



# Epistemic Feelings are Affective Experiences

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## Abstract

This paper develops the claim that epistemic feelings are affective experiences. To establish some diagnostic criteria, characteristic features of affective experiences are outlined: valence and arousal. Then, in order to pave the way for showing that epistemic feelings have said features, an initial challenge coming from introspection is addressed. Next, the paper turns to empirical findings showing that we can observe physiological and behavioural proxies for valence and arousal in epistemic tasks that typically rely on epistemic feelings. Finally, it is argued that the affective properties do not only correlate with epistemic feelings but that we, in fact, capitalise on these affective properties to perform the epistemic tasks. In other words: the affective properties in question constitute epistemic feelings.

## Keywords

epistemic feelings, affective experience, emotion, metacognition, valence, feelings

## Introduction

Increasingly, epistemic feelings are shown to underpin our capacity for metacognition and our pursuit of epistemic and intellectual goods: they are responsible for our immediate sense of knowing, familiarity, understanding, coherence and rightness (e.g. Ackerman & Thompson, 2017; de Sousa, 2008; Michaelian & Arango-Muñoz, 2014; Proust, 2013). Various descriptions of epistemic feelings have been proposed such as “feelings concerning the subject’s own mental capacities and mental processes” (Michaelian & Arango-Muñoz, 2014, p. 97) or “feelings that enter into the epistemic processes of inquiry, knowledge and metacognition” (de Sousa, 2008, p. 189).<sup>1</sup> I will understand epistemic feelings as feelings that signal epistemic properties broadly construed.<sup>2</sup> Now, how do epistemic feelings feature into our ontology of mind, i.e. what *kind* of psychological state are they? Here I provide a case for *Affectivism* about epistemic feelings, the claim that epistemic feelings are affective experiences.<sup>3</sup>

I am not the first to assimilate epistemic feelings with affective experiences. The grounds for this association have not been bulletproof, however. Some just assume that

epistemic feelings are affective (Arango-Muñoz, 2014; Dokic, 2012; Dub, 2015). Others employ an “affective by association” strategy by grouping epistemic feelings together with more established affective experiences such as surprise (Carruthers, 2017a; de Sousa, 2008; Prinz, 2007, 2011). Yet others rely on a handful of empirical findings and considerations that taken by themselves appear inconclusive (Proust, 2015). So while the idea behind Affectivism is not new, it lacks solid footing. Here, I aim to provide such a footing. For that I bring the accumulating but scattered evidence together and reinforce the case for Affectivism.

Having a strong case for Affectivism matters. The idea that epistemic feelings are affective experiences is not unanimously accepted. In fact, some assume it to be false (Clore, 1992; Clore & Huntsinger, 2007; Stepper & Strack, 1993) while others refer to epistemic feelings as introspective evidence for the existence of distinctive *cognitive* phenomenology (e.g. Dodd, 2014; Smithies, 2013; but see Arango-Muñoz, 2019). The idea of distinctive cognitive phenomenology is controversial. Needing to invoke distinctive cognitive phenomenology to shed light on the nature of epistemic feelings would make for a difficult point of departure. Affectivism, on the other hand, lets us start rather strong: it would allow us to apply the wealth of

theoretical and empirical resources available for affective experiences to understand better epistemic feelings.

Although this issue might appear theoretical at first, it harbours practical implications for the ways we approach many psychopathologies. Conditions such as bipolar disorder, schizophrenia, obsessive-compulsive disorder or Capgras syndrome are marked by unusual patterns in what subjects consider right, known or familiar. It seems plausible that (alterations in) epistemic feelings have a role to play in properly conceptualising these states (e.g. Dub, 2015; McLaughlin, 2010). Against this background, understanding epistemic feelings as affective experiences might shed new light on the nature of such psychopathologies and allow us to make targeted adjustments to the ways we approach them.

Here is how I will build my case for Affectivism about epistemic feelings: In section 2 I will provide the reader with a better grasp of epistemic feelings. In section 3 I will establish some diagnostic criteria by outlining what is characteristic about affective experiences: valence and arousal. Based on that I will argue that epistemic feelings display these marks of affective experiences. For that, I will address a challenge coming from introspection in section 4: introspectively, it does not seem obvious that epistemic feelings are affective. I will try to undercut the force of this observation by appealing to the mild nature of epistemic feelings and by providing some phenomenal exhibits that are introspective evidence *for* the idea that epistemic feelings are affective. Appeals to introspection have their limits, however. For the remainder of the paper, I will thus rely on empirical findings to make a case for Affectivism that goes beyond introspection. In section 5, I will show that we can observe physiological and behavioural proxies for valence and arousal in epistemic tasks that typically rely on epistemic feelings. In section 6, I will show that this occurrence is not merely correlational but that we, in fact, capitalise on the affective properties to perform said epistemic tasks. In other words: the affective properties in question constitute the epistemic feelings. In this context it will also come to the fore that the valence in question is conscious. Finally, I will conclude my case for Affectivism in section 7.

## Grasping Epistemic Feelings

A good way to get a grasp of epistemic feelings is to consider some typical situations in which one would experience these familiar phenomena. Remember for instance the last time you encountered a person seemingly for the first time but had the impression that you had seen her before. Such FEELINGS OF FAMILIARITY (FOF) (Whittlesea & Williams, 1998) happen to everyone from time to time and can be directed at all kinds of things (e.g. people, songs, places, odours). Consequently, we take FOFs to mean that we have encountered a certain content before. A closely related feeling is the puzzling DÉJÀ-VU EXPERIENCE

(Brown, 2003) where, against your better knowledge, it seems to you as if you have already been in the situation you find yourself in now.

For another epistemic feeling, think back to your time in school. In situations when a teacher was probing the knowledge of one of your classmates, asking her questions such as “When did the French Revolution start?” or “What is the capital of Australia?” it might have occurred to you that you knew the answer. Importantly, this feeling struck you *before* you had the chance to retrieve the relevant information from memory. Suppose now, that, encouraged by this FEELING OF KNOWING (FOK) (Koriat, 2000), you tried to go on and retrieve the relevant information. Although a FOK might be a relatively reliable predictor of retrieval success, it does not guarantee it. And so, in some cases you might run into what is commonly known as the TIP-OF-THE-TONGUE EXPERIENCE (TOT) (Schwartz & Metcalfe, 2014), the unpleasant feeling that the relevant information is (stuck) on the tip of your tongue. That is, you are in possession of the relevant information but are currently unable to produce it.

Here are some other examples of epistemic feelings:

- FEELING OF (NOT) UNDERSTANDING: The feeling that you have (not) understood a certain content.
- FEELING OF COHERENCE: The feeling that some content is coherent or stands in relation to another content.
- FEELING OF RIGHTNESS/WRONGNESS (FOR/W): The feeling that some content is right/wrong.

Now, what *are* these feelings and how can we know what they are? A natural idea is the following: if epistemic feelings exhibit certain properties that are characteristic of a certain kind of state, then they (most likely) are this kind of state.

## Characterising Affective Experiences

In this section, I will briefly outline features that are characteristic to affective experiences. In the sections that follow, I will then use these features as diagnostic criteria and argue that epistemic feelings have these features and are thus affective experiences.

First off, affective experiences are *phenomenally conscious*, there is something “it is like” to have an affective experience.<sup>4</sup> Feeling pain in one’s wrist and feeling sad about it are phenomenally conscious states—but so are seeing blue and feeling one’s heartbeat. However, only the former two are affective experiences. So what distinguishes non-affective from affective experiences? That is, apart from being conscious, what are the marks of affective experiences?

Arguably, the central feature of affective experiences is *phenomenal valence*, i.e. the felt positivity or negativity of certain experiences (e.g. Barrett, 2006; Charland, 2005). This basic positivity or negativity is often made sense of in hedonic terms as pleasantness or unpleasantness or in value terms as seeming value or disvalue (Carruthers, 2017b; Teroni, 2018). Affective experiences are *valenced* experiences. Neither the visual experience of something blue nor the bodily sensation of one's heartbeat are felt as positive or negative by themselves. However, exteroceptive experiences and non-affective bodily sensations naturally prompt or co-occur with affective experiences such as pain, sadness, enjoyment or fear which *do* feel positive or negative.

It is important to emphasise that when I talk of valence I mean valence as a *phenomenal* property of affective experiences. Such phenomenal valence needs to be distinguished from associated but ultimately non-phenomenal properties such as emotion- or object valence (Colombetti, 2005). Importantly, phenomenal valence also needs to be distinguished from its unconscious functional counterpart: unconscious valence. Unconscious valence has a functional profile reminiscent of phenomenal valence in motivating aversive (avoidance, cessation) or appetitive (approach, continuation) behaviours (e.g. Berridge & Kringelbach, 2015; Winkielman et al., 2005).

Another characteristic phenomenal aspect of affective experiences is *felt arousal*: During an affective experience the subject feels a more or less localised increase or decrease (i.e. change) in level of activation, energy or excitement. Such felt arousal co-varies with but is distinct from actual physiological arousal states (Colombetti & Harrison, 2018; Satpute et al., 2019).

Note that both properties of affective experiences, valence and arousal, are *gradable*: affective experiences can be more or less positive or negative and (de)activating. Now if epistemic feelings can be shown to have these features, then this can be taken as solid evidence for them being affective experiences.

I say that valence and arousal are *characteristic* to affective experiences. What does that mean? Is it to say that they are *essential* and/or *unique* to affective experiences? I do think that this is true of phenomenal valence: if something has valence, then it is an affective experience and not otherwise. Valence is arguably the best candidate for “the mark of the affective”, picking out the family of affective experiences as a natural psychological kind (Fernandez Velasco & Loev, 2021). With arousal matters are more complicated. This is partly because the relationship between valence and arousal is a matter of debate (Kuppens et al., 2013, for a review). Some take valence and arousal to be two sides of the same coin, one standing for the “polarity” (i.e. positive or negative) and the other for the “volume” (i.e. intensity) of an affective experience (e.g. Barrett & Bliss-Moreau, 2009; Russell, 2003). Others take valence and arousal to be closely

associated but dissociable dimensions (e.g. Anderson et al., 2003; Kuhbandner & Zehetleitner, 2011). The lesson that we can draw either way, I think, is this: even if, in contrast to valence, arousal might not be essential or unique to affective experiences, it is often considered in the same breath with valence when it comes to characterising affective experience. So even though I will focus on valence as the *central indicator* of affective experiences, occasional mention of arousal in epistemic feelings will support the present agenda.

## The Challenge from Introspection

Why think that epistemic feelings are affective experiences? As proponents of cognitive phenomenology are right to point out: when one introspects, it does not seem obvious that they are.<sup>5</sup> In comparison to affective experiences such as migraines, fears or orgasms, epistemic feelings are not obviously experienced as positive, negative or arousing. This datum threatens to undermine the case that epistemic feelings are affective experiences at the outset and thus needs to be addressed first.

The force of this observation is weakened by acknowledging that, usually, epistemic feelings have only a subtle positivity or negativity and degree of arousal. In other words, epistemic feelings typically come in the form of *mild* affective experiences. This is not unlike, say, affective aesthetic experiences.

There is a lesson here. Part of the problem for acknowledging mild affective experiences lies in the approach traditionally taken towards affective experiences. When we think of affective experiences, the focus tends to lie on a few paradigm cases of affective experiences such as pain and fear. But in what sense are pains and fears paradigms of affective experiences? Without doubt, they exhibit the features characteristic of affective experiences—valence and arousal—to an *extraordinarily high* degree. But in being “very loud” as affective experiences, they are actually quite special, rare occurrences. A much larger part of our affective life is plausibly constituted by the little, subtle movements of our affective sensibilities. These affective experiences are not only all too often neglected in the face of their few “violent” conspecifics but also easy to neglect because of their calm nature.

Now, we might be able to triangulate this mild part of our affective life that is often lost to introspection by considering this: Phenomenally obvious paradigmatic affective experiences are relatively rare occurrences in comparison to, say, perceptual experiences and thoughts which are with us literally all the time. However, we know something about affective experiences that appears somewhat at odds with this apparent scarcity. Importantly, we can see the feature in question instantiated in paradigmatic affective cases: Affective experiences are typically caused by perceptual experiences and thoughts and they interact with these states in significant ways.<sup>6</sup> Now, we have perceptual experiences

and thoughts all the time. If these are involved with affective experiences, does it mean that they get only involved with them under exceptional circumstances? Does it mean that outside of these exceptional circumstances we go about our business as some kind of “Kantian Angels” driven purely by thought and perceptual experiences—only to be sometimes thrown off our enlightened path by affective seizures?

A more natural construal is that our ever-present perceptual experiences and thoughts lead to affective experiences that are just as ever-present. Most of them, however, are not present as phenomenal ruptures but as gentle guides of thought and action. The reason why we tend to think about affective experiences in the former “violent” way might be because we tend to study the tip of the affective iceberg that happens to be more phenomenally salient.

From an evolutionary standpoint it appears plausible that we have affective experiences that are concerned with epistemic properties. Epistemic properties are of relatively high survival value to our species, a species that strongly relies on social coordination and the exchange of information. Furthermore, the importance of epistemic properties—in contrast to e.g. specific colours—is relatively invariant across contexts. It seems thus plausible that we have evolved a suite of affective states that swiftly detect these properties in our external and internal milieus (Sperber et al., 2010).

This perspective also brings to the fore that the function of affective experiences is not to be violent but to make things salient and prepare us to adaptively respond to them (Brady, 2009; Kozuch, 2020). Consequently, they typically direct our attention towards something else than themselves, towards something that matters. It is thus not surprising that we are only able to get a good look at them in exceptional circumstances—such as when they *are* violent or when there is, consciously, not much else to look at.

Now, add to this our documented unreliability to introspect the nature of our experiences, especially affective experiences (Haybron, 2008; Schwitzgebel, 2008), and you get a sense for why becoming aware of mild affect—while beneficial for theoretical and personal reasons—is not at all an easy task.

So if epistemic feelings are affective experiences and, furthermore, *mild* affective experiences, then it is rather unsurprising that their affective nature tends to elude us. That’s why we need to go beyond introspection and look at empirical work, something I will do in the next sections.

For the remainder of this section let me note that so far, I have been fighting a defensive battle concerning the power of introspection to shed light on the affective nature of epistemic feelings. Yes, epistemic feelings are usually mild affective experiences—typically the positive or negative valence integral to them does not come “in a very large quantity (or a high intensity), explosively” (Bramble, 2013, p. 212). This is, however, not to say that epistemic feelings

cannot be reasonably intense, giving us some introspective evidence for their affective nature. To demonstrate this, I ask you to read the following passage and try to understand what it is about:

A newspaper is better than a magazine. A seashore is a better place than the street. At first it is better to run than to walk. You may have to try several times. It takes some skill but it is easy to learn. Even young children can enjoy it. Once successful, complications are minimal. Birds seldom get too close. Rain, however, soaks in very fast. Too many people doing the same thing can also cause problems. One needs lots of room. If here are no complications it can be very peaceful. A rock will serve as an anchor. If things break loose from it, however, you will not get a second chance. (Bransford & Johnson, 1972, p. 722)

How do you feel? Probably confused, unable to understand—this FEELING OF NOT UNDERSTANDING is a negative epistemic feeling (e.g. Silvia, 2010). Now try to attend to what phenomenally happens when I give you the following hint: kite. You likely feel much better now; suddenly everything seems to fall into place. What you just experienced is a reasonably intense FEELING OF UNDERSTANDING (e.g. Dodd, 2014).

My favourite illustration of a FEELING OF WRONGNESS (FOW) is, alas, not well compatible with the present format. It consists in making you look at upward flowing water.<sup>7</sup> Looking at it, you supposedly experience a clearly unpleasant FOW about what you see. Presumably, many of us experience similar (but less intense and continuous) FOWs on seeing (or imagining) things such as a crooked picture or cars driving on the left/right side of the street.

Consider now FEELINGS OF RIGHTNESS (FORs). Think about, for instance, the last time you were arranging furniture until it “looked” or felt right. The internet has recently spawned a genre of video clips that capitalises on the FORs of the audience. These clips show events and actions that typically involve the meticulous manipulation of physical objects such as peeling wood. In fact, “Oddly Satisfying” videos have become prominent enough to be featured in *WIRED* and *The New York Times* (Faramarzi, 2018; Matchar, 2019). Their appeal is admittedly better demonstrated than described. I recommend the same-named subreddit and YouTube channel.<sup>8</sup>

In fact, descriptions of highly intense instances of FORs occurring during ecstatic seizures (Picard, 2013) or intoxication (James, 1882, pp. 206–208) allow for an instructive peak into the affective nature of epistemic feelings. The extremely magnified feelings in these reports are the result of exceptional mental conditions. It stands to reason, however, that they are just extraordinary representatives of feelings that, in much lower dosages, are ordinary and regular ingredients of our phenomenal life. What makes these testimonies so remarkable is that we encounter FORs with their phenomenal volume turned up very high and a positive valence that

comes “in a very large quantity (or a high intensity), explosively”.

These examples demonstrate that epistemic feelings can in fact be reasonably intense and clearly positive, negative and arousing.

In this section I addressed the worry that the affective nature of epistemic feelings is not introspectively obvious. In its course I strived to illustrate and explain that epistemic feelings are usually (but not always) only mildly valenced and arousing. These reflections serve to give at least initial plausibility to the idea that epistemic feelings are affective experiences. Luckily, however, there is harder evidence available. I now turn to empirical findings.

### The Correlation of Affective Properties and Epistemic Feelings

In the following two sections I will make a case for epistemic feelings being affective experiences by reviewing empirical findings. In this section, I will establish the case for a covariation between affective measures and epistemic feelings. Then I will present studies that suggest that the relationship is not merely correlational but that the affect constitutes epistemic feelings.

As discussed in section 3, it is distinctive of affective experiences to possess a phenomenal valence. Thus, if it can be shown that epistemic feelings have phenomenal valence, then this can be taken as evidence that they are affective experiences.

As in general with phenomenal qualities, valence cannot be measured directly. One thus has to rely on indirect evidence by measuring observable variables assumed to be associated with valence. Luckily, several valence-associated variables have been identified in the form of psychophysiological and behavioural responses (Mauss & Robinson, 2009).

It is generally assumed that valence is bodily realised (e.g. Craig, 2009; Damasio & Carvalho, 2013). Now, epistemic feelings co-vary with bodily changes in the form of specific interoceptive alterations and facial muscle activity (Fiacconi et al., 2016, 2017; Forster et al., 2016; Topolinski et al., 2009; for a review Winkielman et al., 2003).<sup>9</sup> Topolinski et al. (2009), for instance, presented subjects with word triads that either did or did not share a common remote associate (e.g. coherent triad SALT, DEEP, FOAM implying SEA vs. incoherent triad DREAM, BALL, BOOK). They found that relatively to presenting incoherent triads, presenting coherent triads activated the smiling muscle, *zygomaticus major*, and inhibited the frowning muscle, *corrugator supercilii*. Such patterns of facial muscle activity are regarded as symptomatic for positive affect (Larsen et al., 2003).

Epistemic feelings have also been shown to lead to increased liking, a behavioural measure of positive valence

(e.g. Forster et al., 2013; Trippas et al., 2016, experiment 1; Topolinski & Strack, 2009b, experiment 1, 2009c, experiment 3; Winkielman et al., 2003). Trippas and colleagues, for instance, presented subjects with simple arguments that were either logically valid or invalid.<sup>10</sup> They did not ask subjects to reason about the arguments but simply to rate how much they spontaneously liked them. They found that relatively to invalid arguments, valid arguments were liked more.

Another indicator of valence in epistemic feelings is the finding that they lead to affective priming effects (Topolinski & Strack, 2009c, experiment 2). In affective priming, subjects evaluate a target stimulus with an affective connotation, say, the word “poison” as positive or negative after being presented with an affectively-laden prime stimulus, say, the word “cake”. If target and prime have the same/opposite affective connotation then the evaluation of the former is facilitated/hampered. Such priming effects can e.g. be read out from a subject’s response time in making target evaluations. Assuming that the previously mentioned coherent word triads trigger positive epistemic feelings, Topolinski and Strack used word triads as affective primes and negative and positive words as targets. They found that while incoherent word triads did not lead to changes in response time, coherent triads slowed subjects down when they had to subsequently evaluate a negative word.<sup>11</sup>

Another established physiological proxy of affective experiences is the skin conductance response (SCR) which is associated with the second characteristic of affective states: felt arousal. Ordinarily, the occurrence of FOFs co-varies with a discriminatory SCR for familiar and unfamiliar stimuli (e.g. faces or words) (Ellis et al., 1999; Morris et al., 2008). Capgras patients display a similar SCR to familiar and unfamiliar faces indicating, among other things, the absence of a FOF on whose basis they could discriminate between familiar and unfamiliar individuals (Ellis et al., 1997). The patients recognise the familiar person (or sometimes pet or object) visually but the usual affective response ordinarily elicited by the sight of the individual in question (*inter alia* a FOF) is missing (Pacherie, 2010).<sup>12</sup>

I think these findings show that epistemic feelings co-vary with affective properties such as valence and arousal. This, in turn, strengthens the case for the thesis that epistemic feelings *are* affective.

### Affective Properties Constitute Epistemic Feelings

What we have seen so far is that affect arises during epistemic tasks. However, this does not establish that the affective properties play any genuine epistemic role. In fact, it might be mere correlation. The observed changes in affective markers might not be part of epistemic feelings but rather

consequences of other things that happen during the epistemic task. Perhaps the subjects in the experiments are simply happy or frustrated as a *result* of detecting or failing to detect an epistemic property? Or they are excited or anxious about the task?

I think these are legitimate considerations—it is plausible that there might be episodes of happiness and frustration as well as excitement and anxiety during the experiments. That is, there might be affective experiences that occur during the experimental tasks that are not epistemic feelings. However, I think that this is well compatible with the idea that the epistemic feelings on which the epistemic tasks themselves capitalise are affective as well. This is, (some of) the observed affective properties indeed *constitute* epistemic feelings. In this section I will make the case that the covariation between epistemic feelings and affective properties is not just a correlation but a constitution relationship.

Particularly instructive evidence comes from two kinds of misattribution studies: The first kind of studies observes false positives of epistemic properties based on incidentally induced affect. That is, inducing nondiagnostic affect leads subjects to incorrectly judge that an epistemic property is present. The first part of this section will be concerned with these studies. The second part of this section will be dedicated to the second kind of misattribution studies. These go the other way around: the researchers make the subject believe that the affect they experience during an epistemic task is not diagnostic for the presence of an epistemic property. This turns out to strip the subject of her ability to accurately detect the epistemic property, indicating that epistemic properties are detected based on affect, and, since the affect can be misattributed, that the affect in question is conscious.

The first kind of studies generates a misattribution of seemingly non-affective properties such as familiarity, coherence and grammaticality based on induced positive or negative affect.<sup>13</sup> In the familiarity studies, novel stimuli are rated as more familiar (or unfamiliar) as a result of the affect manipulation. This holds true for various affect manipulations: i) making participants contract the smiling muscle, *zygomaticus major*, or the frowning muscle, *corrugator supercilii* (Phaf & Rotteveel, 2005, experiment 2); ii) using faces that are either attractive (Monin, 2003) or display emotions (by e.g. smiling or frowning) (Baudouin et al., 2000; Garcia-Marques et al., 2004, experiment 1; Lander & Metcalfe, 2007); iii) using subliminal primes in the form of happy versus neutral faces (Duke et al., 2014; Garcia-Marques et al., 2004, experiment 2) or happy versus sad words (Phaf & Rotteveel, 2005, experiment 1). In the coherence and grammaticality studies (Topolinski & Strack, 2009a), affect is either induced via the contraction of the mentioned facial muscles or the subliminal presentation of happy and sad faces. As a consequence of the affect manipulation, items are more (less) often judged as coherent and grammatical.

Crucially, Duke and colleagues and Topolinski and Strack explicitly demonstrate that the effect of induced affect closely mirrors the effects of processing fluency (as well as actual familiarity, coherence and grammaticality) on familiarity, coherence and grammaticality judgments (Duke et al., 2014; Topolinski & Strack, 2009a). This needs a little unpacking. To understand the importance of this finding, we need to familiarise ourselves with the construct of processing (dis)fluency (Alter & Oppenheimer, 2009). Processing fluency is a process property that refers to the “ease”, understood as relative speed, with which a given cognitive process is executed.<sup>14</sup>

There are a couple of things that we know about processing fluency. For instance, it is a prominent proximal cause of epistemic feelings, leading to judgments of epistemic properties such as familiarity or coherence (e.g. Unkelbach & Greifeneder, 2013). Now, there is something else that we know about processing fluency: it has been found to trigger positive affect (Winkielman et al., 2003). We can now connect the dots between these two observations.

When the researchers induce fluency-independent affect, they find that it mirrors the effects of fluency on judgments of epistemic properties. This parallel effect suggests two things: First, the induced affect seems to be *used for* epistemic judgments. This indicates that the typical results of fluency in the form of epistemic feelings, on the one hand, and affect, on the other, are two sides of the same coin. Second, we observe characteristic effects on epistemic judgments without fluency being involved. This indicates that what matters for the epistemic judgments is not processing fluency *per se* but its seemingly multiply realisable product: positive affect. This implies that it does not matter whether it is processing fluency or something else that causes this positive affect. Rather it appears that given a specific context, say, a task relying on the detection of an epistemic property such as familiarity or coherence, epistemic feelings can be triggered by whatever triggers affect. This affect, in turn, is correctly or incorrectly taken to signal the presence of the epistemic property. Fluency emerges thus as only one of many possible antecedents of epistemic feelings.

Against this background, it appears likely that epistemic feelings in general (i.e. also those not caused by fluency) are constituted by transient, context-specific positive or negative affect.

This point is reinforced by the second kind of misattribution studies, to which I now turn. While in the first kind of studies the subjects misattribute seemingly non-affective epistemic properties based on affect, in this kind of studies the misattribution goes the other way around: Informative affective reactions are discounted by being misattributed to an irrelevant source (Topolinski & Strack, 2009b, 2009c). In these studies, the experimenters ask subjects to make semantic coherence judgments by discriminating between word triads that either share a common remote associate (e.g.

SALT, DEEP, FOAM implying SEA; coherent triad) or not (e.g. DREAM, BALL, BOOK; incoherent triad).

In the fluency reattribution condition, the subjects are told that the “easiness of reading and the fluency with which the meaning of words is recognized” (Topolinski & Strack, 2009b, p. 614) is due to a task-irrelevant source: background music. In the affect-reattribution condition, the subjects are told that the positive affect that might arise in the course of the task is due to the background music. The authors show that while misattributing fluency has no effect on performance, misattributing affect essentially strips subjects of the ability to detect the property of semantic coherence (above chance level).

Importantly, the aim of the researchers was to find out what is *felt* in the task: the processing fluency triggered by processing semantically coherent items or the positive affect that is triggered by the processing fluency. The authors conclude that their “finding strongly suggests that it is not the fluency that is used as internal cue in intuitive judgments of semantic coherence, but rather the fluency-triggered positive affect” (p. 615). This is a crucial finding in two respects.

First, this strengthens the initial case made on the basis of the findings by Duke and colleagues and Topolinski and Strack by suggesting that epistemic feelings consist in context-specific, transient positive or negative affect. Fluency is not a cue available in experience to use for judgment. What is available is the result of fluency: positive affect. The researchers additionally back this conclusion with the finding that coherent triads are liked more than incoherent triads but are not rated as more fluent in processing (Topolinski & Strack, 2009b, experiment 1).

Reinforcing and extending this point, Balas and colleagues find that altering the semantic coherence task to include word triads that themselves are neutral but have an affect-laden common remote associate has a characteristic impact on judgments of semantic coherence:<sup>15</sup> there is an increase in accuracy and speed for triads with positive associates relative to those with neutral and negative ones. On this basis, the authors argue that “fluency-based positive affect can be strengthened or weakened by affective responses induced through partial activation of an affectively valenced memory content (i.e., solutions to triads).” (Balas et al., 2012, p. 318) This, in turn, brings the point home (in line with Duke et al., 2014 and Topolinski & Strack, 2009a) that “fluency of processing is not the only source of affective response that can influence intuitive judgements” (Balas et al., 2012, p. 312).

Together these findings imply that seemingly non-affective epistemic properties such as coherence are (sometimes) detected based on *affective* epistemic feelings.<sup>16</sup> This is shown by the fact that in specific contexts (e.g. cognitive tasks) positive or negative affect correctly or incorrectly signals the presence or absence of the task-relevant property.

Second and perhaps even more important: The valence in epistemic feelings needs to be conscious in order to make them affective *experiences*. However, I discussed in section 3 that behaviour can also be biased by unconscious valence. That is, the epistemic behaviours observed in the experiments might not be the result of conscious epistemic feelings but of some unconscious action-biasing valenced states that are functionally analogous to epistemic feelings, “epistemic nudges” (see footnote 4). That such epistemic nudges occur is, I think, plausible.

However, we cannot explain the present experimental findings simply by relying on them. On the contrary, the mentioned studies demonstrate that the affect integral to epistemic feelings is conscious. This is because the subjects can misattribute the conscious affective signals that they would usually use to make conscious judgments. This contrasts with e.g. their inability to misattribute and use the unconscious processing fluency directly. Subjects cannot misattribute something that is unconscious since there is nothing to (correctly or incorrectly) attribute in the first place. The present finding, thus, rules out something that might seem like a possible explanation when one considers unconscious valence. Instead, what we observe in the experiments appears to be the result of affective experiences—epistemic feelings.

## Conclusion

Here, I have provided a case for the idea that epistemic feelings are affective experiences. I first outlined the characteristic features of affective experiences: phenomenal valence and felt arousal. Using these as diagnostic criteria I proceeded to make the case that epistemic feelings possess said features. To give this idea initial plausibility, I explained why the affective nature of epistemic feelings might not appear introspectively salient: epistemic feelings are usually only mildly valenced and arousing. I also provided some phenomenal examples where the affective nature of epistemic feelings is introspectively salient.

I then turned to empirical findings to show that epistemic feelings covary with affective markers. Specifically, epistemic feelings covary with interoceptive changes, variations in SCR and facial muscle activity, proxies for the affective properties of valence and arousal. Furthermore, positive epistemic feelings lead to increased liking and can serve as positive affective primes—behavioural proxies for the presence of valence.

I went on to make the case for the covariation between epistemic feelings and affective properties being not just a correlation but a constitution relationship. For that, I presented studies that observe false positives of epistemic properties based on incidentally induced affect. That is, inducing nondiagnostic affect leads subjects to incorrectly judge that an epistemic property is present. This speaks in favour of an affective constitution of epistemic feelings.

Secondly, I made the case that the constitutive affect in question is conscious. It thus not only causally biases epistemic behaviour but phenomenally constitutes epistemic feelings that provide conscious guidance for the subject's epistemic behaviour. To build the case for this idea, I recounted studies where the following happens: the experimenters make the subject believe that the affect they experience in an epistemic task is *not* diagnostic for the presence of an epistemic property. As a consequence, the subject loses her ability to accurately detect the epistemic property. This does not only indicate that epistemic properties are detected on the basis of affect but also that the affect in question is conscious. Based on the reviewed findings I conclude that epistemic feelings are affective experiences. Thus, Affectivism is true.

This conclusion is not without consequence. I mentioned at the outset that epistemic feelings are plausibly involved in psychopathologies such as bipolar disorder, schizophrenia, obsessive-compulsive disorder or Capgras syndrome. Specific aspects of these conditions can be cast in a new light by applying what we know about affective experiences to epistemic feelings. If e.g. the delusions characteristic to manic episodes are not put in place by faulty reasoning but by abnormal affective experiences, say aberrant feelings of rightness or wrongness, then quite different considerations apply when making an assessment. Arguably, we have significantly less intentional control over the ways we feel than over the ways we reason. Additionally, affective experiences are typically imbued with motivational force and are thus particularly hard to override (Brady, 2009; McLaughlin, 2010). This perspective has thus implications for the agency and responsibility we ascribe to somebody in a manic episode. Similar considerations apply to the ways we go about treatment. As e.g. demonstrated by exposure therapy, maladaptive affective experiences can be changed but they are sensitive to very different kinds of evidence than is reasoning.

All this shows is that identifying epistemic feelings as affective experiences is good news because it allows us to apply the wealth of theoretical and empirical resources that we have for the latter to understand the former. At the same time, we realise how the affective realm expands into domains traditionally considered the province of "cold" cognition. It turns out that affect is an integral part of our intellectual and epistemic lives.

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### Notes

- 1 Epistemic feelings are also sometimes called cognitive, metacognitive or noetic feelings (e.g. Clore, 1992; Koriat, 2000; Dokic, 2012).
- 2 In a jargon familiar to emotion scholars: epistemic feelings are those phenomenal states that have epistemic properties as their formal objects (Kenny, 1963) or core relational themes (Lazarus, 1991). Alternatively, it suffices for the present purpose to zero in on epistemic feelings extensionally: epistemic feelings are simply those feelings that I describe and discuss in the remainder of this article.
- 3 Two clarificatory notes: First, calling epistemic feelings "feelings" is a conventional practice and does not presuppose that they are affective experiences. I will *argue* that epistemic feelings are affective experiences. Second, I want to remain neutral on whether epistemic feelings constitute a natural (psychological) kind. However, if Affectivism is true then epistemic feelings are part of a larger family of states that plausibly qualifies as a natural (psychological) kind: affective experiences.
- 4 That affective experiences are conscious is a conceptual truth (Clore, 1994; Lacewing, 2007). This is not to say that there can be no (analogous) unconscious affective states. It is only to say that there can be no unconscious affective *experiences*. The same goes for epistemic *feelings*. Whatever one's use of the term, "feelings" are usually understood as experiences and are thus necessarily conscious. Thus epistemic feelings are necessarily conscious (Koriat & Levy-Sadot, 2000). This is not to say, however, that there can be no analogous unconscious states, say, some kind of "epistemic nudges".
- 5 In fact, proponents of cognitive phenomenology go a step further by suggesting that the phenomenology of epistemic feelings is *cognitive* (rather than affective) in nature (e.g. Dorsch, 2016).
- 6 For instance, perceptual and cognitive states provide affective experiences with their specific intentional object. When you are afraid of a bear, it is your fear that represents the bear as fearsome, but it is your multisensory perceptual experience that represents the bear that your fear is about (Deonna & Teroni, 2012; Bain, 2013). In other words: affective experiences engage with perceptual and cognitive states in representational division of labour.
- 7 Here is a video of upward flowing water: <https://youtu.be/NiOafQZwn0g>.
- 8 For FOWs: there is an "Oddly Unsatisfying" analogue to Oddly Satisfying videos on the web.
- 9 The interoceptive changes in question are variations in cardiac cycle and heart muscle activity. Note that these changes can also be understood as relating to arousal rather than valence. On the other hand, the facial muscle activity is a sure sign for valence (see further below in the main text).



- 10 An example of a valid argument used is: [P1: All wines are mips; P2: No mips are tools; C: No wines are tools] An example of an invalid argument used is: [P1: All wines are mips; P2: No mips are drinks; C: Some wines are drinks].
- 11 The authors provide a convincing explanation for why coherent triads did not *facilitate* positive evaluations: First, they note the possibility of a flooring effect in that no further acceleration of the evaluative judgment might have been possible. Second, they review findings showing that the relative contribution of facilitation in affective priming is generally smaller than that of inhibition and even tends to disappear in cases of *weak* affective primes such as the word triads used by the authors. Third, they point out that inhibition effects are typically observed when the time interval between the presentation of prime and target is short while facilitation effects are typically observed when they are relatively longer. They convincingly argue that the intervals in their experiment tended to be short (Topolinski & Strack, 2009c, pp. 1480–1481).
- 12 Additionally, there might be a pronounced alienating feeling of *unfamiliarity* (Bayne and Pacherie, 2005). It is also important to note that more recent work suggests that the relationship between dampened SCRs towards familiar individuals (indicating a lack of arousal), deficient FOFs and the Capgras delusion is more complex than previously assumed (see Coltheart and Davis, 2022, for a review). It might thus turn out that Capgras syndrome is not a clear-cut case of evidence for a link between arousal and FOFs. Nevertheless, FOFs remain important for understanding Capgras syndrome.
- 13 There are also analogous findings on the relationship between confidence and affect (e.g. Lufityanto et al., 2016; Sidi et al., 2017). I omit discussing them because of space constraints.
- 14 Naturally, given that there are many kinds of cognitive processes, there are many kinds of fluencies: perceptual fluency, retrieval fluency, encoding fluency, answer fluency, conceptual fluency, to name a few.
- 15 An example for a positive/negative coherent triad is: COMPETITION, FINISH, ROUND implying MEDAL; CANDLES, NOVEMBER, STONE implying GRAVE.
- 16 Of course, nothing precludes that the mentioned non-affective epistemic properties are also sometimes assessed via judgments that are based on something else than epistemic feelings.

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