

Article

Epistemic Emotions Justified

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Abstract: The view that emotions can provide defeasible justification for evaluative beliefs is widespread in the emotion literature. Despite this, the question of whether epistemic emotions can provide defeasible justification for theoretical beliefs has been almost entirely ignored. There seems to be an implicit consensus that while emotions may have justificatory roles to play in the former case, they have no such roles to play in the latter case. Here, I argue against this consensus by sketching a proposal for securing epistemic emotions justificatory roles.

Keywords: epistemic emotions; epistemic feelings; feeling of certainty; epistemology

1. Introduction

Philosophers and psychologists have suggested that there are mental phenomena called epistemic feelings or emotions [1–3]¹. Typical examples include the feeling of knowing, such as when you feel you know the answer to a question (the answer is often ‘on the tip of the tongue’), the feeling of certainty, where you feel certain about an answer given to a mathematics calculation for example, the feeling of uncertainty, when the opposite is true, and the feeling of forgetting, where you feel that you have forgotten something even though you may not be entirely sure what. At least sometimes, these epistemic feelings are right. When one experiences a feeling of forgetting for example, one often has actually forgotten something.

My goal is to argue that we should take seriously the possibility that our epistemic emotions justify theoretical beliefs. That is, in feeling certain, for example, one is defeasibly justified to believe that a given belief is true. In the philosophy of emotion, there is a popular view that emotions provide defeasible justification for beliefs based on them [4–8]². Typically, however, the emotions in question are standard, so called ‘garden variety’, emotions such as fear or anger.³ So far, little attention has been given the question of whether this justificatory role holds for the epistemic or theoretical domain. That is, while it might be granted that fear of a dog provides defeasible justification for the evaluative belief that a dog is dangerous, it is far more contentious whether the feeling of certainty about the result of a mathematical calculation, for example, provides justification for the belief that one’s answer is correct. In this paper I am concerned with arguing that, in so far as ‘garden variety’ emotions hold justificatory force, epistemic emotions do too. Throughout, I will take the feeling of certainty as my guiding example case.⁴

The plan is as follows, in section one I briefly outline psychological work on epistemic feelings to highlight their role in metacognition. Although this work suggests that epistemic emotions are important for the regulation and monitoring of cognitive tasks, and often do correlate with epistemic values such as truth, whether these feelings can justify theoretical beliefs is a philosophical question. In Section 2 I outline the justificatory demand that must be met to secure epistemic emotions a properly justificatory role. There is what I call a ‘narrow traditional view’ that we must challenge, which holds that while emotions might have justificatory roles to play in the practical realm (broadly construed), they have no role to play in the theoretical realm. In Section 4 I sketch how the justificatory demand can be met, modeling my response on existing accounts of how emotions meet an analogous



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justificatory demand in the practical domain. In doing so I challenge the narrow traditional view and emotions emerge as important potential justifiers even in the theoretical realm.

2. Epistemic Emotions in Psychology: Metacognition

Metacognition is the psychological study of our ability to monitor and control our own thoughts and cognitive tasks. Psychologists take there to be two distinct ways of evaluating our cognitive performance: One is explicit reasoning about the task and the other is a non-inferential felt sense of how the task is going. Epistemic feelings are involved in the latter. Both modes of metacognition influence reasoning by causing one to begin a cognitive task, continue it or stop it [2].

The feeling of knowing, for example, has been found to be a reliable indicator that a subject knows the answer to a question and will be able to retrieve the information from memory [11]. This phenomenon is easily illustrated by the typical game show scenario where contestants must press buttons as quickly as possible in response to questions, signaling their desire to answer the question. Contestants tend to press the button before they have actually explicitly recalled the answer. The button is pressed if the contestant experiences a feeling of knowing and only after this is the explicit answer retrieved from memory. Paynter et al. [12] for example found the feeling of knowing to occur within a 300–500 ms time window whereas memory retrieval takes place after this.

The feeling of certainty also occurs commonly in our mental life. When doing mathematical calculations or logical inferences for example, we can experience a sense of the outcome being certain or right. We can also experience a sense of the outcome being wrong. This has been called the feeling of error. Additionally, we can experience a separate feeling when we are uncertain about the outcome of our cognitive exercise. Each of these feelings has a distinctive motivational role. The feeling of uncertainty typically motivates one to look over one's calculation, find whether and where one made a mistake, and review things in order to be able to endorse the outcome with confidence. The feeling of error, much like the feeling of uncertainty, motivates one to look over one's calculation and sometimes to start over completely. The former, however, explicitly endorses a negation of the outcome while the feeling of uncertainty does not. The feeling of certainty on the other hand not only motivates one to stop the cognitive task in question but also involves an implicit endorsement of the outcome of the process [13].

Feelings of certainty in reasoning⁵ are thought to play the same kind of role as the feeling of knowing in memory, in that they provide feedback on the functioning of the cognitive task at hand. The feeling of knowing is widely taken to be the affective response to what has been called the 'fluency heuristic'. Stimuli that are processed quickly are tagged with a conscious feeling of knowing and are more likely to be recalled, making the feeling of knowing a good indicator of future recollection of stimuli. This makes sense given that familiar objects or stimuli will be processed more quickly or with greater ease than novel objects. The feeling of knowing then seems to be triggered by fluent processing which occurs when the stimuli in question is familiar. This epistemic feeling has been characterized as the felt probability that the unrecalled item will be correctly recognized or recalled, while the feeling of certainty is plausibly the felt probability that the relevant inference is correct. Both epistemic feelings execute metacognitive control. The feeling of knowing motivates memory retrieval efforts while studies show that strong feelings of certainty motivate the cognitive task to be terminated [14].

The feeling of certainty is thought to act as a heuristic with respect to correctness in a similar way to how the feeling of knowing acts as a heuristic with respect to our ability to recall a piece of information. That is, answers felt to be correct are also generated more fluently than answers felt to be incorrect or wrong.⁶ The fluency heuristic then seems to also trigger feelings of certainty, which in turn have been observed to correlate to actually correct answers [13]. Heuristic responses involve impressions formed about objects of perception and thought, which are automatic and outside the subject's control. Judgments based on metacognitive feelings involve the substitution of one attribute for another, for example the

judgment substitutes the affective valence experienced in the metacognitive feeling for a probability/likelihood that the object of thought is correct [15].

Acknowledging the widespread role of affective states in our reasoning has been taken by some to warrant skepticism of our cognitive abilities. Burton for example urges us to distrust our feelings of certainty because they are not the product of conscious thought processes but rather involuntary affective outputs [16]. Such a position, we will see below, involves subscribing to a traditional view of the relation between reason and affect, which has been largely abandoned. Of course, we can be mistaken and feel certain about things that are in fact false, but that is not always, nor arguably typically, the case. An important philosophical, as opposed to empirical question arises from the metacognition literature: whether judgements caused by epistemic feelings are also justified by them.

3. Philosophical Aspects of Epistemic Emotions

Three initial philosophical questions arise when considering epistemic emotions, namely in what sense are these affective states epistemic? Secondly, are the above-mentioned feelings really emotions? and lastly are we justified in forming beliefs based on them? This paper is focused on the third question but I will say a few words on the other two, especially the second as it will turn out to be central for my argument.

On the first question, note that the claim that emotions are epistemic can be given a number of different interpretations. First, emotions might be epistemic in the sense that they provide the agent with information. All emotions are arguably epistemic in this sense. Second, emotions might be epistemic in that they play functional roles in our cognitive processes. This is arguably the sense of ‘epistemic’ used in the psychology literature. Lastly, epistemic emotions might be epistemic in that they are related to some epistemic value, typically truth. We will see that epistemic emotions are epistemic in all three senses. The first, trivial one, applies to all emotions, such that if epistemic feelings are emotions this is granted.⁷ The second functional sense seems to be established by the range of empirical work on metacognition that characterizes the various roles these affective states play in monitoring and controlling cognitive tasks. The third sense will be the hardest to establish, and I will be using the feeling of certainty as my case study in doing so.

Hookway [17,18] was one of the first philosophers to discuss what has come to be known as the feeling of certainty, he wrote that:

“The goodness of the inference is something that is felt. This I take to be a phenomenological point and to suggest that the vehicle of our confidence in the inference is affective . . . When we accept a proposition on the basis of evidence we often possess:

1. A feeling towards a belief or proposition
2. That reveals standards of epistemic evaluation
3. Which we cannot necessarily articulate
4. But with which we can confidently identify ourselves, which we trust.” ([17], p. 84)

Hookway claims that the epistemic evaluations afforded by the feeling of certainty are immediate and entitle acceptance of a particular belief/hypothesis [17]. He identifies two problems—one explanatory and the other justificatory—that might arise for such a claim and provides reasons to dismiss both. With respect to the former, Hookway believes that the explanatory problem can be met while, with respect to the latter, he believes that no such justificatory problem actually arises. I agree with him on the first point but disagree on the second.

On the explanatory problem Hookway writes that ‘there is an explanatory question of accounting for why our emotional evaluations are appropriate to our cognitive needs’ [17]. The objection would go briefly as follows: If we do not have an account for why our emotions are relevant to our cognitive practices then we cannot trust them. The explanatory problem asks that a story be told for how our emotional evaluations are appropriate to our cognitive needs. In other words, how our emotional evaluations are adequate for

truth seeking (or for securing epistemic ends sufficiently approximal to truth so as to allow us to adequately navigate the world⁸). Hookway highlights that a naturalistic, likely evolutionary, explanation could plausibly be given in response to the problem above. I agree with him here. It would certainly be a survival advantage to be able to reason correctly, and, as seen above, empirical studies highlight two strategies for monitoring and controlling cognitive tasks: explicit reasoning and epistemic emotions.

On the justificatory problem, Hookway writes that:

“we might argue that unless we can give a justification of our trust in our emotional evaluations, we should feel anxiety about the ordinary beliefs that depend upon them.” ([17], p. 90)

In other words, the justificatory problem raises a worry regarding the justification of our feelings of certainty and those beliefs we base on them. Hookway moves immediately to dismiss this worry writing that:

“this, however, is a mistake. So long as we identify with our emotional evaluations, this quite properly produces doubt of most considerations that question them”. ([17], p. 90)

I am not convinced by Hookway’s dismissal of the justificatory worry. For one, it remains somewhat elusive what ‘identification’ with one’s emotional evaluations amounts. Secondly, we would typically not accept such a response for other cases where a justificatory question seems to arise. For example, in the case of belief, if one ‘identifies’ with a belief one holds, this is unlikely to settle concerns regarding whether the belief is itself justified or not. It seems that both internalist and externalist views of justification would call for further elaboration on why identification blocks the justificatory problem from arising.⁹ I take the justificatory worry to actually issue a justificatory demand that must be met for the role of epistemic emotions in our cognitive practices to be vindicated. In the next section I spell out a more precise justificatory demand that the rest of the paper will be concerned with meeting.

The Justificatory Demand

What I call the *traditional view* is succinctly summarized by Jaggar:

“Within the Western philosophical tradition, emotions have usually been considered potentially or actually subversive of knowledge”. ([20], p. 378)

This view holds emotions to be irrational or arational, and hence wise deliberation is characterized as dispassionate deliberation. The *traditional view* has given emotions a bad reputation in epistemology. For example, Blackwell’s Companion to Epistemology does not contain the words ‘feeling’ or ‘emotion’ in its index [21]. The *traditional view* has been greatly challenged across academic disciplines, studies in psychology and neuroscience have found emotions to be indispensable to moral deliberation [22,23], and many philosophers take emotions to play similarly indispensable roles in moral epistemology [24,25]. Although the *traditional view* has been largely abandoned, I take a narrow version of the view to be the dominant in thinking about the relation between emotion and theoretical reasoning. This *narrow-traditional view* holds emotion to be potentially beneficial to practical reasoning but not to theoretical reasoning. This paper is concerned with opposing a specific instantiation of this *narrow-traditional view* that concerns justification. The view can be summarized as follows:

The narrow traditional view: emotions have no justificatory role to play in theoretical reasoning because they can play no justificatory role in securing epistemic ends.¹⁰

Note that I am construing theoretical and practical reasoning to be mutually exclusive domains of reasoning for the sake of simplicity. I am construing practical reasoning quite broadly. It includes moral and non-moral reasoning on what one should do, but also reasoning about what evaluative states of affairs pertain. That is, reasoning about whether a certain situation is dangerous, constitutes a loss or an offense counts as practical reasoning

here. This is because such evaluative reasoning is often involved in deciding how to act, but also because such evaluative concerns are related to human well-being and survival which are arguably ‘practical’ concerns. By theoretical reasoning I mean all reasoning that does not fall under this definition of practical reasoning, this will include reasoning about what is true, logical, mathematical and abstract thinking that is not directly related to our well-being or other practical concerns.¹¹

This narrow traditional view is supported by a few intuitive claims. First, whereas the role of emotion in justifying practical judgements, and even intentions and actions, seems intuitively plausible, it seems less clear what role emotions could play in securing epistemic ends. The intellectual domain is concerned with acquiring beliefs rather than motivating actions, and while the latter are often directed at behavioral goals, the former have commonly been thought to be in some way directed at truth. It is hard to see how emotions could bear on the truth of theoretical beliefs. Although it is widely accepted that emotions can justify evaluative beliefs narrowly related to the emotion in question, such as the belief that ‘this dog is dangerous’ in fear, it seems bizarre to take an affective state to be able to justify a non-evaluative belief such as ‘4 is the square root of 16’. The *narrow-traditional view* therefore has considerable intuitive appeal. That is, while emotions might have justificatory roles to play in justifying evaluative and practical judgements, they seem to have no clear role in the justification of non-evaluative theoretical beliefs.¹² The *narrow-traditional view* holds that the formation of such beliefs is most effective when the agent is dispassionate. To adequately challenge the *narrow-traditional view* we must meet what I call the *justificatory demand*:

Justificatory Demand: Any account that claims that we can trust our emotions in theoretical reasoning must offer an explanation of what would make any beliefs formed on the basis of such an emotion justified.

If the *narrow-traditional view* is correct, emotions are at best epistemically inert epiphenomena in the pursuit of theoretical knowledge, and at worst they are damaging to such pursuits and should be detached from. My aim is not to argue that every emotion is epistemically relevant or that they should all be trusted. A relevant role for emotions in intellectual inquiry can be secured without the endorsement that certain emotions must always play such a role.

Following the *narrow-traditional view*, we would expect there to be no experimental evidence for fruitful roles of affect in theoretical reasoning. But this is simply not the case. As canvassed above, there is a vast literature in metacognition that observes affective states to play important metacognitive roles. Such roles involve giving the subject feedback on how well one is doing at a mental task such as remembering or doing a mental calculation.

The role of emotion in reasoning is multifaceted and complex; emotions provide speed and information, they allow us to track salience and relevance, while also often motivating and regulating inquiry. This list is meant to highlight some conceptually rather than functionally distinct roles emotion plays in reasoning. Indeed, it should not be surprising that these roles often come hand in hand in the unfolding of our cognitive lives. My focus will be on the role of epistemic emotions in epistemic evaluation. Emotions have been found to play regulatory roles in starting, ending, and giving ongoing feedback about our performance on cognitive tasks such that they might well play justifying roles in epistemic evaluation.

I have mentioned that garden variety emotions are considered capable of justifying relevant evaluative beliefs. Perhaps epistemic emotions have not yet been considered candidate justifiers because they differ so greatly from these standard types of emotion, indeed perhaps epistemic feelings are not emotions at all. In the next section I will argue that epistemic feelings are sufficiently similar to standard emotions such that their nature is not adequate grounds for denying their ability to play justificatory roles.

4. Epistemic Feelings as Emotions

Feelings and emotions have been importantly distinguished in the philosophical literature, where emotions are typically contrasted to mere feelings by virtue of feelings lacking intentionality [5,24]. Despite this important distinction I have used the two terms interchangeably throughout to refer to contentful affective states. Here, I will briefly argue that we have much reason to consider epistemic feelings emotions, rather than affective states of some other sort. At the very least, I argue, epistemic feelings have sufficient in common with emotions to suggest that they might play similar justificatory roles. We will see that epistemic feelings arguably share all five of the key attributes of emotions: They have associated bodily experiences, double intentionality, a distinctive phenomenology, characteristic behavioural effects and are subject to rational evaluation.¹³ I briefly say a few words on each of these five features in turn.

(a) Bodily Feelings

Emotions are typically accompanied by bodily feelings of some sort, such as increased heart rate and pupil dilation in fear. It might seem harder to specify what bodily feelings are involved in feelings of certainty. The putative opposite of the feeling of certainty, a feeling of uncertainty, has been observed to share many bodily correlates with anxiety however, such as elevated heart rate for example. Further, there is evidence that the facial expression adopted by the subject influences the felt difficulty of a given task [26]. The feeling of knowing for example covaries with the distention of the corrugator facial muscle, whereas the feeling of difficulty or uncertainty covaries with its tension [27]. It seems therefore plausible that the feeling of certainty correlates with subtle patterns of bodily feelings including changes in heart rate and facial expression. These changes will sometimes be quite salient, for example, when finally arriving at an answer to an exam question one was struggling with, one may release muscle tension and feel physically energized.

(b) Double Intentionality

Emotions are thought to be in some way directed towards two distinct but related objects: particular objects and formal objects. The particular object of an emotion is the specific object of the token emotion. In the case of fear of a dog for example, the dog is the particular object of the emotion. In the case of feeling of certainty, the particular object is the **proposition** one feels certain about. As for the formal object; there are conceptual ties between emotions and the conditions that typically elicit them. In paradigmatic cases, for instance, fear is elicited by dangers, anger by offenses, grief by losses, etc. and these elicitors figure into our conceptions of the corresponding emotions—e.g., danger figures into our conception of what fear is. Formal objects are those objects of an emotion type that remain constant across distinct token occurrences of the emotion [28]. The formal object of the feeling of certainty seems to be certainty or truth. I consider the formal object further below.

(c) Phenomenology

Experiences of different emotion types are characterized by distinct phenomenology, of which their valence is an important part. Epistemic feelings also have a distinctive, albeit less intense, phenomenology. The feeling of having a word on the tip of one's tongue is salient and gripping, while the feeling of having forgotten something similarly has its own characteristic subjective feel. The feeling of certainty may have a subtler phenomenology but it certainly has a positive affective valence, while feelings of uncertainty or error have negative subjective tones.

(d) Behavioural tendencies

Paradigmatic emotions are associated with distinctive behavioural patterns, flight for fear and aggression for anger for example. So long as we grant that there are mental actions [29], then it seems likely that epistemic emotions are also linked to distinctive behavioural patterns that tend to follow distinct evaluation types. For example, when you

feel certain you stop the cognitive task at hand, when you feel uncertain you keep going or redo the task.

(e) Subject to rational evaluation

Many take emotions to be rationally assessible in that emotions can be deemed appropriate or inappropriate. We can inquire as to the adequacy of an emotion in a given scenario and make normative claims with respect to emotions. ‘One shouldn’t be afraid of the dark’ for example, or ‘you should be angry at her, she lied to you’. Feelings of certainty are likewise subject to such evaluation, we can question whether we are right to feel certain of P (ex: Luz feels that her calculation yielded the right result but questions this feeling when looking over her exam). We can likewise judge a situation as fitting for a feeling of certainty to be felt by a subject (ex: Manuel’s teacher notices he is very unsure of his answers to a homework assignment and urges him to trust himself as they are all correct).¹⁴

Given the above, I taken feelings of certainty, along with other types of epistemic feelings, to share sufficient features with emotions so as to warrant investigation into their potential justificatory role, that is, epistemic feelings do not seem to be so far removed from emotions that we think a justificatory role for them is precluded. Epistemic emotions seem to have complex intentional content, characterized by particular as well as formal objects, they are subject to rational evaluation, have distinctive phenomenology and mental action profiles. If garden variety emotions can provide justification for beliefs, why should epistemic feelings not be able to?

5. Meeting the Justificatory Demand: A Sketch

The *justificatory demand* demands an explanation for why we can, when we can, trust our feelings of certainty. In other words, why does the feeling of certainty justify the associated evaluative judgment ‘This belief is true’ or ‘This belief is correct’. My claim is that emotions can play such a justificatory role, not that they always do so. This justificatory demand with regard to epistemic evaluation that we have been concerned with is a narrow problem within a wider justificatory concern, namely how emotions can justify judgments of any sort, not just those related to our epistemic concerns.

There is therefore a general justificatory demand (henceforth JD) that is as follows:

General justificatory demand (JD): Any account that claims that we can trust our emotions in reasoning must offer an explanation of what would make any belief formed on the basis of such an emotion justified.

The narrow justificatory demand concerning theoretical reasoning or epistemic evaluation (henceforth JD_{THEO}), which I am concerned with and which has been discussed so far is as follows:

Theoretical justificatory demand (JD_{THEO}): Any account that claims that we can trust our emotions in theoretical reasoning must offer an explanation of what would make any belief formed on the basis of such an emotion justified.

Many take reasoning to be exhausted by a division into two types: Theoretical and practical. I follow a simple distinction between these two types of reasoning in that the former is concerned with epistemic ends while the latter relates to practical aims broadly construed. Given this, the general justificatory demand can be divided into two justificatory demands concerned with each type of reasoning. There is then the following justificatory demand for the practical realm:

Practical justificatory demand (JD_{PRAC}): Any account that claims that we can trust our emotions in practical reasoning must offer an explanation of what would make any belief formed on the basis of such an emotion justified.

To meet JD we need an account, or accounts, of how emotions justify beliefs of any sort. Assuming theoretical and practical reasoning can be pulled apart in a coherent manner, JD_{THEO} is a concern with respect to establishing a role for emotions in theoretical reasoning while JD_{PRAC} is a concern with respect to establishing a role for emotions in practical reasoning. To adequately challenge the *narrow-traditional view* with which we are concerned

however, JD_{THEO} must be met. I have pulled these two justificatory demands apart so as to better illustrate how we might learn from JD_{PRAC} how to meet JD_{THEO} .

As we have seen, many hold that JD_{PRAC} can be met [8,24,31,32]. Despite this, there is little to no work on meeting JD_{THEO} . Unlike JD_{PRAC} it is very contentious whether JD_{THEO} can be met, for the reasons given above in support of the *narrow-traditional view*. Crucially, that it is feasible that emotions play a role in securing practical rather than epistemic ends. It is easier to picture emotions playing a role in justifying actions of instrumental benefit to the subject, or beliefs regarding the value of certain objects or states of affair, than it is to imagine emotions justifying beliefs in epistemic evaluation. As meeting JD_{PRAC} is less contentious than meeting JD_{THEO} I model how to meet the later on the former in the next section. I will discuss JD_{PRAC} with respect to fear throughout. JD_{PRAC} demands that an account be given for how fear can justify the evaluative judgment that ‘the dog is dangerous’. JD_{THEO} demands an account be given for how the feeling of certainty can justify the judgment ‘I am sure of this’ or ‘this is true’, where ‘this’ is a belief under consideration.

A number of thinkers have outlined how to meet JD_{PRAC} [6,30,33]. Common to these views is the following general picture: An evaluative judgment is justified when the emotion it is based on is justified. An emotion is justified if it occurs in response to an object that possesses features that warrant or seem to warrant such a response. I will sketch how JD_{PRAC} is thought to be met with respect to fear and then model how JD_{THEO} can be met for the feelings of certainty on the framework proposed. My contention is that insofar as attempts to meet JD are successful in the practical domain, there is room to argue that JD_{THEO} can be met in a similar manner. I will not be concerned with defending the existing attempts at meeting JD_{PRAC} .

Emotions are thought to represent their particular objects as instantiating their associated formal objects [5,8]. An emotion is typically taken to be justified if its particular object has (or seems to have)¹⁵ features that match the formal object of the emotion type. For example, fear of the dog is only justified if the dog does, or seems to, pose a threat to the subject. The formal object supplies the correctness conditions for the emotion, such that whether the particular object actually possesses dangerous properties will determine whether the emotion of fear is correct or not. Correctness and justification come apart for emotions in much the same way truth and justification are thought to come apart for belief. Correctness concerns the actual state of affairs while justification concerns the evidence at the subject’s disposal. As we are concerned with justification and not correctness, this would work as follows for the case of fear of the dog: if a dog in certain situation constitutes, or seems to the agent to constitute, a danger (perhaps because the dog has sharp teeth and is growling), the emotion of fear is justified if it is based on representations of these features (big teeth, and growling). In other words, my fear of the dog, is justified if it is based on the representation of certain features pertaining to it that constitute, or seem to constitute, a danger.

Meeting the *justificatory demand* will therefore first involve emotions themselves being justified. Emotional justification can be summarized as follows:

An emotion E is justified if its particular object x possesses (or seems to poses) descriptive or natural features n to which the evaluative property F of the emotion can or could be attributed.

The particular object of an emotion x can therefore be seen to have evaluative property F if x possesses natural or descriptive properties n that allow the ascription of F to x . Descriptive properties n therefore act as reasons for emotion E , and justify it when the conditions above hold. If the emotion is justified then my *justificatory demand* can be met as, according to many, a justified emotion can in turn justify the associated evaluative judgment. The associated judgment is one that brings the formal and particular objects of the emotion together to form an evaluative judgment J of the content: x is F .

Many take (justified) emotions to confer the relevant evaluative judgement immediate and non-inferential justification. This involves taking emotional experience at face value,

in that one does not need to bring to mind one's reasons for one's emotion to be justified in forming a belief based on the emotion. The *justificatory demand* is then met as follows:

An evaluative judgment J , of the form x is F , based on emotion E is justified if E is itself justified.

This sketch of a proposal can be used to meet JD_{PRAC} for our fear of the dog example. How this can be done is summarized in the table (Table 1) below:

Table 1. Meeting JD prac.

Case	Emotion	Formal Object	Particular Object	Descriptive Properties	Evaluative Judgment
Threat to survival	E Fear	F Danger	x Dog	N Big teeth, erratic behavior	P That dog is dangerous.

This proposal is a sketch and there is much room for fleshing out its various components. But it is a widely accepted story for meeting the *justificatory demand* in the literature.¹⁶ I mean only to provide a plausible proposal for meeting the *justificatory demand* with respect to fear such that we have a working proposal to meet JD_{PRAC} on which JD_{THEO} can be modelled. I now turn to how this framework can be extended to the theoretical case to meet JD_{THEO} for the feeling of certainty.

Note that meeting JD_{THEO} is not a topic of current research, nor is it a common assumption made in work on theoretical reasoning or work on the emotions that it can be met. In this respect there is a great asymmetry between the theoretical and practical domains. This asymmetry is due to various factors I have already mentioned. Recall that emotions seem more relevant to securing practical rather than epistemic aims. As states that relate to our personal well-being, emotions are more straightforwardly relevant to motivating instrumental actions and justifying practical judgements than to generating true beliefs. This is why JD_{THEO} is a more controversial and more demanding justificatory demand. I contend that it can be met however. In so far as JD_{PRAC} can be met by the proposal sketched above, I argue JD_{THEO} can be similarly met by focusing on the metacognitive case study of the feeling of certainty.

We know x for the feeling of certainty, i.e., its particular object, as it is the proposition one feels certain about, but we do not know which properties n of the proposition constitute properties to which the formal object, putatively truth, can be attributed. To meet JD_{THEO} using the framework sketched above we must further investigate what the formal object of the feeling of certainty is and specify what the descriptive properties that allow its attribution are.

To do so we should consider four requirements that any formal object F of an emotion E must fulfill:

1. *Phenomenological Requirement:* The formal object must be something that all instances of the relevant affective experience ascribe, either implicitly or explicitly, to the particular object of that experience independently of whether the particular object in fact instantiates it. The formal object of the feeling of certainty must be something akin to truth, for when we experience feelings of certainty we feel the proposition it is about to be true.
2. *Empirical Requirement:* The formal object must be something that the feeling of certainty actually tends to track.¹⁷
3. *Normative Requirement:* The formal object must be something that can fail to apply to the particular object of an emotion. In other words, the formal object must be something we can wrongly attribute to the particular object, otherwise questions about the rational assessability of the affective state would not arise.
4. *Correspondence Requirement:* The formal object cannot be a property that applies to the particular object only in virtue of one's feeling a certain way, i.e., there must be

reasons for the emotional response external to the affective experience itself. These reasons are the natural or descriptive features n of the particular object.

The formal object 'Danger' fulfills all these requirements for fear, given that, respectively: one sees feared objects as dangerous; fear tends to track dangers; our fear can be misguided; and there are physical aspects of the world on which danger can be thought to supervene. We must return to the psychological literature to help us meet these requirements for the feeling of certainty, while bearing in mind that the phenomenological requirement commits us to taking the formal object to be something akin to truth.¹⁸

The empirical requirement is satisfied by the fact that there is a correlation between the feeling of certainty and the probability of selecting the correct answer [13]. Feelings of certainty are widely taken to be at least weakly positively correlated with objective accuracy.

With respect to the correspondence requirement, it will be helpful to look at what the psychological research takes the feeling of certainty to represent. Some take feelings of certainty to represent the validity of the associated inference directly, by representing the amount of evidence for the option chosen for example, or by representing a function of the evidence for the chosen and unchosen options [13]. Most concede that feelings of certainty correlate positively with such computations, but it is a separate matter entirely whether feelings of certainty actually represent such computations.

Rather than representing these computations directly, it is more likely that feelings of certainty respond heuristically to cues of the undergoing processing. There is broadly a consensus that experimental evidence points to the heuristic basis of metacognitive feelings. That is, the feelings respond to cues of the structural and functional aspects of the cognitive processing rather than the content of such processing. The most popular cue that metacognitive feelings are taken to detect is that of 'Fluency'. Fluency refers to the ease or speed of processing.

Thompson is one of the few psychologists to work specifically on the feelings of certainty [13,14]. She proposes we model feelings of certainty in reasoning on feelings of knowing in memory. In memory retrieval, fluency is often a good indicator of difficulty and tends to trigger the feeling of knowing [34]. When something is processed (or generated) fluently, a positive feeling about that something can arise, which is experienced as a feeling of certainty in reasoning [35]. Fluent processing activates the smiling muscle while non-fluent processing activates the frowning muscle [36]. Furthermore, stimuli that are processed fluently are preferred to less fluently processed items as reflected by consumer choices [37] and liking ratings [38]. Thompson postulates that fluent reasoning triggers feelings of certainty which may then serve as the basis for a judgment that the answer is correct [39] or true [40].

On this view, feelings of certainty are taken to correlate with a feature of the cognitive process itself, namely fluency. The feeling of certainty therefore seems to be sensitive to factors of the cognitive process itself rather than the content of the processing. Kahneman notes that the fluency heuristic, on this view, is a form of attribute substitution, 'in which an inference about a target construct, such as confidence, is based on a salient, *but technically irrelevant cue*' (my emphasis), such as ease of processing [41].

I do not think fluency can, on its own, account for the positive correlation between epistemic feelings and their accuracy. The speed of processing must hinge on some feature that is relevant to the accuracy of the epistemic feeling. Without further specification, answers given more quickly are not necessarily more likely to be correct. If they are more likely to be correct it is surely due to some other feature of the process on which speed naturally piggybacks or depends. Indeed, this is intuitive in the memory case where feelings of knowing are seen as heuristic responses to the fluency cue because *familiar* stimuli are processed more quickly. Repetition and priming of certain stimuli makes their processing quicker, which accurately correlates with feelings of knowing about those items. Thompson does not say what could be playing the role in reasoning that familiarity plays in memory. I propose the analogue to familiarity, in reasoning, to be coherence. Thompson does mention coherence, she says that it could be an alternative causal determinant of

feelings of certainty [13]. Thompson takes coherence to be an alternative cause of the feeling of certainty operating at the same level, so to speak, as fluency rather than taking fluency to piggyback on coherence in a manner analogous to how fluency piggybacks on familiarity in the memory domain. The reasons for such a move on her part are unclear.

There is evidence that fluency piggybacks on coherence however, for example Topolinski et al. [39] asked participants to read word triads which either had or did not have a remote word associate (e.g., ‘salty’, ‘deep’ ‘foam’ are associated with ‘sea’; ‘dream’, ‘ball’, ‘book’ do not have a remote associate). The coherent triads are read more fluently than the non-coherent ones, presumably because the third word is semantically primed by the first two. There is also evidence that coherence enhances feelings of certainty; for example, when a description of an individual suggests membership in a group (such as being an engineer) that is at odds with the base rate probability of membership, both feelings of certainty and final confidence judgments are lowered relative to when the two sources point to the same answer [13].

Rather than being a mere alternative causal determinant of feelings of certainty, on a par with fluency, is it not more likely that the fluency cue is piggybacking on coherence? It seems more likely that feelings of certainty are triggered heuristically via the fluency cue in response to coherence of the particular object with a wider set of beliefs. The more coherent a proposition is within the wider system of beliefs, the more quickly it will be processed or generated, hence beliefs that are highly coherent are processed more fluently which in turn triggers stronger feelings of certainty.

What exactly coherence should be taken to be is contentious and beyond the scope of this work. Coherence has however been highlighted as a critically important factor in reasoning [42,43]. Indeed, it has even been argued that reasoning is primarily concerned with making one’s beliefs more coherent with newly gathered evidence as well as already held beliefs. The coherence I have in mind involves two things; first, it involves no obvious contradiction in that the belief felt certain of is one that does not explicitly contradict a belief one already endorses. Second, a belief felt certain of coheres with non-conscious beliefs that it explains or that explain it. The coherence in question is therefore explanatory coherence as it does not just involve lack of contradiction within a context of already held beliefs but also points towards explanatory relations between elements of the belief system. Propositions felt certain of are therefore felt to be so in virtue of explanatory relations as well as lack of contradiction.. I propose feelings of certainty are felt instances of explanatory coherence between the propositions felt certain about, and the non-conscious context in which the relevant belief is embedded.

When we feel x to be the case in feelings of certainty, I propose we enjoy an experience of fluency which covaries with explanatory coherence. Although high explanatory coherence does not ensure truth, it is arguably positively correlated with it. Now we can appreciate that taking the formal object of the feeling of certainty to be truth satisfies all four of the requirements set. Truth satisfies the phenomenological requirement intuitively in that feelings of certainty involve a felt attribution of truth. Truth satisfies the empirical requirement as experimental evidence suggests that feelings of certainty correlate positively with correct answers or propositions (even if weakly). Likewise, truth satisfies the normative requirement as it can be misattributed to propositions felt certain of, as coherent beliefs can be false. This would not be the case if we took the formal object of the feeling of certainty to instead be coherence, for example, as, if I am right, feelings of certainty might necessarily signal coherent beliefs. As for the correspondence requirement, we needed a descriptive property of the particular object of the feeling of certainty to which truth can be attributed (and misattributed) which exists independently to the affective state itself. Attention to empirical work in metacognition research suggests that fluency might be this descriptive feature. I have argued that truth cannot be attributed to fluency in its own right, and that fluency likely piggybacks on explanatory coherence. Explanatory coherence then is the descriptive property of propositions often felt certain of, to which truth is attributed. Fluency is a heuristic cue that triggers feelings of certainty by signaling degrees of explana-

tory coherence. Fluency is a feature of the structure of the processing rather than of the content of the processing itself, and it acts as a heuristic cue in triggering the feeling of certainty. Explanatory coherence is also arguably a structural feature of beliefs, but it is nonetheless a feature of the content of beliefs, or propositions, rather than its processing. Truth then satisfies the correspondence requirement as there is a feature of the proposition, namely its explanatory coherence, that exists independently of the affective state.

The difference between the theoretical and the practical case here is that while in the practical case features of objects over which evaluative properties can supervene are usually themselves accessible to the agent (such as the dog's sharp teeth). In the theoretical case, explanatory coherence is arguably occluded from the agent (at least in the first instance) and only triggers feelings of certainty indirectly through the fluency cue (which is only accessible to the agent from a first-person perspective through the feeling of certainty itself). So long as unconscious, and perhaps structural, features of objects can play justificatory roles, the feeling of certainty can be justified and itself play justificatory roles.

The table (Table 2) below summarizes how to meet JD_{THEO}:

Table 2. Meeting JD Theo.

Case	Emotion	Formal Object	Particular Object	Descriptive Properties	Judgment
	E	F	x	n	P
Threat to survival	Fear	Danger	Dog	Big teeth, erratic behavior	That dog is dangerous.
Theoretical Reasoning	Feeling of Certainty	Truth	P	Explanatory coherence via Fluency cue	This belief is true.

The feeling of certainty is justified if its ordinary object *x* is (or appears to be) explanatorily coherent as this is a feature to which the formal object of truth can be attributed. The feeling of certainty is triggered heuristically by fluency which piggybacks on explanatory coherence which, in turn, correlates positively with truth. This allows us to meet the justificatory demand as the associated evaluative judgment 'this belief is true' is justified when based on a feeling of certainty if the feeling of certainty is itself justified.¹⁹ This justification is defeasible in that if you acquire contradictory evidence this justification may be defeated, but in a first instance, and while no conflicting evidence is brought to light, feelings of certainty may justify beliefs about the truth of theoretical propositions.²⁰

6. Conclusions

I have challenged the *narrow-traditional* view by arguing that in so far as the sketched proposal is successful in meeting JD_{PRAC}, it can be applied to meet JD_{THEO}. I relied on relevant research in metacognition to aid my argument. This is work that had not yet been leveraged in tackling the neglected question of whether epistemic emotions play justificatory roles. I have not claimed that emotions cannot lead us astray in theoretical reasoning. My goal was to challenge the *narrow-traditional view* by arguing that it is not irrational to trust our affective states in theoretical reasoning. The *narrow-traditional view* loses force when we take seriously the evidence for affective states playing important roles in the regulation and control of our cognitive tasks. I have highlighted such evidence as ripe for philosophical attention and taken steps towards an initial response to the justificatory demand by reading the empirical work through the lens of contemporary philosophy of emotion and offering a novel interpretation of existing work on the feeling of certainty. I provided only a sketch of how to secure the feeling of certainty a justificatory role. Future work should flesh out this proposal, tackling whether disanalogies between the practical and the theoretical case threaten the claim that JD_{THEO} can be met. Future work should also explore whether my proposal can be extended to other epistemic emotions beyond the feeling of certainty.

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Notes

- ¹ I use the terms epistemic feeling and epistemic emotion interchangeably for now (see Section 3).
- ² These views have been subject to a number of critiques [9,10] and defenses [4,7]. My specific claim in this paper is that in so far as the view survives critique, it is arguably just as plausible for epistemic emotions as it is for the garden variety emotions it has been proposed of.
- ³ I am following others in restricting my working notion of ‘emotion’ to occurrent states with intentional objects [6,8].
- ⁴ Note that my aim is somewhat modest, albeit, I think significant: I will be sketching a framework for securing feelings of certainty a justificatory role. This framework will be one that can hopefully be applied to other epistemic emotions in a similar vein, but whether the framework can in fact be extended to other epistemic emotions is a topic for future work and beyond the scope of this paper.
- ⁵ Note that I am restricting my discussion to feelings of certainty that pertain to the outcomes of explicit reasoning or cognitive tasks. I am therefore excluding cases where one feels certain of a stand-alone proposition such as ‘my cat is beautiful’ or ‘God exists’. It is a topic for future work whether my claims here can be applied also to such cases.
- ⁶ I will return to this below in my final substantive section.
- ⁷ I will argue for this in Section 3, but note that even if epistemic feelings fall short of being emotions, they are still arguably epistemic in this first sense because they still carry information (pains for example are feelings that carry important information).
- ⁸ See Elgin on why truth may not be the relevant epistemic standard [19]. Here, I am taking truth to be the target epistemic value that feelings of certainty evaluate beliefs in relation to, but I believe a relevantly modified account could be constructed where truth is replaced for other epistemic values such as understanding.
- ⁹ Perhaps some understanding of identification could play a role in an internalist response to the justificatory problem. More would need to be said on how exactly this would work however, and in any case this would amount to responding to the justificatory problem, rather than dismissing it as Hookway intends to.
- ¹⁰ There are related narrow traditional views that invoke different epistemic roles, for example one could think that emotions are subversive to theoretical reasoning because they bias reasoning, here I am concerned only with the specific claim about justification. This is because, despite most thinkers granting that emotions can bias reasoning, emotions are still taken to play justificatory roles in the practical domain and typically excluded from the theoretical.
- ¹¹ Note that I am not claiming that this is, all things considered, the best way of distinguishing practical and theoretical reasoning. How exactly to do so is complex and a topic of debate. For current purposes I adopt the above-mentioned distinction so as to hone in on the epistemic role of epistemic emotions in a domain of reasoning unrelated to our well-being, survival or evaluative concerns.
- ¹² I am not denying that epistemic feelings arise in practical reasoning as well nor that practical beliefs have truth values. One can feel certain (or uncertain) of beliefs about what to do, or which evaluative properties hold. I set aside such cases so as to focus on the role of epistemic feelings in theoretical reasoning, where epistemic feelings are arguably the only affective states involved and where no justificatory role has been secured for emotions. In so far as my argument succeeds in meeting the justificatory demand it will also apply to practical beliefs and vindicate our trust in epistemic feelings in practical reasoning.
- ¹³ Note that some of these characteristics can also be read as ways of distinguishing epistemic emotions from beliefs. In short, epistemic feelings have psychological profiles that seem to better align with those of emotions than beliefs. This is because epistemic feelings, much like emotions, seem to have salient phenomenology (which in standard cases beliefs are thought to lack), as well as temporal properties (such as occurrent beginnings and ends), and characteristic behavioural tendencies. I am happy to grant that beliefs and emotions might exist on a spectrum when it comes to psychological profile, where epistemic emotions are plausibly closer to beliefs than our garden-variety emotions are. The claim is nonetheless, that epistemic feelings share important characteristics with emotions and that doing so does not block them from playing justificatory roles as many take emotions to be able to play justificatory roles.
- ¹⁴ Note that emotions can be normatively evaluated along a number of distinct axes. Correctness concerns whether the emotion is actually correct (analogous to truth in belief). What I call appropriate or fitting is analogous to justification in belief, it pertains to whether there are reasons or evidence for one’s emotion. This excludes ‘wrong sorts of reasons’ as we are concerned with reasons that can be followed in feeling the emotion rather than prudential or moral considerations. Finally, emotions can be evaluated for their prudential and moral value which often go under the label of ‘appropriateness’ as well [30]. This will not be our concern

here however, by ‘rational evaluation’ we will be concerned primarily with whether the emotion is fitting, and sometimes with whether it is actually correct.

- 15 I am following others in assuming that ‘seemings’ of objects having certain properties are non-evaluative perceptual or cognitive states such as perceptions or beliefs [24].
- 16 Objections to the view that emotions can play such justificatory roles have been raised in the literature, and responses to these worries have been offered [4,7]. I will not be concerned with defending the justificatory role of emotions. My claim is that in so far as emotions can play justificatory roles in the practical realm, they can arguably do so in theoretical realm as well.
- 17 Note that this requirement is one that arguably only those with externalist inclinations need be committed to. For internalists aligned with phenomenal conservatism or versions of evidentialism, this requirement is likely unnecessary. However, as will become clearer later on, internalists aligned with accessibilism are likely to find it hard to grant the feeling of certainty a justificatory role as the factors that determine its justification are not easily accessible to the agent. Although the account I sketch here will most straightforwardly align with an externalist picture of justification, it is not my intention to argue against the plausibility of an alternative internalist account.
- 18 Note that belief is also thought to have the formal object of truth, such that a worry may arise here regarding whether the feeling of certainty can share the same formal object as truth without collapsing the epistemic emotion into a type of belief, or vice versa. I cannot address this worry fully here, but would like to note a few promising directions to pursue in a future attempt to resolve it. First, we might reject the view that different types of attitude cannot share the same formal object (perhaps there are further differences that individuate attitude types), second, we might accept that the feeling of certainty (and perhaps other epistemic emotions) are indeed sub-types of belief, namely one’s that have a distinctive phenomenological quality that put them somewhere in the middle along a putative spectrum between emotion and belief. Thank you to an anonymous reviewer for raising this point.
- 19 One might worry that the feeling of certainty always comes out as justified, but its propensity to come out as justified is no higher than that of fear of the dog. From the agent’s own perspective, their affective states will typically feel justified (at least in the first instance) as it always in some sense seems to them that the object has the relevant features that warrant the attribution of the relevant formal object, otherwise they would not experience the relevant affective state in the first place. In so far as existing accounts cash out emotional justification as seen above, then emotional justification is going to come quite easily in both the practical and the theoretical cases. One can point out to oneself, or a third party might point out to us, that actually the dog is behaving erratically because he has epilepsy. This would make you lose justification for your fear. Similarly, if you realize, or someone calls your attention to the fact, that you are only feeling certain of something because you have seen this sort of answer before, it is familiar, then you might lose justification for your feeling of certainty in an analogous way. Granted we do not have perceptual access to features of our beliefs, as we do with external objects, justification can still be lost in analogous ways.
- 20 One might worry that fear and the feeling of certainty are somewhat disanalogous in terms of the evidence they can provide in the justification of relevant beliefs. This is because, while fear seems to be closely connected to dangers, feelings of certainty are a further step (or a few steps) removed, so to speak, from truths as these experiences track coherence, rather than truth itself, and they do so via tracking fluency. Future work should examine whether this disanalogy threatens the justificatory role of feelings of certainty. We might, for example, grant that feelings of certainty are evidence of perhaps a different sort to fear (perhaps feelings of certainty are a type of higher-order evidence), without denying that they are still evidence. I am grateful to an anonymous reviewer for raising this point.

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