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Cognitive phenomenology and metacognitive feelings

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The cognitive phenomenology thesis claims that “there is something it is like” to have cognitive states such as believing, desiring, hoping, attending, and so on. In support of this idea, Goldman claimed that the tip-of-the-tongue phenomenon can be considered as a clear-cut instance of non-sensory cognitive phenomenology. This paper reviews Goldman's proposal and assesses whether the tip-of-the-tongue and other metacognitive feelings actually constitute an instance of cognitive phenomenology. The paper will show that psychological data cast doubt on the idea that the tip-of-the-tongue and other metacognitive feelings are clear-cut instances of cognitive phenomenology.

KEYWORDS

bodily feelings, cognitive phenomenology, feeling of knowing, introspection, metacognitive feelings, tip-of-the-tongue phenomenon

1 | INTRODUCTION

One of the most controversial debates in the contemporary Philosophy of Mind centers on the discussion of whether cognitive attitudes have a proprietary phenomenology. The cognitive phenomenology thesis claims that “there is something it is like” (Nagel, 1974) to have cognitive states such as believing, desiring, hoping, attending, and so on. According to this view, cognitive attitudes have a particular phenomenology, a raw feeling, that the subject is aware of or can introspect. For instance, there is *something it is like to think* that it rains different from *what it is like to judge* that it rains; that is, there is a phenomenological difference between different attitudes that are directed towards the same content. Thus, according to some authors, this type of phenomenology that pertains to the cognitive attitudes is different from the phenomenology of the content of mental states: one thing is the phenomenology of my perceiving the rain, and another the phenomenology of my *believing* or *judging* that it is raining.¹

¹ Saying that the cognitive phenomenology debate is about cognitive attitudes is controversial because some philosophers hold that cognitive phenomenology also pertains to the content of thought (Montague, 2015; Pitt, 2004; Strawson, 2011). Here I endorse Horgan and Tienson (2002), Klausen (2008), and Chudnoff's (2015a, 2015b) view, according to which the real issue is the phenomenology of

In the former case, one's sensory phenomenology relates to the external objects and its sensory effects on oneself (the rain, its sounds, the way it reflects the light, and how the drops touch one's body); whereas in the latter case, one is aware of one's own cognitive attitudes (one's own belief and/or judgement concerning what is going on in front of oneself). It is by perception that one gets to know the surrounding objects, whereas it is by introspecting the cognitive phenomenology that the subject is able to discriminate or know her attitudes; that is, to know which cognitive attitude she has with respect to a mental content (Bayne & Montague, 2011a, 2011b; Goldman, 1993). So, the cognitive phenomenology thesis claims that "there is something it is like" to have cognitive states such as believing, desiring, hoping, attending and, so on. This thesis has been put forward against the more conservative view that attributes phenomenology exclusively to sensory states, perceptual states, and bodily sensations (Braddon-Mitchell & Jackson, 2007; Carruthers, 2005; Lormand, 1996; Prinz, 2011; Robinson, 2005, 2011; Tye, 1995, 2000; Tye & Wright, 2011). Many philosophers working in the Philosophy of Mind either explicitly or implicitly accept a division within the realm of mental states between intentional states like beliefs and desires on the one hand, and phenomenal states like perceptions and sensations on the other hand. This view has been called "separatism" (Horgan & Tienson, 2002) and it holds that the cognitive and phenomenal aspects of the mind can be separated. Some philosophers even subscribe to the stronger view that there is nothing it is like to have a belief (Tye & Wright, 2011).

The cognitive phenomenology thesis has been sometimes associated to metacognitive feelings, after Goldman's (1993) claim that the tip-of-the-tongue phenomenon (henceforth TOT) is a clear-cut instance of cognitive phenomenology. Some philosophers have followed Goldman and accept that the TOT phenomenon and other metacognitive feelings such as the feeling of knowing are examples of this kind of phenomenology (Dorsch, 2016; González-Grandón, 2016; Jorba, 2013; Smithies, 2013),² whereas others think that this argument needs further analysis (Bayne & Montague, 2011b; Calabi, 2016; Jorba & Moran, 2016). Thus, this paper aims to assess Goldman's proposal in order to determine whether the TOT and other metacognitive feelings actually constitute an instance of cognitive phenomenology through a careful analysis of some empirical results concerning metacognitive feelings. First, the paper presents the cognitive phenomenology thesis and some arguments for and against it (section 2), followed by a reconstruction of Goldman's view (section 3). Then, the paper will present psychological data about metacognitive feelings and assess to what extent these data support the cognitive phenomenology thesis, and respond to some objections (section 4). Finally, the paper draws some conclusions and explains what metacognitive feelings are if not cognitive phenomenology (section 5). The main argumentative strategy of this paper is an inference to the best explanation; it aims to show that philosophical and psychological theories of metacognitive feelings do not support the cognitive phenomenology thesis, but rather an embodied account of metacognitive feelings, according to which they are embodied signals that have been recruited to represent internal processes.

the attitude, not phenomenology of the content. Following these authors, I hold that the issue of cognitive phenomenology is orthogonal to the issue of phenomenal intentionality: the cognitive phenomenology is the phenomenology of the cognitive attitude (e.g., I believe), which is independent of the content, whereas the phenomenal intentionality debate refers to the phenomenology of the intentional content. So, I am not longer considering the issue of phenomenal intentionality in this paper.

² Although Goldman did not use the concept "metacognitive feeling," today it is widely accepted in the contemporary philosophical and psychological literature that the TOT is a metacognitive feeling (Arango-Muñoz, 2014b; Arango-Muñoz & Michaelian, 2014; Bayne & Montague, 2011b; Calabi, 2016; Dokic, 2012; Jorba, 2013; Smithies, 2013). Other philosophers have also developed similar reflections without using the term "metacognitive feeling." Siewert, for example, seems to be thinking about this type of feeling when he analyzes the case of the sudden realization that he had forgotten his briefcase while driving to work (Siewert, 1998, p. 287).

2 | THE LIBERAL VERSUS THE CONSERVATIVE VIEW³

As I said in section 1, there are two main views on cognitive phenomenology. The liberal view claims that all or most mental states possess a proprietary and specific phenomenology (Horgan & Tienson, 2002; Pitt, 2004; Siewert, 1998; Strawson, 2010, 2011). Mental states or attitudes such as beliefs, desires, intentions, hopes, rememberings, and others have a proprietary phenomenology that the subject is conscious of:

The terms qualia and qualitative are sometimes restricted to sensations (percepts and somatic feelings), but we should not allow this to preclude the possibility of other mental events (beliefs, thoughts, etc.) having a phenomenological or experiential dimension (Goldman, 1993, p. 24).

Moreover, each of these states has a specific phenomenology that differentiates it from the others, and cannot be reduced to sensory states (Chudnoff, 2015b; Montague, 2015),⁴ a phenomenology that the subject can introspect in order to know in which mental state she is in.

[T]he experience of seeing red and the experience of now seeming to understand this very sentence, and of thinking that nobody could have had different parents... all fall into the vast category of experiential episodes that have a certain qualitative character for those who have them as they have them (Strawson, 2010, p. 194).

In this quote, Strawson (2010) identifies three totally different mental states as being experiential. He claims that the perceptual experience of seeing something red, which is clearly a sensory state, and the experience of semantic comprehension, which is not so clearly sensory, both have something in common: they are both experiential and/or phenomenal states. Then, Strawson claims that these experiences also have something in common with the abstract thought (the negation of a counterfactual judgment) that nobody could have had different parents; they all share something in common, they are all within the realm of experience. According to Strawson, all mental states, even cognitive states, are conscious experiences endowed with qualitative and phenomenological properties.

On their side, Horgan and Tienson (2002) claim that both the mental attitude and its content contribute to the phenomenal character of the propositional attitude as a whole; that means that a change in the cognitive attitude, even without a change in its content, can change the phenomenal character:

Intentional states have a phenomenal character, and this phenomenal character is precisely the what-it-is-like of experiencing a specific propositional attitude vis-à-vis a specific intentional content. Change either the attitude-type (believing, desiring, wondering, hoping, etc.) or the particular intentional content, and the phenomenal character thereby changes too (Horgan & Tienson, 2002, p. 522).

All these remarks about cognitive phenomenology are synthetized by the Irreducibility Thesis: “Some cognitive states put one in phenomenal states for which no wholly sensory states suffice” (Chudnoff, 2015b, p. 6; see also Dorsch, 2016). I would like to highlight two important aspects of

³ Prinz (2011) calls these views “expansionism” and “restrictivism” respectively, and Siewert (2009) “inclusivism” and “exclusivism.” Jorba calls them “defenders” and “deniers” (Jorba, 2016). Here I follow Bayne and Montague’s (2011b) labels.

⁴ Most of the proponents of the cognitive phenomenology thesis endorse this irreducibility claim. Others, however, propose a stronger claim: phenomenal cognitive states are *independent* of sensory states (Kriegel, 2015). For an analysis of the difference between both claims, see Chudnoff (2015a, 2015b).

this thesis. First, although the thesis is framed in non-causal terms, it is naturally read as a causal condition: cognitive states (thinking, remembering, reasoning, calculating) cause or produce cognitive phenomenology. Thus, if some phenomenology is to be considered as properly “cognitive” it should have a cognitive state as its cause. The second aspect has to do with the fact that, since no sensory state suffices, this type of phenomenology cannot be produced by sensory or bodily states, no matter how many or how complex they are. That is why the Irreducibility thesis has both ontological and epistemological consequences: it is an ontological thesis concerning the metaphysical constitution and causes of this particular kind of phenomenology. And it also imposes some epistemological constraints about the possible explanation of this phenomenon. In the following sections, the Irreducibility Thesis will be the main criterion to assess whether some phenomenology is or is not properly cognitive.

Opposed to the liberal view, the conservative view restricts phenomenology to a smaller set of mental states. This view holds that only perceptual and sensory experiences (such as pains, bodily reactions, proprioception, and emotions) have a proprietary and specific phenomenology (Braddon-Mitchell & Jackson, 2007; Carruthers, 2005; Lormand, 1996; Prinz, 2011; Robinson, 2005, 2011; Tye, 1995; Tye & Wright, 2011). Cognitive states such as beliefs, thoughts, suppositions, calculations, and so on, lack phenomenology. This view is lucidly illustrated by Braddon-Mitchell and Jackson:

Bodily sensations and perceptual experiences are prime examples of states for which there is something it is like to be in them. They have a phenomenal feel, a phenomenology, or, in a term sometimes used in psychology, raw feels. Cognitive states are prime examples of states which there is not something it is like to be in them, of states that lack a phenomenology (Braddon-Mitchell & Jackson, 2007, p. 129).

This claim seems puzzling given that certain cognitive states such as beliefs or thoughts can be conscious and *sometimes* seem to have a related phenomenology. But conservative philosophers have designed a strategy to prevent this move. The strategy is to claim that the phenomenology that a subject is conscious of, when she has a given conscious mental state, is derived from the sensory vehicle of the intentional content, or other related sensory mental states such as sensations, emotions, and mental and motor imagery. The apparent phenomenology related to the occurrent thought “I left my green notebook at home” is really derived from the sensory phenomenology of the vehicle of the intentional content of my thought, mainly the mental image of the green notebook and/or the acoustic image—the vehicle—of inner speech (Carruthers, 2005, 2009; Carruthers & Veillet, 2011; Prinz, 2011; Tye, 2000; Tye & Wright, 2011). A similar analysis could be provided for explaining the apparent phenomenology of Strawson's (2010) thought that “nobody could have had different parents.” Carruthers explains the apparent phenomenology of thoughts in the following way:

Our thoughts aren't like anything, in the relevant sense, except to the extent that they might be associated with visual or other images or emotional feelings, which will be phenomenally conscious by virtue of their quasi-sensory status (Carruthers, 2005, pp. 138–139).

Thus, the conservative view denies that there is any proprietary cognitive phenomenology and restricts phenomenology to perceptual and sensory states. The apparent cognitive phenomenology reported by philosophers is only a mistake derived from the elements associated with mental states such as proprioceptive states, acoustic images of inner speech, sensory, and motor imagery. This phenomenology is derived from other sensory mental states; it is not proprietary of thought.

Against this background, liberals have proposed two main lines of argument in favor of cognitive phenomenology: (a) the phenomenal contrast arguments, and (b) the examples of nonsensory cognitive phenomenology (Smithies, 2013). The argument that appeals to metacognitive feelings is a version of the second type of argument. Thus, in this paper, I will only focus on Goldman's (1993) proposal that the TOT phenomenon can be counted as an instance of nonsensory cognitive phenomenology, and that it supports the cognitive phenomenology thesis. Some philosophers have considered that this argument is sound (Dorsch, 2016; González-Grandón, 2016; Jorba, 2013; Smithies, 2013), whereas others think that it needs further analysis (Bayne & Montague, 2011b; Calabi, 2016).

3 | GOLDMAN, THE TOT PHENOMENON, AND OTHER METACOGNITIVE FEELINGS

Some years ago, Goldman (1993) proposed the cognitive phenomenology thesis as the solution to the problem of how a subject determines which mental state or cognitive attitude she is in and, then, self-ascribe it. The problem is mainly how to account for the way in which a subject determines *immediately* and *spontaneously* which cognitive attitude she is in, when she is conscious of an intentional content. In other words, when faced with an intentional content such as “it rains” (p), the subject has to determine what is her cognitive attitude towards that content: does she believe it, see it, wish it, or imagine it? To believe that p, to wish that p, and to imagine that p, are three possible mental states or cognitive attitudes directed to the same intentional content and the subject must be able to immediately determine in which attitude/state she is. How does she do it? How does she know which mental state she is in? The answer provided by Goldman is that it is in virtue of the phenomenal character of the cognitive attitudes that a subject is able to introspect it and know about it: “There is ‘something it is like’ to have these attitudes, just as much as there is ‘something it is like’ to see red” (Goldman, 1993, p. 26). There is a distinct phenomenal character for each type of cognitive attitude: the *what-it-is-likeness* of believing that p is different from the *what-it-is-likeness* of desiring or imagining that p. Despite the fact that the cognitive phenomenology is not as apparent as the sensory phenomenology, it plays an essential role in introspection and self-knowledge (Pitt, 2004). It is in virtue of our conscious experience of our cognitive attitudes that we are able to determine which attitude we have concerning an intentional content and, thus, to self-ascribe it.

Here is Goldman's original statement that relates the TOT phenomenon to cognitive phenomenology:

When one tries to say something but cannot think of the word, one is phenomenologically aware of having the requisite conceptual structure, that is, of having the definite content one seeks to articulate. What is missing is the phenomenological form: the sound of the sought-for word. The absence of this sensory quality, however, does not imply that nothing (relevant) is in awareness. Entertaining the conceptual unit has a phenomenology, just not a sensory phenomenology (Goldman, 1993, p. 24).

The argumentative strategy that Goldman undertakes here is to look for cases where one can see a clear-cut dissociation between the sensory phenomenology related to the content and the phenomenology of the attitude (i.e., the phenomenology of “entertaining a conceptual unit”). If one can find clear-cut cases where there is some phenomenology in the absence of the sensory phenomenology related to the content (“the sought-for word”), then this could be taken as evidence for phenomenology of the attitude or cognitive phenomenology (Smithies, 2013). Although Goldman original

statement concerned only the TOT phenomenon, other philosophers have associated the thesis of the cognitive phenomenology to a wider spectrum of metacognitive feelings (Bayne & Montague, 2011b; González-Grandón, 2016; Jorba, 2013; Jorba & Moran, 2016; Smithies, 2013) after Goldman's (1993) claim that the TOT phenomenon was an instance of cognitive phenomenology. From this point of view, the TOT phenomenon and other metacognitive feelings are clear-cut instances of the phenomenology of the cognitive attitudes and they are different from the sensory phenomenology associated to bodily or sensory states. Thus, according to this view, metacognitive feelings are irreducible in the sense that they are nonsensory experiences of cognitive attitudes (see Irreducibility thesis, section 2). For example, a tip-of-the-tongue phenomenon that a subject has *after* failing to retrieve a piece of information is considered to be the cognitive experience of the cognitive state of possessing the given information in his memory. The same analysis would apply to a feeling of knowing that a subject has just *before* retrieving the name he was asked for. Thus, in both the TOT phenomenon and the feeling of knowing, the cognitive attitude of *knowing* a piece of information would have a proprietary phenomenology that the subject can introspect, which is irreducible to sensory phenomenology. The same analysis would apply, then, to other metacognitive feelings such as the feeling of forgetting, of error, of understanding,⁵ of (un)certainty, of difficulty, of curiosity, of rightness, of epistemic anxiety and many others (see Arango-Muñoz & Michaelian, 2014 for a review).

In order to assess the adequacy of this argumentative strategy, it is important to explore the psychological determinants of metacognitive feelings. Are metacognitive feelings *directly* and *immediately* caused by the cognitive attitudes? According to Goldman's model this should be the case: we know *directly* and *immediately* our attitudes through their phenomenology, even in the absence of the sensory component of their vehicles or contents (as it is deemed to happen in the TOT phenomenon). Among the psychological models that have been proposed to account for these feelings, the direct-access view is the one that fits better with the ideas of *immediacy* and *spontaneity* of the self-ascriptions based on metacognitive feelings. According to the direct-access view, there is a subpersonal self-scanning mechanism that monitors the mental states of the subject and elicits some metacognitive feelings based on the internal detection of mental states (Brown & McNeill, 1966; Hart, 1965; Nelson & Narens, 1990). One of the empirical predictions that this model entails is that, since the feelings are triggered by the *direct* detection of mental states and processes, there should be a strong correlation between the metacognitive feeling the subject is aware of and her cognitive attitude. In other words, if the mechanism is working properly, there should be a strong correlation between metacognitive feelings and cognitive states.⁶ Thus, for example, if one feels that one knows a piece of information, then one should be in possession of the required piece of information. Besides this empirical prediction, the endorsement of the Irreducibility Thesis (see section 2) by the defenders of cognitive phenomenology commits them to the following argumentative requirement: if metacognitive feelings are to be considered as an instance of cognitive phenomenology, they should be determined by mental attitudes themselves and by nothing else. In other words, if metacognitive feelings

⁵ For those familiar with Strawson's remarks about the 'understanding experience' (Strawson, 2009, 2010, 2011) it is important to recall that this concept should not be identified with the feeling of understanding, the *aha!* feeling, or similar feelings (however, see Dorsch, 2016). Chudnoff (2015b, pp. 17–22) also suggests some demarcations between cognitive phenomenology and other feelings that may not be purely cognitive (the feeling of self-satisfaction, the relief of general tension, and the feeling of getting it).

⁶ In this paper the concepts "cognitive states," "mental states," "inner states" are used co-extensively to denote the conjunction of a cognitive attitude (e.g., a belief, a desire, an intention, etc.) and its content (e.g., there is a three, the weather is good, water is H₂O, etc.). Accordingly, the self-scanning mechanism should detect both the attitude and the content; or at least the attitude without the content as happens in the TOT phenomenon or the feeling of knowing. This requisite is derived from the fact that cognitive phenomenology is mainly phenomenology of the cognitive attitudes (see footnote 1).

are instances of cognitive phenomenology, and cognitive phenomenology is to be understood as irreducible phenomenology of the cognitive attitude itself, then this phenomenology must be caused or determined by the cognitive attitude itself (i.e., one's believing, desiring, intending, etc.). In contrast, if metacognitive feelings are caused by other factors such as contextual factors, sensory states, and bodily experiences, then they should not be counted as clear-cut instances of cognitive phenomenology (i.e., phenomenology that is proper to the cognitive attitude itself) and thus cannot be cited in support of the cognitive phenomenology thesis as defenders of cognitive phenomenology thesis hold (I return to this point in section 5).

4 | THE PSYCHOLOGICAL DATA AGAINST THE COGNITIVE PHENOMENOLOGY INTERPRETATION

As Sebastián (2016) has pointed out, the debate concerning the existence of cognitive phenomenology has overlooked empirical data that may help to solve the issue. This paper attempts to work in this direction by surveying some empirical literature. So, in this section, I would like to assess to what extent the psychological data on the TOT phenomenon and other metacognitive feelings supports the cognitive phenomenology thesis as Goldman claimed, in particular I will present the main arguments against the direct-access model, and I will assess to what extent psychological data support the Irreducibility Thesis and its argumentative requirement (see section 2).

Two of the first studies on metacognitive feelings were Hart's (1965) study on the feeling of knowing and Brown and McNeill's (1966) study on the TOT phenomenon. The psychological studies on metacognitive feelings burgeoned in the following years. Flavell's (1979) influential work on children metacognition also considered these experiences as essential for children cognitive development. Nelson and Narens's (1990) seminal paper on metacognition, which proposed a functional framework for this mental capacity, already took into account these experiences and gave them an important role in the monitoring of cognitive processes. In recent years, it is the work by Koriat (1993, 1997, 2000, 2012), Paynter, Reder and Kieffaber (2009), Reder (1987), Reder and Ritter (1992), Schwartz (2002), and Schwartz and Metcalfe (2010) that brought the subject back into the research spotlight.

Interestingly, those first studies by Hart (1965), Brown and McNeill (1966), and Nelson and Narens (1990), all proposed a direct-access model according to which the monitoring mechanism that elicits metacognitive feelings had a direct access to mental states (cf. footnote 6). Something like a "Google-like search engine" (Hill, 2011) in the brain monitors and/or scans mental processes and states (cf. footnote 6). This model, however, was soon abandoned and was severely criticized in various studies (Koriat, 1993, 1997; Reder, 1987; Reder & Ritter, 1992). On the one hand, this model has difficulty in accommodating many of the recent findings of metacognitive studies, especially those concerning the confabulatory nature of many self-attributions (for a review, see Carruthers, 2009, 2011); and on the other hand, the idea of a subpersonal mechanism that directly detects and monitors mental states is obscure and needs to be clarified (Schwitzgebel, 2014). This idea of a mechanism of direct-access is obscure because it implies that metacognition has access to contents of the mind even when the subject fails to access those contents. For example, when a subject has a TOT after failing to retrieve a piece of information, the mechanism would still have access to the information that the subject cannot access herself. It is unclear how the metacognitive mechanism could access that content, and why it could do it while the subject cannot. In Koriat's words, the mechanism "has privileged access to stored knowledge beyond what is accessible to memory" (Koriat, 2000, p. 157). This problem of the direct-access view, becomes even more pressing if one accepts the

reconstructive theory of memory, according to which information is not stored but reconstructed at retrieval (Michaelian, 2016; Schacter & Addis, 2007).

There are three main empirical findings that the direct-access model of metacognitive feelings in conjunction with the Irreducibility Thesis have trouble accommodating: (a) the fact that heuristics determine cognitive monitoring and metacognitive feelings, (b) the fact that bodily sensations can also interfere with metacognitive monitoring, and, finally, (c) this model has troubles explaining the existence of metacognitive illusions.

4.1 | The heuristic basis of metacognitive feelings

In opposition to the direct-access model, recent empirical studies on metacognitive feelings agree on the fact that these feelings are determined by the implicit application of some heuristics to assess cognitive processing. For example, the feeling of familiarity is often caused by taking the perceptual fluency of the observed stimuli as a sign of a previous encounter with the stimulus (Oppenheimer, 2008; Whittlesea, 1998; Whittlesea & Williams, 2001). The feeling of knowing is caused by the frequency of the observed stimuli (e.g., how often one has confronted a question or encountered a name that appears in a question) (Paynter et al., 2009; Reder, 1987; Reder & Ritter, 1992), and by the accessibility of partial or related information (Koriat, 1993, 2000). The TOT phenomenon is also determined by similar factors (Schwartz, 2002; Schwartz & Metcalfe, 2010).

In a classic experiment conducted by Lynne Reder and her colleagues, subjects were presented with a series of unfamiliar math problems (e.g., 24×36), some of which were repeated many times over the course of the experiment. Subjects were asked to rapidly choose between remembering and calculating the result based on their feeling of knowing of the answer. Then, they had to either remember the result (in less than 1 s) or calculate it by hand (for this they had 25 s). The main result of this study is that subjects can estimate, based on their feeling of knowing, whether they know the answer much faster than answer is retrieved or calculated. Yet, the feeling of knowing is mainly determined by the frequency of encounter with the problem: the more the subjects see the problem, the more they are likely to feel that they know it and try to retrieve it from memory (Paynter et al., 2009; Reder, 1987; Reder & Ritter, 1992).

Jérôme Dokic also reviewed these data and concluded: “the implicit mechanisms underlying the feeling of knowing need not monitor the memory trace itself (*pace* Hart, 1965). In fact, they can be causally disconnected from the subject's first-order state of knowledge” (Dokic, 2012, p. 307). In fact, these results cast doubt on the idea that metacognitive feelings are triggered by a mechanism that directly detects and monitors inner states (cf. footnote 6). Instead, these empirical results suggest that the feeling-eliciting mechanism evaluates the mental activity by reference to external conditions or sensory properties of the cognitive processing, such as the frequency of encounter with a given stimulus, the perceptual fluency of the stimulus or the fluency of the processing (how fast one retrieves the answer), or the accessibility of other related information. This explains some metacognitive illusions such as erroneous feelings of knowing or erroneous TOT experiences: sometimes taking the fluency of the stimulus as a sign of successful retrieval leads the subject astray. This clearly violates the empirical prediction (section 3) according to which there should be a strong correlation between the metacognitive feeling the subject is aware of and her cognitive attitude, given that the feelings should be directly triggered *only* by the inner detection of mental states and/or processes. If metacognitive feelings are triggered according to external cues and heuristics, there is no room for inner mental state detection. Moreover, the cited evidence shows that metacognitive feelings do not fulfil the argumentative requirement of the Irreducibility Thesis (section 3), since the data suggests that the determinants of metacognitive feelings are external cues and heuristics that are only “contingently associated

with these mental states” (Dokic, 2012, p. 307), but not cognitive attitudes themselves or mental states.

4.2 | The interference of bodily sensations

While the former data is likely to be puzzling for cognitive phenomenology theorists, the following data should be more disturbing. Some researchers have found that some bodily sensations affect the emotional experiences concerning cognitive tasks. The most striking data on this respect comes from an experiment carried out by Goldinger and Hansen (2005). In their experiment, subjects were requested to study some words, pictures, and faces. Later on, after a distracting task, they took a recognition test with 96 stimuli from the stimulus class (half old, half foils) in random order. In half the trials, a subliminal buzz or vibration (a low-amplitude, 1.500 ms, 60 Hz triangle wave) also appeared at the stimulus onset. The buzz was produced by a set of amplifiers that were installed underneath the seat where the subjects passed the task. Goldinger and Hansen's (2005) results are striking:

The buzz increased the likelihood that participants responded ‘old’, both correctly and incorrectly. This effect occurred only with subjectively difficult stimuli, those relatively unlikely to elicit clear recollection (...). [Moreover], the buzz reduced confidence in hits and increased confidence in false alarms, in accord with the most likely attributions for the feelings of familiarity associated with the buzz (Goldinger & Hansen, 2005, p. 525).

This paper by Goldinger and Hansen is entitled “Remembering by the seat of your pants” because the subliminal buzz under the seat elicited a feeling of familiarity that influenced subjects' judgments of recognition and confidence. Again, this data violates the empirical prediction (section 3) according to which metacognitive feelings should be strongly correlated with cognitive attitudes, and also the argumentative requirement of the Irreducibility Thesis, according to which metacognitive feelings should only be determined by the mental attitude itself that the subject is in. Why would a subliminal vibration influence the way you feel about you own cognitive states if they had a proprietary phenomenology that is independent of any sensory cue? If metacognitive feelings were triggered by the direct detection of the cognitive attitude the individual is in (as is required by the empirical prediction and the argumentative requirement of Irreducibility Thesis, see Sections 2 & 3), subliminal vibrations or bodily feelings, such as the cardiovascular feedback (Fiacconi, Peter, Owais & Köhler, 2016), should not affect or influence the felt experience.⁷

4.3 | Metacognitive illusions

Metacognitive feelings are reliable in many tasks and contexts. The feeling of knowing has been shown to correlate with the ability to retrieve information from memory (Paynter et al., 2009; Reder, 1987). The TOT phenomenon, after a memory retrieval failure, has been shown to correlate with the ability to recognize the target word among distractors (Schwartz, 2002). However, some illusory metacognitive experiences have also been documented in the literature. Metacognitive illusions also cast doubt on the cognitive phenomenology thesis because they violate the argumentative requirement of the Irreducibility thesis presented earlier (see sections 2 and 3): if metacognitive feelings are to be considered as evidence for cognitive phenomenology, they should be determined by the mental

⁷ Related to this point, some researchers have claimed that the facial expressions adopted by the subject during a cognitive task has an important influence in the felt experience (Strack, Martin & Stepper, 1988). However, a replication of the classic experiment by Strack et al. failed in all 17 attempts by 17 different labs (Wagenmakers, Beek, Dijkhoff & Gronau, 2016).

attitude itself and by nothing else. Now, the illusory character of this experience derives precisely from the following facts: (a) they do not accord with the ongoing cognitive process of the subject, and (b) they are triggered by factors different from the cognitive attitudes themselves. In the following, I will present some metacognitive illusions and explain how they contribute to the debate about the existence of cognitive phenomenology.

Probably the better known metacognitive illusion is the *déjà vu* experience, wherein a person feels that she has already seen something before. According to some researchers the *déjà vu* is caused by an erroneous feeling of familiarity, caused by a dysfunction in the parahippocampal gyrus (Illman, Butler, Souchay & Moulin, 2012). A related, but different experience is the *déjà vecu*, wherein a person feels that she has already lived certain event.⁸ According to Illman et al. (2012), the *déjà vu* concerns recognition, whereas the *déjà vecu* concerns memory recollection.

The feeling of familiarity can also be influenced by manipulating the perceptual properties of the stimulus, such as its clarity (Kelley & Rhodes, 2002), its size (Rhodes & Castel, 2008) or frequency (Reder & Ritter, 1992). For instance, clear stimuli are more likely to elicit a feeling of familiarity than degraded perceptual stimuli (Whittlesea & Williams, 2000, 2001). So, the metacognitive illusion of feeling that something is familiar when it is not can be triggered by manipulating these perceptual properties.

Another illusory metacognitive phenomenon is the illusory feeling of knowing. Rhodes and Castel (2009) carried out an experiment in which participants listened words that varied in volume. Then, subjects had to report their judgments of learning (henceforth JOL) for each item, and later they had to try to recall them. Their striking result is that the reported JOLs were influenced by word's volume "with loud words given higher JOLs than quiet words, and that volume had no influence on recall" (Rhodes & Castel, 2009, p. 550). Moreover, when it comes to decide whether to study more or pass a test, "participants were more likely to choose to restudy quiet words than loud words" (Rhodes & Castel, 2009, p. 550). Words' volume influenced metacognitive feelings: subjects had a feeling of knowing towards louder words, whereas they felt uncertain about quieter words. Both cases of metacognitive feelings were illusory because volume does not influence actual memory performance.

Another interesting example of metacognitive illusions comes from some neuropsychological pathologies. Dokic and Martin (2012; see also Dub, 2015) have convincingly argued that the Capgras, the Fregoli, and the Derealization syndromes should be understood as metacognitive illusions. In the Capgras syndrome the patient recognizes the face of one of her relatives (e.g., her husband or her mother), but does not feel that this person actually is her relative; she believes that her relative has been replaced by an impostor. This pathology is often explained as a hypoactivity of patient's visuo-affective system (Young, 2009). In the Fregoli syndrome "patient feels as if one of her relatives is perceptually present even though the person in front of her does not look at all like her relative" (Dokic & Martin, 2012). This pathology is often explained as a hyperactivity of patient's visuo-affective system (Coltheart, 2007). In the Derealization syndrome the subject feels as if nothing of what she sees is real (Sacco, 2010). According to Dokic and Martin (2012), one should understand these pathologies as "metacognitive" because they are pathologies of the affective phenomenology associated with visual experiences, and not of the perceptual phenomenology itself (after all the subject sees the objects in a normal way). Thus, the affective phenomenology generates the relational phenomenology of perception.

⁸ There are many different theories about the *déjà vu* experience. For space reasons, I am going to focus on this explanation here. For other views on this, see Brown (2004).

4.4 | Replies to some objections

Philosophers sympathetic to the cognitive phenomenology may complain that the previous remarks fail to establish that metacognitive feelings are bodily sensations. They may insist that these factors only *affect causally* metacognitive feeling, but *do not constitute* them. They would insist that the cited empirical data only show correlations between these factors and metacognitive feelings, but they are unable to show metaphysical constitution. Despite the cited empirical data, metacognitive feelings might be determined by cognitive attitudes themselves; or at least, they might be determined both by cognitive attitudes and bodily responses. I call this latter view “the mixed account of metacognitive feelings.” To answer these complaints, I will develop some considerations:

1. I accept the concern about the limitations of an inference based on empirical results, and I totally agree that these results only show correlations between bodily sensations and metacognitive feelings. It is commonly accepted among philosophers that empirical data can hardly demonstrate any metaphysical claim, especially in the case of metaphysical constitution. However, the fact that metacognitive feelings seem to be systematically correlated with activity in one or more sensory systems is a reason to classify them as “sensory.”⁹
2. Moreover, it is important to point out that we are not just faced with a single empirical result, but with a bunch of studies reporting similar results. So, it seems to me that we cannot just disregard these results appealing to armchair philosophy or introspective observations. Confronted with the presented empirical data, the burden of proof shifts to those who claim that metacognitive feelings are nonsensory, that is, determined solely by cognitive attitudes.
3. These philosophers may also claim that metacognitive feelings are determined *both* by cognitive attitudes and sensory states; that is, these feelings may have a complex causal history that involves cognitive attitudes as well as bodily states. I call this “the mixed account of metacognitive feelings.” However, there are some problems with this view. First, since nobody has yet clearly proposed this account in the literature, it is still unclear how it will work; therefore it is not an option that should be discussed in detail here. Second, as we saw in section 3, metacognitive feelings have been introduced to this debate following an argumentative strategy that tries to find clear-cut cases of nonsensory phenomenology (Smithies, 2013). Thus, saying that they are both cognitive and bodily, or cognitive and sensory, fails to meet the requirements of the chosen argumentative strategy and returns us to the starting point of the discussion. This is a reason to consider that a mixed account of metacognitive feelings might not be the right starting point if one aims to argue for the existence of cognitive phenomenology. The mixed view simply fails to support the cognitive phenomenology thesis, because it cannot show that metacognitive feelings are clear-cut cases of cognitive phenomenology. If metacognitive feelings are caused by both the underlying cognitive attitude and by a bodily response, then these feelings should not be quoted as clear-cut instances of nonsensory cognitive phenomenology, as Goldman (1993) and others intended.
4. Finally, a methodological clarification: the argumentative strategy of this paper so far has been to appeal to the inference to the best explanation. Given the empirical data revised so far, the best explanation of metacognitive feelings seems to be that they are mainly determined by heuristics (section 4.1) and bodily states (section 4.2), not by cognitive attitudes themselves. This strategy has obvious limitations (for example, new findings may suggest different

⁹ I took this idea from Reinaldo Bernal's presentation: “The Character of Cognitive Phenomenology,” which took place at the International Workshop: “Phenomenal Concepts and Phenomenal Consciousness: Epistemic Approaches to the Problem of Conscious Experience.” I reproduce this idea with his consent.

interpretations), but until we get more conclusive data or a better understanding of this phenomenon, this strategy seems to be the best one.

5 | FINAL REMARKS

At first glance, metacognitive feelings seem to favor the liberal view about cognitive phenomenology, such as Goldman (1993) proposed. However, after revising some psychological data on metacognitive feelings, we realize that:

- Metacognitive feelings are correlated with sensory properties of the stimuli and the cognitive processes (such as perceptual fluency and/or frequency) rather than with the mental attitudes themselves.
- Metacognitive feelings are embodied: there are some somatic markers and bodily sensations that shape these experiences, rather than the cognitive attitudes themselves.

Hence, the psychological evidence reviewed in this paper casts doubt on the idea that metacognitive feelings can be used as clear-cut evidence for the cognitive phenomenology thesis.

After the previous considerations, there are two issues that need to be addressed: first, it is important to explain how to understand metacognitive feelings if not as cognitive phenomenology and, second, it is important to explain why we need these feelings at all. In the following lines, I will briefly address both issues.

Concerning the explanation of metacognitive feelings, so far we have seen that the empirical evidence does not support the claim that they are instances of cognitive phenomenology. So, my first suggestion is that we can better understand these feelings as instances of emotional or affective states rather than as instances of cognitive phenomenology. A somatic theory of emotion that ties bodily activations with the representation of external states of affairs or external conditions is key to understand how this can work (Arango-Muñoz, 2014b; Barlassina & Newen, 2013; Prinz, 2004). Felt emotions are perceptions of bodily changes which have acquired the function of indicating certain states of affairs or certain conditions. For example, in the case of metacognitive feelings, certain bodily perceptions have acquired the function of indicating that a given task is difficult or that answer is known. Thus, the psychological data pertaining to the embodied nature of metacognitive feelings cited before could be interpreted in this way: metacognitive feelings are bodily feelings that have acquired the function of indicating cognitive conditions or dispositions (whether a piece of information could be retrieved from memory; whether a stimulus is a familiar one, etc.), through a phylogenetic history and learning.

In order to understand the second issue, why do we have metacognitive feelings at all, I propose to consider an evolutionary speculation. The evolutionary speculation starts with the assumption that since introspecting one's own mental states and dispositions, and producing meta-representations of those is costly, most animals lack the introspective capacity (Carruthers, 2008, 2009). Introspection seems to be too cognitively demanding, time consuming, and often unreliable (Carruthers, 2009, 2011). However, a simpler way to assess one's own mental states in a cheaper and faster, though indirect way, could have evolved before introspection. In fact, it seems that nonhuman animals share with us this capacity to assess one's own mental states through metacognitive feelings and that capacity is what allows them to pass metacognitive tasks (Smith, 2009; Smith, Shields & Washburn, 2003).¹⁰

¹⁰ It is important to notice that I am not denying that introspection is a way to know one's own mental states nor I am suggesting that metacognitive feelings are the only way to know them. I am just suggesting that there are two different forms of self-knowledge. I develop this elsewhere (Arango-Muñoz, 2014a).

That is, by means of metacognitive feelings the subject gets information concerning her own mental states. Although this information is rather sketchy, incomplete, gappy, and often too subtle for one notice it, the subject can exploit it in order to guide her cognitive activities and, sometimes, form self-ascriptions (Arango-Muñoz, 2014a; Proust, 2015b).¹¹

At this point, one may wonder then, how metacognitive feelings have acquired the function of indicating mental conditions without having any direct relation to cognitive attitudes. A reflection on the previous considerations could give us some clues. Metacognitive feelings are triggered by sensory cues (such as perceptual or processing fluency) and these cues are symptomatic of some cognitive conditions insofar these cues *normally* covary with them. Thus, for example, a child learns that whenever she listens a question that has familiar words, it is likely that she knows the answer. She learns a heuristic that gets embodied as a feeling of knowing. However, at this point, another clarification is needed because the remarks on metacognitive illusions in section 4.3 suggest that metacognitive feelings are not reliable. How can metacognitive feeling be used to assess mental states and processes if they are not reliable? The short answer to this concern is that the existence of metacognitive illusions does not imply that metacognitive feelings are always misleading, in the same way that the existence of perceptual illusions does not discredit perception. Most cases of metacognitive feelings are reliable, and thus can be used to assess mental states, dispositions and processes. For example, it has been shown that the feeling of error is strongly correlated with errors in mathematical reasoning (Fernández-Cruz, Arango-Muñoz & Volz, 2016). One of the most important projects in metacognitive studies is to understand in which particular cases metacognitive feelings are accurate and when they are misleading.

The main accounts of metacognitive feelings focus on the monitoring function of these feelings (Arango-Muñoz, 2014b; Dokic, 2012; Proust, 2013, 2015a; Sousa, 2009). According to most philosophers working on metacognition, metacognitive feelings pop up into the mind only when triggered by their monitoring function, and this function is independent of the mental attitude the subject is in (as I have shown in the previous sections). Metacognitive feelings do not necessarily change with each change of mental attitude, as it is supposed to happen with cognitive phenomenology; they depend instead on a monitoring system. To make things even more complicated, there are some psychologists who have claimed that most of the time metacognitive feelings shape individuals' behavior unconsciously (Paynter et al., 2009; Shea et al., 2014; Spehn & Reder, 2000). So, it seems that the phenomenal presence of metacognitive feelings and its cognitive function are independent from the truth or falsity of the cognitive phenomenology thesis. That is, it might turn out that there are metacognitive feelings, which are phenomenal, while there are no cognitive states (such beliefs or desires) with proprietary phenomenology. So, the main claim of the paper is that metacognitive feelings are independent of the cognitive phenomenology thesis and they cannot be cited as clear-cut instances of cognitive phenomenology.

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¹¹ It is important to notice here that I am not suggesting that animals also have the feeling of knowing or the TOT. I only suggest that they may be endowed with simpler forms of metacognitive feelings such as certainty or uncertainty. I develop this idea elsewhere (Arango-Muñoz, 2014b).

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REFERENCES

- Arango-Muñoz, S. (2014a). Metacognitive feelings, self-ascriptions and metal actions. *Philosophical Inquiries*, 2(1), 145–162.
- Arango-Muñoz, S. (2014b). The nature of epistemic feelings. *Philosophical Psychology*, 27(2), 1–19. <https://doi.org/10.1080/09515089.2012.732002>
- Arango-Muñoz, S. & Michaelian, K. (2014). Epistemic feelings, epistemic emotions: Review and introduction to the focus section. *Philosophical Inquiries*, 2(1), 97–122.
- Barlassina, L. & Newen, A. (2013). The role of bodily perception in emotion: In defense of an impure somatic theory. *Philosophy and Phenomenological Research*, 89(3), 637–678. <https://doi.org/10.1111/phpr.12041>
- Bayne, T. & Montague, M. (2011a). *Cognitive phenomenology*. Oxford: Oxford University Press.
- Bayne, T. & Montague, M. (2011b). Cognitive phenomenology: An introduction. In T. Bayne & M. Montague (Eds.), *Cognitive phenomenology* (pp. 1–42). Oxford: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199579938.003.0001>
- Braddon-Mitchell, D. & Jackson, F. (2007). *The philosophy of mind and cognition* (Second ed.). Oxford: Blackwell.
- Brown, A. S. (2004). *The déjà vu experience*. New York: Psychology Press.
- Brown, R. & McNeill, D. N. (1966). The ‘tip of the tongue’ phenomenon. *Journal of Verbal Learning and Verbal Behavior*, 5, 325–337.
- Calabi, C. (2016). Tip-of-the-tongue experiences: A modest proposal on cognitive phenomenology. *Phenomenology and Mind*, (10), 86–93. https://doi.org/10.13128/Phe_Mi-20093
- Carruthers, P. (2005). Conscious experience versus conscious thought. In *Consciousness: Essays from a higher-order perspective* (pp. 134–156). Oxford: Oxford University Press.
- Carruthers, P. (2009). How we know our own minds: The relationship between mindreading and metacognition. *Behavioral and Brain Sciences*, 32(2), 121–138. <https://doi.org/10.1017/S0140525X09000545>
- Carruthers, P. (2011). *The opacity of mind: An integrative theory of self-knowledge*. Oxford: Oxford University Press.
- Carruthers, P. & Veillet, B. (2011). The case against cognitive phenomenology. In T. Bayne & M. Montague (Eds.), *Cognitive phenomenology* (pp. 35–56). Oxford: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199579938.003.0002>
- Chudnoff, E. (2015a). *Cognitive phenomenology*. New York: Routledge.
- Chudnoff, E. (2015b). Phenomenal contrast arguments for cognitive phenomenology. *Philosophy and Phenomenological Research*, 90(2), 82–104. <https://doi.org/10.1111/phpr.12177>
- Coltheart, M. (2007). Cognitive neuropsychiatry and delusional belief. *The Quarterly Journal of Experimental Psychology*, 60, 1041–1062. <https://doi.org/10.1080/17470210701338071>
- Dokic, J. (2012). Seeds of self-knowledge: Noetic feelings and metacognition. In M. Beran, J. Brandl, J. Perner & J. Proust (Eds.), *The foundations of metacognition* (pp. 302–321). Oxford: Oxford University Press.
- Dokic, J. & Martin, J. R. (2012). Disjunctivism, hallucination and metacognition. *WIREs Cognitive Science*, 3, 533–543.
- Dorsch, F. (2016). Irreducible cognitive phenomenology and the aha! Experience. *Phenomenology and Mind*, 10, 108–121. https://doi.org/10.13128/Phe_Mi-20095
- Dub, R. (2015). Delusions, acceptances, and cognitive feelings. *Philosophy and Phenomenology Research*, 94(1), 27–60. <https://doi.org/10.1111/phpr.12220>
- Fernández-Cruz, A. L., Arango-Muñoz, S. & Volz, K. (2016). Oops, scratch that! Monitoring one's own errors during mental calculation. *Cognition*, 146, 110–120. <https://doi.org/10.1016/j.cognition.2015.09.005>
- Fiacconi, C. M., Peter, E. L., Owais, S. & Köhler, S. (2016). Knowing by heart: Visceral feedback shapes recognition memory judgments. *Journal of Experimental Psychology: General*, 145(5), 559–572. <https://doi.org/10.1037/xge0000164>
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist*, 34(10), 906–911. <https://doi.org/10.1037/0003-066x.34.10.906>
- Goldinger, S. D. & Hansen, W. A. (2005). Remembering by the seat of your pants. *Psychological Science*, 16(7), 525–529. <https://doi.org/10.1111/j.0956-7976.2005.01569>
- Goldman, A. (1993). The psychology of folk psychology. *Behavioral and Brain Sciences*, 16(1), 15–28. <https://doi.org/10.1017/S0140525X00028648>
- González-Grandón, X. (2016). Un modelo sentimental para la arrogancia epistémica. *Scientiae Studia*, 14(1), 123–150. <https://doi.org/10.1590/S1678-31662016000100007>
- Hart, J. T. (1965). Memory and the feeling-of-knowing experience. *Journal of Educational Psychology*, 56(4), 208–216.
- Hill, C. S. (2011). How to study introspection. *Journal of Consciousness Studies*, 18(1), 21–43.
- Horgan, T. & Tienson, J. (2002). The intentionality of phenomenology and the phenomenology of intentionality. In D. J. Chalmers (Ed.), *Philosophy of mind: Classical and contemporary readings* (pp. 520–533). Oxford: Oxford University Press.
- Illman, N. A., Butler, C. R., Souchay, C. & Moulin, C. J. A. (2012). Déjà experiences in temporal lobe epilepsy. *Epilepsy Research and Treatment*, 2012, article ID: 539567, 1–15. <https://doi.org/10.1155/2012/539567>

- Jorba, M. (2013). *Cognitive phenomenology: A non-reductive account*. Barcelona: Universidad de Barcelona.
- Jorba, M. (2016). Attitudinal cognitive phenomenology and the horizon of possibilities. In T. B. Christopher Gutland (Ed.), *The phenomenology of thinking: Philosophical investigations into the character of cognitive experiences* (pp. 77–96). New York, NY: Routledge.
- Jorba, M. & Moran, D. (2016). Conscious thinking and cognitive phenomenology: Topics, views and future developments. *Philosophical Explorations*, 19(2), 95–113. <https://doi.org/10.1080/13869795.2016.1176230>
- Kelley, C. M. & Rhodes, M. G. (2002). Making sense and nonsense of experience: Attributions in memory and judgment. In B. H. Ross (Ed.), *The psychology of learning and motivation: Advances in research and theory* (Vol. 41, pp. 293–320). San Diego: Academic Press.
- Klausen, S. H. (2008). The phenomenology of propositional attitudes. *Phenomenology and the Cognitive Sciences*, 7, 445–462. <https://doi.org/10.1007/s11097-007-9081-z>
- Koriat, A. (1993). How do we know that we know? The accessibility model of the feeling of knowing. *Psychological Review*, 100(4), 609–639. <https://doi.org/10.1037/0033-295X.100>
- Koriat, A. (1997). Monitoring one's own knowledge during study: A cue-utilization approach to judgments of learning. *Journal of Experimental Psychology*, 126(4), 349–370. <https://doi.org/10.1037/0096-3445.126.4.349>
- Koriat, A. (2000). The feeling of knowing: Some metatheoretical implications for consciousness and control. *Consciousness and Cognition*, 9(2), 149–171. <https://doi.org/10.1037/0033-295X.100.4.609>
- Koriat, A. (2012). The subjective confidence in one's knowledge and judgements: Some metatheoretical considerations. In M. Beran, J. Brandl, J. Perner & J. Proust (Eds.), *The foundations of metacognition* (pp. 520–533). Oxford: Oxford University Press. x.
- Kriegel, U. (2015). *The varieties of consciousness*. Oxford, New York: Oxford University Press.
- Lormand, E. (1996). Nonphenomenal consciousness. *Noûs*, 30(2), 242–261. <https://doi.org/10.2307/2216295>
- Michaelian, K. (2016). *Mental time travel: Episodic memory and our knowledge of the personal past*. Cambridge, MA: MIT Press.
- Montague, M. (2015). Cognitive phenomenology and conscious thought. *Phenomenology and the Cognitive Sciences*, 1–15. <https://doi.org/10.1007/s11097-014-9403-x>
- Nagel, T. (1974). What is it like to be a bat? *Philosophical Review*, 83, 435–450. <https://doi.org/10.2307/2183914>
- Nelson, T. O. & Narens, L. (1990). Metamemory: A theoretical framework and new findings. *The Psychology of Learning and Motivation*, 26, 125–173. [https://doi.org/10.1016/S0079-7421\(08\)60053-5](https://doi.org/10.1016/S0079-7421(08)60053-5)
- Oppenheimer, D. M. (2008). The secret life of fluency. *Trends in Cognitive Sciences*, 12(6), 237–241. <https://doi.org/10.1016/j.tics.2008.02.014>
- Paynter, C. A., Reder, L. M. & Kieffaber, P. D. (2009). Knowing we know before we know: ERP correlates of initial feeling-of-knowing. *Neuropsychologia*, 47(3), 796–803. <https://doi.org/10.1016/j.neuropsychologia.2008.12.009>
- Pitt, D. (2004). The phenomenology of cognition, or, what is it like to think that P? *Philosophy and Phenomenological Research*, 69(1), 1–36. <https://doi.org/10.1111/j.1933-1592.2004.tb00382.x>
- Prinz, J. (2004). Embodied emotions. In R. Solomon (Ed.), *Thinking about feeling: Contemporary philosophers on emotion* (pp. 44–58). Oxford: Oxford University Press.
- Prinz, J. (2011). The sensory basis of cognitive phenomenology. In T. Bayne & M. Montague (Eds.), *Cognitive phenomenology* (pp. 174–196). Oxford: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199579938.003.0008>
- Proust, J. (2013). *The philosophy of metacognition: Mental agency and self-awareness*. Oxford: Oxford University Press.
- Proust, J. (2015a). The representational structure of feelings. *Open. Mind*, 31, 1–26. <https://doi.org/10.15502/9783958570047>
- Proust, J. (2015b). Time and action: Impulsivity, habit, strategy. *Review of Philosophy and Psychology*, 6(4), 717–743. <https://doi.org/10.1007/s13164-014-024-1>
- Reder, L. M. (1987). Strategy selection in question answering. *Cognitive Psychology*, 19(1), 90–138. [https://doi.org/10.1016/0010-0285\(87\)90005-3](https://doi.org/10.1016/0010-0285(87)90005-3)
- Reder, L. M. & Ritter, F. E. (1992). What determines initial feeling of knowing? Familiarity with question terms, not with the answer. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 18(3), 435–451. <https://doi.org/10.1037/0278-7393.18.3.435>
- Rhodes, M. G. & Castel, A. D. (2008). Memory predictions are influenced by perceptual information: Evidence for metacognitive illusions. *Journal of Experimental Psychology: General*, 137, 615–625. <https://doi.org/10.1037/a0013684>
- Rhodes, M. G. & Castel, A. D. (2009). Metacognitive illusions for auditory information: Effects on monitoring and control. *Psychonomic Bulletin & Review*, 16(3), 550–554. <https://doi.org/10.3758/PBR.16.3.550>
- Robinson, W. S. (2005). Thoughts without distinctive non-imagistic phenomenology. *Philosophy and Phenomenological Research*, 70(3), 534–561. <https://doi.org/10.1111/j.1933-1592.2005.tb00414.x>
- Robinson, W. S. (2011). A frugal view of cognitive phenomenology. In T. Bayne & M. Montague (Eds.), *Cognitive phenomenology* (pp. 197–180). Oxford: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199579938.003.0009>
- Sacco, R. G. (2010). The circumplex structure of depersonalization/derealization. *International Journal of Psychological Studies*, 2, 26–40. <https://doi.org/10.5539/ijps.v2n2p26>
- Schacter, D. L. & Addis, D. R. (2007). The cognitive neuroscience of constructive memory: Remembering the past and imagining the future. *Philosophical Transactions of the Royal Society B*, 262, 773–786. <https://doi.org/10.1098/rstb.2007.2087>
- Schwartz, B. (2002). *Tip-of-the-tongue states, phenomenology, mechanisms and lexical retrieval*. London: Lawrence Erlbaum Associates.

- Schwartz, B. & Metcalfe, J. (2010). Tip-of-the-tongue (TOT) states: Retrieval, behavior, and experience. *Memory and Cognition*, 39, 737–749. <https://doi.org/10.3758/s13421-010-0066-8>
- Schwitzgebel, E. (2014). Introspection. In Z. N. Edward (Ed.), *The Stanford Encyclopedia of Philosophy*. Stanford, CA: Stanford University Retrieved from <http://plato.stanford.edu/archives/sum2014/entries/introspection/>
- Sebastián, M. Á. (2016). Cognitive access and cognitive phenomenology: Conceptual and empirical issues. *Philosophical Explorations*, 19(2), 188–204. <https://doi.org/10.1080/13869795.2016.1176235>
- Shea, N., Boldt, A., Bang, D., Yeung, N., Heyes, C. & Frith, C. D. (2014). Supra-personal cognitive control and metacognition. *Trends in Cognitive Sciences*, 18(4), 186–193. <https://doi.org/10.1016/j.tics.2014.01.006>
- Siewert, C. (1998). *The significance of consciousness*. Princeton, NJ: Princeton University Press.
- Siewert, C. (2009). Consciousness and conceptual thought. In T. Bayne (Ed.), *The Oxford companion to consciousness* (pp. 167–168). Oxford: Oxford University Press.
- Smith, J. D. (2009). The study of animal metacognition. *Trends in Cognitive Sciences*, 13(9), 389–396. <https://doi.org/10.1016/j.tics.2009.06.009>
- Smith, J. D., Shields, W. & Washburn, D. (2003). The comparative psychology of uncertainty monitoring and metacognition. *Behavioral and Brain Sciences*, 26(3), 317–339. <https://doi.org/10.1017/S0140525X03000086>
- Smithies, D. (2013). The nature of cognitive phenomenology. *Philosophy Compass*, 8(8), 744–754. <https://doi.org/10.1111/phc3.12053>
- Sousa, R. (2009). Epistemic feelings. *Mind and Matter*, 7(2), 139–161.
- Spehn, M. K. & Reder, L. M. (2000). The unconscious feeling of knowing: A commentary on Koriati's paper. *Consciousness and Cognition*, 9(2), 187–192. <https://doi.org/10.1006/ccog.2000.0435>
- Strack, F., Martin, L. L. & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology*, 54, 768–777.
- Strawson, G. (2009). *Selves, an essay in revisionary metaphysics*. Oxford: Clarendon Press.
- Strawson, G. (2010). *Mental reality* (2nd ed.). Cambridge, MA: MIT Press.
- Strawson, G. (2011). Cognitive phenomenology: Real life. In T. Bayne & M. Montague (Eds.), *Cognitive phenomenology* (pp. 285–325). Oxford: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199579938.003.0013>
- Tye, M. (1995). *Ten problems of consciousness: A representational theory of the phenomenal mind*. Cambridge, MA: MIT Press.
- Tye, M. (2000). *Consciousness, color, and content*. Cambridge, MA: MIT Press.
- Tye, M. & Wright, B. (2011). Is there a phenomenology of thought? In T. Bayne & M. Montague (Eds.), *Cognitive phenomenology* (pp. 326, 35–344). Oxford: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199579938.003.0014>
- Wagenmakers, E. J., Beek, T., Dijkhoff, L. & Gronau, Q. (2016). Registered replication report: Strack, Martin, & stepper (1988). *Perspectives on Psychological Science*, 11(6), 917–928. <https://doi.org/10.1177/1745691616674458>
- Whittlesea, B. W. A. (1998). Why do strangers feel familiar, but friends don't? A discrepancy-attribution account of feelings of familiarity. *Acta Psychologica*, 98(2–3), 141–165. [https://doi.org/10.1016/s0001-6918\(97\)00040-1](https://doi.org/10.1016/s0001-6918(97)00040-1)
- Whittlesea, B. W. A. & Williams, L. D. (2000). The source of feelings of familiarity: The discrepancy-attribution hypothesis. *Journal of Experimental Psychology. Learning, Memory, and Cognition*, 26(3), 547–565.
- Whittlesea, B. W. A. & Williams, L. D. (2001). The discrepancy-attribution hypothesis: I. The heuristic basis of feelings of familiarity. *Journal of Experimental Psychology. Learning, Memory, and Cognition*, 27(1), 3–13.
- Young, G. (2009). In what sense 'familiar'? Examining experiential differences within pathologies of facial recognition. *Consciousness and Cognition*, 18, 628–638.

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