

Ignacio Cea^{1,2} and
David Martínez-Pernía²

Continuous Organismic Sentience as the Integration of Core Affect and Vitality

Abstract: *In consciousness studies there is a growing tendency to consider experience as (i) fundamentally affective and (ii) deeply inter-linked with interoceptive and homeostatic bodily processes. However, this view still needs further development to be part of any rigorous theory of consciousness. To advance in this direction, we ask: (1) is there any affective type that is always present in consciousness?, (2) is it related to interoception and homeostasis?, and (3) what are its properties? Here we analyse and compare Jim Russell's core affect and Thomas Fuchs' concept of vitality, and propose a more encompassing notion that subsumes both: continuous organismic sentience. It provides affirmative answers to questions 1 and 2, and, regarding question 3, a preliminary list of thirteen properties divided into ontological, phenomenological, and functional categories. This is the first of a series of studies that will systematically address different notions*

Correspondence:
Email: igneocj@gmail.com

-
- ¹ Center for Research, Innovation and Creation and Faculty of Philosophy and Religious Sciences, Universidad Católica de Temuco, Chile.
 - ² Center for Social and Cognitive Neuroscience, School of Psychology, Universidad Adolfo Ibáñez, Chile.

of a fundamental, homeostatically-rooted affective type, to achieve a rigorous, unified concept for consciousness science.

1. Introduction

The scientific study of consciousness has witnessed a huge proliferation of theories, frameworks, and empirical tools in recent decades. Most of them have focused on the perceptual and cognitive aspects of consciousness (Baars, 1988; 2005; Crick and Koch, 1990; Dehaene and Naccache, 2001; Dehaene, Changeux and Naccache, 2011; Tononi *et al.*, 2016; Tononi, 2017). However, in recent years, there has been also an increasing interest in its affective dimension. Indeed, an important group of scientists has even suggested that we may have entered the *era of affectivism* in the mind sciences (Dukes *et al.*, 2021). The importance of moods, feelings, emotions, and motivations, both as important research topics in themselves and as fundamental to understanding cognitive phenomena such as attention, decision making, and perception, is being increasingly acknowledged by the scientific community. This is happening also in the specific case of consciousness. Seminal work from Damasio (1994; 1999) and Panksepp (1998) gave strong momentum to the view that affective phenomena deserve special treatment if we want to understand how and why we are conscious, have a sense of self, and, more broadly, what the place is of consciousness in nature.

Following this trend, a picture has now emerged according to which affective experience would be a *fundamental* form of consciousness that arises from *interoceptive* processes that inform the organism about the changing states of its body's internal milieu in order to maintain *homeostasis* (Parvizi and Damasio, 2001; Thompson and Varela, 2001; Merker, 2007; Thompson, 2007; 2015; 2022; Barrett and Bliss-Moreau, 2009; Solms, 2013; 2019; 2021a,b; Barrett and Simmons, 2015; Seth and Tsakiris, 2018; Solms and Friston, 2018; Carvalho and Damasio, 2021; Damasio, 2021; Pereira Jr, 2021; Seth, 2021). For instance, Antonio Damasio writes that 'homeostatic feelings are the first enablers of consciousness' (2021, p. 149), or that feeling is 'a foundational component of standard consciousness' (*ibid.*, p. 122). Mark Solms writes that 'consciousness... is fundamentally affective, and... an extended form of homeostasis' (2021b, pp. 294–5). Anil Seth states that the 'bedrock layers [of conscious selfhood] are intimately tied to the interior of the body... to a basal... ever-present sense of simply "being" an embodied, living organism' (Seth,

2021, p. 182). Barrett and Simmons, in turn, write that ‘affective properties such as pleasure, displeasure and arousal — which are thought to be rooted in interoception — are fundamental properties of conscious experience’ (Barrett and Simmons, 2015, p. 425).

In sum, there is an important group of researchers claiming that conscious experience is (i) *fundamentally affective* and (ii) *deeply inter-linked with interoceptive and homeostatic processes in the bodies of living creatures*. We call it the *affective-homeostatic view of consciousness* (AHV for short). This is very close to what has recently been called affect-based theories of consciousness (Seth and Bayne, 2022). Importantly, if these approaches are on the right track, then consciousness would probably not be a substrate-independent computational process running in the brain, equally implementable on a sufficiently powerful computer, but more of a biologically-rooted phenomenon better understood in line with the *life–mind continuity* thesis (Thompson, 2007; 2011; Kirchhoff, 2018).

However, although it constitutes a very promising view, the statements that consciousness is (i) fundamentally affective and (ii) inter-linked with interoception and homeostasis in living bodies have not received the analysis and argument they deserve to be part of any rigorous theory of consciousness. To start, it is not clear how to understand the purported *fundamentality* of homeostatic-affective experiences. In this regard, we adopt Kriegel’s (2015) framework according to which the fundamentality of any type of conscious experience means being a *primitive* form of phenomenology, in the sense of neither being grounded in, nor being reducible to, any other phenomenal type, while being the ungrounded grounder for some or all other phenomenal types, in the ontological sense that (all or some of) the other phenomenal types would be instantiated wholly *in virtue of* the synchronous instantiation of the primitive type (*ibid.*). So, if affect is fundamental or primitive in consciousness, then it would not be grounded in any other phenomenal type, e.g. perceptual, cognitive, or conative types, but would ground some or all of them, the latter case meaning it would not only be *a* fundamental type, but *the* fundamental type. In other words, if affect is the *ultimate* phenomenal type, then it would be the ungrounded grounder of all other types of phenomenology, i.e. all phenomenal types would be experienced in

virtue of the fact that affective consciousness is also simultaneously experienced.^{3,4}

Now, instead of directly asking whether all types of experience occur in virtue of the affective phenomenal type, in this paper we engage in a more modest project that we think is a first crucial step to address the purported fundamentality of affect. We make the reasonable assumption that if homeostatically-rooted affective phenomenology is indeed the *ultimate* primitive of consciousness (i.e. the phenomenologically ungrounded phenomenal type that grounds all other phenomenal types), then it would need to satisfy, at least, *the necessary condition of being present whenever someone is phenomenally conscious*. Therefore, for all consciousness to be somehow grounded in affect and intimately interlinked with life-regulation, a necessary (although insufficient) condition is that some (sub)type of life-related affective element would always be present in experience, even if not at the attentional focus.

So, in order to make progress in the affective-homeostatic view of consciousness, three questions should be explicitly asked:

- (1) Is there any subtype of affective experience that is always present in consciousness?
- (2) Is it related to interoception and homeostatic regulation in living bodies?
- (3) What are its properties?

There are currently several accounts that are offering affirmative answers to question 1 and 2, and giving certain details concerning question 3. That is, they try to describe and explain a continuous affective layer constituted by an interoceptive and homeostatically-

³ This is compatible with affect being grounded in neurobiological or (neuro)physiological processes in the brain or across the body.

⁴ It is important to make explicit that, following Kriegel (2015) and others, we are assuming an ontology of *types* (and subtypes) of conscious experiences; or more plausibly, types of often simultaneously instantiated *layers* of phenomenology, like perceptual, cognitive, conative, and affective types, and their respective subtypes, e.g. emotional phenomenology and mood phenomenology as affective subtypes. Now, although we will often speak in terms of types of (e.g. affective) *states*, we will do so in a loose sense that is compatible with affects being *processes*, that can be regarded e.g. as causally connected series of successive states (Kim, 2011). Also, we are neither assuming nor addressing whether the phenomenal types are either distinct or reducible to neurophysiological states or processes, which lies beyond the scope of the paper. Thanks to one of the referees for pressing us to clarify this.

rooted feeling, characterized by various authors as ‘the feeling of being alive’. These attempts come from different disciplines such as neuroscience, psychology, psychiatry, and philosophy. Damasio, for instance, describes it as ‘the feeling of life itself, the sense of being’ (Damasio, 1994, p. 150); a ‘background body sense’ (*ibid.*, p. 152), which is ‘continuous and endless’ (Damasio, 2018, pp. 234–5). Seth pictures it as a ‘cognitively subterranean, inchoate, difficult-to-describe experience of simply *being a living organism*’ (Seth, 2021, p. 195), that could be understood as the ‘feeling of being alive’ (*ibid.*, p. 157). Thompson and Varela call it ‘sentience — the feeling of being alive... the inescapable affective backdrop of every conscious state’ (Thompson and Varela, 2001, p. 424), ‘a kind of primitive self-aware liveliness or animation of the body’ (Thompson, 2007, p. 161). Craig characterizes it as ‘*homeostatic sentience*... a real-time portrayal of the living “material me”... the feeling of being alive’ (Craig, 2015, pp. 194–5). Russell and Barrett write about ‘*core affect*... the most elementary consciously accessible affective feelings’ (Russell and Barrett, 1999, p. 806), while Fuchs describes ‘*vitality*... [as the] foundational layer of experience’ (Fuchs, 2012, p. 153). Other closely-related notions are Colombetti’s ‘background bodily feelings’ (2013, p. 123), de Vignemont’s ‘interoceptive feelings’ (2019, p. 262), de Preester’s interoceptive and non-topographic ‘most basic form of subjectivity’ (2019, p. 305), Thayer’s biopsychological model of moods (1990; 1996), and Ryan and Deci’s ‘vitality’ (2017), among others.

Now, although there are many relevant proposals, the field of consciousness studies is lacking a comprehensive and systematic evaluation and comparison of these conceptualizations across disciplines with the specific aim of addressing the three aforementioned research questions to advance the affective-homeostatic view of consciousness. Here, we make a first step and critically examine what to our minds are two of the most well-developed accounts.

The first is the notion of *core affect* from experimental psychologist James Russell and colleagues (Russell, 1980; 2003; 2005; 2017; Russell and Barrett, 1999; Yik, Russell and Steiger, 2011). In Section 2, we review this notion and arrive at a set of nine explicitly attributed properties, such as being continuous, pre-reflective, and objectless. In Section 3, we review a second notion, *vitality*, from psychiatrist-philosopher Thomas Fuchs (2012; 2013a,b; 2018). We arrive at a set of eleven properties including being self-conscious, bodily, and homeostatic. In Section 4, we show that both notions share a subset of

seven properties, while differing in others, and we argue that this difference is just semantic and that they are in fact co-referential terms. We do this by showing the plausibility of attributing vitality's *prima facie* unique properties to core affect (4.1), and vice versa (4.2). Then, we propose a novel hypothesis about the *intrinsically motivational* nature of core affect/vitality (4.3). Finally, in Section 5, we offer the concept of *continuous organismic sentience* to subsume core affect and vitality under a more encompassing notion that integrates and exceeds both: it is the union of core affect and vitality's initially unique properties, plus our proposal about their intrinsically motivational nature. This result allows us to provide affirmative answers to questions 1 and 2, and, regarding question 3, create a preliminary list of thirteen properties divided into ontological (one property), phenomenological (ten properties), and functional categories (two properties). We end with concluding remarks and potential avenues for future research.

This is the first of a series of theoretical studies that will systematically address and try to integrate different conceptions of a continuous, homeostatic, primordial feeling of being alive. We hope this will contribute a rigorous, unified concept for consciousness science, especially important for those endorsing the affective-homeostatic view or affect-based theories of consciousness.

2. Core Affect

We start with the concept of core affect, which is a theoretical construct that springs from decades of research from experimental psychologist Jim Russell and colleagues (Russell, 1980; 2003; 2005; 2017; Russell and Barrett, 1999; Yik, Russell and Steiger, 2011). It is meant to designate an elementary affective layer of experience normally at the background of every conscious state. Russell and colleagues claim that, regardless of whether someone is experiencing any emotional episode, thought, image, recollection, etc., she would always be experiencing core affect. In other words, core affect seems to be a *continuous* feature of experience, defined as 'a neurophysiological state that is consciously accessible as a simple, nonreflective feeling that is an integral blend of hedonic (pleasure–displeasure) and arousal (sleepy–activated) values' (Russell, 2003, p. 147). Let us unpack this.

First, it would be 'simple' in the sense of not being composed of any other separable experiential elements, while being the

fundamental building block of every affective experience. In our terminology, this means that core affect is *affectively primitive*, i.e. within the affective domain, core affect is not grounded in any other affective element, but is an indispensable ingredient for any affective experience to occur, e.g. emotions and moods (Russell, 2003; 2005; 2017).⁵

Second, in calling it ‘non-reflective’, Russell means an affective state that does not constitutively require reflection or thought for it to be experienced: ‘it can exist without being labeled, interpreted, or attributed to any cause’ (Russell, 2003, p. 148). To use a more widespread notion, we will call it *pre-reflective*, in that it could eventually become an object of reflection and even voluntary self-regulation, but is typically and spontaneously experienced without such high-level cognitive processes. Importantly, this is directly related to the fact that core affect unfolds in the experiential *background* of one’s consciousness, that is, not as an attended object of experience, but as the affective experiential backdrop that permanently colours how we perceive the world around us (Barrett and Bar, 2009; Barrett, 2017).

Third, core affect is an ‘integral blend of hedonic and arousal values’, that is, phenomenologically constituted by the two dimensions of activation/deactivation (i.e. degree of *arousal*) and pleasure/displeasure (i.e. *hedonic valence*). For instance, someone feeling excited or enthusiastic will be in a pleasant and highly aroused state, someone feeling sad or tired will be in a state of unpleasant deactivation, while a feeling of serenity will be a deactivated pleasant state. Several examples of core affective states and their corresponding place within this two-dimensional structure are shown in Figure 1.

⁵ This does not entail that core affect is *the* fundamental or primitive form of consciousness, which is the stronger possibility that we raised in the introduction. It is logically possible that core affect is the ground of all affective life (i.e. what is claimed by Russell and colleagues), while being itself grounded in e.g. perceptual experience. As mentioned, in this work our focus is exclusively on what we take to be a minimal necessary condition for any phenomenal type to be the ultimate phenomenal primitive; namely, being continuously present in conscious experience.

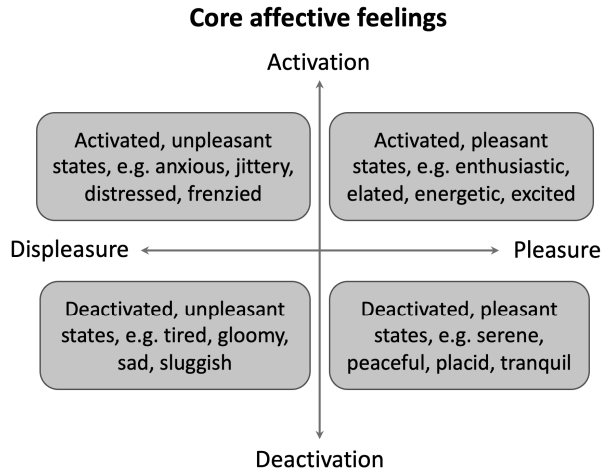


Figure 1. Examples of core affective feelings as blends of activation and hedonic values. Adapted from Yik, Russell and Steiger (2011).

Russell also stresses that core affect is not directed to any intentional object, it is an *objectless* feeling. In contrast to emotional states like fear which typically have an object, i.e. something is feared (e.g. a ghost), a core affective state like serenity is not directed to any particular object, the feeling is about nothing in particular. It is therefore much closer to moods, which are also typically described as objectless (Rolls, 1999; VandenBos, 2015). Indeed, Russell defines moods as ‘prolonged core affect with no object’ (2003, p. 147) and Barrett (2017) states that core affect is a technical term for the common-sense notion of moods.⁶

Another important property of core affect that deserves an explicit mention is that core affective states are what we may call ‘*world-colouring*’. Evidence suggests that your core affect influences how you perceive the world (Russell, 2003; 2005; Barrett and Bar, 2009; Barrett, 2017), including whether a drink tastes delicious or insipid, whether people seem nice or mean, or a painting beautiful or ugly (Barrett and Bar, 2009). This is related to core affect being normally at the background of one’s experience, which makes it possible for other

⁶ However, we remain neutral concerning the potential identification of core affect with moods, especially due to the diverse and sometimes incompatible ways in which moods are conceptualized in affective science and philosophy.

objects to be attended while core affect is simultaneously experienced. Also, this is related to what Barrett (2017) calls ‘affective realism’, the fact that we project to the world qualities that, strictly speaking, belong to our experience of the world. We tend to perceive external objects as being good or bad, depending on our background state of core affect, such that job applicants are rated more negatively on rainy compared to sunny days, and a camera in a journalist’s hand is perceived by a highly negatively aroused soldier as a gun and the journalist as a terrorist (*ibid.*).

Consider now the *motivational* status of core affect. Russell argues that our core affective states have an impact on the formation of preferences and attitudes toward external events and objects. Typically, we form preferences and approach situations that previously caused or were accompanied by positively valenced feelings, and avoid those that were negatively felt (Russell, 2003). This is a way in which core affect has a motivational relevance. More generally, this is an instance of the hedonic principle according to which, *ceteris absentibus* (i.e. in the absence of other contravening causes), pleasant core affective experiences (and the associated external circumstances) are sought, while unpleasant ones (and their associated external situations) are avoided. This entails that someone experiencing positive core affect will, generally speaking, behave in such a way as to prolong or repeat the situation or activity that promotes that feeling, while someone experiencing negative core affect will behave as to interrupt or avoid it.

In sum, Russell and colleagues are very explicit that core affect is a continuous (but changing) affective state that hence tentatively provides an affirmative answer to our research question 1: is there any subtype of affective experience that is always present in consciousness? Concerning our question 3 — what are its properties? — we reviewed explicit characterizations of core affect as (i) continuous, (ii) affectively primitive, (iii) pre-reflective, (iv) in the background, (v) hedonically valenced, (vi) (de)activated, (vii) objectless, (viii) world-colouring, and (ix) motivational. Now, concerning 2 — is it related to interoception and homeostatic regulation in living bodies? — although Russell sometimes suggests a positive answer, to the best of our knowledge he is not explicit about it. However, in Section 4.1 we will argue for a positive answer supported by further empirical and theoretical considerations, including writings from one of Russell’s direct collaborators, neuroscientist Lisa Feldman Barrett.

We turn now to another concept that denotes a permanent and ground-state affective layer of experience that is more explicitly related to interoception and homeostatic regulation.

3. Fuchs' Feeling of Being Alive: Vitality and Conation

Psychiatrist and philosopher Thomas Fuchs offers the 'feeling of being alive' as a phenomenological and biologically-rooted concept that would denote 'the affective backdrop of every conscious state... confirming the inherent linkage of processes of life and processes of experience, of *Leben* and *Erleben*' (Fuchs, 2018, p. 113). It has two main components: *vitality* and *conation* (Fuchs, 2012; 2013a,b; 2018). We start with vitality.

He describes vitality as 'lived in the background — as a realm of diffuse ease or unease, relaxation or tension, restriction or expansion, freshness and vigour or tiredness and exhaustion' (Fuchs, 2012, p. 153), which has a 'basic polarity of *Wohlbefinden* and *Missbefinden* (well- and ill-being)' (*ibid.*, p. 153). The close relationship to core affect is evident. All these feelings mentioned by Fuchs, e.g. relaxation, tension, vigour, exhaustion, etc., can be seen as combinations of *hedonic valence* and *arousal* values, e.g. as deactivated pleasant states in relaxation and ease, deactivated unpleasant states in the case of tiredness and exhaustion, or as an activated pleasant state in the feeling of vigour (Yik, Russell and Steiger, 2011).

As quoted, Fuchs also stresses that vitality is at the *background* of consciousness. It is not the attended object of experience, such as something perceived, thought, remembered, or imagined, but a 'continuous bodily background feeling' (Fuchs, 2012, p. 152). The strong convergence with core affect is apparent.

Also, in plain affinity with the property of core affect that we have called *world-colouring*, Fuchs claims that feelings of vitality are '*media* of perceiving the world as well, they color and pervade all experience' (*ibid.*, p. 153). Drawing on Heidegger's treatment of moods and Ratcliffe's further elaboration as 'existential feelings', Fuchs conceives of vitality as bodily states that are experienced as ways in which the world is disclosed, as forms of attunement to the world, such that the world appears dull, annoying, and unappealing to someone exhausted and uneasy, or even more extreme, as completely uninteresting, unreal, or strangely unfamiliar, as in some psychiatric disorders (*ibid.*; Fuchs, 2013a).

However, in contrast to Russell, Fuchs explicitly stresses that feelings of vitality are ‘bound to the body... [and] may be regarded as indicators of our particular state of life in its ups and downs’ (Fuchs, 2012, p. 153), they arise from an ‘interoceptive loop’ (2018, p. 112). This ‘loop’ is constituted by the internal environment of the body (i.e. inner tissues, organs, blood pressure, glucose and oxygen levels, etc.) in continuous reciprocal interaction with the brain, especially the upper brainstem (*ibid.*). Hence, vitality seems to arise in intimate connection to *interoceptive* and *homeostatic* processes within the animal’s body. As Fuchs puts it, vitality is ‘ultimately rooted in the homeodynamic regulation between brain and body, and, in a sense, integrates the present state of the organism as a whole’ (Fuchs, 2012, p. 154).⁷

Let us turn now to the second element of Fuchs’ concept of the feeling of being alive: *conation*. It refers to the ‘fundamental “energetic” dynamics of life that can be described by terms such as drive, instinct or urge...’ (*ibid.*, p. 155), plus other feelings like desire, fulfilment, and satisfaction, that would be ‘the subjective side and the driving-force of the processes of self-preservation and exchange that characterize animal life’ (*ibid.*, p. 157). Conation emphasizes the motivational aspect of feeling alive, the primordial impulse to act in such a way as to meet our vital needs and perpetuate life.

However, it seems pretty clear that Fuchs’ conation refers to *intermittent* states, such as hunger and thirst, not to a continuous type of affective phenomenology. These often imperious, motivational states purportedly arise to correct critical homeostatic imbalances (i.e. low sucrose and water levels), and are experienced as spontaneous urges to seek the corresponding resources. As such, conation should be understood as a discontinuous layer of physiological motivation that arises against a permanent layer of vitality. Indeed, Fuchs explicitly associates conation to Panksepp’s *primal/primary-process* affective consciousness (Panksepp, 1998; 2005; 2017),⁸ constituted by brain-based, genetically programmed instinctual emotions that are critical

⁷ Given our present purposes, we regard the difference between ‘homeostatic’ and ‘homeodynamic’ as mainly a difference of emphasis or connotation, but substantially referring to the same physiological process of continuous regulation of vital variables within certain viable bounds for the organism to remain alive.

⁸ Panksepp (1998) identifies seven major emotional systems in the brain of all mammals, supporting their corresponding emotional feelings, physiological changes, and behaviours; these are SEEKING, RAGE, FEAR, LUST, CARE, PANIC, and PLAY.

for survival, such as seeking, rage, and care. Importantly, these emotions are typically fleeting episodes that arise and disappear as a function of the situation and homeostatic demand. Panksepp warns that primal emotions are not to be confused with ‘background bodily feelings (e.g., tiredness)’ (Panksepp, 2005, p. 39).⁹

In sum, conation is described as a discontinuous layer of typically highly aroused emotional episodes aimed to fulfil urgent homeostatic needs. Although very critical for survival, due to its intermittency, conation differs from core affect and vitality and could not be directly included in the permanent, affective layer of experience that we are trying to characterize. Importantly, given that Fuchs attributes mainly to conation the motivational aspect of the feeling of being alive, this leaves vitality itself with no explicit motivational role, and hence differing to core affect in this particular respect.

Now, there is an experiential aspect that Fuchs develops considerably but Russell barely mentions. It is the *subjectivity* and *bodily nature* of the basic feeling of being alive. More specifically, Fuchs argues that vitality constitutes a ‘*basic bodily self-affection* or a *minimal form of subjectivity*’ (Fuchs, 2018, p. 112), a ‘subjective body’ (*ibid.*, p. 72). That is, a fundamental pre-reflective bodily self-awareness entailed by the non-anonymous character of vitality feelings (Fuchs, 2012; 2018). The notion of pre-reflective bodily self-awareness refers to the tacit quality of *mineness* that all the different experiences that one has share in common. Irrespective of the fact that all my experiences can differ both in their contents or objects (e.g. a sunset, a poem, etc.) and in their mode of presentation (e.g. remembered, perceived, imagined, etc.), there is something that remains the same, namely, that they are all *my* experiences, I am pre-reflectively aware that I am the bodily subject of all these experiences (Legrand, 2007; Zahavi, 2008; 2011; Gallagher and Zahavi, 2012).

Vitality would constitute a pre-reflective bodily self-consciousness inasmuch as it makes perfect sense to say that it was already my background feeling of serenity, unease, or vigour, even before I put it in the focus of my attention and explicitly recognize it as mine. Vitality would be subjective in a minimal, bodily sense, rather than being phenomenologically anonymous or neutral. Importantly, the bodily-

⁹ Although it is not mentioned by Fuchs, conation also comes very close to Denton’s *primordial emotions* (Denton, 2005; Denton *et al.*, 2009). These include feelings of hunger for food, hunger for air, thirst, pain, sexual desire, etc.

subjective character of vitality does not mean that the body or the subject are intentional objects of experience, like contents the experience of vitality would be about. Rather, they constitute a subjective body that acts as ‘a *medium*’ (Fuchs, 2018, p. 71) through which we perceive the world, a constant background that permeates and colours all objects of experience. As Colombetti aptly clarifies with respect to the bodily character of affective experiences, ‘for a feeling to be a *bodily* feeling, it need not be *about* the body... [but] as *that through which* one experiences something else’ (Colombetti, 2013, p. 113).

Finally, Fuchs also goes further than Russell and argues that vitality is not only the most fundamental affective type but the ultimate primitive of experience. He states that the feeling of being alive ‘is situated at the threshold of life and experience’ (Fuchs, 2012, p. 149), the point where self-regulatory biological processes become an essentially sentient ‘pre-reflective self-awareness’ (*ibid.*, p. 149), the ‘foundation of all conscious experience’ (Fuchs, 2018, p. 107). However, as we clarified in the introduction, we think that claiming that affective-homeostatic consciousness is the phenomenological ground for all forms of consciousness is an utterly strong thesis that surpasses the purposes of this paper. Instead, we are focusing here on a minimal necessary condition that the ultimate phenomenal primitive must satisfy, which is to be ubiquitous in conscious experience. Hence, we are going to consider only the weaker implication that Fuchs’ vitality satisfies the property of being *affectively primitive*, i.e. the affective subtype that grounds all affective experience. This is entailed by the stronger thesis but at the same time allows us to remain neutral about it.

To sum up, Fuchs asserts that the fundamental feeling of being alive can be understood as comprising two components: vitality and conation. Conation would denote a set of intermittent states that does not satisfy the condition of being continuously present in experience. Vitality, in contrast, would provide an affirmative answer to our research question 1 — is there any subtype of affective experience that is always present in consciousness? — and hence will be the focus of consequent discussion. Moreover, regarding question 2 — is it related to homeostatic regulation? — it also offers a positive answer. Concerning question 3 — what are its properties? — vitality is described by Fuchs as being (i) continuous, (ii) affectively primitive, (iii) pre-reflective, (iv) in the background, (v) hedonically valenced, (vi) (de)activated, (vii) world-colouring, (viii) subjective/self-conscious, (ix) bodily, (x) interoceptive, and (xi) homeostatic.

4. Core Affect and Vitality as Co-referential Terms

So far, we have reviewed Russell's concept of core affect and Fuchs' feeling of being alive, especially vitality. Now, regarding how core affect and vitality are explicitly characterized, we can safely state that they both refer to an affective experiential dimension which is (i) continuous, (ii) affectively primitive, (iii) pre-reflective, (iv) in the background, (v) hedonically valenced, (vi) (de)activated, and (vii) world-colouring. These are the properties they share. Regarding their differences, core affect is explicitly described by Russell as being (i) objectless and (ii) motivational, while Fuchs' vitality is not. The latter, in turn, in contrast to the former, is additionally described as being (i) subjective, (ii) bodily, (iii) interoceptive, and (iv) homeostatic. This is summarized in Table 1.

	Russell's Core Affect	Fuchs' Vitality
Continuous	Yes	Yes
Affectively primitive	Yes	Yes
Pre-reflective	Yes	Yes
Background	Yes	Yes
Hedonically valenced	Yes	Yes
(De)Activated	Yes	Yes
World-colouring	Yes	Yes
Objectless	Yes	No
Motivational	Yes	No
Subjective	No	Yes
Bodily	No	Yes
Interoceptive	No	Yes
Homeostatic	No	Yes

Table 1. Properties that are explicitly included in the corresponding concept.

Now, we will argue that both concepts, *core affect* and *vitality*, share the same referent, i.e. designate the same conscious affective phenomenon, even if they differ in their meanings, i.e. the properties they explicitly ascribe to the referent. To attempt to show this, we ask:

- (i) Is it plausible to attribute vitality's extra properties to core affect?
- (ii) Is it plausible to attribute core affect's extra properties to vitality?

In the following, we argue that both answers are 'Yes'. We think that this result will be a compelling case in favour of the hypothesis that they are in fact different ways of describing the same continuous, affective, ground-state layer of experience intimately tied to organismic regulation. We end with the proposal of a new theoretical construct to subsume both concepts: *continuous organismic sentience*.

4.1. *Vitality's extra properties and core affect*

We start by asking whether it is plausible to attribute vitality's properties of being interoceptive, homeostatic, bodily, and subjective to core affect.

To the best of our knowledge, Russell does not explicitly stress any essential relation between core affect on the one hand, and *interoception* and *homeostatic regulation* on the other. Indeed, in the paper in which he and colleagues discuss the probable neurophysiological mechanisms underlying core affect's fundamental ingredients, that is, arousal and hedonic valence, they do not, at least explicitly, refer to specifically interoceptive or homeostatic mechanisms (Posner, Russell and Peterson, 2005).

However, here we argue that further evaluation of the core affect construct plausibly reveals its tight link to interoception, homeostasis, and the body. First, Russell mentions that core affect is what people can always describe when asked 'how do you feel?' (Russell, 2003; 2005). Now, Craig has repeatedly argued that interoception, which he defines as the sense of the physiological condition of the body, is precisely what enables people to answer the question 'how do you feel?' (Craig, 2002; 2009; 2015). Moreover, there is a huge body of research showing the inseparable link between interoception and homeostatic regulation (Cameron, 2001; Craig, 2002; 2009; 2015; Carvalho and Damasio, 2021; Damasio, 2021). Indeed, this is implicitly suggested by Russell when he states that 'core affect is a continuous assessment of one's current state' (Russell, 2003, p. 149).

Likewise, Lisa Feldman Barrett, one of Russell's collaborators, claims that the word 'core' in 'core affect' reflects the idea that external events have an affective meaning to the subject in so far as 'they can influence the homeostatic (core affective) state of the individual' (Barrett, 2006, p. 48). More recently, she explicitly acknowledges that interoception produces 'the spectrum of basic feeling from pleasant to unpleasant, from calm to jittery... interoception... is the origin of feeling [core affect]' (Barrett, 2017, pp. 56–7).

Additionally, recent findings show that one hour of Reduced Environmental Stimulation Therapy (REST) in a floating tank, in which all exteroceptive stimuli are drastically minimized and interoceptive processes are enhanced, promoted feelings of relaxation and serenity (Feinstein *et al.*, 2018). Now, these feelings are consistently described by Russell and colleagues as pleasant deactivated core affective states (Russell, 2003; Yik, Russell and Steiger, 2011).

Hence, a reasonable conclusion is that core affective states arise, at least in part, from interoceptive processes. Moreover, given the inseparable link between interoception and homeostasis, core affect would also be intimately linked to life regulatory processes in living bodies.

Let us address now the *bodily* nature of core affect, which is not explicitly stressed by Russell and colleagues. Recall that, for Fuchs, vitality is bodily, in a phenomenological sense, because all background states of vitality are pre-reflectively felt as states of oneself as a bodily subject, as the sentient body one is. We claim that it is perfectly plausible to attribute this phenomenological bodily character to core affect. Russell himself suggests this in some of the descriptions of core affective states that he and colleagues give to the participants of their studies. For instance, to evaluate whether a participant experienced a pleasant deactivated state like feeling tranquil or comforted, they ask the subjects to report the extent to which the description ‘My body was tranquil’ or ‘My body felt soothed and comforted’ (Yik, Russell and Steiger, 2011, p. 730) actually represents the experience. On the other hand, to evaluate unpleasant activated states, like feeling tense, they ask whether the experience can be described by sentences such as ‘My body was trembling with tension’ (*ibid.*, p. 729). So, although this, all by itself, does not show that for Russell core affect would have a bodily character in exactly the same sense of Fuchs’ vitality, it shows that its bodily character is at least partially acknowledged. Additionally, if one asks oneself whether core affective feelings such as serenity, tiredness, or enthusiasm are felt in one’s own case as abstract disembodied states or, in contrast, as (at least in part) ways in which our bodies are felt, the most plausible answer seems to be the latter option.

We turn now to the *subjective* character of Fuchs’ vitality and evaluate whether it can be applied to Russell’s core affect. Recall that, for Fuchs, vitality is self-conscious or subjective in so far as it is not anonymous or neutral but, on the contrary, comprises a quality of pre-reflective bodily *mineness*, which constitutes a basic form of bodily subjectivity. Surprisingly, this is in fact partially acknowledged by Russell, but, to the best of our knowledge, only once in his writings. He just states that ‘Core Affect is located not in any part of the body but in the core self. The “core self” here is... me here and now’ (Russell, 2005, p. 30). Now, putting aside Russell’s very problematic strategy of clarifying core affect’s selfhood by equating it with other several accounts, we think that core affect’s subjectivity could

certainly be understood along the lines of the pre-reflective bodily subjectivity that Fuchs stresses.¹⁰

For instance, in paradigmatic core affective states like feeling energetic, serene, or sluggish, there is a clear sense in which these are always implicitly and pre-reflectively experienced as states of oneself, even if one does not explicitly recognize them as such. For instance, it would be at odds with our everyday experience to claim that it is only when asked ‘how do you feel’ and respond ‘I feel very energetic’ that the feeling acquires a subjective character. It seems far more plausible to claim that *I* was feeling energetic even before I explicitly recognized myself as the subject of that feeling. Recalling the phenomenological insight expressed by Fuchs, core affective states have subjective character in so far as they are not anonymous or neutral, but *my affects*, feeling states of *my body*, states of myself as a *bodily subject*, even if I do not explicitly recognize it as such.

In sum, we argued that it is plausible to attribute vitality’s properties of being *interoceptive*, *homeostatic*, *bodily*, and *subjective* to core affect. We ask now whether core affect’s properties of being *objectless* and *motivational* could be attributed to Fuchs’ vitality.

4.2. Core affect’s extra properties and vitality

Is core affect’s property of being *objectless* compatible with Fuchs’ vitality? Recall that core affect is objectless in so far as it is not directed to any intentional object, it is about nothing specifically. The main difficulty in ascribing this property to Fuchs’ vitality is that he emphasizes the world-involvement of vitality. He writes that ‘feelings of vitality should *always* be considered as *media* of perceiving the world... they may also be described as states of *attunement* to the world’ (Fuchs, 2012, p. 153, first italics added). As such, they may be regarded not as objectless feelings, but as having the world as a whole or certain aspects of it as their object. However, Fuchs himself writes that vitality is a ‘pre-reflective, *undirected* bodily self-awareness’ (Fuchs, 2013b, p. 613, italics added). Moreover, he states that the

¹⁰ Russell mentions Gallagher’s *minimal self*, Panksepp’s *SELF*, and Damasio’s *core self*. Unfortunately, due to space limitations, we are unable to argue here why this identification is problematic. Additionally, for the purposes of this paper, we are not sharply distinguishing between selfhood, subjectivity, and subject. We are assuming, following Zahavi (2008; 2011), that the pre-reflective self-conscious character of experience simultaneously entails a subjective perspective, a subject, and a minimal form of selfhood.

feeling of being alive is a subclass within a wider class of *existential feelings* (Ratcliffe, 2008), which he claims ‘lack intentional “aboutness”’ (Fuchs, 2013b, p. 614). Hence, and setting aside the phenomenological complexities of existential feelings, we conclude that both Russell’s core affect and Fuchs’ vitality feelings seem to be objectless, but at the same time possess the property we named *world-colouring*, that is, they shape and tinge how we perceive and relate to the world arounds us.

We turn now to the *motivational* status of vitality. Recall that core affect is motivational in the sense of influencing our decision making, preferences, and attitudes towards events in the world in a mood-congruent manner. In general, people will try to prolong and repeat events in the world that are accompanied by pleasant feelings and stop and avoid those that are unpleasant. Now, although Fuchs concentrates on the motivational quality of feeling alive in conation, which we disregarded for being an *intermittent* affective subtype, we think that there is no impediment in extending to vitality the motivational analysis that Russell offers. Indeed, there are implicit suggestions about this in Fuchs’ writings, when he states that, for instance, feelings of low vitality such as tiredness and exhaustion make objects ‘lose their richness and interest and appear dull or annoying’ (Fuchs, 2012, p. 153). In other words, feelings of vitality would strongly influence how appealing and inviting things in the world appear, and, in that way, are motivational in the sense of dramatically shaping ‘what *energizes* and *gives direction* to behavior’ (Ryan and Deci, 2017, p. 13).

In sum, it seems safe to attribute core affect’s initially unique properties to vitality and vice versa. We take this result as plausibly showing that they are in fact different ways of describing the same continuous, affective, ground-state layer of experience intimately tied to interoception and organismic regulation. Now, before we offer our proposal of a new theoretical construct to subsume both core affect and vitality under a more encompassing notion, we would like to argue for a specific hypothesis concerning the motivational nature of this ground-state feeling of life.

4.3. *Core affect/vitality as intrinsically motivational*

We want to propose that feelings of vitality/core affect are not only involved in motivation, but are *intrinsically motivational* (Ryan and Deci, 2017), they energize and direct behaviour mainly in virtue of

how these feelings are experienced, and not necessarily depending on external rewards or norms. Their phenomenology includes a pre-reflective felt willingness to either act or remain inactive in such a way as to either perpetuate or end a given feeling and the associated situation. One premise for this is the hedonic principle applied to the valence dimension of core affect/vitality, according to which ‘people typically seek pleasure and seek to perpetuate it when it occurs. They naturally avoid displeasure and seek to end it when it occurs’ (Russell, 2003, p. 156). Subjects would be disposed to perform certain behaviours to prolong or end certain situations in virtue of the hedonic valence of these feelings. The second premise is the view that the activation/arousal dimension also disposes the organisms to act in a certain way, in virtue of the felt degree of energy of these feelings. As Russell himself declares, the arousal dimension is felt as ‘one’s sense of mobilization and energy’ (*ibid.*, p. 148), which is, according to Thayer (1996), ‘an action system: when we feel energy, we feel a desire to move. Energy impels us to move... Conversely, we feel tired when it is time to sleep or when we have expended great amounts of energy’ (p. 78). In other words, the degree of energy we feel would entail, *ceteris absentibus*, the extent to which we are disposed to perform actions or rather remain more inactive.

Combining these ideas about valence and arousal, we would like to propose the following hypothesis. Core affects/vitality feelings are intrinsically motivational in the specific sense that, in virtue of how these feelings feel, highly aroused states tend to mobilize the subject *to act*, either to perpetuate a pleasant state (e.g. enthusiasm, elation) or to change an unpleasant state (e.g. anxiety, jitteriness), while deactivated states dispose the subject to *do nothing*, that is, to remain inactive, such that she either remains in a pleasant state (e.g. relaxation, serenity), or changes an unpleasant one (e.g. tiredness, gloominess). In other words, we propose that the four quadrants of the core affect structure have a mirroring structure in terms of intrinsically motivational character. This is illustrated in Figure 2.

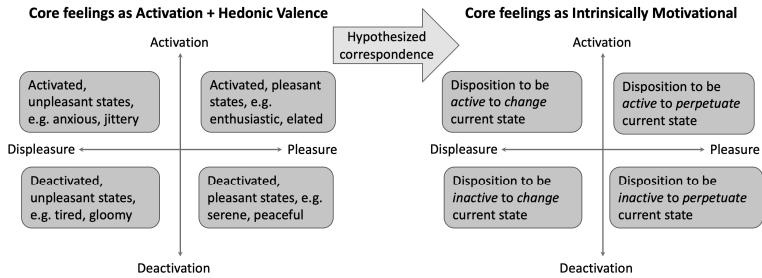


Figure 2. Correspondence between activation and hedonic values of core affective/vitality states with their hypothesized intrinsically motivational character.

5. Continuous Organismic Sentience (COS) as the Integration of Core Affect and Vitality

Having argued for the plausibility of attributing vitality's extra properties to core affect and vice versa, and given the systematic affinities between both concepts, we take it to be a reasonable and parsimonious assumption that both notions are designating the same fundamental and continuous affective phenomenal subtype rooted in interoceptive mechanisms and homeostatic regulation. We propose now a more encompassing concept to subsume both notions. It is intended to share as referent the same affective phenomenal subtype with core affect and vitality, but, semantically, it is wider than both because it comprises the union (in the set-theoretic sense) of all the properties they initially attribute explicitly to this primitive feeling of being alive.

The concept we propose to subsume both core affect and vitality is continuous organismic sentience (COS): an affective phenomenal subtype that is (i) affectively primitive, (ii) continuous, (iii) pre-reflective, (iv) in the background, (v) hedonically valenced, (vi) (de)activated, (vii) world-colouring, (viii) objectless, (ix) intrinsically motivational, (x) self-conscious, (xi) bodily, (xii) interoceptive, and (xiii) homeostatic.

We opted for the label 'continuous organismic sentience' because we think it easily captures the main features of this apparently fundamental life-related affective layer. First, 'continuous' emphasizes one of the main target properties we were looking for, what we regarded as a necessary (but insufficient) condition for any affective subtype to qualify as the ultimate primitive of consciousness, namely, always being present in consciousness. 'Organismic', in turn, highlights its

essential link with interoception and the life-regulatory processes of the body. Finally, ‘sentience’ denotes its pre-reflective and affective nature.

Before we conclude, we would like to clarify the nature of these thirteen properties. They can be divided into *ontological*, *phenomenological*, and *functional* properties. Property (i) ‘affectively primitive’ is the only *ontological* property. It is ontological because it describes COS as a subtype of affective phenomenology that is ontologically prior with respect to the rest of the affective spectrum. That is, the phenomenology of moods, feelings, emotions, etc. would be either identical to COS or depend, supervene, or be grounded in the phenomenology of COS. In other words, this first property pertains to the ‘metaphysics of phenomenology’ (Kriegel, 2015, p. 7), i.e. the enquiry into the metaphysical relations of supervenience, reduction, grounding, etc. among phenomenal types and subtypes. As mentioned in the introduction, whether COS is the ultimate primitive of all consciousness is beyond the scope of this paper.

The second group of properties are *phenomenological*. They characterize what is it like to experience COS from the subjective perspective. These being (ii) continuousness, (iii) pre-reflectivity, (iv) being in the background, (v) hedonic valence, (vi) (de)activation, (vii) world-colouring, (viii) objectlessness, (ix) intrinsic motivation, (x) self-consciousness, and (xi) bodiliness.

Finally, we regard the properties of COS of being (xii) interoceptive and (xiii) homeostatic as *functional* properties, in the sense that they characterize COS in terms of the causal role it may play regarding the overall physiological economy of the organism, namely, informing the subject about the overall state of her internal milieu (xii — interoceptive) and thereby contributing to the maintenance of the overall physiological balance within the organism (xiii — homeostatic). An intriguing question that deserves future consideration is how the phenomenological property of being *intrinsically motivational* relates to both functional properties, e.g. the causal role it may play, as a felt aspect of experience, in physiological regulation.

6. Conclusions and Future Research

This paper is intended as a first step in a systematic evaluation of the purported fundamentality of an interoceptive and homeostatically-rooted affective type of consciousness. To move forward, we asked three questions:

- (1) Is there any subtype of affective experience that is always present in consciousness?
- (2) Is it related to interoception and homeostatic regulation in living bodies?
- (3) What are its properties?

As a first step to advance answers to these questions, we reviewed the concepts of core affect and vitality, and argued for their co-referentiality. We also proposed a novel hypothesis about the intrinsically motivational character of core affect/vitality, and proposed the integration of both notions under the more encompassing concept of continuous organismic sentience (COS). With this concept we try to provide affirmative answers to questions 1 and 2, and, regarding question 3, provide a preliminary list of thirteen properties that characterize COS as being (i) affectively primitive, (ii) continuous, (iii) pre-reflective, (iv) in the background, (v) hedonically valenced, (vi) (de)activated, (vii) world-colouring, (viii) objectless, (ix) intrinsically motivational, (x) self-conscious, (xi) bodily, (xii) interoceptive, and (xiii) homeostatic. These properties can be divided into ontological (property i), phenomenological (properties ii–xi), and functional categories (xii–xiii).

As mentioned, this is the first of a series of theoretical papers that will systematically address and attempt to integrate different concepts describing a continuous, homeostatically-rooted, and interoceptive feeling of being alive, across diverse disciplines such as psychology, psychiatry, philosophy, and neuroscience. If affect is indeed the fundamental ground of consciousness, standing ‘in the midst of that vast biological field which lies between the lowliest organic activities and the rise of mind’ (Langer, 1967, p. 32), then consciousness science should give special attention to this fundamental affective layer most intimately related to life-regulatory processes in our living bodies, what we propose to call continuous organismic sentience. We proposed it as a first conceptual integration across disciplines, in this case between (neuro)psychology (core affect) and (phenomenological) psychiatry (vitality).

An important limitation of the present study is its exclusively theoretical nature. Hence, a much-needed complementary line of research would be an empirical assessment of COS. We recommend methodologies that could take seriously the phenomenological dimension of COS, such as first-person experimental approaches (Varela and Shear, 1999), second-person empirical approaches to first-

person experience (Petitmengin, 2006; Petitmengin, Remillieux and Valenzuela-Moguillansky, 2019), or neurophenomenological methods that integrate first-, second-, and third-person perspectives (Varela, 1996; Lutz and Thompson, 2003; Bitbol and Petitmengin, 2017). These methodologies may be implemented in experimental settings where COS may be enhanced or even isolated (to a certain degree), for instance, in floating pools as in REST protocols (Feinstein *et al.*, 2018).

We hope that this preliminary theoretical characterization of COS will be a relevant contribution to understand the relationship between being alive and being sentient, and move towards answering why and how there is something it is like to be us (Nagel, 1974; Chalmers, 1995).

Acknowledgments

This work was supported by ANID-Fondecyt Postdoctoral Grant 3210707 to I.C.

References

- Baars, B.J. (1988) *A Cognitive Theory of Consciousness*, Cambridge: Cambridge University Press.
- Baars, B.J. (2005) Global workspace theory of consciousness: Toward a cognitive neuroscience of human experience, *Progress in Brain Research*, **150**, pp. 45–53.
- Barrett, L.F. (2006) Are emotions natural kinds?, *Perspectives on Psychological Science*, **1** (1), pp. 28–58. doi: 10.1111/j.1745-6916.2006.00003.x
- Barrett, L.F. (2017) *How Emotions Are Made: The Secret Life of the Brain*, New York: Houghton Mifflin Harcourt.
- Barrett, L.F. & Bar, M. (2009) See it with feeling: Affective predictions during object perception, *Philosophical Transactions of the Royal Society B: Biological Sciences*, **364** (1521), pp. 1325–1334.
- Barrett, L.F. & Bliss-Moreau, E. (2009) Affect as a psychological primitive, *Advances in Experimental Social Psychology*, NIH Public Access, pp. 167–218. doi: 10.1016/S0065-2601(08)00404-8
- Barrett, L.F. & Simmons, W.K. (2015) Interoceptive predictions in the brain, *Nature Reviews Neuroscience*, **16** (7), pp. 419–429.
- Bitbol, M. & Petitmengin, C. (2017) Neurophenomenology and the microphenomenological interview, in Schneider, S. & Velmans, M. (eds.) *The Blackwell Companion to Consciousness*, 2, pp. 726–739, Chichester: Wiley-Blackwell.
- Cameron, O.G. (2001) Interoception: The inside story — a model for psychosomatic processes, *Psychosomatic Medicine*, **63** (5), pp. 697–710. doi: 10.1097/00006842-200109000-00001
- Carvalho, G.B. & Damasio, A. (2021) Interoception and the origin of feelings: A new synthesis, *BioEssays*, Preprint. doi: 10.1002/bies.202000261
- Chalmers, D.J. (1995) Facing up to the hard problem of consciousness, *Journal of Consciousness Studies*, **2** (3), pp. 200–219.

- Colombetti, G. (2013) *The Feeling Body: Affective Science Meets the Enactive Mind*, Cambridge, MA: MIT Press. doi: 10.5860/choice.52-0767
- Craig, A.D. (2002) How do you feel? Interoception: The sense of the physiological condition of the body, *Nature Reviews Neuroscience*, **3** (8), pp. 655–666.
- Craig, A.D. (2009) How do you feel — now? The anterior insula and human awareness, *Nature Reviews Neuroscience*, **10** (1), pp. 59–70. doi: 10.1038/nrn2555
- Craig, A.D. (2015) *How Do You Feel? An Interoceptive Moment with Your Neurobiological Self*, Princeton, NJ: Princeton University Press.
- Crick, F. & Koch, C. (1990) Towards a neurobiological theory of consciousness, *Seminars in the Neurosciences*, **2**, pp. 263–275.
- Damasio, A. (1994) *Descartes' Error: Emotion, Reason, and the Human Brain*, London: Putnam.
- Damasio, A. (1999) *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*, New York: Houghton Mifflin Harcourt.
- Damasio, A. (2018) *The Strange Order of Things: Life, Feeling, and the Making of Cultures*, New York: Pantheon Books.
- Damasio, A. (2021) *Feeling & Knowing: Making Minds Conscious*, New York: Pantheon Books.
- de Preester, H. (2019) Subjectivity as a sentient perspective and the role of interoception, in Tsakiris, M. & De Preester, H. (eds.) *The Interoceptive Mind: From Homeostasis to Awareness*, Oxford: Oxford University Press.
- de Vignemont, F. (2019) Was Descartes right after all? An affective background for bodily awareness, in Tsakiris, M. & De Preester, H. (eds.) *The Interoceptive Mind: From Homeostasis to Awareness*, pp. 259–271, Oxford: Oxford University Press.
- Dehaene, S. & Naccache, L. (2001) Towards a cognitive neuroscience of consciousness: Basic evidence and a workspace framework, *Cognition*, **79** (1–2), pp. 1–37. doi: 10.1016/S0010-0277(00)00123-2
- Dehaene, S., Changeux, J.-P. & Naccache, L. (2011) The global neuronal workspace model of conscious access: From neuronal architectures to clinical applications, in Dehaene, S. & Christen, Y. (eds.) *Characterizing Consciousness: From Cognition to the Clinic?*, Cham: Springer.
- Denton, D. (2005) *The Primordial Emotions: The Dawning of Consciousness*, Oxford: Oxford University Press.
- Denton, D., McKinley, M.J., Farrell, M. & Egan, G.F. (2009) The role of primordial emotions in the evolutionary origin of consciousness, *Consciousness and Cognition*, **18** (2), pp. 500–514.
- Dukes, D., Abrams, K., Adolphs, R., Ahmed, M.E., Beatty, A., Berridge, K.C., Broomhall, S., Brosch, T., Campos, J.J., Clay, Z., Clément F., Cunningham, W., Damasio, A., Damasio, H., D'Arms, J., Davidson, J.W., de Gelder, B., Deonna, J., de Sousa, R., Ekman, P., Ellsworth, P.C., Fehr, E., Fischer, A., Foolen, A., Frevert, U., Grandjean, D., Gratch, J., Greenberg, L., Greenspan, P., Gross, J.J., Halperin, E., Kappas, A., Keltner, D., Knutson, B., Konstan, D., Kret, M.E., LeDoux, J.E., Lerner, J.S., Levenson, R.W., Loewenstein, G., Manstead, A.S.R., Maroney, T.A., Moors, A., Niedenthal, P., Parkinson, B., Pavlidis, I., Pelachaud, C., Pollak, S.D., Pourtois, G., Roettger-Roessler, B., Russell, J.A., Sauter, D., Scarantino, A., Scherer, K.R., Stearns, P., Stets, J.E., Tappolet, C., Teroni, F., Tsai, J., Turner, J., Van Reekum, C., Vuilleumier, P., Wharton, T. & Sander, D. (2021) The rise of affectivism, *Nature Human Behaviour*, **5** (7), pp. 816–820.

- Feinstein, J.S., Khalsa, S.S., Yeh, H., Al Zoubi, O., Arevian, A.C., Wohlrab, C., Pantino, M.K., Cartmell, L.J., Simmons, W.K. & Stein, M.B. (2018) The elicitation of relaxation and interoceptive awareness using floatation therapy in individuals with high anxiety sensitivity, *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, **3** (6), pp. 555–562.
- Fuchs, T. (2012) The feeling of being alive: Organic foundations of self-awareness, in Fingerhut, J. & Marienberg, S. (eds.) *Feelings of Being Alive / Gefühle des Lebendigseins*, Berlin: De Gruyter.
- Fuchs, T. (2013a) Depression, intercorporeality, and interaffectivity, *Journal of Consciousness Studies*, **20** (7–8), pp. 219–238.
- Fuchs, T. (2013b) The phenomenology of affectivity, in Fulford, K.W.M., Davies, M., Gipps, R.G.T., Graham, G., Sadler, J.Z., Stanghellini, J. & Thornton, T. (eds.) *The Oxford Handbook of Philosophy and Psychiatry*, pp. 612–631, Oxford: Oxford University Press.
- Fuchs, T. (2018) *Ecology of the Brain: The Phenomenology and Biology of the Embodied Mind*, Oxford: Oxford University Press.
- Gallagher, S. & Zahavi, D. (2012) *The Phenomenological Mind*, 2nd ed., London: Routledge. doi: 10.4324/9780203086599
- Kim, J. (2011) *Philosophy of Mind*, 3rd ed., London: Routledge.
- Kirchhoff, M.D. (2018) Autopoiesis, free energy, and the life–mind continuity thesis, *Synthese*, **195** (6), pp. 2519–2540.
- Kriegel, U. (2015) *The Varieties of Consciousness*, Oxford: Oxford University Press.
- Langer, S.K. (1967) *Mind: An Essay on Human Feeling*, Baltimore, MD: JHU Press.
- Legrand, D. (2007) Pre-reflective self-as-subject from experiential and empirical perspectives, *Consciousness and Cognition*, **16** (3), pp. 583–599.
- Lutz, A. & Thompson, E. (2003) Neurophenomenology: Integrating subjective experience and brain dynamics in the neuroscience of consciousness, *Journal of Consciousness Studies*, **10** (9–10), pp. 31–52.
- Merker, B. (2007) Consciousness without a cerebral cortex: a challenge for neuroscience and medicine, *The Behavioral and Brain Sciences*, **30** (1), pp. 63–134. doi: 10.1017/S0140525X07000891
- Nagel, T. (1974) What is it like to be a bat?, *Philosophical Review*, **83** (October), pp. 435–450.
- Panksepp, J. (1998) *Affective Neuroscience: The Foundations of Human and Animal Emotions*, Oxford: Oxford University Press.
- Panksepp, J. (2005) Affective consciousness: Core emotional feelings in animals and humans, *Consciousness and Cognition*, **14** (1), pp. 30–80.
- Panksepp, J. (2017) Affective consciousness, in Velmans, M. & Schneider, S. (eds.) *The Blackwell Companion to Consciousness*, 2nd ed., Oxford: Blackwell.
- Parvizi, J. & Damasio, A. (2001) Consciousness and the brainstem, *Cognition*, **79** (1), pp. 135–160.
- Pereira Jr., A. (2021) The role of sentience in the theory of consciousness and medical practice, *Journal of Consciousness Studies*, **28** (7–8), pp. 22–50.
- Petitmengin, C. (2006) Describing one’s subjective experience in the second person: An interview method for the science of consciousness, *Phenomenology and the Cognitive Sciences*, **5** (3–4), pp. 229–269. doi: 10.1007/s11097-006-9022-2

- Petitmengin, C., Remillieux, A. & Valenzuela-Moguillansky, C. (2019) Discovering the structures of lived experience, *Phenomenology and the Cognitive Sciences*, **18** (4), pp. 691–730.
- Posner, J., Russell, J. & Peterson, B. (2005) The circumplex model of affect: An integrative approach to affective neuroscience, cognitive development, and psychopathology, *Development and Psychopathology*, **17** (3), pp. 715–734. doi: 10.1017/S0954579405050340
- Ratcliffe, M. (2008) *Feelings of Being: Phenomenology, Psychiatry and the Sense of Reality*, Oxford: Oxford University Press.
- Rolls, E.T. (1999) *The Brain and Emotion*, Oxford: Oxford University Press.
- Russell, J.A. (1980) A circumplex model of affect., *Journal of Personality and Social Psychology*, **39** (6), pp. 1161–1178.
- Russell, J.A. (2003) Core affect and the psychological construction of emotion, *Psychological Review*, **110** (1), pp. 145–172. doi: 10.1037/0033-295x.110.1.145
- Russell, J.A. (2005) Emotion in human consciousness is built on core affect, *Journal of Consciousness Studies*, **12** (8–9), pp. 26–42.
- Russell, J.A. (2017) Cross-cultural similarities and differences in affective processing and expression, in Jeon, H.F. & Jeon, H.C.I. (eds.) *Emotions and Affect in Human Factors and Human-Computer Interaction*, pp. 123–141, San Diego, CA: Academic Press. doi: 10.1016/B978-0-12-801851-4.00004-5
- Russell, J.A. & Barrett, L.F. (1999) Core affect, prototypical emotional episodes, and other things called emotion: Dissecting the elephant, *Journal of Personality and Social Psychology*, **76** (5), pp. 805–819.
- Ryan, R.M. & Deci, E.L. (2017) *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*, New York: Guilford Press.
- Seth, A. (2021) *Being You: A New Science of Consciousness*, London: Penguin.
- Seth, A.K. & Tsakiris, M. (2018) Being a beast machine: The somatic basis of selfhood, *Trends in Cognitive Sciences*, **22** (11), pp. 969–981. doi: 10.1016/j.tics.2018.08.008
- Seth, A.K. & Bayne, T. (2022) Theories of consciousness, *Nature Reviews Neuroscience*, **23**, pp. 439–452.
- Solms, M. (2013) The conscious id, *Neuropsychoanalysis*, **15** (1), pp. 5–19. doi: 10.1080/15294145.2013.10773711
- Solms, M. (2019) The hard problem of consciousness and the free energy principle, *Frontiers in Psychology*, **9** (Jan). doi: 10.3389/fpsyg.2018.02714
- Solms, M. (2021a) Précis of The Hidden Spring: A Journey to the Source of Consciousness, *Journal of Consciousness Studies*, **28** (11–12), pp. 153–166.
- Solms, M. (2021b) *The Hidden Spring: A Journey to the Source of Consciousness*, London: Profile Books.
- Solms, M. & Friston, K. (2018) How and why consciousness arises: Some considerations from physics and physiology, *Journal of Consciousness Studies*, **25** (5–6), pp. 202–238.
- Thayer, R.E. (1990) *The Biopsychology of Mood and Arousal*, New York: Oxford University Press.
- Thayer, R.E. (1996) *The Origin of Everyday Moods: Managing Energy, Tension, and Stress*, New York: Oxford University Press.
- Thompson, E. (2007) *Mind in Life: Biology, Phenomenology, and the Sciences of Mind*, Cambridge, MA: Harvard University Press.
- Thompson, E. (2011) Précis of Mind in Life: Biology, Phenomenology, and the Sciences of Mind, *Journal of Consciousness Studies*, **18** (5–6), pp. 10–22.

- Thompson, E. (2015) *Waking, Dreaming, Being: Self and Consciousness in Neuroscience, Meditation, and Philosophy*, New York: Columbia University Press.
- Thompson, E. (2022) Could all life be sentient?, *Journal of Consciousness Studies*, **29** (3–4), pp. 229–265.
- Thompson, E. & Varela, F. (2001) Radical embodiment: Neural dynamics and consciousness, *Trends in Cognitive Sciences*, **5** (10), pp. 418–425. doi: 10.1016/S1364-6613(00)01750-2
- Tononi, G. (2017) The integrated information theory of consciousness: An outline, in Schneider, S. & Velmans, M. (eds.) *The Blackwell Companion to Consciousness*, pp. 343–356, Oxford: Wiley Blackwell. doi: 10.1002/9781119132363.ch44
- Tononi, G., Boly, M., Massimini, M. & Koch, C. (2016) Integrated information theory: From consciousness to its physical substrate, *Nature Reviews Neuroscience*, **17** (7), pp. 450–461. doi: 10.1038/nrn.2016.44
- VandenBos, G.R. (2015) *APA Dictionary of Psychology, Second Edition*, Washington, DC: American Psychological Association.
- Varela, F. (1996) Neurophenomenology: A methodological remedy for the hard problem, *Journal of Consciousness Studies*, **3** (4), pp. 330–349.
- Varela, F. & Shear, J. (1999) *The View from Within: First-Person Approaches to the Study of Consciousness*, Exeter: Imprint Academic.
- Yik, M., Russell, J.A. & Steiger, J.H. (2011) A 12-point circumplex structure of core affect, *Emotion*, **11** (4), pp. 705–731.
- Zahavi, D. (2008) *Subjectivity and Selfhood: Investigating the First-Person Perspective*, Cambridge, MA: MIT press.
- Zahavi, D. (2011) The experiential self: Objections and clarifications, in Siderits, M., Thompson, E. & Zahavi, D. (eds.) *Self, No Self? Perspectives from Analytical, Phenomenological, and Indian Traditions*, New York: Oxford University Press.

Paper received June 2022; revised November 2022.