The Journal of Mind and Behavior
Spring 2020, Volume 41, Number 2
Pages 109–130
ISSN 0271–0137

Neuroscientific Threat to Free Will as Non-Veridicality of Agentive Experience

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Libet-style experiments appear to present a threat to free will, establishing that conscious will to voluntary action is causally preceded by non-conscious brain activity. However, philosophers have proposed many objections to this threat, focusing on conceptual gaps between the non-reality of free will and the relevant neural event sequence. Contrary to this philosophical tendency, I argue that the neural event sequence, if empirically established, poses a threat to free will. However, the threat should be reconceptualized as the idea that our actions are not freely willed in the way we experience them, as suggested by Benjamin Libet. To develop this idea, I characterize the phenomenology of agentive experience and argue that our agentive experience turns out to be non-veridical in light of the relevant neural event sequence. The resultant argument seems invulnerable to the existing objections and their adaptations.

Keywords: Benjamin Libet, free will, agentive experience

In the 1980s, Benjamin Libet reported a series of intriguing experimental findings on voluntary actions. His study inspired many subsequent experiments, known as *Libet-style experiments,* which have followed and developed crucial findings. These studies appear to imply that our voluntary actions are initiated by non-conscious brain activity, which precedes our conscious will to perform those actions. These findings have often been described as posing a serious threat to free will as it is said that Libet's work "provides a striking example of the impact of neuroscience on concepts of human nature" (Frith and Haggard, 2018, p. 405; see also Harris, 2012; Haynes, 2011).

I would like to thank Raymond Russ for his support in revising the manuscript. I would also like to thank the two anonymous reviewers for their helpful comments. I am grateful to Kazuki Iijima, Masashi Kasaki, Yukihiro Nobuhara, Taku Sasaki, Ikuro Suzuki, Makoto Suzuki, and Takayuki Suzuki for their helpful comments and discussions. This work was supported by JSPS KAKENHI Grant Numbers 20K00002, 20H01752, 16H03347. Correspondence concerning this article should be addressed to Koji Ota, Faculty of Humanities, Niigata University, 8050 Ikarashi 2-no-cho, Nishi-ku, Niigata, 950-2181, Japan. Email: ota@human.niigata-u.ac.jp

However, Libet-style experiments have invited numerous criticisms, such as those concerning the methodology to specify the timing of conscious will[1] as well as the assumption about the functional nature of the relevant non-conscious brain activity.[2] Whereas these criticisms are worth considering, I will forego discussing them in this paper. Instead, I will consider what is implied concerning free will *if* it is established that conscious will is causally preceded by non-conscious brain activity.[3] This is worth considering because philosophers have proposed many objections against Libet-style experiments focusing on this question. Indeed, most philosophical works reject the idea that free will is threatened by Libet-style experiments.[4] Against this tendency, this paper argues that the relevant neural event sequence, if empirically established, poses a threat to free will. In arguing so, I reconceptualize the threat as an idea that our agentive experience is non-veridical and, thus, our actions are not freely willed in the way we experience them, as Libet himself has suggested.

In the next section, I briefly review the core findings of Libet-style experiments and present a mapping of the existing objections against the threat to free will. Then I clarify the threat to free will envisaged by Libet and develop his idea by combining it with a philosophical characterization of the phenomenology of the agentive experience. I also attempt to show that the resultant argument is invulnerable to the existing objections and their adaptations.

The Neuroscientific Threat to Free Will and the Extant Objections to It

In Libet's original experiments (Libet, 1985; Libet, Gleason, Wright, and Pearl, 1983), subjects were instructed to freely move their wrists and report the moment

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[1] For example, it has been often argued that the timing of conscious will — the first-order mental state — and the timing of becoming aware of that conscious will — the second-order mental state — must differ, and only the latter is revealed by a W-judgment (see the next section in the main text). If this is the case, the alleged temporal order of the non-conscious brain activity and the conscious will would not be obtained (Bittner, 1996; Horgan 2011; Van Gulick, 1985; Young, 2006) [for more methodological considerations, Banks and Isham, 2009; Dominik et al., 2017; Fischborn, 2016; Gomes, 1998; Klein, 2002; Matsuhashi and Hallett, 2008; Mele, 2009; Pockett and Purdy, 2011].

[2] In particular, readiness potential (RP) has been recently interpreted in terms of a "stochastic model," according to which RP reflects accumulation of neural noise and does not represent any specific neural signal to lead an action (Khalighinejad, Schurger, Desantis, Zmigrod, and Haggard, 2018; Schurger, Sitt, and Dehaene, 2012; but see Travers, Khalighinejad, Schurger, and Haggard, 2020).

[3] Famously, while denying the initiating role of conscious will, Libet suggested that consciousness plays the role of "veto," that is, it blocks an action to be performed after the action has been initiated non-consciously (Libet, 1985, 1999, 2004). However, it may be that such a conscious veto is also preceded by non-conscious brain activity. Although Libet claimed that there is no evidence for it, a study by Filevich, Kühn, and Haggard (2013) seems to refute Libet's claim, detecting a preceding non-conscious brain activity in subjects who chose whether to respond to a visual stimulus or to inhibit doing so. The non-veridicality argument, which will be developed in this paper, can incorporate this finding and be extended to the claim that the experience of inhibiting an action in the experiments is non-veridical.

[4] A recent exception is Caruso (2012). See also footnote 8.

at which they felt the will to do so. They were given a clock with a hand that rotated every 2.56s and were instructed to remember and report the position of the clock hand when they felt the will to move their wrists. This report, called the W-judgment, was intended to indicate the moment at which the conscious will to perform the action emerged. During the trials, the readiness potential (RP) — the electrical potential thought to reflect the preparatory neural activity of a movement within the motor areas of the brain — was measured so that it could be compared with the subjects' W-judgment and their wrist movement. Importantly,[5] the RP onset was found to be earlier than the moment of the conscious will, which was specified based on the W-judgment as 150ms before the movement, implying that the conscious will to perform the voluntary action was preceded by the RP onset by 400ms.

Libet's finding has been developed in many subsequent studies. Haggard and Eimer (1999) found that lateralized readiness potential (LRP), which is supposed to signal a specific right- or left-hand movement, preceded conscious will by 400 or 500ms when the subjects freely chose their right or left hand to press keys. In a related development, using intracranial recording, Fried, Mukamel, and Kreiman (2011) found that the neuronal activity in the supplementary motor area and pre-supplementary motor area — the neural loci where RP and LRP seem to arise — preceded the conscious will to move a hand by about 1000ms. Similar findings have been obtained in fMRI studies. Soon, Brass, Heinze, and Haynes (2008) utilized fMRI signals to predict the subjects' choice to press a button with their right or left hand with 60% accuracy, which was significantly higher than chance. Interestingly, those fMRI signals preceded the moment in which a subject reported choosing the movement by 7s so that the underlying neural activity was estimated to form up to 10s before the subjects' reported choice (see also Bode et al., 2011; Soon, He, Bode, and Haynes, 2013). According to Haynes (2011), such fMRI studies show that "the brain can begin to unconsciously prepare decisions several seconds before they reach awareness" (p. 92; for further reviews, see Brass, Lynn, Demanet, and Rigoni, 2013; Haggard, 2008, 2019; Zhong, 2016, etc).

I will focus on what conclusions should be drawn about free will if the relevant neural event sequence is empirically established, such that non-conscious brain activity causally triggers a subject's actions several hundred milliseconds (or perhaps several seconds) before the conscious will to perform the action is formed. Indeed, many existing objections are concerned with several conceptual gaps between such a neural event sequence and the non-reality of free will and can be understood as targeting what I will call the *standard argument* (for similar reconstruction, see Bayne, 2011a; McKenna and Pereboom, 2016; Nahmias, 2010):

[5] More precisely, this electrical potential Type II RP was measured in trials in which the subjects were instructed not to preplan an action. I denote it simply as RP in this paper.

(P1) As indicated by the relevant neural event sequence, the actions studied in Libet-style experiments are not initiated by the conscious will.
(P2) If the actions studied in Libet-style experiments are not initiated by conscious will, then they are not freely willed.
(P3) If the actions studied in Libet-style experiments are not freely willed, then everyday actions are not freely willed.
Hence, everyday actions are not freely willed.

As explained below, those objections dispute either of the three premises (P1)–(P3).

First, according to the *distal will objection*, if we consider the distal will as well as the proximal will, the actions studied in Libet-style experiments turn out to be initiated by conscious will (e.g., Flanagan, 1992; Gallagher, 2006; Gomes, 1999; Hodgson, 2012; Horgan, 2011; Mele, 2009; Näätänen, 1985; Nahmias, 2010; Zhu, 2003). This objection reminds us that experimental subjects have the conscious will to, say, visit the laboratory and follow instructions; distal conscious will functions as a causal background condition of those actions. So, the objection goes, such functioning is qualified as initiating the actions to the extent that the actions are counterfactually dependent on that will. If this is the case, the premise (P1) is questioned.

Second, according to the *causal nexus objection*, the proximal conscious will can still qualify as the initiator of action because it might function as the causal nexus between the non-conscious brain activity and the resulting action (e.g., Clark, 1999; Mele, 2011; Moore, 2010; Nahmias, 2010, 2014; Schlosser, 2012). Requiring an initiator of actions to be uncaused — like an "unmoved mover" — presupposes a kind of incompatibilism between action initiation and its causal determination, which itself is a controversial philosophical idea and would not be accepted by compatibilists. This objection again makes the premise (P1) unjustified.

Third, according to the *non-conscious freedom objection*, even if the proximal conscious will is disqualified as the initiator of actions, there is a sense that those non-consciously initiated actions are still freely willed (e.g., Freeman, 1999; Levin, 2015; Levy, 2005; Rosenthal, 2002; Velmans, 2003). As Rosenthal (2002) states, "[i]t is plain that there is no difference in respect of freedom between conscious and nonconscious volitions," and "[c]onscious volitions differ from those which are not conscious only in that we are conscious of them" (p. 219). If this is the case, the premise (P2) will be denied.

Fourth, according to the *ecological validity objection*, even if the actions studied in the Libet-style experiments turn out to not be freely willed, this finding cannot be generalized to everyday actions outside laboratories (e.g., Asma, 2017; Herdova, 2016; Levy, 2014; Mele, 2009; Roskies, 2011; Schlosser, 2014; Shepherd, 2015a; Waller, 2012). The actions studied in the experiments are all similar to capriciously moving a wrist or arbitrarily choosing a hand to press a key without any reason or deliberation. The decision therein is rather like Buridan's ass — where subjects are "indifferent between or among their leading options" (Mele,

2009, p. 83) — and, thus, does not seem to involve "freedom worth wanting" (Dennett, 1984), that is, the sort of agency that is deemed to ground moral responsibility in everyday ethical practices. This objection resists the above argument by questioning the premise (P3).

The purpose of this paper is not to defend the standard argument; instead, I will try to explore the neuroscientific threat to free will in another form of argument and show that it is invulnerable to the above objections. Therefore, this attempt, if successful, would regain the conditional claim that free will is threatened *if* the relevant neural event sequence is empirically established. However, at the same time, the threat thus supported takes a subtly different form: everyday actions are not freely willed in the way we experience them. To explain this, in the next section, I begin by reflecting on why Libet believed his original experiment was related to the issue of free will.

Reconceptualizing the Neuroscientific Threat

Libet on the Threat

Why are we, at least initially, surprised to learn about the relevant neural event sequence that Libet-style experiments are supposed to establish? First, our folk psychological conception of human agency appears to be in error in light of the relevant neural event sequence. This point was suggested by Libet when he stated that the neural event sequence implies that "free will or free choice of whether 'to act now' could not be the initiating agent, contrary to one *widely held view*" (Libet, 1992, p. 269, italics added; see also Haynes, 2011). This sort of neuroscientific threat seems to be tracked by the standard argument, as it has been revealed by recent empirical studies that people are more inclined to attribute freedom to proximal rather than distal will, conscious rather than non-conscious will, and non-deliberative rather than deliberative actions; thus people would regard those actions studied in Libet-style experiments as freely willed examples (Deutschländer, Pauen, and Haynes, 2017; see also Shepherd, 2012, 2015b, 2017; Vierkant, Deutschländer, Sinnott–Armstrong, and Haynes, 2019). Indeed, these three factors appear to be reflected in the three premises, respectively. For example, the premise (P2) holds if we assume that consciousness is a prerequisite for free will in accordance with this inclination of folk psychology.

However, this does not exhaust our surprise. The perceived threat also arises from imagining — from the first-person perspective — how we would *feel* regarding our agency in those experiments and then finding that there is a considerable mismatch between this feeling and the relevant neural event sequence. Libet claims:

> This is of course *also* contrary to each individual's own *introspective feeling* that he/she consciously initiates such voluntary acts; this provides an important empirical example of the possibility that the *subjective experience* of a mental causality need

> not necessarily reflect the actual causative relationship between mental and brain events. (1992, p. 269, italics added)

Libet has repeated this intuition, for example: "How can we explain our feeling or experience that we initiated an act? If the cerebral process that initiates a freely voluntary act is an unconscious one, the feeling of consciously initiating the process becomes paradoxical" (2004, p. 144). Other neuroscientists have also mentioned this point. For example, Talmi and Frith (2011) noted, "[o]ne way to characterize the result of Libet's experiment is that it reveals a discrepancy between the subjective experience of a decision and the 'true' cause of that decision" (p. 125).

This points to another conception of the neuroscientific threat: there is a discrepancy between the way we subjectively grasp our agency and the neural event sequence underlying our agency as objectively described. In short, our experience of our agency is non-veridical in light of the findings of Libet-style experiments. This form of neuroscientific threat is not reflected in the standard argument and appears distinct from and no less important than the other, folk-psychologically framed one.[6] Primarily, freedom of will is a mental experience that is not merely postulated to explain or predict other people's actions. If such experience of freedom turns out unavoidably wrong under neuroscientific pressures, then it follows that *our actions are not freely willed in the way we experience them*. In the remainder of this section, I consider how an agentive experience could be generally non-veridical and utilize this consideration to equip the neuroscientific threat with philosophical argumentation.

The Phenomenology of Freedom

Experience of agency and its distinctive phenomenological character can be discerned by comparing various types of experience with one another (Bayne, 2009; Siegel, 2007). One can immediately find an experiential difference between moving one's arm and it being moved by someone else. While both cases involve the same bodily movement and share similar feelings, one can distinguish them by comparing how they feel, which means that the experience of moving one's arm has a phenomenological character that is absent in the experience of one's arm being moved by another person. Such a contrast becomes more drastic with pathological cases. Patients with alien hand syndrome suffer from uncontrollable movements of their hands and arms, as if these parts of their bodies are being

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[6] Caruso (2012) comes close to the phenomenological framing: "The fact that we experience conscious intentions as occurring prior to movement causes us to believe that these intentions cause behavior. Although this experiential order of events plays a major role in generating our feeling of freedom, does our sense of conscious will match the underlying pattern of neural events?" (p. 189, italics in original). However, Caruso seems to invoke the phenomenology of agentive experience to endorse the folk-psychological importance of conscious will, thus failing to make the distinction between the two kinds of threat.

manipulated by another person (Banks et al., 1989; Della Sala, Marchetti, and Spinnler, 1991). However, the individual's affected hand still sometimes shows purposeful movements, while the other, unaffected hand simultaneously tries to prevent the movements. For example:

> [W]hen the patient had a steaming cup of tea in front of her, the right hand proceeded to pick it up and bring it to her mouth, even though the patient knew that it was too hot and had just said she would wait a few moments until it had cooled. Nevertheless, it needed the intervention of her left hand to replace the cup on the table. (Della Sala, Marchetti, and Spinnler, 1991, p. 1114)

The phenomenological difference will be clear between the experience of such symptomatic movements of the affected hand and those of the unaffected hand, implying that we usually undergo an agentive experience that involves a distinctive phenomenology.

This experiential character can also be illustrated when the agentive experience is manipulated. Desmurget et al. (2009) administered a direct electrical stimulation to the inferior parietal cortex, which resulted in subjects' reports that they willed or wanted to move a part of their body. For example, one subject said, "I felt a desire to lick my lips" (p. 812). Furthermore, when the stimulation was intensified, the subject reported that he moved a part of his body, although this did not happen. He said, "I moved my mouth, I talked, what did I say?" (p. 812). These reports show that we enjoy an agentive kind of experience that can be "illusory" (p. 811) in situations such as the one above.

Although the phenomenology of agentive experience seems complex (Bayne, 2008; Bayne and Levy, 2006), its crucial aspect for our present purpose is such that the agentive experience carries the *phenomenology of freedom* at the moment of initiating an action. This phenomenology has been recorded in many philosophical writings. When Descartes (1644/1985) argued for the existence of free will that escapes causal determination, he justified it with introspection: "We have such close awareness of the freedom and indifference which is in us, that there is nothing we can grasp more evidently or more perfectly" (1.41). Similar phenomenological reports have been found in more recent writings, such as, for example, Searle (1984): "Reflect very carefully on the character of the experiences you have as you engage in normal, everyday ordinary human actions. You will sense the possibility of alternative courses of action built into these experiences" (p. 95; for other examples, see Campbell, 1951, p. 463; 1957, p. 169; Lehrer, 1960, p. 150). The central idea is that the agentive experience carries the phenomenology of alternative possibilities of action, which have been sometimes metaphorically described as "forking paths" (Kane, 2007, p. 6).

However, the phenomenology of freedom does not seem to be exhausted by alternative possibilities. In the philosophical debate, the incompatibilist view of determinism and free will is distinguished between *leeway incompatibilism* and

source incompatibilism (McKenna, 2001; McKenna and Pereboom, 2016; Pereboom, 2001). The former view requires indeterminism for free will because freedom implies alternative possibilities, while, in contrast, the latter requires that an ultimate causal source of action lies within the agent.[7]

Source incompatibilism can be distinguished by the nature of such a causal source: an *agent* itself or an agent's *mental state*. Whereas *agent-causal libertarianism* suggests that we have an incompatibilist sort of freedom such that we, the agents, are the causal source of our actions (Chisholm, 1976; Clark, 2003; O'Connor, 1995, 2000), *event-causal libertarianism* suggests that we have an incompatibilist sort of freedom in that our mental state is the causal source of our actions (Ekstrom, 2000; Kane, 1996). These two sorts of freedom have sometimes been reflected in phenomenological reports of agentive experience. On the one hand, as O'Connor (1995, p. 196) states: "It does not seem to me (at least ordinarily) that I am caused to act by the reasons which favor doing so; it seems to be the case, rather, that *I* produce my decision *in view of* those reasons […]" (italics in original; for similar descriptions, see Gallagher, 2000, p. 16; Horgan, Tienson, and Graham, 2003, p. 329). On the other hand, Rosenthal (2002) can be understood as giving a phenomenological report of the event-causal libertarian sort of freedom: "[T]hough we experience conscious volitions as causing voluntary actions, we typically experience those conscious volitions themselves as uncaused" (p. 219).

We can identify a general feature of the source incompatibilist phenomenology from these introspective reports: we experience our will as *created within consciousness*. It may be either in an agent-causal libertarian manner (as reported by O'Connor) or event-causal libertarian manner (as reported by Rosenthal). This phenomenology is the key to the neuroscientific threat to free will because Libet-style experiments, if they establish the relevant neural event sequence, show that our agentive experience is non-veridical in terms of this sort of phenomenology, as I explain below.

Non-Veridicality of the Agentive Experience

Experience has a veridicality condition, which is specified by its phenomenology because an experience generally represents to its subject how the world is.[8]

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[7] In arguing for liberation free will, Descartes (1644/1985) seems to commit himself to source incompatibilism by saying that an agent is "the *author* of his actions" (1.37, italics added).

[8] The phenomenological specification of the veridicality condition can be formalized with the notion of phenomenal content, which is a representational content determined by the phenomenological character of the experience (Chalmers, 2010). More formally, "a representational content C of a perceptual experience E is a phenomenal content if and only if, necessarily, any experience with the phenomenal character of E has representational content C" (Chalmers, 2010, pp. 382–383), where the veridicality condition is specified by the proposition expressed by C. Whereas this definition is presented to capture the veridicality condition of perceptual experience, I extend it to agentive experience as discussed in the main text.

Although the veridicality condition is typically discussed for perceptual experiences, we can equally apply the notion to agentive experience.[9] For example, the experience of illusory lip movement has the phenomenology of a voluntary lip movement and, thus, has a veridicality condition <I am moving my lip> so that the experience is non-veridical. Likewise, if agentive experience presents the source incompatibilist phenomenology as explained above, then it has a veridicality condition that can be expressed as <this action is created within consciousness>.[10] Therefore, an agentive experience could be either veridical or non-veridical in terms of the source incompatibilist phenomenology.

Remember, in Libet-style experiments, subjects are allowed to freely choose to perform an action when they want to perform it. These actions are experienced as typical, in contrast to cases in which the action is coerced or, for example, in the case of alien hand syndrome. Importantly, Libet-style experiments are designed to retain the phenomenology; their subjects feel "introspectively that they are performing the act on their own initiative" (Libet, 1985, pp. 529–530). Indeed, Libet describes his subjects reporting the feeling that their actions have the ultimate causal source in themselves;

> The subjects did indeed report that the inclination for each act appeared spontaneously ("*out of nowhere*"), that they were consciously aware of their urge or decision to act before each act, that they felt in conscious control of whether or not to act, and that they felt no external or psychological pressures that affected the time when they decided to act. (Libet, 1985, p. 530, italics added)

If this is the case, the agentive experience in those experiments is non-veridical in terms of the source incompatibilist phenomenology, in light of the relevant neural event sequence. For, while the relevant veridicality condition is that the action is created within consciousness, the neural event sequence tells us that the action is causally triggered by non-conscious brain activity and, thus, is *created outside consciousness*. Consequently, by virtue of this non-veridicality, the actions studied in Libet-style experiments are not freely willed in the way that subjects experience their agency.

Furthermore, this inference prompts us to reconsider how everyday actions are modeled in Libet-style experiments. Certainly, in contrast with the actions studied in those experiments, we often adopt deliberation in choosing and performing

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[9] The only difference I find between them is that, in contrast with perceptual experience which attributes properties to (objects within) the world, agentive experience necessarily attributes properties to its subject, one's mental states, or actions.

[10] Here, I assume that the agentive experience at hand has a descriptive, mind-to-world direction of fit, just like perceptual experience and doxastic states (Bayne, 2011b), although it might be argued that it has instead a directive, world-to-mind direction of fit, just like intention and desire (Searle, 1983). Although I believe that the former view is plausible with regard to the phenomenology of initiating an action, if the latter is correct, then my claim would be replaced with the idea that the agentive experience is unsatisfied in terms of the relevant phenomenology.

actions in everyday situations. Moral decisions have been regarded as exemplifying free will since philosophers have almost always attempted to explore the sort of freedom that grounds moral responsibility. For example, Kane (1996, 2007) developed a famous hypothetical case of the businesswoman:

> Consider a businesswoman who faces such a conflict. She is on her way to an important meeting when she observes an assault taking place in an alley. An inner struggle ensues between her conscience, to stop and call for help, and her career ambitions, which tell her she cannot miss this meeting. She has to make an effort of will to overcome the temptation to go on. If she overcomes this temptation, it will be the result of her effort, but if she fails, it will be because she did not *allow* her effort to succeed. And this is due to the fact that, while she willed to overcome temptation, she also willed to fail, for quite different and incommensurable reasons. (Kane, 2007, pp. 26–27, italics in original)

I claim that such decision-making shares the phenomenology of freedom of the sort that I have emphasized. Before the decision, the businesswoman would feel that the choice between her possible actions is indeterminate: stopping or going. Then, after establishing the decision, she would find her chosen action determinate. Through this stream of deliberation, she would experience her chosen action as created within her consciousness. Indeed, it seems unavoidable that she would experience her action in this way because whatever is apprehended in serious deliberation should be within consciousness. Therefore, the phenomenology at issue is common to everyday actions that involve deliberation, including moral decisions as well as those decisions studied in Libet-style experiments.[11] If this is the case, we can say that the crucial aspects of everyday actions are adequately modeled in the laboratory, which enables us to generalize the relevant non-veridicality to our everyday actions to that extent.

My argument so far, which I will call the *non-veridicality argument,* can be summarized as follows:

> (Q1) The agentive experiences relevant to Libet-style experiments are non-veridical in terms of the phenomenology of freedom.
> (Q2) If the agentive experiences relevant to Libet-style experiments are non-veridical in terms of the phenomenology of freedom, then the relevant actions therein are not freely willed in the way we experience them.
> (Q3) If the relevant actions in Libet-style experiments are not freely willed in the way we experience them, then everyday actions are not freely willed in the way we experience them either.
> Hence, everyday actions are not freely willed in the way we experience them.

[11] The idea developed here is inspired by Libet's discussion of the commonality between everyday actions and the actions studied in the laboratory (e.g., Libet, 1985, pp. 536, 562–563; 1999, pp. 53–54; Libet, Gleason, Wright, and Pearl, 1983, pp. 640–641). According to Libet, the experimental subjects reported that the conscious will was experienced in the same way as "slower conscious deliberation" (Libet, 1985, p. 539).

In the following, I defend this argument against the philosophical objections that I have explained and their adaptations. In doing so, I clarify the contrast between the standard argument and the non-veridicality argument.

The Existing Objections and Their Adaptations

The Distal Will Objection

As explained previously, according to the distal will objection, any actions studied in Libet-style experiments are initiated by distal conscious will and, thus, the premise (P1) of the standard argument is questioned. We might adapt the objection to challenge the non-veridicality argument. The idea is that our agentive experience does not involve any sort of phenomenology concerning proximal mental states but rather only a phenomenology that tells us that a distal conscious will causes, initiates, or creates the action. If this is the case, then our agentive experience in Libet-style experiments remains veridical under the relevant neural event sequence, and the premise (Q1) of the non-veridicality argument is questioned.

However, this phenomenological characterization of the agentive experience seems implausible. The agentive experience does not seem to track the distal conscious will, which would have been formed, say, some days or hours ago. Perhaps the objection could be amended to limit its focus to the distal will to complete the experimental task, which persists for only an hour or even a few minutes. However, the phenomenological temporal extension of the experience is often supposed to be some dozens or hundreds of milliseconds (Dainton, 2006; Tye, 2003), whereas I believe it seems introspectively better to say that it is more extended, perhaps up to a few seconds in the case of agentive experience. Anyway, it is highly plausible that our agentive experience tracks only the proximal origin of the action within such a short temporal window, the phenomenology of which should be characterized in the source incompatibilist manner I have described above. Although there may be a sense in which we can experience a distal past event, it is limited to the experience of remembering or recalling, the phenomenology of which is fundamentally different from that of the agentive experience tracking the ongoing way the action is created within consciousness.

A sophisticated adaptation can be found in Horgan's (2011) version of the objection. According to Horgan, the subjects in Libet-style experiments have "standing intention," which fails to indicate the specific timing to do an action but functions as a background condition of the action. The standing intention, he argues, involves the phenomenology of "self-as-source" (p. 164), which is non-committal about the causal origin of the action so that the agentive experience therein is considered veridical. However, such characterization of agentive experience fails to capture the phenomenology I have emphasized. Indeed, in contrast to Horgan's claim that there is no rationale to any other significant

phenomenology than his characterization, Libet's subjects issued the phenomenological report that their action "comes out of nowhere" (Libet, 1985, p. 530), which suggests that they experience the ultimate causal source within themselves. Horgan is right that agentive experiences involve a "self-as-source" phenomenology; however, the precise character of this phenomenology seems not to be exhausted by the background condition of action such as standing intention.

The Causal Nexus Objection

Remember that, according to this objection, the proximal conscious will mediates between non-conscious brain activity and the action, qualifying its status as the initiator of that action. Thus, the premise (P1) of the standard argument is called into question. Before considering the adaptation of this objection, let us closely look at how the causal nexus story is expressed by its representative proponent. Mele (2009, 2011) emphasizes that nonconscious brain activity, such as RP, is a preparation for the subsequent conscious will and/or decision, which he calls "pre-proximal intention group (PPG)." With this in mind:

> Libet asks […], "How would the 'conscious self' initiate a voluntary act if, factually, the process to 'act now' is initiated unconsciously?" I offer an answer here. Processes have parts, and the various parts of a process may have more and less proximal initiators. A process that is initiated by an item in the PPG may have a subsequent part that is directly initiated by a consciously made decision. The conscious self — which need not be understood as something mysterious — might more proximally initiate a voluntary act that is less proximally initiated by an item in the PPG. Readers who, like me, prefer to use "self" only as an affix may prefer to say that the acquisition or formation of a relevant proximal intention — and specifically, an intention that is consciously acquired or formed — might more proximally initiate an intentional action that is less proximally initiated by an item in the PPG. (Mele, 2009, p. 69)

It should be conceded that the possibility that A is caused by B and the latter, in turn, is caused by C does not eliminate B's status of causing A. However, is it also plausible that this possibility does not eliminate B's status of *initiating* A? Although Mele seems to assume so in the above passage, this is not obvious. In any event, I will rather emphasize that our agentive experience involves the phenomenology of action initiation, which is distinct from "less proximal initiators." Indeed, such phenomenological consideration gives a basis to answer the question motivating the causal nexus objection:

> Is it being presupposed instead that an action is free only if it proceeds from an intention that has no causes of which the agent is not conscious? What recommends this idea? If intentions are caused, neural events of which we are not conscious are among their causes. Why should that be thought to prevent actions that proceed from caused intentions from being free? (Mele, 2011, pp. 26–27)

An initial response is that our agentive experience involves the phenomenology that our action is created within consciousness; thus, the causal nexus story does not save the veridicality of that experience. Mele might raise a concern about how this is relevant to the proper notion of freedom, which seems hard to adjudicate given the long-standing debate about it. I concede that it is difficult to deduce the simple proposition that our action is not freely willed from the alleged neural event sequence. Instead, my bottom-line claim is concerned with experience: *an action is not freely willed in the way one experiences its initiation*. (Concerning a further attempt to undermine the significance of phenomenology, see the next subsection.)

Thus, a possible adaptation of the causal nexus objection is to claim that the phenomenology of the agentive experience is such that we experience our action as something compatible with its initiation outside consciousness. If this is the case, the premise (Q1) of the non-veridicality argument will be questioned. However, again, such characterization of the phenomenology does not fit with the aforementioned experimental subjects' reports that their action "comes out of nowhere." To argue against this, one may be tempted to explain such a phenomenological report as a systematic error to assure the veridicality of agentive experience in the causal nexus story. One possible line of thought is that the phenomenology of agentive experience does not concern whether or not our actions are triggered by non-conscious brain activity; therefore, we do *not feel* our action as causally determined. However, when we issue a phenomenological report, we are inclined to say that we *feel* that our actions are *not* causally determined and, thus, are created within consciousness. In short, we confuse an *absence of feeling* with a *feeling of absence* (Dennett, 1984; Holton, 2009). Although attractive in its initial appearance, this strategy suffers from a problem.[12] We do not feel that a headache is causally determined; however, we are not inclined to say that the headache is felt as not causally determined — let alone freely willed — either. It is unclear why the alleged error occurs only in the agentive experience and not in any other types of experience, whether sensory, perceptual, or cognitive. Without amendments to avoid this incorrect prediction, the strategy does not explain the phenomenological report.

[12] Two types of this "Spinozan" strategy should be distinguished. The first argues that, due to phenomenological confusion, we are inclined to say that we have libertarian freedom. The second argues that, due to the same phenomenological confusion, we are inclined to say more moderately that we experience libertarian freedom. Whereas the former targets the metaphysical belief that we are libertarian agents, which has recently been debated (Kissel, 2018; Nichols, 2015), the latter targets the phenomenological belief (or report) that we experience ourselves as libertarian agents, which is the topic we are concerned with in this paper. Although distinct, they are susceptible to the headache argument, as both, at base, assume the existence of the same phenomenological confusion.

The Non-Conscious Freedom Objection

Remember that the non-conscious freedom objection states that even if our action is initiated by non-conscious brain activity, this still never implies that the action is not freely willed. What is at stake here is whether freedom requires consciousness. Libet seems to have presumed this requirement: "[a] free will process implies one could be held consciously responsible for one's choice to act or not to act" (1999, p. 52). However, according to the objection, the relevant will's non-consciousness does not imply the loss of freedom.

In contrast, the non-veridicality argument explains how consciousness is related to freely willed action. This argument concerns whether or not our actions are freely willed in the way we experience them, which in turn hinges on the veridicality of the agentive experience in terms of its source incompatibilist phenomenology, as I have argued. Thus, to that extent, the possibility that action is initiated by non-conscious brain activity and, thus, is created outside consciousness, has an implication for the issue of free will.

It might be still objected that it does not matter whether our actions are freely willed in the way we experience them, which is perhaps a straightforward adaptation of the non-conscious freedom objection. The idea is that, as our non-conscious brain activity is constitutive of our agential self, we can safely say that our actions are freely willed even if created outside consciousness, criticizing the premise (Q2). I counter this objection by focusing on its central idea that agentive experience, or its phenomenology, is dispensable to questions of freedom. Suppose that, for example, all our actions and their underlying neural and bodily functioning were intact, except for our agentive experience. Our actions might feel coerced or, perhaps, nothing agential would be felt at all; we would simply observe our body moving. However, assuming that agentive experience is dispensable, we have to say that nothing is lost concerning freedom. We could conceive similar scenarios in which agency and agentive experience are dissociated, which should be taken as a *reductio* against the objection at hand.

Let us closely look at Levy's (2005) sophisticated version of the non-conscious freedom objection in order to see how it attempts to undermine the significance of consciousness. According to Levy, an action is freely willed to the extent that deliberation, decision, and intention are formed via the properly functioning sub-personal processes; furthermore, those processes do not have to be consciously controlled. In claiming so, he emphasizes an observational character of consciousness. He illustrates this by discussing the case of deliberation about a job offer:

> Suppose I have concluded that my reasons support my accepting the job offer. Now let me consider whether or not to act as I believe I ought. How shall I make this decision? I can consciously contemplate my reasons, and the fact that they

> support my accepting the job, all I like. In the end, I have simply to decide to accept the offer, or not to accept it, and that is not a task that consciousness itself can accomplish. Instead, *it is reported to consciousness*. (Levy, 2005, p. 72, italics added)

However, contra Levy, the issue at stake is not simply whether or not consciousness has to, and is able to, play specific functional roles in decision-making. Rather, the question is whether or not we correctly experience our agency, as raised by Libet. When framed by this question, the significance of consciousness to the issue of free will appears obvious.[13] Indeed, even granting that Levy is right about the observational character of consciousness in decision-making, we are still entitled to ask whether the observation tracks the truth. Thus, the non-conscious freedom objection is built on the misguided assumption that the crucial issue is merely the function of consciousness, which can also be seen in other works advancing the non-conscious freedom objection (see, for example, Levin, 2015, pp. 270–274; Rosenthal, 2002, pp. 217–219; Velmans, 2003, pp. 42–45).

The Ecological Validity Objection

According to the final objection, as the actions studied in Libet-style experiments are performed without reason or deliberation, the findings derived from them cannot be generalized to everyday actions. Thus, the premise (P3) of the standard argument is questioned. On the other hand, the non-veridicality argument is presented to allow such a generalization by specifying the common phenomenology between actions in the laboratory and everyday contexts, as I have argued above.

Let us look at how the ecological validity objection could incorporate a phenomenological consideration in order to challenge the non-veridicality argument. Although morally responsible action must be accompanied by reason-responsive processes, such as deliberation, the actions studied in Libet-style experiments do not; thus, there will be a phenomenological difference between them, even while sharing the source incompatibilist phenomenology. Although I have emphasized the phenomenological commonality, what matters for moral responsibility lies in the difference. Therefore, the objection goes, everyday actions fail to be adequately modeled in the laboratory; thus the premise (Q3) is questioned.

In response, let me again focus on the subjects' phenomenological reports. In Libet's study, "most importantly, the subject felt she was *responsible* for the act and also felt that she could *control* when to act as well as whether or not to act"

[13] Levy also points out that requiring conscious control on decision-making implies an impossible demand that control is to be consciously controlled, because the decision-making itself is a controlling process. However, contra Levy, the requirement of conscious control is actually that the decision is to be conscious, which does not imply that another control is to be mounted upon it. In any event, the veridicality of agentive experience requires that, upon decision-making, an action is created within consciousness; nothing like such meta-control is implied here.

(2004, p. 129, italics added). This suggests that the sort of agency that grounds moral responsibility is experienced in the laboratory as well, while the subjects might not deliberate over what moment to perform their actions. Although the subjects' reports are open to alternative interpretations, it seems the most straightforward to think that the source incompatibilist phenomenology gives the feeling that subjects are responsible for, and in control of, their actions. If this is the case, then the sort of agency that grounds moral responsibility is experienced in the laboratory to the same degree that it is experienced in everyday actions. My point here is not that the emphasized phenomenology suffices what we usually take as morally responsible agency; instead, such phenomenology is involved therein and, thus, the agentive experience turns out to be non-veridical in morally-relevant situations as well.[14]

Schlosser (2014) notes that philosophers usually disregard the freedom of indifference and that "free will proper" (p. 251) involves a choice based on reasons. Schlosser suggests that

> [a]gainst this background, it is easy to see why the findings from the experiments in the Libet paradigm have appeared to be irrelevant to philosophers. The experiments, it seems, investigate only the freedom of indifference. This is only an insignificant and uninteresting kind of freedom, and the findings tell us nothing about free will proper. (p. 251)

I think that this philosophical tendency misses why Libet-style experiments have been seriously considered by neuroscientists and have widely surprised people. Those experiments are understood to be inconsistent with the crucial phenomenology — the creation of an action — that people experience in everyday cases of the "free will proper." My argument suggests that the neuroscientific threat should be reconsidered in terms of the phenomenology of agentive experience.

Concluding Remarks

I argued that if the relevant neural event sequence is established by Libet-style experiments, then it provides a threat to free will. The central idea behind this

[14] Some empirical studies focused on ecological validity and examined whether RP would occur in situations that require deliberation. On the one hand, Maoz, Yaffe, Koch, and Mudrik (2019) found a clear RP in an arbitrary decision task but no RP in a decision task in which the subjects deliberate on what charitable organization should be selected for a donation. On the other hand, however, Verbaarschot, Farquhar, and Haselager (2019) found no difference in RP and LRP between arbitrary and deliberative decision tasks; in the latter, the subjects played a strategic video game that was intended to induce an "evaluative or emotional experience" (section 2.1.1.). Further works are expected to overcome these seemingly contradictory findings by operationalizing the character of everyday actions; such studies can be more illuminating if they systematically probe the phenomenology of free will. Indeed, Verbaarschot et al. probed the phenomenological report via questions such as "Did you feel responsible for your actions?," which may be further developed to investigate the nature of the phenomenology of free will.

claim is, as suggested by Libet, that there is a mismatch between our subjective experience of freedom and the objective description of the neural event sequence. I elaborated on this idea by first specifying the source incompatibilist phenomenology of the agentive experience; then, I attempted to demonstrate that the resulting argument is invulnerable to the existing major objections raised by philosophers and their adaptations.

The present discussion, which emphasizes the significance of the phenomenology of agentive experience, encourages specific empirical studies. For example, Deery, Bedke, and Nichols (2013) examined how people felt about their agentive experience using a questionnaire survey method and found that participants reported the leeway incompatibilist — but not compatibilist — sort of phenomenology. A similar methodology could be adopted to establish whether people experience the source incompatibilist phenomenology, which was not addressed in their study. We could also extend such investigation to situations in which Libet-style experiments are conducted. Whereas I have invoked the phenomenological reports as described by Libet, they have not yet been systematically investigated in Libet-style experiments. Therefore, elucidating the nature of the phenomenology of freedom in experimental conditions could help reveal the extent to which everyday actions are modeled in a laboratory setting.[15]

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[15] Whereas some recent neuroscientific studies have begun to probe the subjective sense of freedom during experimental trials, those studies have simply asked subjects to what extent they felt the freedom to choose certain options using numerical scales (e.g., Filevich et al., 2013; Rens, Bode, and Cunnington, 2018). There is still room to elaborate these scales in terms of a philosophical characterization of freedom, which will help to elucidate the nature of the phenomenology of freedom and its underlying neural processes.

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