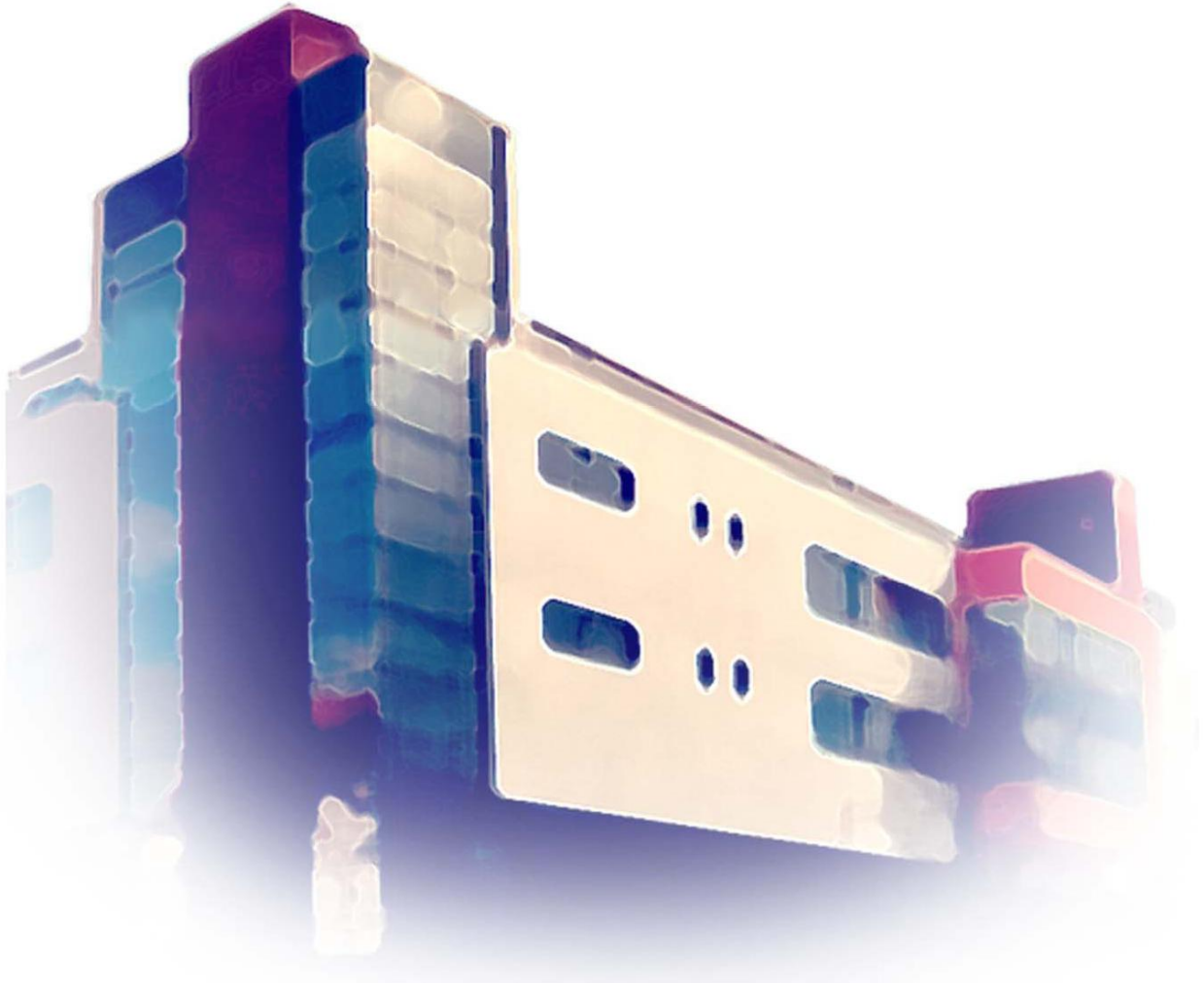


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*Self-Control in the Free Will Debate.
The Implications of Empirical Studies*



PICS

Publications of the Institute of Cognitive Science

Volume 2-2011

ISSN: 1610-5389

Series title: PICS
Publications of the Institute of Cognitive Science

Volume: 2-2011

Place of publication: Osnabrück, Germany

Date: August 2011

Editors: Kai-Uwe Kühnberger
Peter König
Sven Walter

Cover design: Thorsten Hinrichs



Self-Control in the Free Will Debate

The Implications of Empirical Studies

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Submitted: October 29, 2009

Abstract

What can empirical studies tell us about free will? By looking at the literature, one could get the idea that there are only two ways to answer this question: (1) Free will is clearly identified by the empirical sciences as being a mere illusion, or (2) empirical studies do not and never will tell us anything about free will. This thesis argues for a view that lies in the middle. First, I will argue that self-control – conceptualized as the influence of conscious deliberations on decisions – is a necessary condition for free will. Second, from the perspective of self-control, I will discuss findings from neuropsychology, cognitive psychology, and social psychology. It will turn out that no experiment is able to deny, on a stable empirical basis, that we usually have self-control when we think we do. However, especially social psychological studies strongly suggest that we should keep a healthy dose of skepticism with regard to our trust in free will. The claim that there can *never* be a study which clearly speaks against free will seems to be premature.

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1 Introduction

Free will is a fundamental assumption of our society. Besides other areas, it is deep-rooted in our legal system and theories of ethics: Since our will is free, we are morally responsible for our actions, and deserve to be punished or praised for our behavior. We feel like it is perfectly natural and intuitive to assume free will. Just like with any other intuitive assumption, a large philosophical debate emerged around it. Having its roots back to at least ancient Greece, the free will debate can be seen as one of the oldest and most discussed issues in the history of philosophy, partly driven by an emotional involvement comparable to topics like the Copernican revolution or the creation-evolution controversy.

To most people, it seems obvious that we have free will. However, it is not clear what that actually means. Philosophers tried to formulate various definitions of free will and attention has been drawn to three different conditions¹. First, it has been proposed that we need to be the *ultimate cause* of our actions to have free will. We can initiate causal chains, but nothing causes us to cause these events to happen – we are “unmoved movers”². This condition has been referred to as the condition of *origination*³. Second, we need to have the ability to do otherwise. If I need to decide between studying linguistics and medicine, and I go for linguistics, then I could also have chosen medicine in this very situation. Both decision outcomes could have actually happened. This condition has been referred to as the *principle of alternative possibilities*⁴. Third, our decisions need to be the result of conscious deliberations and reasoning. Free decisions are not motivated solely by unconscious processes or instinctive drives, free decisions require a process of conscious reflection. This condition has been referred to as the condition of *self-control*⁵.

In the free will debate, various theories of free will developed, with each of them having a different view on these conditions. The core of the debate has been the role of *determinism*, the idea that, given the laws of nature and a certain state of the world, all future world states are fixed and in principle predictable. *Incompatibilists* claim that determinism and free will are incompatible. The

¹ This illustration can be found in Walter (2001, ch. 1) or Beckermann (2005). Needless to say, these conditions come in various forms.

² Cf. Chisholm (1964), reprinted in Watson (1982, p.32)

³ Cf. Kane (1996, ch. 7)

⁴ Cf. Walter (2001, pp. 11-13)

⁵ Cf. Churchland (2006), Dennett (1984, ch. 3)

typical incompatibilist demands that, for our will to be free, all three conditions have to be satisfied, with an emphasis on the principle of alternative possibilities. Since determinism rules out the principle of alternative possibilities⁶, determinism and free will cannot coexist. *Libertarians* are incompatibilists who think that we in fact do have free will, therefore determinism has to be false, while *hard determinists* are incompatibilists who believe the opposite: Determinism is true, hence our will cannot be free. Besides the camp of incompatibilists, there are the *compatibilists*. Compatibilists believe that free will and determinism are compatible. They deny that the principle of alternative possibilities and the condition of origination have to hold in their radical form. Instead, they believe that the idea of self-control alone is important for our will to be free. Since self-control and determinism are compatible (our decisions should be *determined* by conscious deliberations), free will and determinism are compatible.

While the debate has been a purely conceptual discussion, dominated by philosophers with arguments related to determinism, the direction has shifted when empirical studies entered the debate. The onset of this new tenor can probably best be assigned to the neuropsychological experiments of Benjamin Libet in the 1980s. Since then, more and more empirical scientists entered the debate, and shouts about an empirical falsification of free will echoed in the media. Simplifying somewhat, libertarianism has been labeled as the unscientific position, which sticks to a mere illusion; hard determinists were praised as the progressive revolutionaries, who help to guide us out of our old-fashioned beliefs; and the compatibilist strategy has been seen as a desperate attempt to save free will through an overly weak definition. Today, it seems like the debate has cooled down and people have returned to a more careful analysis, which acknowledges the questions that Libet's experiments leave open. It is my impression that compatibilism is the new mainstream position, along with the message that although self-control alone is a step back from our traditional understanding of free will, it represents a more natural theory of freedom, which guarantees free will, fits neatly into a scientific understanding of the world and is immune against empirical findings from the cognitive sciences.

In this thesis, I want to investigate to what extent the latter claim actually holds. Is the condition of self-control really immune to empirical findings, or are there studies which pose a serious threat? Which studies have been mentioned in this context? What conclusions do they allow, and where are their shortcomings? Where are the research gaps and what could be a fruitful direction for future experiments? In order to answer these questions, I will, in the second chapter,

⁶ Cf. van Inwagen's (1975) consequence argument for a detailed analysis.

elaborate more on the concept of self-control and its connection to the debate. In the third chapter, I am going to introduce the relevant experiments one by one, analyze their possible interpretations with respect to self-control and discuss their weaknesses. Finally, in the fourth chapter, I will try to use my results to propose a promising direction for future research.

2 The Notion of Self-Control

In the introduction, I already sketched the meaning of self-control. In section 2.1, I will try to give the concept more depth. What properties does self-control have, and what is its role in everyday situations, society, and evolution? In section 2.2, I am going to put self-control into the context of the free will debate, discuss for which positions it is relevant, and motivate why I believe that it deserves more attention than it got in the past.

2.1 What is Self-Control?

Instead of the term self-control, others have made use of the words *intelligibility*⁷, *self-regulation*⁸ or *autonomy*⁹ in this context. As noted above, self-control means that our decisions are driven by conscious deliberations. When we have self-control in decision-making, we first think about the alternatives that are available. We imagine their consequences, introspect on our motivational states, investigate which option satisfies our beliefs and desires best, weigh reasons against each other, identify and resolve potential conflicts, form intentions and decide accordingly. Many compatibilists emphasize the attribute of *reasons-responsiveness*¹⁰ - self-controlled decisions must be determined by reasons. Some compatibilists also claim that self-controlled decisions must be determined by *rational* arguments¹¹. I believe we have to be more careful here. Rationality is often understood as being an *optimal* way to achieve a goal. However, self-control only means *that* conscious deliberations drive our decisions, not that this is necessarily an optimal way to our goal. A decision which rests on false estimates can still be self-controlled, although it is not optimal.

Here is a typical situation in which we exercise self-control: We feel a spontaneous impulse to act, but instead of following it immediately, we stop, take a step back, and think about it. We

⁷ Cf. Walter (2001, pp. 29-33)

⁸ This term is mostly used in the domain of psychology; cf. Baumeister & Vohs (2004).

⁹ Cf. Nahmias (2007, pp. 171-173)

¹⁰ Cf. Fischer (1994, pp. 162-168)

¹¹ Cf. Beckermann (2005, p. 121)

consider the consequences of the action, and check whether it makes sense to inhibit the impulse in favor of a long-term goal. An example would be a smoker, who feels the desire to have a cigarette, but represses it to avoid lung cancer. These situations, in which conscious reflection overrides affective impulses, are the paradigm cases of self-controlled behavior. John Locke famously called this ability the *power of suspension*¹². It is often argued that self-control is one of the most important skills that distinguish humans from animals – we can resist temptations and break habits. More self-control could be a solution to essential problems of our society¹³, including crime, violence, drug addiction, abuse, unwanted pregnancy, sexually transmitted diseases, failure to exercise regularly, and overeating.

In a nutshell, from what I discussed so far, a decision is self-controlled if and only if it is driven by conscious deliberations. An obvious question that comes up is what *driven* actually means. Does a decision have to be *strictly determined* by conscious deliberations, or must there be only *some* influence? Following researchers like Eddy Nahmias¹⁴, I think we should not see self-control as a yes-or-no concept that can be assigned in a strictly categorical way with sharp boundaries. Rather, self-control should be seen as a *gradual* cognitive ability. A decision is self-controlled *to the extent* to which conscious deliberations influence it. Sometimes, we exercise a lot of self-control, and we can push our impulses into an entirely different direction; in other situations, we are largely determined by impulses, and conscious reasoning can only make minor changes to our behavior; and sometimes, we are dictated by “hard-wired” reflexes, in which self-control plays no role at all.

From the perspective of evolution through natural selection, one could provide elegant explanations for the emergence of self-control¹⁵. One could argue that self-control enables a certain degree of detachment from stimulus-driven behavior. We do not only react to short-term impulses in a rigid way. Through conscious deliberations and reasoning, we can behave much more flexible by putting our perceptions into a larger context. This allows for the pursuit of long-term goals in spite of a constantly changing environment. The idea of *delayed gratification*¹⁶ seems crucial here: We can inhibit impulsive behavior to experience a larger gain in the future. On the other hand, there are also some disadvantages. Compared to impulsive behavior, self-controlled behavior takes a lot of time and energy. Therefore, when we are pressed for time, we rely on our rigid, narrow-minded impulses,

¹² Cf. Locke (1690)

¹³ Cf. Baumeister & Vohs (2004, p. 506)

¹⁴ Cf. Nahmias (2007, pp. 70-72)

¹⁵ Cf. Goschke (2004, p. 188), Logue (1995, pp. 21-29), Dennett (2003b, ch. 6-7), Suhler & Churchland (2009, pp. 342-343)

¹⁶ Cf. Logue (1995, pp. 6-7)

but when we can spare some time and energy, we take the liberty of engaging in self-control to ensure that our behavior is adequate. Needless to say, this could just be an evolutionary fairytale. Although there is some evidence that self-controlled and impulsive behaviors have some of these properties¹⁷, the actual role in evolution is hard to test empirically. Still, I believe that the idea of self-control as an evolutionary adaptation is a fruitful paradigm.

As stated above, I understand self-control as the gradual influence of conscious deliberations on our decisions. I do not claim that this is a final, concise definition of self-control. One could ask, for example, what exactly deliberations are. I will not go into more detail here, because I do not think that this can currently be done in a satisfying way, which would be helpful with respect to the free will problem. But what I hope to have provided is a *way* of looking at self-control. Despite some vagueness, I hope to have offered a *tool* which can be used to discuss empirical studies in the context of self-control. In intersection with empirical studies, it may then be possible to further specify a definition of self-control.

2.2 Why Self-Control matters for the Free Will Debate

The literature on free will is dominated by arguments related to determinism. Hopping on a recent trend¹⁸, I believe that the attention in the free will debate should shift from determinism to self-control, for the following reasons.

First of all, self-control is clearly relevant for the free will debate. Self-control is, in one version or another, essential for the compatibilist position. For the compatibilist, our will is free if and only if it is the result of self-controlled decision-making. If the compatibilist further accepts that self-control is a gradual ability, then it follows that our will can be free in varying degrees. Self-control as a condition for free will can account for the fact that we experience various behaviors as unfree: Reflexes, like the knee-jerk reflex or the blink reflex; strongly impulsive actions, like the behavior related to drug addictions or strong phobias; and actions associated with neurological disorders, like the tics in Tourette's syndrome or the movement dysfunctions in Parkinson's disease. What these behaviors have in common is that they cannot be prohibited through conscious considerations. The actions cannot be influenced by deliberate reasoning, they lack self-control.

Self-control is also relevant for the incompatibilist position. Although incompatibilists emphasize the principle of alternative possibilities and the condition of origination in one way or

¹⁷ Cf. Logue (1995, ch. 3)

¹⁸ Cf. Baumeister et al. (2008), Nahmias (2001, ch. 1)

another, most incompatibilists also stipulate the condition of self-control. This is not easy to notice by looking at the literature, but it is actually widespread. To quote just two incompatibilists, the libertarian Laura Ekstrom writes:

“An agent enjoys freedom of action only if the agent’s act results from a preference — that is, a desire formed by a process of critical evaluation with respect to one’s conception of the good.”¹⁹

Likewise, the German libertarian Geert Keil argues:

“[Willensfreiheit beinhaltet die Fähigkeit] praktische Überlegungen anzustellen, bestehende eigene Wünsche zu prüfen und gegebenenfalls zu suspendieren und das Ergebnis dieses Abwägungsprozesses handlungswirksam werden zu lassen. Es bedarf für Willensfreiheit nicht nur eines Spielraums von offenen Möglichkeiten, sondern auch der entsprechenden Fähigkeiten.”²⁰

In agreement with Keil, I believe that incompatibilists *need to* include self-control²¹ in their theory of freedom. Emphasizing that we are able to do otherwise or emphasizing that we are uncaused causers cannot explain why we experience, for example, the knee-jerk reflex as unfree. A theory of free will needs to further specify *how* free decisions are made and *in what way* they differ from unfree decisions. This is where self-control fits in. One can think of the principle of alternative possibilities and the idea of origination as additional features of self-control. For the libertarian, when our conscious deliberations influence our decisions, we *even* have the power to do otherwise, or it is *even* the case that our conscious deliberations are not subject to causality. Hence, the way I see it, incompatibilists need self-control as a basis for their theory. It is therefore not surprising that there are various passages on self-control in the incompatibilist literature, which can be easily overlooked in the light of the overwhelming amount of passages on the determinism controversy. Consequently, I believe that self-control is relevant for both compatibilists and incompatibilists.

¹⁹ Ekstrom (2000, p. 108)

²⁰ Keil (2007, p. 130)

²¹ I do not know whether Keil would accept the term „self-control“, but I read him as referring to something which is at least very similar to my conception of self-control.

I do not want to deny that determinism is relevant for the free will debate, too. However, I think there are various reasons why determinism should take a back seat in future research, and why we should focus on self-control. First, it is my impression that the discussion about determinism stopped making significant progress. The debate seems like a dead end, in which the different positions are mainly motivated by intuitions. The major problem is that determinism cannot be tested empirically. We neither have the appropriate tools to investigate micro-phenomena in sufficient detail, nor can we construct adequate experiments, because the world is never in the same state twice²². Although quantum mechanics, the prevalent theory in physics, assumes indeterminism, this does not mean that determinism is false, because we cannot exclude the possibility that there are underlying deterministic processes²³. Hence, it does not seem like we could get an answer on the question about determinism in the near future. Compared to determinism, it seems to be much easier to conduct experiments on self-control. Although there are methodological problems, which I am going to analyze in detail in chapter 3, they do not seem as severe as the problems that determinism encounters. Regarded in this light, it is striking that self-control has scarcely been addressed in the debate²⁴.

Besides, I think that self-control can be investigated independently of the question about determinism, because I believe self-control is compatible with both determinism and indeterminism²⁵. It has been argued that self-control is incompatible with indeterminism, because if indeterminism is true, then decision-making is governed by chance. I disagree on this point. Although indeterminism entails that microphysical events are governed by random processes, this does not necessarily mean the random processes are also present at macro-levels, like the level of decision-making. The indeterminism at lower levels might “wash out”²⁶ at higher levels.

Summing up, I think that the conceptual and empirical research on self-control should be extended. In the free will debate, progress on the determinism controversy has slowed down and support from the empirical sciences seems out of reach. In contrast, the topic of self-control did only get minor attention, although it is empirically testable and highly relevant for both compatibilists and incompatibilists.

²² Cf. Keil (2007, ch. 3)

²³ Cf. Walter (2001, pp. 20-25)

²⁴ Cf. Dennett (1984, p. 51)

²⁵ Cf. Nahmias (2001, ch. 1)

²⁶ Roskies (2006, p. 421)

3 The Empirical Evidence: Is Self-Control an Illusion?

In this chapter, I will introduce some of the empirical studies which have been mentioned in the context of self-control and the free will debate. The common message behind these studies is that we tend to overestimate the control we have. My goal is to analyze whether this is really true. For each of the experiments, I am going to present the common conclusions and interpretations which have been drawn for self-control, and discuss their adequacy. As I mentioned in section 2.1, my “working definition” of self-control will be the influence of our conscious deliberations on our decisions. It will turn out that while some of the studies appear to be highly overrated, others pose a more serious threat to our way of thinking about self-control. I will start with neuropsychological experiments, which try to combine psychological research on decision-making with the measurement of brain activity. After that, I will investigate psychological studies on illusory feelings of control, subliminal priming effects, and social behavior.

3.1 Neuropsychology

In the rise of neuroscience, interest in the neural correlates of mental processes began to grow. Benjamin Libet was one of the first scientists who investigated neural correlates of volition and decision-making. In section 3.1.1, I will introduce one of his most famous studies and its widespread interpretation. Section 3.1.2 is devoted to the methodological criticism that has been raised to question this interpretation, and follow-up studies which tried to improve on these points. Finally, in section 3.1.3, I am going to analyze the boundaries of these neuropsychological studies – what would follow for our conception of self-control if the methodological weaknesses were overcome and the same findings would hold?

3.1.1 Libet's Experiments

It is rather uncontroversial to claim that Libet's experiments are *the* most discussed studies in the free will debate. Here is one of his most influential studies²⁷: In 1965, Kornhuber and Deecke²⁸

²⁷ Cf. Libet (1985)

²⁸ Cf. Kornhuber & Deecke (1965)

discovered that voluntary motor actions are correlated with a characteristic EEG-signal²⁹, which precedes the action. They called this signal the “*Bereitschaftspotential*”, which translates to *readiness potential*. Libet wanted to investigate how the readiness potential relates to conscious decision-making. In his experiment, subjects were told that they should flex their wrist “at any time the desire, urge, decision or will should arise in them”³⁰. The time they performed the action was measured via EMG, a technique to measure muscle activity. At the same time, subjects had to fixate a rotating clock and report the position of the clock at the time they became aware of the intention to flex their wrist. This is how Libet measured the time when the conscious intention to act arises. During this whole process, subjects were connected to an EEG-monitor, such that the readiness potential could be measured. Libet was interested in the following question: How does the time of the conscious intention to act compare to the time when the readiness potential occurs? Consistent with the finding of Kornhuber and Deecke, he found that the readiness potential precedes the action by about 550 milliseconds. But the surprising result was that the awareness of the intention to act preceded the action by about 350 milliseconds, meaning that the awareness of the decision occurs at about 200 milliseconds *after* the readiness potential can be measured.

A widespread interpretation of this result is that consciousness comes too late to cause our decision. If the readiness potential is an indicator for an upcoming motor action, and the awareness of the decision to act occurs after the readiness potential, then awareness does not play a causal role in decision-making. When we are aware of the decision process, the decision is *already made*, and we cannot change it. From the perspective of self-control, the picture is straightforward: Our conscious deliberations *cannot* influence our decisions, because the decision is made unconsciously. The feeling of conscious control over our decisions must be just an illusion, and we are determined by unconscious processes in the brain. Daniel Wegner writes:

*“[Libet’s] finding suggests that the experience of consciously willing an action begins after brain events that set the action into motion. The brain creates both the thought and the action, leaving the person to infer that the thought is causing the action.”*³¹

²⁹ EEG (electroencephalography) is a method to measure the electrical activity of the brain along the scalp. Although the measurement is rather gross, one can still find characteristic signals for various cognitive phenomena.

³⁰ Libet (1985, p. 530)

³¹ Wegner (2003, p. 66)

In the German literature, one can find similar statements, for example by Wolfgang Prinz:

„Danach scheint es – um es paradox zu formulieren –, als sei die Handlungsentscheidung längst gefallen, wenn die bewußte Intention ausgebildet wird. Wenn das zutrifft, kann die Handlungsintention nicht die kausale Grundlage der Handlungsentscheidung sein. Vielmehr kommt die Handlungsentscheidung in anderen Prozessen zustande, die Libet als unbewußt bezeichnet.“³²

Hence, according to these interpretations, Libet's finding supports *epiphenomenalism*: consciousness is seen as just a side-effect that does not play a causal role in our behavior. If this were true, then this would deny the existence of self-control, since our conscious deliberations could not influence anything in the (“objectively” observable) physical world.

3.1.2 Methodological Criticism and Follow-Up Studies

These interpretations and the dogma of an empirical falsification of free will are prevalent, especially in popular science and media portrayals. By now, there is also a huge amount of literature which criticizes Libet's method and the common interpretations of his results. In this section, I will mention some of the most severe methodological shortcomings and discuss some follow-up studies that tried to investigate these problems.

One methodological problem is the role of the readiness potential. In the interpretations of Libet's experiment, it is assumed that the readiness potential represents activity in the brain which *determines* the action. However, some studies propose that the readiness potential represents merely an unspecific preparation of an action³³. Since the subjects in Libet's study did not have any action alternatives, and they could simply decide between doing and not doing a specified action, Libet's results do not exclude the possibility that subjects could have chosen between a variety of different action alternatives even after the readiness potential. In an attempt to resolve these ambiguities, Haggard and Eimer³⁴ replicated Libet's experiment with some modifications. In their study, subjects could choose between pushing a right and a left button, such that there were two simple action alternatives. In addition to that, Haggard and Eimer measured the *lateralized readiness potential*, which has turned out to be a more specific predictor of the action than the general

³² Prinz (1996, p. 99)

³³ For a recent study, cf. Herrmann et al. (2008)

³⁴ Cf. Haggard & Eimer (1999)

readiness potential³⁵. In short, Libet's basic finding was confirmed: Haggard and Eimer found that there is still a gap between the lateralized readiness potential and the awareness of the decision, although the gap was smaller than in Libet's study. But still, it is unclear whether the processes underlying the lateralized readiness potential really *determine* the decision, or whether there is just a correlation. In the study by Haggard and Eimer, two of eight subjects showed the reversed effect: The measured awareness *preceded* the lateralized readiness potential. This might be an effect that only occurred due to the ambiguity of EEG-signals, but nevertheless, it shows that we should be more careful in interpreting the studies. Talking about unconscious *determinants* in the brain might be just a rash conclusion which is based on misleading correlations.

Another methodological problem that has been criticized is the measurement of the moment of awareness. Research in psychology has shown that it takes cognitive time and effort to observe the clock and to compare the position of the clock with the moment of awareness³⁶. It might be the case that this process can account for the gap between the readiness potential and the measured moment of awareness, while the *actual* awareness occurs before the readiness potential. However, the gap is probably too large for these explanations. This becomes particularly apparent in the light of a study by Haynes et al.³⁷, which suggests that there are potential unconscious determinants in the brain even *prior* to the processes measured by the readiness potential. In some interpretations of Libet's study, it is assumed that the readiness potential indicates when the decision is unconsciously made. However, research in neuroscience has shown that the readiness potential originates from the supplementary motor area, a brain region involved in the late stages of motor planning. In this regard, one could assume that the readiness potential does not represent decision-making, but just the preparation of the action after the decision has already been made. In an fMRI³⁸ study, Haynes et al. tried to test this hypothesis. In their study, the subjects were in an fMRI scanner and should freely choose between pushing one of two buttons, while again reporting the moment of awareness.³⁹ By applying statistical methods to the fMRI-scans, Haynes et al. tried to find activities of brain regions

³⁵ Cf. Coles (1989)

³⁶ Cf. Dennett (2003a, pp. 41-43)

³⁷ Cf. Haynes et al. (2008)

³⁸ fMRI (functional magnetic resonance imaging) is a neuroimaging method to measure and locate brain activity. This is done indirectly through measuring the blood flow and blood oxygenation in the brain. fMRI is one of the most recently developed forms of neuroimaging, and is widely used, especially due to its low invasiveness and good spatial resolution.

³⁹ Instead of a rotating clock, Haynes et al. showed the subjects a sequence of letters. The subjects should report the letter that was present when they became aware of their decision to press a button.

which could predict the decision before the subjects were aware of it. More specifically, they wanted to find a brain region X, which showed the activity pattern A when the subject is going to push the left button and the activity pattern B when the subject is going to push the right button. While they expected to find respective brain activities in the motor cortex, like the activity measured by the readiness potential, Haynes et al. wanted to find out whether other brain regions have the same predictive power, even before the readiness potential can be measured. They indeed found brain regions like that, most notably the frontopolar cortex. Surprisingly, this activity occurred up to about 10 seconds⁴⁰ before the subjects were conscious of the decision. This suggests that the gap between potential unconscious determinants in the brain and the awareness of the decision is a lot larger than Libet's study suggested. A gap of this magnitude can probably not be explained away by referring to the delayed measurement of the awareness. Still, the problem remains that only correlations and probabilities are measured – whether or not one can infer determinants in the brain is still uncertain.

I believe that another methodological problem is even more severe: Even if there is such a gap, the decision in the experimental condition is certainly a very simple one, since the subjects can just decide between two buttons. Usually, there are a lot more options available to us when we make decisions. In addition to that, and more importantly, the decision is not intrinsically motivated⁴¹. There is absolutely no reason why we should push the right button instead of the left button. The decision will not affect our life in any relevant way, no arguments have to be weighed up against each other, and the decision is not connected to any long-term consequences. We just do not care about the decision. One could argue that when the decision *is* intrinsically motivated, then we will not find such a gap between presumably determining activity in the brain and the awareness of the decision - in that case, our conscious deliberations do matter and we can exercise self-control. This kind of criticism poses a serious challenge for neuropsychological experiments, since it is hard to design an experiment in which the participants make “natural” decisions. The more complex the decision, the less controllable are the experimental conditions. Moreover, it is hard to design an experiment in which the decisions are personally relevant for the subjects, since this factor is strongly dependent on individual differences. On top of that, the experiment has to be compatible with neuroscientific techniques like EEG or fMRI, which only function properly in restricted environments.

⁴⁰ Depending on the subject, and depending on the particular decision, this time lag varied.

⁴¹ Cf. Kuhl & Hübner (2007)

3.1.3 What do these Studies show at best?

Although these neuropsychological experiments leave some questions open, in particular questions about intrinsically motivated decisions and the exact causal mechanisms, personally, I would not be surprised if neuroscience could one day answer these questions. My goal in this section is to construct and discuss a “worst-case” scenario, in order to learn more about the boundaries of these neuropsychological experiments. What if we subtract all the methodological problems that the neuropsychological experiments on decision-making face – what would then follow for self-control? Imagine that a neuropsychological experiment exists which shows the following: In a “natural” decision, which has personal relevance for the subject and is intrinsically motivated, there is unconscious activity in the brain, which *precedes* conscious awareness of the decision and causally *determines* the decision. Would that mean that we have to deny the idea of self-control?

I believe that even such an experiment could not deny self-control. First, one has to become clear on the relation between our brains and our mental states. In his book “The Astonishing Hypothesis”, Francis Crick writes:

“[Your] sense of personal identity and free will are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules. [...] You’re nothing but a pack of neurons.”⁴²

Statements like these often carry the implicit assumption that neural mechanisms *bypass* our mental life⁴³. If electrical activity in the brain causes our decisions, then our experience of conscious deliberations and reasoning *cannot* be causally relevant. However, neuroscience seems to show that there is in fact an intimate relationship between neural mechanisms and our mental life. It is becoming more and more likely that in some sense of “is”, the mind *is* the brain. Although there are a lot of philosophical puzzles left open on this issue, I believe that, *without further assumptions*, determination by neural mechanisms does not necessarily mean that conscious deliberations are causally irrelevant⁴⁴. From this perspective, the force of our imaginary experiment is not the

⁴² Crick (1994, p. 3)

⁴³ Cf. Nahmias (forthcoming)

⁴⁴ This point is made forcefully by Beckermann (2006).

conclusion *that* our decisions are determined by neural mechanisms. This alone does not threaten self-control. Rather, it is the conclusion that the decisions in the experiment are made *unconsciously*.

Prima facie, it seems like this conclusion is incompatible with self-control. If the decision is made unconsciously, then it seems like our conscious deliberations cannot have an influence on it. But an idea from the domain of psychology allows for a different view. It might be the case that our conscious deliberations can “*program*” our unconsciousness⁴⁵. Figuratively speaking, the picture looks as follows: Our consciousness can send instructions to our unconsciousness on how to react and decide in certain circumstances. If the respective situation is present, then our unconsciousness processes the situation as instructed, without conscious thoughts being involved. When our unconsciousness is done with the processing, it passes the results on to our consciousness. We can then consciously consider whether we are satisfied with the result. If this is not the case, we might “reprogram” our unconsciousness to change how future situations are handled. Eddy Nahmias puts it this way:

“We consciously consider what sorts of actions we want to perform in certain situations, what reasons and desires we want to move us, and then we go out into the world aiming to act in accord with these conscious considerations (our ‘programs’ or plans of action), and we consciously monitor ourselves, adjusting our actions when we see them diverge from our plans.”⁴⁶

If this theory is right, then conscious deliberations can configure our unconsciousness in a certain way. Our unconsciousness is not a rigid, reflex-like system, like it has traditionally been thought of; rather, it is - at least sometimes - flexible, dynamic and controlled by conscious intentions. A good example is learning to type on a keyboard. When you start trying to type, then you need to consciously look for the keys you want to press. But after a while, as soon as you get used to typing, this process becomes unconscious and automatic. You do not need to consciously concentrate on the keys anymore. Nonetheless, you are consciously monitoring the process and you have the ability to change the automatism if you want to – the unconscious process is *in your control*. Ansorge and Horstmann⁴⁷ termed this type of control *preemptive top-down control*, in contrast to *reactive top-*

⁴⁵ The same argument can be found in Rosenthal (2002), Goschke (2004, p. 192), Walter & Goschke (2006, pp. 132-133), and Nahmias (forthcoming).

⁴⁶ Nahmias (forthcoming)

⁴⁷ Cf. Ansorge & Horstmann (2007)

down control, which means that our conscious deliberations directly intervene and guide the process⁴⁸. Others made use of the terms *distal intentions* and *proximate intentions*⁴⁹. Begging some forbearance, I will use slightly different concepts, since they fit better into the conceptual framework I used so far: In the following, *preemptive self-control* shall refer to the “self-programming” ability to configure unconscious processes, while *direct self-control* shall denote the direct engagement of conscious deliberations in the process. Although it is, to date, unclear whether and in what way preemptive self-control exists, the research area in psychology is beginning to grow⁵⁰.

By applying this theory to our imaginary experiment, we can account for the finding that our decisions are *made* unconsciously, and that conscious awareness only occurs after the decision has already been made. But from the perspective of preemptive self-control, this does not mean that our conscious deliberations did not influence the decision, because the unconscious decision-making process could have been set up in advance by conscious deliberations. We might have “programmed” how we want to decide. One could imagine that this happened during the task instruction, when the subjects consciously agreed to follow the instructions. At that point, they consciously formed an intention on how they want to decide. For example, in Haynes et al.’s study, this could have been the intention to push the buttons in a rather even way, while at the same time avoiding an obvious system (like pushing the buttons in a strictly alternating way). When the respective situation was present, there was no need for another process of conscious decision-making and the decision was simply triggered unconsciously. Nevertheless, it was exactly what the subjects wanted on a conscious level. If this picture is true, then for our conscious deliberations to have an influence on our decisions, it is not necessary that they are the proximate cause of the decision. Instead, the influence could also be indirect through consciously configuring unconscious processes. While it is easier to imagine preemptive self-control being present in typing or driving, we might feel more resistance to apply this theory to decision-making in general. However, especially in the light of the growing research area, it is a possibility that has to be considered. Since our imaginary neuropsychological experiment cannot exclude this possibility, it cannot undermine self-control.

To sum up, Libet’s neuropsychological experiments and the respective follow-up studies are not easy to interpret. Although they appear to be a strong threat against self-control and free will at first glance, they encounter some severe methodological shortcomings. So far, no intrinsically motivated

⁴⁸ This distinction can be traced back to Dretske (1988).

⁴⁹ Cf. Nahmias (forthcoming)

⁵⁰ Cf. Pashler et al. (2001), Ansorge & Neumann (2005), Kiefer (2007), Ansorge et al. (2009), Hassin et al. (2009)

decisions have been studied in this context, so the results of the experiments may not generalize. In addition to that, there is a lack of understanding about the exact causal mechanisms, and we might be dealing with misleading correlations. If these problems were absent, and there would be an experiment showing that genuine decisions are determined by unconscious neural mechanisms, then this would speak against the idea of direct self-control. However, such an experiment could be consistent with preemptive self-control. Hence, the neuropsychological experiments done so far do not allow for strong conclusions about self-control – all they do is offer room for speculation. At best, they could one day show that we have to change our way of thinking about self-control, but they will not be able to show that self-control does not exist all. I will now close my analysis of the neuropsychological research, and examine whether behavioral studies in psychology have more conclusive force with respect to self-control.

3.2 Control Illusions

One phenomenon that attracted attention in the free will debate is the so-called *control illusion*. In short, studies on control illusions try to make the subjects *feel* that they are controlling something, when they demonstrably do not have this kind of control. In particular, the psychologist Daniel Wegner is known to draw strong conclusions from these experiments. I will start by describing the famous I-Spy study by Wegner and Wheatley⁵¹ and another study by Linser and Goschke⁵². After that, I will discuss their interpretations.

In the I-Spy study, the subjects were sitting at a table with a confederate, who was posing as a participant. In front of them was a square board, mounted atop a computer mouse. By moving the square board, the subjects could thereby control a cursor on a computer screen, which showed a picture with various small objects. Both the subject and the confederate could touch the square board, such that they both could influence the movement of the cursor. The subjects were told to move the square board in slow sweeping circles, and after about 30 seconds, they should stop and rate how much they (and not the confederate) influenced the cursor. While they were moving the square board, the subjects heard the names of some objects on the computer screen through headphones. They were told that this was just supposed to distract them, and that the confederate was listening to different words through his headphones. There were two experimental conditions: In one condition, the confederate was forcing the cursor to move to a certain object, which the

⁵¹ Cf. Wegner & Wheatley (1999)

⁵² Cf. Linser & Goschke (2007)

subject had heard through his headphones shortly before the cursor was on that object. In the other condition, the same happened, except that this time, the subject did not hear the word of the object. The result of the experiment was that the subjects reported to have *more* control over the cursor in the first condition than in the second condition. However, in both cases, the confederate was in fact forcing the cursor to move to the respective object, so the subject did not have any control in both conditions. Hence, the subjects were led to believe that they had control over the cursor just by hearing the names of the objects, which they were explicitly told to ignore. One can conclude that our feeling of control does not necessarily match the “real” causal mechanisms, and that our feeling of control can be deluded.

Before I discuss stronger interpretations, let me introduce the study by Linser and Goschke. Their goal was to create an illusory feeling of control with the help of subliminal priming⁵³. (In section 3.3, I will discuss how subliminal priming can affect the outcome of decisions, while this experiment was just concerned with subliminal priming of the feeling of control.) Linser and Goschke gave subjects a choice: At fixed time points, they could decide whether they wanted to push a left or a right button. After their decision, a blue or a yellow circle appeared on the screen. Having done that for a couple of times, the subjects were asked to rate, on a scale of 1 to 100, how much their decision influenced whether a blue or a yellow circle appeared – how much control they had. What the subjects did not know was that the blue and yellow circles appeared in a completely random order, and that they had been subliminally primed immediately before their decisions. There have been three conditions. In the congruent condition, the prime was the word “BLUE” or “YELLOW”, and the prime always matched the color of the circle that appeared after the decision. In the incongruent condition, the primes were the same, except that this time, they never matched the subsequent color of the circle. For instance, when the prime was “BLUE”, a yellow circle appeared after the decision. The third condition was the neutral condition, in which the primes were just meaningless letter strings like “AGLB”. The result of the experiment was that the subjects reported a *stronger* feeling of control in the congruent condition than in the incongruent and neutral condition. This is striking because they demonstrably did not have this kind of control, since the color of the circle was

⁵³ Subliminal priming denotes the effect that an unconsciously perceived stimulus affects the subsequent response to another stimulus. The “prime” is the stimulus that should influence the later response, while the “target” is the stimulus that triggers the response. To ensure that the prime is only unconsciously perceived, the prime is shown for just a very short duration. In addition to that, it is often “masked”, usually meaning that another stimulus is presented immediately before and immediately after the prime. It has been shown that masking is very effective for subliminal priming, in particular because it “erases” the afterimage of the prime.

completely random in all conditions, and their decision did not influence the subsequent circle in any way. One can, again, conclude that our feeling of control can be tricked, and that it does not necessarily reflect the causal mechanisms that were actually effective.

There are much more studies which show the same effect⁵⁴. What can we learn from these experiments for self-control? Wegner⁵⁵ draws the conclusion that conscious will must be an illusion. Our intuition that we have self-control and that our conscious deliberations can causally influence our behavior must be a mere post-rationalization, and conscious will is a causally impotent epiphenomenon. Critics⁵⁶ argue that Wegner's conclusions are far too strong. First, it is important to notice that the studies above investigated our feeling of control over some *external* events (like the movement of a cursor or the appearance of circles on a computer screen). More specifically, they studied how we think our actions influence some observed events. But they did not investigate our feeling of control *over our own decisions*, namely the feeling of self-control, since the studies do not question that our conscious deliberations influenced which button we wanted to push or how we wanted to move our hand on the square board. Second, the studies on control illusions just show that our feeling of control *can* be mistaken and that it is not a perfectly reliable tracker of the causal mechanisms that are at work. However, the experiments do not show that our feeling of control is *always* wrong. The studies show that the feeling of control can "malfunction", but that does not mean that it does not work under "normal" circumstances, in the environment we are used to. This becomes particularly apparent by considering the fact that these studies are usually designed to systematically "trick" the subjects. The conditions do not seem to represent ordinary situations, therefore, generalizations seem inappropriate. An analogy to visual illusions begs to be drawn⁵⁷. For instance, in the Mueller-Lyer illusion⁵⁸, we perceive two identical lines as having an unequal length, probably because we misinterpret visual cues about relative distance that are typically reliable indicators. Likewise, in control illusions, we might misinterpret cues which usually indicate that we have control over some external event. But, like in the Mueller-Lyer illusion, the cues are rather *unusual* - hence, the studies cannot deny that our feeling of control is *usually* adequate.

⁵⁴ A collection can be found in Wegner (2002). For the reverse effect, namely the effect that we feel we are *not* in control, when we in fact are, table-turning is a good example (cf. Faraday (1853))

⁵⁵ Cf. Wegner (2002, especially ch. 1 and ch. 5), although he sometimes makes weaker conclusions (cf. Wegner (2003, p. 68))

⁵⁶ Cf. Walde (2006, pp. 114-118), Keil (2007, pp. 156-157)

⁵⁷ Cf. Keil (2007, p.158), Nahmias (forthcoming)

⁵⁸ Cf. Mueller-Lyer (1889)

I do not think that the experiments on control illusions are worthless for the free will debate. At least, they show that we should be more careful with trusting our intuitions and feelings. Especially in the libertarian camp, one can often find the argument that free will and self-control are a “phenomenal fact”. But the studies on control illusions indicate that we should be more cautious with these approaches, since our feelings and impressions do not necessarily mirror the facts. Still, control illusions can indeed not tell us much about self-control. What remains is the rather unspectacular conclusion that our impression of how our actions influence observed phenomena can be misguided in cleverly designed experiments, which are probably not representative for everyday situations.

3.3 Subliminal Priming of Decision-Making

Subliminal priming studies cannot only tell us something about illusory feelings of control. There are also numerous experiments which examine how subliminal primes can affect *how* we decide. In this section, I will first introduce a typical experiment of this kind, which should be representative for what these studies can show in general. After that, I will analyze how we could interpret empirical findings like these.

Wendt-Kuerschner and Goschke⁵⁹ wanted to show that free decisions can be influenced by factors we are not aware of. Their experiment consisted of two parts. In the first part, the subjects could, at specified time points, freely decide between pushing either a left or a right button. When they pushed the left button, they could see a square on a computer screen, and when they pushed the right button, they saw a rhombus. This part of the experiment was designed to let the subjects form associations between pushing the buttons and seeing symbols on the screen. In the second part of the experiment, the procedure was basically the same, with one crucial difference: This time, shortly before the subjects had to decide, they were subliminally presented with a prime, which was either the square or the rhombus. The results showed that although the subjects were not aware of the primes, they were more likely to choose the left button when they were primed with the square, and they were more likely to choose the right button when they were primed with the rhombus.

What could this mean for self-control? Since the primes were subliminally presented, the subjects did not have conscious access to them, meaning that the primes could not have been part of their conscious deliberations. But the experiment shows that the primes did in fact influence the decision. Together with the fact that the subjects *experienced* the decisions as being free and self-

⁵⁹ Cf. Wendt-Kuerschner & Goschke (in preparation)

controlled, this seems to imply that supposedly free decisions can be influenced by external factors, which are beyond the scope of our conscious deliberations. This conclusion would diminish self-control: When we think we have self-control, the influence of our conscious deliberations is, at least, less than we think. The studies do not allow for the conclusion that we have no self-control at all, because although they show that unconscious factors demonstrably have an influence on our decisions, they do not show that conscious deliberations do not have *any* influence. This was different in the experiments on control illusions. In these experiments, we could be sure that the actions of the subjects did not have any influence on the observed phenomena. However, in the study by Wendt-Kuerschner and Goschke, we do not know whether a certain amount of self-control could have played a role, because the primes just made a certain choice more *likely* – they did not *determine* the decision. Nevertheless, it seems like we can draw the conclusion that when we think we have self-control, external factors of which we are unaware of can have an influence on our decisions – at least sometimes, our conscious deliberations alone do not determine the decisions we experience as self-controlled.

What could one oppose to this conclusion? Basically, we can recycle points that I have mentioned in previous sections. First, one could argue that this is a case of preemptive self-control. Although we are not aware that the primes had an influence on our decisions, we consciously *want* them to have an influence. Hence, we configured our unconscious system in the respective way.

There is indeed evidence suggesting that the effects of subliminal priming are dynamic and dependent on conscious intentions⁶⁰. For instance, in a study by Dehaene et al.⁶¹, subjects were given the task to check whether a presented number is lower or higher than 5. If the number was lower, then they should push a left button, and if the number was higher, they should push a right button. Shortly before the number was presented, the subjects have been subliminally primed with numbers as written words (e.g. "SIX")⁶². As usual, there have been two conditions: In the congruent condition, the prime was a number that would elicit the same response as the subsequent target number. For example, the prime "TWO" would be followed by the target "4", since both are lower than 5. Likewise, the prime "EIGHT" would be followed by the target "7", because both are higher than 5. In the incongruent condition, the opposite was the case, and the prime always corresponded

⁶⁰ Cf. Ansorge & Neumann (2005), Kiefer (2007), Ansorge et al. (2009)

⁶¹ Cf. Dehaene et al. (1998)

⁶² The prime was a number as a written word, and not a number as an arabic digits like the targets, because Dehaene et al. wanted to ensure that the priming effect occurs on a semantic level and not just on a level of "surface forms".

to a different response than the target (“ONE” would be followed by “6”, etc.). The results were that the subjects in the congruent condition responded significantly faster than the subjects in the incongruent condition. Dehaene et al. interpret this result as showing that we unconsciously apply the consciously accepted task instructions to the prime⁶³. If this is true, then our intentions can indeed have an influence on subliminal priming effects, and the influence of subliminal primes can be ascribed to preemptive self-control.

However, it is a matter of debate whether this was really going on in the study by Wendt-Kuerschner and Goschke. It is likely that the subjects did not prepare the effect in a *specific* way. It seems like they did not have an intention like “I want to push the left button when the square appears shortly before my decision”. Although this has not been tested empirically, it seems like a reasonable assumption to me, because an intention like this was neither mentioned in the task instruction nor is there a good reason to have such an intention. One could argue that the subjects formed a more abstract intention, like, for example, “I want to decide according to my spontaneous associations”. There is a slippery slope between acknowledging the vast complexity of our brains on the one hand, and engaging in absurd attempts to save free will on the other hand. It seems to me like (1) assuming the presence such a conscious intention is absurd and (2) even if such an abstract intention is present, the connection to the priming effect is too loose to justify the use of the term self-control. I have the impression that although *some* priming effects are dynamic and influenced by conscious intentions, *this* case seems more like a “hard-wired” associative mechanism, comparable to a reflex. It is an open research question whether preemptive self-control can really account for priming studies like these, but personally, I am rather skeptical that consciousness plays a major role in these findings.

Other points can also be raised to counter the above conclusion of subliminal priming studies. As I argued in the section about neuropsychological studies, the experimental conditions do not reflect a “natural” decision, since pushing a left or right button is not intrinsically motivated and has no personal relevance to us. Thus, the properties of the decisions in the experiment may not generalize to all decisions we make. In addition to that, as I argued in the section on control illusions, the experimental conditions may not reflect ordinary circumstances - it is questionable whether we

⁶³ It is rather uncontroversial to claim that this study shows the dynamic character of priming effects. However, it is not clear whether our *intentions* really control this effect as Dehaene et al. suggested. For other interpretations, cf. Damian (2001) or Kunde et al. (2003).

encounter subliminal primes in our everyday life in such a systematic way⁶⁴. It is not clear whether “normal” circumstances can also affect our decisions in the way systematic subliminal primes do.

Summing up, the fact that subliminal primes can unconsciously influence our decisions poses the most serious threat to self-control that I have discussed so far. It allows for stronger conclusions than the studies on control illusions, since the actual process of decision-making is affected, and not just our judgment of how our actions causally relate to observed events. The empirical finding is also stronger than the findings of the neuropsychological experiments, because it is not confronted with the open question whether the neural correlates are really unconscious *determinants*. However, we still encounter the other problems that the neuropsychological experiments faced: The experimental conditions may not represent “natural” conditions, because the decisions are neither intrinsically motivated, nor is it clear whether we usually encounter subliminal primes in such a systematic way. Due to these shortcomings, we are left over with the conclusion that our feeling of self-control can be tricked in experimental conditions which are probably exceptional. Hence, the studies show that what the experiments on control illusions already suggested for our judgment of causality in general does also hold for our experience of self-control in decision-making. What we can learn from these studies is that we should be more skeptical when it comes to our intuitions about self-control: When we think we know the factors that drive our decisions, we *can* be mistaken. Our feeling of self-control is not infallible. But, still, we have no idea about the role of self-control in our everyday life.

3.4 Social Psychology

From all the empirical sciences, the research area of social psychology has to offer studies which I believe pose the most serious threat to self-control. Apart from Wegner’s control illusions, social psychology has been largely neglected in the free will debate, and socio-psychological studies found their way into the free will literature only very recently. This contribution can probably best be assigned to Eddy Nahmias⁶⁵. Especially in comparison to Libet’s experiments, studies from social psychology are radically underdiscussed and there is much work left to do. Following Nahmias, I will try to make a start and attempt to clarify what exactly social psychology can contribute. First, I am going to introduce a selection of social-psychological studies and their respective *prima facie* conclusions. Section 3.4.1 is devoted to studies which show that (non-subliminal) priming can affect social behavior, while section 3.4.2 will show that the situational context can have a huge impact,

⁶⁴ Bargh (1992) argues that these cases would probably be very rare.

⁶⁵ Cf. Nahmias (2007)

too. In comparison to the previously mentioned studies, I think the biggest advantage of social psychological studies is that they study “natural” decisions in everyday situations. Thus, their conclusions cannot be countered by the “lack of naturalness”-argument, which I mentioned as an essential problem for all of the studies I discussed before. Unfortunately, since “more natural” means “less controllable” in empirical studies, other problems arise. In section 3.4.3, I will discuss which questions the studies from social psychology leave open.

3.4.1 Priming in Social Psychology

Bargh et al.⁶⁶ conducted an experiment which basically consisted of two parts. In the first part, the subjects had to complete a so-called “Scrambled Sentence Test”. In this test, they were given five words in a non-grammatical order (e.g. “he it hides finds instantly”) and their task was to use these words to construct a grammatical four-word sentence (e.g. “he finds it instantly”) as quickly as possible. The subjects did this for 30 sentences. Bargh et al. had three different conditions: The subjects had to sort sentences which were either all related to *rudeness* (e.g. “they her bother see usually”), *politeness* (e.g. “they her respect see usually”), or nothing specific (neutral condition, e.g. “they her send see usually”). This part of the experiment was supposed to prime the subjects (non-subliminally) to the respective topics. In the second part of the experiment, the subjects were involved in a staged situation in which the experimenter was talking to a confederate (acting as another participant). Since the subjects were told to receive further instructions from the experimenter, they had to wait until the conversation was over. Bargh et al. measured whether the subjects interrupted the conversation, and if so, how long they would wait before interrupting. If they would not interrupt in 10 minutes, the experimenter would stop the conversation by himself and the subject would be counted as a non-interrupting participant. The result of the experiment was that the subjects who have been primed to rudeness interrupted the conversation significantly more often (67%) than the subjects who were in the politeness (17%) or neutral condition (37%). When the subjects were asked whether they believe the Scrambled Sentence Test could have influenced their behavior in any way, none of them showed any awareness or suspicion that it could have affected their willingness to interrupt.

⁶⁶ Cf. Bargh et al. (1996)

Results like these are widespread in the literature of social psychology⁶⁷. What can we conclude from these studies for self-control? The decision in question is whether the subjects wanted to interrupt the conversation or let it continue. The results of the study indicate that the words in the Scrambled Sentence Test influenced this decision. However, as common sense and the debriefing after the experiment suggests, the words were not part of the conscious deliberations which the subjects made in that particular decision. This suggests that decisions which seem to be self-controlled can be influenced by factors *outside* of our conscious deliberations, which is a threat to self-control. So far, the conclusion is identical to the conclusion of the subliminal priming studies in section 3.3. But the crucial difference is that these studies from social psychology can deal much better with what I have mentioned as a major shortcoming of the subliminal priming studies in section 3.3: the alleged “lack of naturalness”. First of all, unlike the decision to push one of two buttons which have no consequences, the decision to interrupt a conversation is very common and relevant to us⁶⁸. Each and every one of us has to make such a decision on a regular basis. One cannot argue that this scenario is too “artificial”. But one could claim that the manipulated Scrambled Sentence Test is a deceitful trick which we normally do not encounter. Personally, I believe that the “lack of naturalness”-argument finds its boundaries in these experiments. I have the impression that the Scrambled Sentence Test primes us in a way which is comparable to very common situations. For example, politeness may be primed in the same way when we go to a fine restaurant, and rudeness may be primed when we see a fight on the street. However, this is still speculative. In the next section, I will introduce experiments which I believe counter the “lack of naturalness”-argument once and for all. I will postpone the discussion of other objections to section 3.4.3.

3.4.2 The Role of the Situational Context

An important topic in social psychology is how the situational context affects behavior. One of the most famous phenomena is the so-called *bystander effect*⁶⁹. In short, this effect denotes the observation that people are less likely to help someone when passive bystanders are around. Consider a study by Latane and Rodin⁷⁰. In their experiment, subjects heard a female experimenter take a bad

⁶⁷ For example, Bargh & Gollwitzer (1994) showed that priming of the topics “achievement” or “friendship” influences social behavior, too.

⁶⁸ Although it is not a major decision in our life, we still have to weigh up various consequences: On the one hand, we want to receive the information we need, on the other hand, we do not want to cause trouble, we want to treat people with respect, we want to be socially accepted, or the like.

⁶⁹ Cf. Darley & Latane (1968)

⁷⁰ Cf. Latane & Rodin (1969)

fall. 70% of the subjects who were alone went to help. However, if subjects sat next to an impassive confederate, only 7% intervened. Similar effects have been demonstrated numerous times⁷¹. What makes these findings important for self-control is that the overwhelming majority of participants report in post-experimental debriefings that the presence of other people did not play a role in their decision⁷². These statements are made in the light of evidence which strongly suggests the opposite.

Once again, these findings seem to imply that decisions which feel self-controlled can in fact be influenced by factors we are not aware of. But in this case, there seems to be no room at all for arguing that the experimental condition does not resemble a typical situation. It is very common for us to come across people who fall over, and this happens with and without other people nearby. Thus, one cannot bring forward the aforementioned “lack of naturalness”-argument, and generalizations to “normal” decision-making appear to be appropriate. We do seem to be, at least, *overestimating* the influence of our conscious deliberations on our decisions.

Other studies carry the same message for self-control as the experiments on the bystander effect. To mention just two of them: Nisbett and Wilson⁷³ showed that when subjects have to select between a couple of identical products, they tend to choose the rightmost one (the so-called *position effect*). When asked whether the position of the product could have had any influence on their decision, they deny this possibility, and instead come up with reasons why their product is better than the other ones – but in fact, the products were exactly the same. Nisbett and Wilson report:

“When asked about the reasons for their choices, no subject ever mentioned spontaneously the position of the article in the array. And, when asked directly about a possible effect of the position of the article, virtually all subjects denied it, usually with a worried glance at the interviewer suggesting that they felt either that they had misunderstood the question or were dealing with a madman.”⁷⁴

In a particularly disturbing study, Johnson and Goldstein⁷⁵ showed that policy defaults have a huge effect on whether a person agrees to participate in an organ donation program. In one of their experimental conditions (the “opting-in” condition), subjects were told that they should imagine that

⁷¹ Cf. Darley & Latane (1968), or, for a more recent study, cf. Karakashian et al. (2006)

⁷² Cf. Latane & Rodin (1969, p. 197)

⁷³ Cf. Nisbett & Wilson (1977, pp. 243-244)

⁷⁴ Nisbett & Wilson (1977, pp. 243-244)

⁷⁵ Cf. Johnson & Goldstein (2003)

they just moved to a new state where the default was not to be an organ donor, and they were given a choice to confirm or change that status. The other condition (“opting-out”) was identical, except this time, the default was to be an organ donor. The results of the study showed that the default had a huge impact on the decision of the subjects. In the opting-out condition, 82% wanted to donate, whereas only 42% wanted to donate in the opting-in condition. This means that donation rates were about *twice* as high when opting-out as when opting-in⁷⁶. Although the study did not contain a debriefing, it is a pretty safe bet to assume that most of the subjects would deny that the default option influenced their decision to participate in the program.

Many other studies point into the same direction⁷⁷. When we trust these studies, then it seems to hold that we are less in control of our decisions than we think. When we believe that our decisions are driven by conscious reasoning, our decisions are in fact influenced by unconscious factors, which we consciously judge to be irrelevant. Regarded in this light, our feeling of self-control appears to be, at least in part, misleading, which is a threat to free will. Eddy Nahmias concludes the following:

“[T]o the extent that our ignorance of the influence of situational factors limits our capacities to act on reasons we accept, it thereby limits the scope of our free will.”⁷⁸

3.4.2 Open Questions

Can we avoid the conclusion that our decisions are, at least sometimes, less self-controlled than we think – less free than we think? As I stated above, the advantage of the aforementioned studies is the fact that they represent situations which are very common. Therefore, one cannot avoid this conclusion by arguing for a “lack of naturalness”. But there are still other escape routes.

First, one could argue that the verbal reports of the subjects in the post-experimental debriefings are not reliable⁷⁹. Although the verbal reports suggest that the situational factors did not play a role in the conscious deliberations of the subjects, this is not necessarily true. The subjects could have lied. This could have been a particular problem for the studies on the bystander effect.

⁷⁶ Strikingly, by comparing the donation rates and the default policies of different countries, one can observe similar results. It is therefore evident why Johnson and Goldstein titled their paper “Do defaults save lives?”.

⁷⁷ In his recent bestseller “Predictably Irrational”, Dan Ariely summarizes a lot of other studies which make the same point.

⁷⁸ Cf. Nahmias (forthcoming)

⁷⁹ Cf. Nahmias (2007, pp. 180-181)

We do not want to *admit* that our decision to help someone is influenced by the behavior of people around us. However, at least to me, it does not seem plausible to assume that subjects lied in, for example, the studies on the position effect. It is an open research question in how far lying plays a role in these verbal reports. But not only lying could question the reliability of verbal reports. It could also be the case that subjects do not *remember* their conscious deliberations correctly. This is particularly problematic because subjects were not informed that they should pay close attention to their decision-making. The fact that they have been asked to reproduce their thoughts only *after* the experiment, without any prior notice, increases the risk that their statements are imprecise. We could even be dealing with mere rationalizations. Especially the research on eyewitness testimonies⁸⁰ shows that our memories are not an objective trace of what we have perceived. Instead, our memories are often influenced by retrospective inferences, which distort our view on what has “really” happened. If this is true, then it is problematic to take the verbal reports as a reliable protocol of what subjects *actually* thought in the specific situation. Future research will have to clarify in how far the verbal reports in these studies are reliable. Until this is not done, this methodological problem offers enough gunpowder to deny that these studies from social psychology can undermine self-control.

Another way to avoid the above conclusion is to appeal to preemptive self-control. We could have consciously configured our unconscious system such that the situational context is processed in the respective way. But, to me, this strategy seems unreasonable, since, on a conscious level, we do not *want* that the position of an article influences our judgment of its quality. Likewise, we do not want that a word game influences our decision to interrupt a conversation, that the presence of other people influences our decision to help, or that the default case influences our decision to donate. Hence, preemptive self-control cannot account for these effects in a clear-cut way. Although there could still be *some* connection to *some* conscious intention, it seems to me like this relationship is, if it exists at all, too loose to deserve to be called self-control.

In conclusion, although I believe that the studies from social psychology pose the most serious threat to self-control so far, strong conclusions can be countered by questioning the reliability of the verbal reports. Apart from that, it is important to put the experimental results in perspective. In all of the studies which I have discussed, the decisions are not of major importance for the subjects. For example, interrupting a conversation will not have significant consequences, and the organ donation program only becomes relevant when we are already dead. Although we do care about these

⁸⁰ Cf. Loftus (1992; 1997)

decisions, one could argue that we do not care *enough* about them. When a decision is really important for our life, then we are more concentrated and exercise more self-control. Suhler and Churchland put it this way:

“In circumstances where nothing much hangs on doing A rather than B, vigilance might be lower and situational factors more influential. When pursuing a goal, one can encounter many ‘fringe’ choices – whether or not to pick up a piece of litter, for example. Nevertheless, how one decides these fringe choices has very little to do with the normal function of executive control in pursuit of a goal.”⁸¹

Hence, even if these studies from social psychology could show that we have less self-control than we think, this might not generalize to decisions we truly care about.

3.5 Intermediate Conclusion

Let me wrap up the main results of the third chapter. My goal was to discuss whether empirical studies have the conclusive power to deny that we have self-control. I hope to have shown that, from the studies I considered, no study has this kind of explanatory force on a solid empirical basis. Although Libet’s neuropsychological studies and the respective follow-up studies are important findings, they have been overinterpreted in the free will debate. They do not allow for strong conclusions about self-control, primarily because (1) the studies can only show correlations and cannot inform us about the exact causal mechanisms at work and (2) the studied decisions are extremely simple and completely irrelevant for the individual. The idea of preemptive self-control shows that even if these problems were absent, then there would still be room for self-control, although we would have to let go of the view that conscious reasons are always the *proximate* cause of our decisions. The experiments on control illusions show that our judgment of causality is not infallible, and the experiments on subliminal priming show that this also holds for our judgment of the causal mechanisms in decision-making. When we think that conscious deliberations caused our decision, then external factors can in fact have a causal influence of which we are not aware of. But this finding does not allow for strong conclusions about what usually happens in our decisions, since (1) subliminal priming does not seem to play a role in everyday life, at least not in such a systematic

⁸¹ Suhler & Churchland (2009, p. 343)

way, and (2) just like in the neuropsychological experiments, the studied decisions are not intrinsically motivated, so the findings may not generalize to ordinary decisions. I believe that the studies from social psychology pose the most serious threat to self-control, because they study “natural” decisions in everyday contexts and still suggest that people overestimate the influence of their conscious deliberations. If this were true, then we would indeed have less self-control than we think. However, one can deny the validity of this conclusion by (1) questioning the reliability of the verbal reports in the experiments, or (2) arguing that the decisions in the experiments are only of minor importance for us and the findings cannot be generalized to decisions we truly care about. Future research will have to investigate the adequacy of these objections.

Therefore, from an empirical standpoint, one can conclude the following: Our feeling of self-control can be misguided and it is not perfectly reliable. But in how far our feeling of self-control is accurate in everyday life is an open question. The answer could be that we can only be deluded in abnormal experimental conditions. But it could also be the case that we are deluded on a regular basis, or even always. Taking the liberty of speculating, I believe the studies indicate that the answer lies in the middle. Especially in casual decisions, the idea of direct self-control seems to be less relevant than we think. While assuming the existence of some form of preemptive self-control seems like a reasonable assumption to me, this might not guarantee the prominent role of conscious deliberations in all our decisions. Their influence might sometimes be very loose, and our conscious control could be restricted to set up only general predispositions. But when it comes to decisions that we really care about, and we deeply concentrate, it might be the case that direct self-control exists in just the way that we always thought it would exist. But speculation is of little help - the conclusion remains that, so far, empirical studies are not in a position to clearly deny that we usually have self-control when we think we do.

4 Future Research

What direction should future research take? In this chapter, I want to propose perspectives for future research which I believe are fruitful. Section 4.1 will be the upshot of previous chapters: What kind of experimental designs are promising if one wants to find out whether we really overestimate our capacity for self-control? In section 4.2, I am going to suggest how the project of finding an appropriate definition of self-control should be pursued in the future. Finally, in section 4.3, I will

argue that there is a whole psychological research area which has been completely neglected in the free will debate, although it is highly relevant. Although this research does not intend to unmask self-control as an illusion, it can inform us about other aspects of self-control. I believe that future research should try to bridge the gap between this kind of research and the free will debate.

4.1 Research trying to deny Self-Control

The upshot of my previous analysis for future research should be rather clear: If one wants to find out whether empirical studies can threaten our understanding of free will, one should not try to prove or disprove determinism, because promising experiments seem out of reach. Instead, the research on self-control should be largely extended, because it is relevant for both compatibilists and incompatibilists and much better accessible from an empirical point of view. To study self-control, we should let go of experimental designs which try to represent free decisions as pushing between two meaningless buttons – this seems to be prevalent in neuropsychology and cognitive psychology, but it does not allow for interesting conclusions with respect to free will. Future experiments should try to investigate intrinsically motivated decisions. With this goal in mind, the approach of social psychology seems to be very fruitful. This kind of research should primarily be extended in three ways: First, researchers should try to prevent the methodological problems of the existing studies. Most importantly, the reliability of the verbal reports is in need of improvement, since this would enable stronger interpretations. Second, researchers need to examine how many effects like the “bystander effect” or the “position effect” exist. So far, these effects seem like single phenomena, but we need to figure out their common ground to gain a better understanding of the underlying mechanisms. Third, researchers need to find a way to make sure that the subjects truly care about the decisions. The decisions should not only be casual, like whether or not to interrupt a conversation. One could try to involve the subjects in a cleverly designed game. One could also design quasi-experimental studies⁸², in which, for example, students have to make decisions about study fees.

But I am not in a position to provide well-grounded advice on experimental designs. In my view, the most important step towards a fruitful direction of future research is to establish a profound dialogue with social psychologists. It seems to me that a lot of social psychologists do not care about free will, because they probably think it is just an old-fashioned fantasy that philosophers

⁸² “Quasi-experiments” share a lot of characteristics with the so-called “true experiments”, but they lack random assignment of subjects to the experimental conditions.

enjoy sharing far-fetched thoughts about⁸³. However, especially in the recent development of the free will debate, it might turn out that some definitions of free will compare very well with concepts which are established in social psychology. As in most topics in cognitive science, interdisciplinary work seems to be the silver bullet to scientific progress.

4.2 Research on the Definition of Self-Control

As I said in section 2.1, it is hard to find a proper definition of self-control. While I am convinced that “the influence of our conscious deliberations on our decisions” is an important aspect of self-control, it is certainly not the be-all and end-all when it comes to defining self-control. Therefore, if we want to learn more about self-control from empirical studies, it is indispensable to extend the conceptual research on self-control. I believe the best way to this is a reciprocal interplay between philosophy and empirical sciences, because focusing too much on philosophy increases the risk of having a definition that cannot be applied, and focusing too much on empirical work increases the risk of drawing premature interpretations. In this section, I want to lay out fruitful starting points for this kind of research.

First, I think it is important to see self-control not as a single skill, but as a combination of various cognitive abilities. Among other abilities, the following ones seem crucial:

- (1) *Reasoning*: The more we are able to integrate various arguments into a coherent overall picture, the more self-controlled are our decisions.
- (2) *Planning*⁸⁴: The better we can plan ahead and estimate time, the more often will our actions be congruent with our conscious deliberations.
- (3) *Memory and learning*⁸⁵: The more we know about a certain domain, the more are we able to act in accordance with our considered reasons.
- (4) *Attention*⁸⁶: The better we are able to focus our attention on information which is helpful to achieve our goals, and the better we can ignore irrelevant information, the more successful are we at fulfilling our intentions.
- (5) *Preemptive self-control*: Does it exist, and if so, exactly how much conscious control over unconscious processes do we have?

⁸³ Fortunately, a trend into the opposite direction is starting to develop, cf. Baer et al. (2007).

⁸⁴ Cf. Goschke (2004, p. 189)

⁸⁵ Cf. Nahmias (forthcoming)

⁸⁶ Cf. Goschke (2004, p. 191)

- (6) *Emotions*: What is the relation between emotions and self-control? Are they like enemies, who fight against each other, or are, on the contrary, emotions a necessary component of self-control?

This list is far from being complete, but all of these topics are important if we want to find out what self-control really is.

Besides the approach of seeing self-control in the context of other cognitive phenomena, our understanding of self-control could also be enhanced by learning more about mental disorders. Some mental disorders are associated with symptoms which seem to affect self-control. For example, patients with Tourette's syndrome seem to have reduced self-control, since they cannot control the so-called tics. Another example is schizophrenia: Some patients feel like they are being controlled by "external forces". Similar symptoms are associated with the alien hand syndrome, in which patients report that they cannot control their hand. Furthermore, lesions in the dorsolateral prefrontal cortex often lead to an increase of impulsive behavior⁸⁷. Patients have problems pursuing long-term goals and can be easily distracted. I believe that careful observation of the behavioral symptoms of these disorders can help us to define self-control. Seeing how certain mental disorders lead to different behaviors and how various cognitive abilities are affected in different ways might sharpen our intuitions about what we actually mean by self-control. Thus, I once again have to draw the conclusion that interdisciplinary research is needed – armchair philosophy will not suffice.

4.3 Asking New Questions about Free Will

Although the notion of self-control is quite new in the context of the free will debate, it is deep-rooted in personality and motivational psychology. Numerous experiments have been done to study various aspects of self-control. The major question of interest is under what conditions we are able to regulate our impulses through self-control. Most of this research is quite different from the research I discussed in chapter 3. The studies in chapter 3 were designed to show a discrepancy between our experience of self-control and the actual causal mechanisms. They tried to demonstrate that we *overestimate* the amount of control we have. The importance of these studies for the free will debate is rather obvious, since they try to unmask our sense of free will as a mere illusion. By contrast, most of the studies of personality and motivational psychology are not designed to deny that our experience of self-control is veridical. Instead, these studies want to investigate more

⁸⁷ Cf. Walter (2001, p. 257)

general properties of self-control, like the question of under which circumstances our decisions are *more likely* to be self-controlled. From the perspective of the free will problem, these studies may seem to be less sexy. However, I still believe that they are a valuable contribution to the free will debate. In this section, I will sketch this kind of research. It is not my goal to analyze these experiments in detail. Instead, I just want to give an idea of the research I have in mind. Future research should try to bridge the gap between this kind of research and the free will debate, since this could open up new facets of the free will debate.

Let me begin by saying a few words on how self-control is usually measured in this context. A widespread technique is the delayed gratification task⁸⁸. In this task, subjects can choose between an immediate outcome and a delayed, more beneficial outcome. A very simple scenario would be the option between getting 5 dollars today or 10 dollars in a month, but the task comes in various versions. The idea is that choosing the immediate outcome indicates low self-control, whereas choosing the delayed outcome is a sign of high self-control. Another way how self-control is measured is the Stroop task⁸⁹, in which a word denoting a color is printed in a color differing from the color expressed by the word's semantic value (e.g. the word "blue" is printed in green ink). It has been shown that when subjects have to name the printed color of the word, they get distracted by the semantic value of the word, and need some time to inhibit the "automatic" semantic response. Regarded in the light of self-control, the idea is that a longer reaction time indicates low self-control, since the subjects need more time to suppress the automatic response. Low reaction times indicate high self-control, respectively. Yet another technique to measure self-control is to measure how long subjects can hold a handgrip closed⁹⁰. The handgrip is usually used as an exercise tool to strengthen forearm muscles, but from the perspective of self-control, the idea is that the longer one can hold the handgrip closed, the more self-control he has, because he can endure the physical discomfort⁹¹. These are just some of the means that psychologists use to measure self-control⁹². While all of these

⁸⁸ Cf. Logue (1995, p. 36)

⁸⁹ For the original study, cf. Stroop (1935). For a study in the context of self-control, cf. Kuhl & Kazén (1999).

⁹⁰ Cf. Fujita (2006)

⁹¹ Of course, you need appropriate baseline measures to account for the fact that different subjects have different levels of fitness.

⁹² There are also approaches which try to measure self-control by letting trained observers watch subjects and rate their self-control according to a large checklist of behavioral patterns, e.g., the "Self-Control Behavior Inventory", developed by Fagen et al. (1975). While this method has some advantages compared to other approaches, it is difficult to construct an adequate checklist and ensure reliable ratings of the observers. Another widespread method is the use of standardized

techniques have good face validity, it is questionable whether they are really measuring the same thing. These tasks certainly seem relevant for certain aspects of self-control, but the measurement is only of an *indirect* nature. To interpret the decision outcomes or reaction times, we need to make inferences about the underlying processes, and this strategy is prone to errors. Therefore, although these measurements are fruitful approaches to measure self-control, we should keep some skepticism which future research should try to set aside.

What can one find by using these techniques? A lot of studies suggest that our ability for self-control is dependent on our age⁹³. Experiments with delayed gratification tasks have shown that when children get older, they develop increased self-control. Essentially, they understand that it is sometimes beneficial to withhold an impulse to receive a better outcome in the future. One might want to draw the conclusion that our decisions become “more free” as we grow older. It is likely that this process gets reversed when we reach a very old age, although, to my knowledge, there is no decisive research available. Some studies suggest that our ability for self-control is dependent on our understanding of time⁹⁴, which seems reasonable when we consider the fact that the ability to estimate time is necessary for planning, and planning seems to be an important component of self-control. Over a hundred of experiments suggest that self-control can best be understood as a limited resource⁹⁵: Subjects that were given a task that involves self-control were later less successful at a task which requires self-control⁹⁶. This seems to hold even for different domains. Applying these findings to the free will problem suggests the rather peculiar conclusion that the freedom of our will is a limited resource. When we make a free decision, this diminishes the freedom of the subsequent decisions.

Various studies tried to investigate how our ability for self-control could be improved. Although self-control seems to be a resource which can be depleted, the regular application of self-control

questionnaires, in which subjects have to rate their agreement with given statements. An example statement would be “I often do something that I later regret”, which would probably indicate impulsive behavior and thereby low self-control. In recent years, the “Self-Control Scale”, developed by Tangney et al. (2004), has become increasingly popular. However, since these techniques heavily rely on introspection, they are not suitable to measure the “amount” of self-control which was present in a particular situation.

⁹³ Cf. Logue (1995, pp. 36-37)

⁹⁴ Cf. Levine & Spivak (1959)

⁹⁵ Cf. Baumeister et al. (1998)

⁹⁶ A study by Gailliot et al. (2007) suggests that self-control relies on glucose as a limited energy resource.

seems to improve our capacity for self-control in the long run. For example, Muraven et al.⁹⁷ were able to demonstrate this effect by showing that subjects who regularly engaged in a specific self-control task for two weeks, like the monitoring and improvement of their eating behavior or the regulation of their mood, were significantly more successful in a handgrip task after these two weeks. Like a muscle, the power of self-control appears to grow stronger through regular exercise. This would allow for the appealing conclusion that we can “train” the freedom of our will. Research by Fujita et al.⁹⁸ suggests another way to improve self-control, namely by thinking globally and abstractly (why-questions) instead of locally and specifically (how-questions). Fujita et al. were able to demonstrate that when subjects have been primed with an abstract way of thinking, their performance in self-control tasks is significantly better compared to subjects which have been primed with a concrete way of thinking. This result holds across various self-control tasks, including delayed gratification and handgrip tasks. If we believe these studies, then thinking abstractly would be another way to make our will more free⁹⁹.

I do not claim that these findings are undeniable truths. There are a lot of methodological problems and different interpretations which need to be discussed. But my point is that there is a whole research area which has been largely neglected in the free will debate, although it has great potential to tell us more about free will and self-control. This research could offer more clarification on the question of under what circumstances our decisions are *more likely* to be self-controlled, and it can even provide practical advice on how we could make our will “more” free. Hence, I believe that this kind of research should be considered in the future of the free will debate. We should start asking new questions about free will.

⁹⁷ Cf. Muraven et al. (1999)

⁹⁸ Cf. Fujita et al. (2006)

⁹⁹ Goschke (2004, pp. 190-191) illustrates another more indirect way to increase the frequency of self-controlled decisions in our life: the so-called metacognitive strategies. The idea is that when we anticipate a certain motivational state in the future, which could lead to undesired impulsive behavior, we apply behavioral strategies to avoid this motivational state. For example, some students go to the library to study, because they anticipate that they get distracted by the television or their friends when they are at home. A classical example is Ulysses’s strategy of tying himself to the mast to resist the temptation of following the sirens sing. These strategies decrease the frequency of unreflected impulsive behavior and thereby make our lives more self-controlled.

5 Conclusion

People have thought about the issues of free will for over 2000 years, and, at least for a considerable amount of people, it still does not get boring. For a while, it seemed like the stagnating progress of the determinism controversy would take the wind out of the debate's sails. But with the new perspective of self-control, the free will problem is more actual than ever. Self-control is one of the hot topics of contemporary psychology, and it should matter for both compatibilists and incompatibilists.

To study self-control, it is of vital importance to let go of the widespread paradigm to model a free decisions as pushing between two meaningless buttons. Since there cannot be any reason to prefer one button over the other, the subject's task is literally to simulate a random generator. It is absurd to claim that this has something to do with free decisions. In order to study free decisions, we need experimental designs which allow for intrinsically motivated decisions – decisions the subjects truly care about. With this goal in mind, fruitful approaches can be found in the domain of social psychology. These studies strongly suggest that our decisions are indeed less self-controlled than we think. However, it is important to learn from the mistakes that have been made in the interpretations of Benjamin Libet's experiments. We should not draw premature conclusions and acknowledge the methodological shortcomings. In the experiments from social psychology, the open questions are primarily centered on the reliability of the verbal reports and the casual character of the decisions. But, on the other hand, it is equally important not to underestimate these findings. In the light of the available evidence, it does not seem reasonable to quickly dismiss the potential of this empirical approach just to hold on to a traditional understanding of free will. Especially the theory of direct self-control - the idea that conscious deliberations are always the proximate causes of our decisions – seems like a position which is hard to defend in the face of the current research in cognitive science. Still, this does not mean that self-control has to be a mere illusion. The theory of preemptive self-control seems promising, since it can both account for the importance of conscious deliberations and the empirical findings which stress the role of unconscious processes.

There is much work left to do for future research. In my view, promising directions include the extension of the respective research in social psychology and more clarification on the scope of preemptive self-control. Besides, it is indispensable to further clarify what self-control actually means. More than anything, this project requires interdisciplinary work. Furthermore, there is a whole research area in personality and motivational psychology which has been ignored in the free will debate, although it is highly relevant. Hence, the problem is not only a lack of empirical findings, but

also a lack of attention for the available research. Some of this research¹⁰⁰ suggests that high self-control is correlated with good adjustment, less pathology, professional success, better interpersonal relationships, and happiness. In this regard, self-control indeed seems like a skill worth wanting.

¹⁰⁰ Cf. Tangney et al. (2004)

6 References

- Ansorge, U., & Neumann, O. (2005). Intentions Determine the Effect of Invisible Metacontrast-Masked Primes: Evidence for Top-Down Contingencies in a Peripheral Cuing Task. *Journal of Experimental Psychology*, 31(4), pp. 762-777.
- Ansorge, U., & Horstmann, G. (2007). Preemptive control of attentional capture by colour: Evidence from trial-by-trial analyses and orderings of onsets of capture effects in reaction time distributions. *Quarterly Journal of Experimental Psychology*, 60, pp. 952-975.
- Ansorge, U., Kiss, M., & Eimer, M. (2009). Goal-driven attentional capture by invisible colors: Evidence from event-related potentials. *Psychonomic Bulletin & Review*, 16(4), pp. 648-653.
- Baer, J., Kaufmann, J., & Baumeister, R.F. (2007). *Are we free? Psychology and Free Will*. New York: Oxford University Press.
- Bargh, J.A. (1992). Does subliminality matter to social psychology: Awareness of the stimuli versus awareness of its influences. In: R.F. Bornstein & T.S. Pittman (Eds.), *Perception without awareness: Cognitive, clinical, and social perspectives* (pp. 236-255). New York: Guilford Press.
- Bargh, J.A., & Gollwitzer, P. (1994). Environmental control of goal-directed action. *Nebraska Symposium on Motivation*, 41, pp. 71-124.
- Bargh, J.A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: direct effect of trait construct and stereotype activation on action. *Journal of Personality and Social Psychology*, 71, pp. 230-244.
- Baumeister, R.F., Bratslavsky, E., Muraven, M., & Tice, D.M. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology*, 74, pp. 1252-1265.
- Baumeister, R.F., & Vohs, K.D. (2004). Self-regulation. In: C. Peterson & M.E.P. Seligman (Eds.), *Character strengths and virtues: A handbook and classification* (pp. 499-516). Washington, DC/New York: American Psychological Association/Oxford Press.

- Baumeister, R.F., Sparks, E.A., Stillman, T.F., & Vohs, K.D. (2008). Free will in consumer behavior: Self-control, ego depletion, and choice. *Journal of Consumer Psychology*, 18, pp. 4-13.
- Beckermann, A. (2005). Free Will in a Natural Order of the World. In: C. Nimtz & A. Beckermann (Eds.), *Philosophie und/als Wissenschaft* (pp. 111-126). Paderborn: Mentis.
- Beckermann, A. (2006). Neuronale Determiniertheit und Freiheit. In: K. Köchy & D. Stederoth (Eds.), *Willensfreiheit als interdisziplinäres Problem* (pp. 289-304). Freiburg/München: Karl Alber Verlag.
- Chisholm, R. (1964). *Human Freedom and the Self: Lindley Lecture*. Lawrence: University of Kansas. (Reprinted in Watson 1982.)
- Churchland, P. S. (2006). The big questions: Do we have free will? *New Scientist*, 2578, pp. 42-45.
- Coles, M.G.H. (1989). Modern mind-brain reading: psychophysiology, physiology, and cognition. *Psychophysiology*, 26, pp. 251-269.
- Crick, F. (1994). *The Astonishing Hypothesis: The Scientific Search for the Soul*. New York: Charles Scribner's Sons.
- Damian, M.F. (2001). Congruity effects evoked by subliminally presented primes: automaticity rather than semantic processing. *Journal of Experimental Psychology: Human Perception and Performance*, 27, pp. 154-165.
- Darley, J.M., & Latane, B. (1968). Bystander intervention in emergencies: Diffusion of responsibility. *Journal of Personality and Social Psychology*, 8, pp. 377-383.
- Dehaene, S., Naccache, L., Le Clec'h, G., Koechlin, E., Mueller, M., Dehaene-Lambertz, G. van de Moortele, P.-F., & Le Bihan, D. (1998). Imaging unconscious semantic priming. *Nature*, 395, pp. 597-600.

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- Dennett, D.C. (1984). *Elbow Room: The Varieties of Free Will Worth Wanting*. Cambridge, MA: Bradford Books/MIT Press.
- Dennett, D.C. (2003a). The Self as a Responding – and Responsible – Artifact. *Annals of the New York Academy of Sciences*, 1001, pp. 39-50.
- Dennett, D.C. (2003b). *Freedom Evolves*. New York: Viking Press.
- Dretske, F.I. (1988). *Explaining behavior. Reasons in a world of causes*. Cambridge, MA: MIT Press.
- Ekstrom, L. (2000). *Free Will: A Philosophical Study*. Boulder: Westview Press.
- Fagen, S.A., Long, N.J., & Stevens, D.J. (1975). *Teaching children self-control: Preventing emotional and learning problems in the elementary school*. Columbus, OH: Charles E. Merrill.
- Faraday, M. (1853). Experimental investigation of table turning. *Athenaeum*, July, pp. 801-803.
- Fischer, J.M. (1994). *The Metaphysics of Free Will*. Oxford: Blackwell.
- Fujita, K., Trope, Y., Liberman, N., & Levin-Sagi, M. (2006). Construal levels and self-control. *Journal of Personality and Social Psychology*, 90, pp. 351-367.
- Gailliot, M.T., Baumeister, R.F., DeWall, C.N., Maner, J.K., Plant, E.A., Tice, D.M., Brewer, L.E., Schmeichel, B.J. (2007). Self-Control Relies on Glucose as a Limited Energy Source: Willpower Is More Than a Metaphor. *Journal of Personality and Social Psychology*, 92(2), pp. 325-336.
- Goschke, T. (2004). Vom freien Willen zur Selbstdetermination. *Psychologische Rundschau*, 55(4), pp. 186-197.
- Haggard, P., & Eimer, M. (1999). On the Relation Between Brain Potentials and the Awareness of Voluntary Movements. *Experimental Brain Research*, 126, pp. 128-133.

- Hassin, R.R., Bargh, J.A., & Zimerman, S. (2009). Automatic and flexible: The case of nonconscious goal pursuit. *Social Cognition*, 27(1), pp. 20-36.
- Haynes, J., Heinze, H., Brass, M., & Soon, C.S. (2008). Unconscious determinants of free decisions in the human brain. *Nature Neuroscience*, 11, pp. 543-545.
- Herrmann, C.S., Pauen, M., Min, B., Busch, N.A., & Rieger, J.W. (2008). Analysis of a choice-reaction task yields a new interpretation of Libet's experiments. *International journal of psychophysiology*, 67(2), pp. 151-157.
- Johnson, E.J., & Goldstein, D.G. (2003). Do defaults save lives? *Science*, 302, pp. 1338-1339.
- Kane, R. (1996). *The Significance of Free Will*. Oxford: Oxford University Press.
- Karakashian, L.M., Walter, M.I., Christopher, A.N., & Lucas, T. (2006). Fear of negative evaluation affects helping behaviour: The bystander effect revisited. *North American Journal of Psychology*, 8, pp. 13-32.
- Keil, G. (2007). *Willensfreiheit*. Berlin: de Gruyter.
- Kiefer, M. (2007). Top-down modulation of unconscious 'automatic' processes: A gating framework. *Advances in Cognitive Psychology*, 3, pp. 289-306.
- Kornhuber, H.H., & Deecke, L. (1965). Hirnpotentialänderungen bei Willkürbewegungen und passiven Bewegungen des Menschen: Bereitschaftspotential und reafferente Potentiale. *Pflügers Archiv*, 284, pp. 1-17.
- Kuhl, J., & Kazén, M. (1999). Volitional facilitation of difficult intentions: joint activation of intention memory and positive affect removes Stroop interference. *Journal of Experimental Psychology: General*, 128, pp. 382-399.

- Kuhl, J., & Hüther, G. (2007). Das Selbst, das Gehirn und der freie Wille: Kann man Selbststeuerung auch ohne Willensfreiheit trainieren? *Pädagogik*, 11, pp. 36-41.
- Kunde, W., Kiesel, A., & Hoffmann, J. (2003). Conscious control over the content of unconscious cognition. *Cognition*, 88(2), pp. 223-242.
- Latane, B., & Rodin, J. (1969). A lady in distress: Inhibiting effects of friends and strangers on bystander intervention. *Journal of Experimental Social Psychology*, 5, pp. 189-202.
- Levine, M., & Spivak, G. (1959). Incentive, Time Conception and Self Control in a Group of Emotionally Disturbed Boys. *Journal of Clinical Psychology*, 15, pp. 110-113.
- Libet, B. (1985). Unconscious Cerebral Initiative and the Role of Unconscious Will in Voluntary Action. *Behavioral and Brain Sciences*, 8, pp. 529-566.
- Linser, K., & Goschke, T. (2007). Unconscious modulation of the conscious experience of voluntary control. *Cognition*, 104, pp. 459-475.
- Locke, J. (1690). *An Essay Concerning Human Understanding*. London/New York, 1910.
- Loftus, E. (1992). When a lie becomes memory's truth: Memory distortion after exposure to misinformation. *Current Directions in Psychological Science*, 1, pp. 121-123.
- Loftus, E. (1997). Memory for a past that never was. *Current Directions in Psychological Science*, 6, pp. 60-65.
- Logue, A.W. (1995). *Self-Control: Waiting Until Tomorrow For What You Want Today*. Englewood Cliffs, NJ: Prentice Hall.
- Mueller-Lyer, F.C. (1889). Optische Urteilstauschungen. *Archiv fuer die Physiologie*, Supplement Band, pp. 263-270.

- Nahmias, E. (2001). Free Will and the Knowledge Condition. Unpublished dissertation.
- Nahmias, E. (2007). Autonomous Agency and Social Psychology. In: M. Marraffa, M. Caro, & F. Ferretti (Eds.), *Cartographies of the Mind: Philosophy and Psychology in Intersection* (pp.169-185). Berlin-Heidelberg: Springer.
- Nahmias, E. (forthcoming). The Psychology of Free Will. In: J. Prinz (Ed.), *Oxford Handbook of Philosophy of Psychology*. Oxford: Oxford University Press.
- Nisbett, R., & Wilson, T. (1977). Telling More than we can Know: Verbal reports on mental processes. *Psychological Review*, 84(3), pp. 231-259.
- Pashler, H., Johnston, J.C., & Ruthruff, E. (2001). Attention and performance. *Annual Review of Psychology*, 52, pp. 629-651.
- Prinz, W. (1996). Freiheit oder Wissenschaft. In: M. von Cranach & K. Foppa (Eds.), *Freiheit des Entscheidens und Handelns. Ein Problem der nomologischen Psychologie* (pp. 86-103). Heidelberg: Asanger.
- Rosenthal, D.M. (2002). The Timing of Conscious States. *Consciousness and Cognition*, 11, pp. 215-220.
- Roskies, A. (2006). Neuroscientific challenges to free will and responsibility. *Trends in Cognitive Sciences*, 10(9), pp. 419-423.
- Stroop, J.R. (1935). Studies of interference in serial verbal reactions. *Journal of Experimental Psychology*, 18, pp. 643-662.
- Suhler, C.L., & Churchland, P.S. (2009). Control: conscious and otherwise. *Trends in Cognitive Sciences*, 13(8), pp. 341-347.

- Tangney, J.P., Baumeister, R.F., & Boone, A.L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, 72, pp.271-322.
- Van Inwagen, P. (1975). The Incompatibility of Free Will and Determinism. *Philosophical Studies*, 27, pp.185-199.
- Walde, B. (2006). *Willensfreiheit und Hirnforschung. Das Freiheitsmodell des epistemischen Libertarismus*. Paderborn: Mentis.
- Walter, H. (2001). *Neurophilosophy of Free will*. Boston, MA: MIT Press. (Original version in German: Walter, H. (1998). *Neurophilosophie der Willensfreiheit*. Paderborn: Schöningh.)
- Watson, G. (1982). *Free Will*. Oxford: Oxford University Press.
- Wegner, D.M., & Wheatley, T.P. (1999). Apparent mental causation: Sources of the experience of will. *American Psychologist*, 54, pp. 480-492.
- Wegner, D.M. (2002). *The Illusion of conscious will*. Cambridge, MA: MIT Press.
- Wegner, D.M. (2003). The mind's best trick: how we experience conscious will. *Trends in Cognitive Sciences*, 7(2), pp.65-69.
- Wendt-Kuerschner, J. & Goschke, T. (in preparation). The influence of unconscious effect presentations on action control.