determines the normative claim regarding memory dampening technology: if memory dampening technologies cause narrative identity to no longer be maintained, the normative statement will be that its use should be significantly limited.

Similarly, the arguments making the normative claim that the use of memory dampening technology to emotionally dampen memories should not be limited because narrative identity would be strengthened instead of lost, do so centered around the concept of persistence of narrative identity. They too imply that the loss of persistence of narrative identity would make memory dampening undesirable to use, but they argue that this is not the case because narrative identity would instead be strengthened due to the voluntary nature of memory selection through memory dampening technology. Because, in their view, any narrative identity change would be a positive development that leads to a strengthened narrative identity, the use of memory dampening technology should not be limited. Again, narrative identity and the persistence thereof is the ethical value that lies at the core of this normative judgment.

Lastly, the argument that makes the normative claim that the use of memory dampening technology to emotionally dampen memories should not be limited because there would, based on empirical evidence, not be any significant narrative identity change is also centered around the same concept of persistence of narrative identity. Its statement that memory dampening technology should not be limited in its use is based on the claim that narrative identity would not be changed and would be maintained. This implies that this normative claim too is centered around the ethical value of (persistence of) narrative identity.

We thus have established that narrative identity (and the persistence thereof) is a strong ethical value around which arguments throughout the ethical debate surrounding memory dampening technology and identity are based. With narrative identity firmly established as an ethical value and the normative implications and dimensions of the arguments discussed in chapter four laid bare, we can move on to the formulation of three distinct normative views extracted from these arguments and subsequent normative implications.

The first such normative view we can find in the ethical debate surrounding memory dampening technology and identity is based on the argument claiming that memory

dampening technology used to emotionally dampen one's memories can lead to a loss of one's narrative identity (Aoki, 2008) and should therefore not be used at all to emotionally dampen ordinary narrative memories. In other words, it should not be used at all because memory dampening technology poses a danger to the persistence of one's narrative identity and this is a risk that would far outweigh the potential benefits. We will call this view the 'Identity Loss View'.

The second normative view we can find in the ethical debate surrounding memory dampening technology and identity is based on the argument claiming that memory dampening could lead to a strengthening of one's narrative identity because it allows the user to voluntarily choose which memories have an influence on their life story instead of this being left to random chance, bad luck or past mistakes (Kolber 2006, 2011, Wasserman, 2004). Its use, therefore, should not be limited. We will call this view the 'Identity Strengthening View'.

The third and last normative view we can find in the ethical debate surrounding memory dampening technology and identity is based on the arguments claiming that, based on recent empirical research data, memory dampening technology used to emotionally dampen memories will most likely not change one's identity in any significant way. Its use, therefore, should not be limited. We will call this view the 'Unchanging Identity View'.

5.3.2 Extracting Considered Moral Judgments, Moral Principles and the Relevant Background Theories from the Normative Views on Memory Dampening Technology and Identity

In the previous sub-section, we have established narrative identity (and the persistence thereof) as an ethical value within the ethical debate surrounding memory dampening technology and identity and subsequently have provided three normative viewpoints based on the normative claims implied by the discussed arguments centered around the possibility of narrative identity change. We can now extract the considered moral judgment, moral principle and relevant background theory of each of these normative views.

We will start our extraction process with the Identity Loss View, which is based on the idea that due to the danger of loss of narrative identity through the use of memory dampening technology, it should not be used at all. This means that in this view, the use of memory dampening technology to emotionally dampen memories cannot be justified. This leads us to the considered moral judgment that everyday use of memory dampening technology cannot be ethically justified and that, subsequently, people should be deterred from using it.

We will now look at which moral principles we can extract from this view. The focus of the ethical assessment in this thesis is placed specifically within the strict contours of the ethical debate surrounding memory dampening technology and (narrative) identity. Therefore, we will limit our extraction of considered judgments, moral principles and relevant background theories only to those directly relevant to our key question: whether, when taking solely the ethical value of (narrative) identity and qualitative persistence thereof into account, the everyday use of memory dampening technology to emotionally dampen ordinary narrative memories can be ethically justified. Taking this into account, the moral principle which we can extract from this view is that a person's narrative identity and the qualitative persistence thereof should be taken into account when deciding about the moral desirability of emotional dampening technologies¹. The resulting implication of this moral principle is that if a memory dampening technology causes a loss or significant (negative) change in identity, that memory dampening technology becomes morally undesirable, or, in other words, ethically unjustifiable.

Taking together the idea within this view that propranolol has the risk to cause a loss of narrative identity and this moral principle leads us to the aforementioned considered moral judgment which states that the use of propranolol cannot be ethically justified and that people

¹ I would like to thank prof.dr.mr.ir. N. Doorn for her suggestions and input regarding the formulation of this moral principle.

should therefore be deterred from using it. The background theory to be identified here is that of narrative identity (as discussed in sub-section 4.3.2), with specific importance on the narrow question qualitative persistence thereof (as discussed in sub-chapter 4.1 and sub-section 4.2.3). In other words, specific importance is placed on what exactly it would practically take to cause a discontinuity in narrative identity.

The second view we will discuss, the Identity Strengthening View, is based on the idea that because memory dampening would offer a voluntary choice regarding which emotionally negative memories have an effect on one's life story instead of this process being left to random chance, bad luck or mistakes. This idea, then, leads to the claim that people should not be deterred from using memory dampening technology (and researchers should not be deterred from investigating possibilities of the technology). The considered moral judgment to be extracted here is thus that the use of memory dampening technology can be ethically justified and that people should therefore not be deterred from using it.

Similarly to the Identity Loss View, we will only extract moral principles that are directly relevant for the specific issue at hand. The moral principle to be extracted from this view in this way is the same as the moral principle we extracted in the Identity Loss View: a person's narrative identity and the qualitative persistence thereof should be taken into account when deciding about the moral desirability of emotional dampening technologies. This moral principle has the same implication that a memory dampening technology which can lead to narrative identity loss or a significant (negative) narrative identity change would make the memory dampening technology in question morally undesirable. This moral principle has, again, the implication that a memory dampening technology which would cause a significant negative change to narrative identity would make that technology morally undesirable.

An additional implication of this moral principle we extracted from the Identity Strengthening View is that a strengthening as opposed to a loss of narrative identity would make the memory dampening technology in question morally desirable. Because the Identity Strengthening View claims that memory dampening technology could indeed strengthen narrative identity, this leads the view to the aforementioned considered judgment that the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified and that people should therefore not be deterred from using it.

The background theory to be found here is the same as in the last view, namely that of narrative identity, with specific importance put on the narrow question qualitative persistence thereof. Similarly, we will divide this one theory into two theories where the first is that of the theoretical explanation of narrative identity and the second is that of the required practical details of narrow qualitative persistence of narrative identity.

Let us move on to the last view, the Unchanging Identity View, which claims that, based on recent empirical research, narrative identity will most likely not change due to the use of memory dampening technology and that its use therefore should not be limited. Once again, in the extraction of moral principles we will only extract ones that are directly relevant for the issue at hand. This leads us to extract the following moral principle from this view, which due to particular nature of our enquiry is the same as was extracted from the previous views: a person's narrative identity and the qualitative persistence thereof should be taken into account when deciding about the moral desirability of emotional dampening technologies.

The implications are, again, similar to the implications from this moral principle as discussed in the other views: a memory dampening technology that has a negative influence on narrative identity in whatever way is morally undesirable. Because the Unchanging Identity View claims that narrative identity will not be changed in any significant way, the considered moral judgments that follows from taking this claim and the moral principle together is that the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified and that people should therefore not be deterred from using it.

The background theory to be found here is the same as in both previous views, namely that of narrative identity, with specific importance once again put on the narrow question qualitative persistence thereof. We will again divide this one theory into two theories

where the first is that of the theoretical explanation of narrative identity and the second is that of the required practical details of narrow qualitative persistence of narrative identity.

5.4 Application of the Wide Reflective Equilibrium Theory

In this sub-chapter, we will apply the WRE theory to be able to determine the justifiability of the everyday use of propranolol to emotionally dampen ordinary narrative memories. We will focus specifically on the issue of the qualitative narrow persistence of narrative identity and the normative views thereon we have extracted, in sub-section 5.3.1, from the arguments used in the ethical debate on memory dampening technology and identity. We have furthermore extracted from these three views three different sets of moral judgments and moral principles that fit those considered moral judgments. We also clarified and explained the relevant background theories, where we saw that each set of moral principles and considered judgments was related to the same background theories, namely that of narrative identity and qualitative narrow persistence over time of one's narrative identity.

In this sub-chapter, we will determine the justifiability of propranolol used to emotionally dampen ordinary narrative memories by testing the coherency of the three extracted views with the background theories of personal identity and qualitative narrow persistence over time. We will do this because of the following reasons. To try and achieve a WRE from the point of view of a different author or argument (and the related considered judgments, moral principles and background theories) would perhaps be an interesting endeavor, but goes against the underlying idea of WRE that each individual will end up with a (slightly) different WRE after going through the revisionary process.

This is because we cannot reason as if we were a different person and we would therefore not know which considered moral judgments, moral principles or background theories are more or less open to revision in the considered opinion of the author whose position we would try and reason from. The WRE we would end up at from that endeavor is thus not satisfactory, as an author whose point of view we tried to think from could read our interpretation of their thinking and could say that they do not agree with our final assessment because they would not have revised such and such moral judgment, moral principle or background theory in the way that we have done, making the argument and conclusion put forth in this chapter fall apart.

If we wanted to try and undertake such an endeavor properly by doing right by the spirit of the theory of WRE, we would have to undergo the very ambitious undertaking of enlisting the help of all involved authors and asking them to go through the WRE theory regarding their ethical view on memory dampening technology and identity and then, after (much) revision and effort, try and end up with a morally justified statement that fits into each involved author's personal WRE. This is far beyond the scope of this thesis and we will thus determine the strength of the discussed normative views differently, namely by testing the coherence of the three extracted views and their considered judgments and moral principles with the background theories of narrative identity and qualitative narrow persistence over time.

The view that is coherent, or alternatively, the view that would require the least (substantial) revision to reach coherency and thus a WRE can be considered to be the most satisfactory. Based on the outcome, we can thus determine which view is the 'strongest' and which should therefore serve as the base for our normative claim of choice on the justifiability of propranolol used to emotionally dampen ordinary narrative memories.

5.4.1 Testing the Coherency of the Identity Loss View

In order to determine the coherence of the Identity Loss View, we will test whether the considered judgment, moral principle and background theories of narrative identity and qualitative narrow persistence of narrative identity of this view cohere. If they do not cohere, the considered moral judgment of the view claiming that the use of propranolol cannot be ethically justified and that people should be deterred from using it cannot be maintained based on the currently held moral principle and relevant background theories. The moral principle in this view was as follows. A person's narrative identity and the qualitative

persistence thereof should be taken into account when deciding about the moral desirability of emotional dampening technologies. The implication being that a memory dampening technology which has a negative influence on narrative identity (such as the loss of narrative identity) is morally undesirable.

Let us first look at whether the moral principle in this view is coherent with the relevant background theories of narrative identity and the qualitative narrow persistence of narrative identity. The moral principle as described above is indeed coherent with both background theories. Both background theories are merely informative technical explanations of respectively the workings of narrative identity and what it takes for narrative identity to qualitatively persist over time. There are no normative claims or implications to be found in these theories. At the same time, this moral principle does not include any explanatory factual data and provides a purely normative statement. This means that this moral principle coheres with the relevant background theories.

The considered judgment of the Identity Loss View which entails that the everyday use of propranolol cannot be ethically justified and that people should thus be deterred from using it and which is based on the view's claim that the use of memory dampening technology can lead to identity loss is, however, not coherent with the relevant background theory of the qualitative narrow persistence of narrative identity. While the considered judgment does not contradict the moral principle as the statement to be found in the considered judgment can be easily based on the moral principle without there being any contradiction, this does not apply for the relation between the considered judgment and the aforementioned background theory. This is because the considered judgment is made based on a combination of the moral principle and a claim about propranolol's factual effect on narrative identity.

This factual claim, that propranolol can lead to a loss of narrative identity, is not in conflict with the background theory of narrative identity as that theory does not include any claims about the effect of memory dampening technology on one's narrative identity. The claim is, however, in conflict with the latest understanding of the background theory of the qualitative narrow persistence of narrative identity as the recent empirical research data concerning (severe) memory loss and the persistence of identity, as discussed in sub-section 4.3.3, suggests that narrative identity will most likely not be lost or changed to a significant degree when there is (severe) memory loss, which in turn suggests that this will be the case even less so when talking about the emotional dampening of memories specifically. This means that basing the considered judgment partly on this claim will lead to the considered judgment being in conflict with the background theory of qualitative narrow persistence of narrative identity if both are held by one individual. One would in that case have to either use a different background theory or revise one's considered judgment by revising the factual claim on which it is partly based in order to achieve coherence.

In short, while the moral principle of the Identity Loss View is coherent with both relevant background theories, the considered judgment is not because it is partly based on a seemingly false assumption. This means that the Identity Loss View is not coherent as is and would require (substantial) revision in order to reach coherence. Its considered judgment can thus not be maintained. Therefore, the Identity Loss View does not provide a satisfactory answer to the question whether the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified.

5.4.2 Testing The Coherency Of The Identity Strengthening View

We will go through the same process in testing the Identity Strengthening View as we did for the Identity Loss View by determining the coherence of all levels of consideration. The moral principle to be extracted from this view is that a person's narrative identity and the qualitative persistence thereof should be taken into account when deciding about the moral desirability of emotional dampening technologies. The implications of this moral principle as held by this view are twofold. First, similar to the Identity Loss View, any negative change to narrative identity (such as the loss of narrative identity) as the result of the use of memory dampening technology would make that memory dampening technology morally undesirable.

Conversely, any positive change to narrative identity (such as the strengthening of narrative identity) as the result of the use of memory dampening technology would make that memory dampening technology morally desirable.

The considered judgment of this claim is based on both the aforementioned moral principle and the factual claim about the effect of memory dampening technology which entails that memory dampening technology could lead to a strengthening of one's narrative identity. The considered judgment of the view then, based on these two considerations, states that the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified and that people should thus not be deterred from using it.

The moral principle and the relevant background theories are the same as discussed in the previous view and the moral principle and relevant background theories thus cohere for the same reasons as were already discussed in the previous sub-section. Let us therefore look at the coherence between the considered judgment and the relevant background theories. The considered judgment of the Identity Strengthening View coheres with the moral principle of the view because the two would not be in conflict when held by one individual: the considered judgment could easily be made based only on the moral principle. The considered judgment is furthermore coherent with the background theory of narrative identity because that theory does not include any statements about the effect of memory dampening technology on one's narrative identity.

It does, however, not cohere with the background theory of the qualitative narrow persistence of narrative identity. This is for similar reasons to the ones we saw in our discussion of the Identity Loss View: the considered judgment is based on both the moral principle held by the view and a factual claim about the effect of memory dampening technology on narrative identity, which in this case states that memory dampening technology could lead to a strengthening of one's narrative identity.

As the latest understanding of the background theory of the qualitative narrow persistence of narrative identity suggests that (severe) memory loss or memory dampening would most likely not cause any significant change to one's narrative identity, the factual claim made by the view on which its considered judgment is partly based is in conflict with one of the background theories it employs. This means that the considered judgment of the Identity Strengthening View does not cohere with one of its relevant background theories and that (substantial) revisions would be needed in order for the view to achieve coherence.

Because the Identity Strengthening View does not cohere as is and its considered judgment can therefore not be maintained, it does not provide us with a satisfactory answer to the question whether the everyday use of propranolol can be ethically justified.

5.4.3 Testing The Coherency Of The Unchanging Identity View

The last view to undergo the test of coherency is the Unchanging Identity View, which will be put through the same process we saw in the two previous sub-sections. The moral principle of this view is as follows. A person's narrative identity and the qualitative persistence thereof should be taken into account when deciding about the moral desirability of emotional dampening technologies. The implication here is once again that any negative change to one's narrative identity (such as the loss of one's narrative identity) as the result of using a memory dampening technology would make this memory dampening technology morally undesirable. The considered judgment of this view is based on the moral principle described above and the factual claim that narrative identity would not be significantly changed by the use of memory dampening technology. This leads to the considered judgment that the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified and that people should not be deterred from using it.

The moral principle and the relevant background theories are the same as discussed in the previous two views and the moral principle and relevant background theories thus cohere for the same reasons as were already discussed in the two previous sub-sections. Let us therefore look at the coherence between the considered judgment and the relevant background theories. The considered judgment is coherent with the background theory of narrative identity because this theory does not include or imply any normative statements

and does also not include any information about the effect that memory dampening technology could have on one's narrative identity. It is also coherent with the background theory of the qualitative narrow persistence of narrative identity as the latest understanding of that theory suggests that narrative identity would most likely not be significantly changed due to the emotional dampening of memories, which is in line with the factual claim found in the Unchanging Identity View on which its considered judgment is partly based.

The Unchanging Identity View is therefore in coherence. Its moral principle does not conflict with either the considered judgment or the relevant background theories and its considered judgment similarly does not conflict with either its moral principle or the relevant background theories. Because the Unchanging Identity View coheres and its considered judgment can therefore be maintained, it can provide us with a satisfactory answer to the question whether the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified.

5.5 Concluding Remarks

In this chapter we applied the theory of WRE to the ethical views we have extracted from the arguments discussed in the ethical debate surrounding memory dampening technology and identity in order to determine which ethical view is coherent and thus able to provide a satisfactory answer to the question whether the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified. Through our application of the WRE theory, we found that the Identity Loss View and the Identity Strengthening View provided unsatisfactory answers to the question whether the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified because their considered judgments were incoherent with the relevant background theory of the qualitative narrow persistence of narrative identity.

We did find, however, that the considered judgment of the Unchanging Identity View was coherent with the relevant background theories of narrative identity and the qualitative narrow persistence of narrative identity as well as coherent with its moral principle and, subsequently, that the view's considered judgment resulting from this moral principle and based on these background theories can thus be maintained. This means that the Unchanging Identity View is able to provide a satisfactory answer to the question whether the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified.

The answer of the Unchanging Identity View to this question found within its considered judgment is that the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified and that people should not be deterred from using it. In short, we can conclude that, when talking specifically within the contours of the ethical debate surrounding memory dampening and (narrative) identity (and, more specifically, the persistence thereof), the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified.

Chapter 6

Conclusion

In this thesis we discussed the question whether the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified. We discussed and answered this question specifically from the context of the issue of (persistence) of identity as seen in the recent ethical debate surrounding memory dampening technology.

6.1 Results

To reach a conclusion regarding the aforementioned ethical question, we went through a step-by-step process in this thesis. Firstly, we provided a distinction between traumatic memories and ordinary narrative memories. By doing so, we formulated a definition of ordinary narrative memories in which 'ordinary narrative memories', 'non-traumatic memories' or any version thereof are used to refer to memories that are available to conscious awareness and can be recalled at will (i.e. are fully verbally accessible), are mostly true to the original experience, can be verbalized in a clear narrative structure that is not distorted, fragmented or only recalled in sensory form and that, furthermore, do not impair or influence the memory processes of the amygdala and hippocampus (McPherson-Sexton, 2006). We next explained how propranolol works and why propranolol was chosen as the memory dampening technology to focus on in this thesis.

Afterwards, we looked at the philosophical concept of personal identity and specifically at the wide persistence over time question which asks what it takes for a person as an entity to persist over time (Daniels, 2016). We looked at one possible answer to this wide persistence question, namely Parfit's quasi-memory based psychological-continuity answer to the wide persistence question (Parfit, 1984).

We argued that if we reason from the point of view of the quasi-memory based answer to the wide persistence over time question, personal identity would not be changed from the use of memory dampening technology because the persistence of personal identity in this view lies with the remembrance of experiences itself and does not base wide persistence over time on any concept related to the emotional aspect of memories (Parfit, 1984). The psychological criterion put forth by Parfit is not violated if one's memories are emotionally dampened and thus personal identity will remain unchanged after the use of propranolol to emotionally dampen ordinary narrative memories. In short, the everyday use of propranolol to emotionally dampen unpleasant ordinary narrative memories in this sense poses no serious danger to the persistence of identity in this particular instance.

We then looked at recent arguments used in the ethical debate surrounding memory dampening technology and identity and found that authors in this debate reach different conclusions regarding the persistence of identity than we did because they use a different concept of identity, namely the psychological concept of narrative identity (Aoki, 2008, Bell, 2008, Kolber, 2006, 2011, Philips, 2008, Robbillard & Illes, 2016). Narrative identity, then, is concerned with the narrow persistence question which asks what it takes for a person to remain the same sort of person over time. We subsequently provided a theoretical explanation of narrative identity, which can be summed up to be "the internalized and evolving story of the self that a person constructs to make sense and meaning out his or her life" (McAdams, 2011, p. 99).

Before moving on to determining the strength of identity argument in the recent ethics of memory dampening technology and identity debate, we discussed recent empirical research data regarding memory loss and persistence of qualitative identity. We saw that recent research suggests that an impairment in (autobiographical) memory might not necessarily lead to an impairment or discontinuity of one's individual narrative identity (Naylor & Clare, 2008, Stohminger & Nichols, 2015, König et al, 2016, Batra & et al, 2016). Furthermore, we claimed that if the deletion of (autobiographical) memories does not

necessarily lead to a discontinuity of one's individual qualitative narrative identity, this is even less likely to be the case when we talk specifically about merely the emotional dampening of memories.

With these results in mind, we returned to the ethical arguments found in the ethical debate surrounding memory dampening technology and identity and determined their strength. Because these arguments were found to be based on the premise that identity would be necessarily changed by alterations of memory (Aoki, 2008, Bell, 2008, Kolber, 2006, 2011, Philips, 2008) and that this premise is seemingly mistaken, these arguments lose a considerable amount of strength. When we then move the discussion from total deletion to total purging of emotion of a memory to merely emotional dampening of memories, this becomes the case even more so. In short, the ethical arguments found within the ethical debate surrounding memory dampening technology and identity have been argued to be rather weak.

An alternative premise or view to base ethical arguments on that is more in line with recent research data would be that one's qualitative narrative identity is likely not going to be changed by the use of memory dampening technologies and that propranolol will just be one of the many ways in which we are constantly altering the memories we use to constitute our life story. We thus concluded that both in a more theoretical philosophical concept of personal identity and in a more practical psychological concept of personal identity point of view, any fear that one's personal identity would be fundamentally changed by using propranolol would be unwarranted.

Because, as we mentioned, we could not make a proper ethical normative judgment based on this conclusion alone, we enlisted the help of the theory of Wide Reflective Equilibrium (WRE) (Daniels, 1979, 2016, Doorn, 2009, Doorn & Taebi, 2017, Rawls, 1971, 1993) to answer the question whether the everyday use of propranolol to emotionally dampen ordinary narrative memory can, when the discussion is placed specifically within the contours of the ethical debate surrounding memory dampening technology and identity, be ethically justified.

We found, through our application of the WRE theory, that both the Identity Loss View (which made the considered judgment that the everyday use of propranolol to emotionally dampen ordinary narrative memories cannot be ethically justified based on the claim that this would lead to a loss of one's narrative identity) and the Identity Strengthening View (which made the considered judgments that the everyday use to emotionally dampen ordinary narrative memories can be ethically justified based on the claim that the voluntary aspect of using propranolol would lead to a strengthening of one's narrative identity) were incoherent and therefore were not able to provide a satisfactory answer to the question whether the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified.

We did find that the Unchanging Identity View (which made the considered judgment that the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified based on the claim that the use of propranolol would not lead to any significant changes in one's narrative identity) was coherent, however, and that it therefore is able to provide a satisfactory answer to the aforementioned question. The answer to this question found in this view can be extracted from its considered judgment: the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified and people should not be deterred from using it.

After having gone through the above described critical-reflective process that started with a discussion of the distinction between traumatic and ordinary narrative memories and ended with an application of the theory of WRE to test the coherency of three ethical views extracted from arguments found in the ethical debate surrounding memory dampening technology and identity, we can thus give a positive answer to the main question asked in this thesis and come to the conclusion that, when talking specifically within the contours of the ethical debate surrounding memory dampening and identity (and more specifically, the persistence thereof), the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified.

6.2 Discussion and Recommendations

This thesis is specifically focused within the contours of the ethical debate surrounding memory dampening technology and thus focuses specifically on the ethical issue of the potential loss of one's personal or narrative identity. This very specific approach has both benefits and limitations.

A benefit to this specific focus on this issue is that this in-depth analysis provided an opportunity to garner a clear overview of the arguments and ideas surrounding personal identity used in the ethical debate concerning memory dampening. It allowed us to see that ethical arguments offered within the relevant debate are not based on a philosophical conception of personal identity, but rather on a psychological conception of narrative identity. This is not always specified in the arguments, as sometimes the arguments referred to 'identity' as such. Thus, the approach of this thesis laid bare this fact, which is helpful for further ethical debate regarding the issue of identity. Furthermore, by discussing research empirical research data regarding memory loss and the persistence of qualitative identity, a more empirically-aligned view could be developed. This is a boon because of the emergent and practical nature of memory dampening technology and propranolol in particular.

At the same time, by focusing so specifically on this one ethical issue, a broad ethical analysis or assessment of propranolol (and memory dampening technology in general) could not be provided. There are numerous potential issues of the technology that have not been discussed and the issue of identity is merely the most prevalent one. The ethical justification of the everyday use of propranolol to emotionally dampen ordinary narrative memories therefore only applies when talking specifically within the contours of the issue of persistence of identity and the normative claims made and conclusion reached in this thesis should thus not be extrapolated to any broader normative answers about the everyday use of propranolol. Future ethical analyses could thus prove especially helpful to the ethical debate surrounding memory dampening technology were they to provide a similar in-depth analysis as found in this thesis, only then provided for different potential ethical issues of the technology.

Furthermore, this thesis used the quasi-memory based psychological-continuity answer to the wide persistence over time question as the philosophical base for the concept of personal identity to determine whether personal identity would be fundamentally changed through the everyday use of memory dampening technology because this answer agrees with the commonsense intuition that is held by most people. As has been mentioned in chapter four, however, this answer is not infallible or conclusive. Future ethical research regarding memory dampening technology could therefore take another answer to the wide persistence over time question, such as for example animalism, as its base to determine whether personal identity would be fundamentally changed.

If, after extensive research, it is found that personal identity would most likely not be fundamentally changed through the use of memory dampening technology no matter which answer to the wide persistence question one takes as the base for their line of reasoning, it can be safely claimed that, from the point of view of a philosophical concept of personal identity, the use of propranolol does not, in terms of persistence of identity, in any way pose any serious ethical issue. Such broad claims cannot be made based only on the findings in this thesis and more ethical analysis starting from different answers to the wide persistence question, as suggested above, would need to be done to be able to do so.

Also, by following arguments within the recent ethical debate surrounding memory dampening technology and identity in their use of the psychological concept of narrative identity over a more philosophical concept of personal identity, the results of the application of the WRE theory and the conclusions reached in this thesis are more directly useful to potential consumers of propranolol (the public) and the people in charge of making policies regarding the use of propranolol. This is because narrative identity is closer to the everyday experience of identity that a person has. Thus, this particular concept of narrative identity is more directly related to a consumer's possible worries concerning the use of propranolol to emotionally dampen ordinary narrative memories. A person might, for example, not be as concerned with the idea that their philosophical conceptual personal identity could or could

not potentially be discontinued as that person might be with the idea that their individual narrative identity, who they are as a person, could or could not be severely changed from the use of propranolol. A consumer might find such a philosophical discussion interesting, but not especially relevant for their practical, everyday context. This would especially be the case if one's personal identity in the theoretical-philosophical sense would be discontinued, whilst this change would at the same time not necessarily be noticed in a practical, everyday sense. A person might in such a case wonder why they, if they do not notice any identity change in any practical sense, would care about a discontinuity of personal identity in the theoretical-philosophical sense. A purely theoretical-philosophical discussion might for many consumers be too far removed from the context of their daily life. Therefore, staying purely within the context or domain of theoretical conceptual philosophy in the ethical discussion of an emergent technology that might find widespread everyday use would in this case not be as relevant as reasoning from both a theoretical philosophical and a more practical oriented context, such as we did in this thesis. A benefit of using the theory of WRE is that its use allowed us to see what considered judgments, moral principles and background theories were behind the argument used in the ethical debate surrounding memory dampening technology and identity. Through doing this, we found out that the discussed arguments worked with a background theory of qualitative narrow persistence of identity that was not in line with what recent research suggests about the persistence of narrative identity after memory loss. This showed us where the weaknesses of the discussed arguments are located.

A limitation regarding the theory of WRE was that this thesis employed a modest application of the theory. As was specified in sub-chapter 5.4, to have a wider application of the theory of WRE, we would have to undergo the very ambitious undertaking of enlisting the help of all involved authors and asking them to go through the WRE theory regarding their ethical view on memory dampening technology and identity and then, after (much) revision and effort, try and end up with a morally justified statement that fits into each involved author's personal WRE. This was beyond the scope of this thesis, but might be a very interesting avenue for future ethical research to pursue.

The use of recent empirical research data in this thesis was a benefit as it allowed us to take into account the most recent findings regarding the qualitative persistence of narrative identity in our assessment of the arguments. As the ethical debate surrounding memory dampening technology and identity is still a speculative debate concerning an emerging technology, any new empirical developments can be quite beneficial to the debate at hand, as they allow one to lend more strength to one's speculative arguments or revise ideas that are not in line with newer data.

Lastly, the aforementioned speculative nature of the ethical debate applies to this thesis as well: this thesis deals with an emerging technology that has not been fully developed and been made ready for everyday use yet. Therefore, all ideas put forth in this thesis are speculative and concern themselves with the potential future where propranolol can be used in the way described in this thesis. This is both a benefit and a limitation. It is a benefit because it allows us to discuss the ethical issues of propranolol 'before it is too late', that is, before it is already widely available. At this point in time, it is still possible to steer the development, distribution and policy making regarding propranolol in morally satisfactory ways, whilst that is not possible anymore were the debate to take place after it has already been made widely available. The speculative nature is, on the other hand, a limitation because whilst recent research regarding propranolol's possibilities is promising, there are no guarantees that it will work exactly as envisioned in this thesis. If that turns out to be the case, the ideas and arguments in this thesis become less relevant.

Also, more research needs to be done into the potential (long-term) side effects of the use of propranolol to emotionally dampen memories. As the technology is an emergent one, not much is known about the (long-term) side effects its use may have. While recent research suggests that propranolol has no effect on emotionally neutral memories, it is not known whether there are any other side-effects. Extensive testing will still have to be done to determine whether the use of propranolol will not have any as of now unforeseen

consequences on the person using it. If significant negative side effects are found, the ethical debate concerning particular issues of the technology will become increasingly less relevant. At the same time, if the use of propranolol is found to not have any significant negative side effect, such ethical debates will become ever more relevant.

In addition, from the perspective of the potential consumer, the claim can be made that even in the potential future situation where it is found that the use of propranolol poses no real ethical issues, that there are no significant side-effects to its use and that it is therefore allowed to be used on a widespread everyday basis, this does not have to mean that one therefore should feel in any way forced to use propranolol to emotionally dampen their negative ordinary narrative memories. Even if propranolol poses no ethical issue or any significant negative side-effect, the use of the technology should always remain a choice. In this scenario, it should be seen as one of the myriad ways available to us to deal with our emotionally negative memories and should not be seen as the one and only solution to our problems with emotionally negative memories. One could, for example, not want to use propranolol because one wants to deal with one's negative ordinary narrative memories without any 'outside help'. From the perspective of the potential consumer of propranolol, there can thus still be reasons outside of ethics to choose to use or not to use the technology even if its use becomes widespread.

In short, while more ethical research will need to be done to determine the broad ethical justifiability of the everyday use of propranolol to emotionally dampen narrative ordinary memories and more research will need to be done regarding the possibilities of the everyday use of propranolol and potential side-effects to its everyday use, this thesis showed that when looking specifically at the prevalent and oft-discussed issue of propranolol potentially impairing or discontinuing the qualitative persistence of narrative identity, the everyday use of propranolol to emotionally dampen ordinary narrative memories can be ethically justified because it will most likely not cause any significant changes to one's narrative identity.

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