



Everyday anxious doubt

Juliette Vazard^{1,2} 

Received: 31 December 2020 / Accepted: 18 April 2022 / Published online: 13 May 2022
© The Author(s) 2022

Abstract

In this article I examine the role of anxiety in our motivation to reassess our epistemic states, by taking as a starting point a proposal put forward by Levy (Philosophers' Imprint 16:1–10, 2016), according to which anxiety is responsible for the ruminations and worries about threatening possibilities that we sometimes get caught up into in our everyday life. Levy's claim is that these irrational persistent thoughts about possible states of affairs are best explained by anxiety, rather than by beliefs, degrees of belief, or other mental states. I will take Levy's article as a starting point into my study of the role of anxiety in our inclinations to question the epistemic quality of our cognitive states. While I believe that Levy is right in directing our attention to the role of anxiety in these cases, his claim calls for further explanation into the nature of anxiety, and into the mechanisms through which anxiety generates these doubts. Although the relation between anxiety and doubt has already been highlighted (Hookway in: Can J Philos 28:203–225, 1998, Epistemology and emotions, Ashgate Publishing, Hampshire, 2008), there has been little effort to elaborate on the mechanisms through which an affective state like anxiety generates a motivation to reassess our beliefs. This paper is an attempt at providing such an elaboration. Clarifying the role of anxiety in these phenomena will lead me to revise a common assumption about the interactions between anxiety and higher-level cognitive processes, such as the ones involved in representing hypothetical threatening scenarios through mental imagery.

Keywords Anxiety · Epistemic anxiety · Doubt · Belief · Inquiry

✉ Juliette Vazard
juliette.vazard@gmail.com

¹ Swiss Center for Affective Sciences, University of Geneva, Campus Biotech, Chemin des Mines 9, 1202 Geneva, Switzerland

² Institut Jean Nicod, Ecole Normale Supérieure de Paris, Paris, France

1 Introduction

Which psychological mechanisms are responsible for our tendency to reassess the epistemic credentials of our beliefs? An answer to this question might be found by looking at excessive manifestations of such phenomena; cases in which individuals get caught up into questioning the grounds for their beliefs in a manner that we judge unreasonable.¹ What is the plausible cause of such phenomena? It has been argued that such cases cannot satisfactorily be explained by discordant beliefs or degrees of belief. Instead, the plausible cause of such persistent questionings is *anxiety* (Levy, 2016).

In this article I examine the role of anxiety in our inclinations to question the epistemic quality of our own cognitive states. While the relation between anxiety and doubt has already been highlighted (Hookway, 1998, 2008), there has been little effort to elaborate on the mechanisms through which an affective state like anxiety generates a motivation to reassess our beliefs. This paper is an attempt at providing such an elaboration. I will take Levy's proposal and his main case study as a starting point into my examination of the psychology of anxiety more generally, and in particular its role in our tendency to reassess our epistemic position (Sect. 1).

While I believe that Levy is right in directing our attention to the role of anxiety in these cases, his claim calls for further explanation into the nature of anxiety, and into the mechanisms through which anxiety generates these doubts. I will argue that Levy's model needs revising on (1) the specific kind of anxiety involved in these cases, and (2) the way anxiety interacts with imagination and hypothetical thinking to bring about these doubts. For starters, I will propose a refinement of Levy's view, by suggesting that we can be more precise in specifying the kind of anxiety involved in such cases, namely an anxiety that distinctively signals *epistemic uncertainty* (Sect. 2).

I will then introduce a model of how epistemic anxiety generates such doubts, and makes it difficult for one to shake off a threatening possibility once it has been made salient. The persistent nature of some of our doubts, I claim, suggests that the chain of mental events involved in reassessing one's beliefs often starts with an affective state, which then triggers higher-level cognitive processes that are part of *hypothetical thinking* (Evans, 2019). More precisely, I will argue that anxiety signals a need to shift from an intuitive mode to a controlled and reflective mode of cognition in which one is able to represent hypothetical states of the world in order to better face a problematic uncertainty (Sect. 3).

This involves a significant revision of both Levy's account, and the folk psychological idea according to which anxiety arises *as a result* of thinking and imagining possible threats and their negative outcomes. I will suggest instead that, given what we know about our cognitive architecture and the interactions between affective states and higher-level processes, anxiety is more plausibly primary in this process, and is typically what triggers the counterfactual reasoning and imagining of threatening states of affairs in the first place (Sect. 4).

¹ I am here following a tradition in the philosophy and psychology of anxiety to look at clinical or dysfunctional cases in order to understand the nature of well-functioning psychological processes (Kurth, 2018a; Maibom, 2005; Roskies, 2003).

2 Unreasonable questioning and anxiety

We can fail as rational inquirers by asking and inquiring into the wrong questions; questions we have no good reason to inquire into. One source of such unreasonable questionings, as Levy (2016) has suggested, is anxiety. I will here use the cases brought forward by Levy as a starting place, in order to understand the role of the affective phenomenon of anxiety in our inclinations to question the truth value of our beliefs. By doing this, I will point out some limitations in Levy's model, and propose substantial refinements.

Let us start with an example of the phenomenon of interest. Imagine a subject, which we will call Sylvia. Sylvia is in her car driving to work. Suddenly, she considers a possible state of affairs, namely that upon leaving her house in a rush this morning she might have left the stove on. What happens then, is that Sylvia cannot seemingly bring herself to ignore this possibility, and she worries about it. She does not remember turning the stove off, and although she views it as quite unlikely, she remains preoccupied by the thought that it might be on. As Levy notes, there seems to be a discrepancy between Sylvia's occurrent and persistent worries about the stove being on, and her belief that the stove is almost certainly not on (Levy, 2016).

According to Levy, none of the explanations offered in the philosophical literature on such cases of discordancy are able to satisfyingly elucidate this specific class of discordancy cases—which he calls “neurotic anxiety” (NA) cases. First, this class of behaviors cannot be explained by discordant *beliefs*. Sylvia cannot seemingly be accurately described as believing that the stove is on.² Can this kind of cases be explained by evoking a certain degree of belief in this possible state of affairs? Perhaps the high stakes of the matter, combined with a high enough degree of belief, could explain the persistent worry that p might be the case. However, Levy (2016) argues, while the threatening prospect makes it hard to dismiss p , in general the degree of belief one assigns to such propositions is fairly low; too low to explain why one would keep worrying about the possibility of p .

Although she worries about this threatening possibility, Sylvia does not decide to drop everything and drive home to turn off the stove, and if one were to ask her at this instant whether the stove in her house is on, she would answer with the negative.³ In cases such as Sylvia's, although the subject does not believe p , she cannot shake off the thought that p is possible, and that thought alone motivates her in certain ways: it motivates her to worry, and to be relieved upon receiving sufficient evidence, for instance. Hence, what causes Sylvia's behaviors is a mental state that is not a belief but nonetheless motivating and evidence-sensitive. As Levy argues, what triggers her

² As Levy shows, NA discordancy cases cannot be explained through a *phenomenal disposition* account of belief (Schwitzgebel, 2010) either, as Sylvia's dispositions to act, reason, feel, and assert, are towards non- p , rather than towards p . Aliefs (Gendler, 2008) are also poor candidates, since they are not sensitive to evidence; they merely dispose the subject to respond in certain ways given certain stimuli. In NA cases, however, the subject's behavior is dependent on evidence. Were Sylvia to call her partner at home and receive the confirmation that the stove is off, her worries about p would vanish.

³ Sylvia assigns very little plausibility to the scenario in which the stove is in fact on, and were she to find the stove on upon returning home, she would be very surprised, because she really expects the stove to be off. This, Levy (2016) contends, is an important difference between *half-believers* and *anxious thinkers*.

behaviors is *anxiety*. More precisely, Levy suggests that *imagining* some threatening possibility generates anxiety, and it is the anxiety which then goes on to cause rumination and worries. According to Levy, then, when a thought triggers anxiety, the behaviors which follow—ruminations, worries, etc.—are best conceived as caused by anxiety rather than by one's level of credence in the thought itself (Levy, 2016).

I believe that anxiety is indeed at work in such cases of unreasonable doubt. And although this claim might seem intuitively plausible, and even trivial, I think there is much more to say about the way in which an affective state such as anxiety may bring about such doubts. Importantly, while Levy focuses on cases in which an unjustified anxiety motivates unwarranted doubts, I am going to argue that the role of anxiety in epistemic questionings goes beyond that of generating irrational worries. As I will argue, the possibility of irrational worries suggests that the psychological mechanism driving these questionings is affective, but this affective mechanism is not always dysfunctional or ill-calibrated.

In the next section, I start by introducing the recent literature in the psychology and the philosophy of emotion on the nature of anxiety. This will allow me to put forward a first refinement of Levy's account, by specifying the type of anxiety involved in these questionings, namely an anxiety about the epistemic accuracy of our beliefs.

3 Epistemic anxiety: questioning one's beliefs

Although Levy's claim rightly highlights the role of anxiety in the process of questioning one's beliefs, I believe that it does not do enough to explain how anxiety as an affective state generates the cascade of mental events that is characteristic of Sylvia's case, or whether the questionings motivated by anxiety are always irrational. Moreover, as I will show, I believe that the causal relation Levy posits between imaginings and anxiety is mistaken. In Sect. 3, I will introduce my model and explain how it involves an important revision of Levy's claim regarding the chain of mental events that concur to bring about Sylvia's worries.

For starters, Levy's view calls for an explanation as to how an emotion like anxiety might be fit to bring about the mental states that Sylvia is experiencing. What type of affective state is anxiety? And how does anxiety relate to threatening possible states of affairs? Recent theories in the psychology and in the philosophy of anxiety concord to define anxiety as an emotion through which we appraise our current situation as involving *a possible and uncertain threat* (Miceli & Castelfranchi, 2005)⁴ or a *problematic uncertainty* (Kurth, 2018a). The uncertainty is evaluated by the emotion as "problematic" in the sense that an actual error would lead to negative outcomes and be costly to the subject. An uncertainty or epistemic gap is appraised as problematic when it is connected with a subjective utility; when there are important pragmatic interests at stake for us. An uncertainty that is "problematic" in this manner is thus one that merits the subject's attention.

⁴ The threat should be conceived broadly, as a "threat of thwarted goals in any possible domain: from resource acquisition to moral development, from the struggle for survival to the search for social approval or self-approval, from support-seeking to autonomy needs" (Miceli & Castelfranchi, 2015, p. 131).

In other words, anxiety is an affective evaluative experience that one's lack of certainty about the occurrence of a possible state of affairs puts some of our goals at risk of being thwarted. Which form this affective evaluation takes—whether it is a type of perception, of judgement, or a *sui generis* attitude—is a matter of great debate in the philosophy of emotion (Deonna & Teroni, 2015; Solomon, 2007; Tappolet, 2016). For our present purpose, it is sufficient to say that philosophers commonly agree on the idea that emotions are *experiences of value* (De Sousa, 1987; Goldie, 2002; Deonna & Teroni, 2012). In this sense, feeling anxiety towards an upcoming exam *is* experiencing the exam as involving a potential threat, or a problematic uncertainty.⁵

The two dimensions that are thus essential to the elicitation of anxiety are that a context of potential *threat* or goal thwarting has been detected, and that this threat is *uncertain*: one is not in a position to know whether it will in fact occur, or whether one will get affected by it.⁶ A necessary element for the elicitation of anxiety is that one is currently unable to *predict* whether the threat will occur. Recalling Robert Gordon's proposed dichotomy between “knowledge-requiring” and “knowledge-precluding” emotions (1969), this classifies anxiety in the latter category; the category of emotions which are incompatible with knowing that *p*.⁷ For example, that I am anxious about failing the exam precludes that I know whether or not I will fail it.

Given this definition of anxiety as an emotion that detects uncertainty in our cognitive states regarding the occurrence of a possible threat, it makes sense for Levy to claim that persistent worries and questionings such as Sylvia's would be brought about by this emotion. However, it seems that, in light of recent insights into the nature of anxiety in the philosophy of emotion (Kurth, 2018a, 2018b), we can be more precise in formulating this claim, and therefore make more accurate predictions about Sylvia's reactions. Indeed, as we will now see, we have reasons to believe that “anxiety” is not a single emotion but rather refers to a set of distinct emotions. That is, existing philosophical and empirical work shows us not only that there are different types of anxiety, but that these have distinct functional profiles that generate importantly different patterns of thought and behavior.

Because problematic uncertainties can occur in different domains of relevance for us, it has indeed been suggested that anxiety be viewed as a *family of emotions*,⁸ each playing distinct functional roles. These emotions are thought to share a common core (the detection of “problematic uncertainties”) but to be elicited in response to

⁵ Michael Brady (2010, 2013) argues that emotions do not constitute a direct access to such evaluative properties of events or objects, but that they allow us to access them indirectly by motivating information search and conscious processing of the emotional situation. According to this view, emotions motivate us to look for reasons to protect ourselves from a threat, but they do not in themselves provide those reasons.

⁶ What distinguishes anxiety from fear in these accounts is that, while the object of fear is a possible danger, the object of anxiety is a possible and uncertain danger. For example, if I feel anxious about taking the plane tomorrow, I apprehend taking the plane as involving a possible threat, usually: a plane crash. However, the object of my anxiety is not *the danger* per se; it is not *the plane crash*. That is the object of fear. In anxiety, the focus is rather on the *uncertainty* surrounding the threat: whether it will in fact occur, whether it might crash on the mountains or on the lake, what I should do if that happens, whether I might have a chance to survive, etc. (Miceli & Castelfranchi, 2005).

⁷ This category also notably includes the emotion of hope.

⁸ For an elaborate defense of anxiety as a family of emotions, see Kurth (2018a), particularly chapters 2 and 3.

different kinds of threat, and prompt correspondingly different patterns of behavioral responses (Endler & Kocovski, 2001). This family of emotions is thought to include *environmental anxiety*, an anxiety that helps us respond efficiently to uncertain threats pertaining to our physical integrity; *social anxiety*, an anxiety which functions to warn us of possible negative social evaluation; and *practical anxiety*, which is thought to alert us of misguided decision-making (Kurth, 2018a).⁹ Charlie Kurth has proposed that each kind of anxiety relies on a metacognitive mechanism which monitors degrees of uncertainty pertaining to these specific kinds of problems (Kurth, 2018b). In response to a high uncertainty detected, anxiety (be it social, environmental, or practical) triggers feelings of unease that alarm us, and motivational tendencies that prepare us to face and protect ourselves from the given type of threat.

Using this research to illuminate Sylvia's behavior allows us to make more accurate predictions about the kind of actions, thoughts, and feelings that Sylvia's anxiety will cause. As I will argue, because Levy is working with a generic account of anxiety, he is unable to predict that Sylvia will generate thoughts and actions which are importantly distinct from someone experiencing a bout of, say, *social anxiety*. Although social anxiety is likely to trigger some form of "rumination" and "worrying" as well, these will have a different content and consequently different behavioral outputs than the anxious thinking experienced by Sylvia. By contrast, on my account, cases like Sylvia's involve an as of yet unappreciated form of anxiety—epistemic anxiety. As we will now see, looking at anxiety as a family of emotions, including a specifically epistemic kind of anxiety, provides us with a much more informative and precise account of Sylvia's mental state.

"Epistemic anxiety" is a psychological mechanism which has been discussed in the epistemological literature, and which I believe is particularly relevant to understanding Sylvia's case. It has been conceived as a motivational tendency to gather additional evidence and postpone closure of inquiry when high practical interests are at stake in one correctly believing p (Nagel, 2010). In short, it has been proposed that epistemic anxiety is the psychological mechanism responsible for our inclination to invest more cognitive resources in epistemic tasks on which important goals depend. It is therefore an adaptive affective mechanism which plays a crucial role in regulating our epistemic activities, so that we invest more cognitive efforts on matters that are relevant to our goals, concerns, and interests. Christopher Hookway (1998, 2008) has famously proposed that our disposition to feel the emotion of epistemic anxiety is central to our ability to doubt reasonably, because it is the state which first signals that our belief should not be relied upon, and that we are in an "epistemically unsafe" position.

I here propose to connect this literature to contemporary literature in the philosophy of anxiety, thereby providing an understanding of this phenomenon that is in-line with current theories of anxiety.¹⁰ Accordingly, I suggest that we treat "epistemic anxiety" as a member of the anxiety family, more particularly, as a kind of anxiety which alerts

⁹ Practical anxiety is a kind of anxiety which arises as one is about to take or has taken a decision that involves a conflict in one's values and interests; such as the decision to put one's parent in a care home. As one is about to sign the papers, practical anxiety arises and pushes us to reassess one's reasons (Kurth, 2018a).

¹⁰ Note that Jennifer Nagel does not specify the psychological nature of epistemic anxiety, and Christopher Hookway does not contrast it with other kinds of anxiety. In the account I propose here, I go further by

us of the risk of holding false beliefs in certain instances. This framework provides a useful way of understanding the psychological nature of epistemic anxiety, and of explaining how it can play the epistemic functions that Hookway and Nagel have attributed to this mechanism.

Viewed within this framework, epistemic anxiety functions similarly to the other kinds of anxiety, but it distinctively tracks problematic *epistemic* uncertainties—uncertainties about the accuracy of our beliefs—and distinctively functions to promote acquiring and maintaining epistemic accuracy in our mental states (rather than social approval, or physical integrity, for instance). As Kurth has highlighted (2018a, 2018b) all types of anxiety consist in both a monitoring of uncertainty, a signal that uncertainty should be addressed, and a motivational mechanism. For instance, practical anxiety both monitors and controls for high levels of uncertainty regarding the possibility of a bad practical decision, and social anxiety both monitors and controls for high levels of uncertainty regarding the possibility of negative social evaluation. Accordingly, epistemic anxiety can be conceived as monitoring and controlling for high levels of uncertainty regarding the possibility of an epistemic error in our cognitive operations. Epistemic anxiety, I suggest, functions by *monitoring* the degree of epistemic uncertainty in our cognitive operations; *signaling* that a certain threshold of uncertainty has been met by triggering feelings of unease; and *motivating* behaviors aimed at resolving the epistemic uncertainty.

While every kind of anxiety consists in a mechanism with monitoring and control functions, what distinguishes these emotions is that they each deploy these functions according to distinct normative criteria (Kurth, 2018b). For instance, practical anxiety deploys those functions towards *good decision-making*, and social anxiety deploys those functions towards *positive social evaluation*. Given the role it has been argued to play in the regulation of our epistemic activities (Hookway, 2008; Nagel, 2010), I suggest that epistemic anxiety monitors and controls our cognitive activities towards accurate representations or true beliefs.¹¹ Although each kind of anxiety signals uncertainty, and therefore typically triggers investigative behaviors, when one experiences epistemic anxiety, the norms guiding one's inquiry are epistemic norms; the type of accuracy that is sought is epistemic accuracy. The type of reasons relevant to one's inquiry are epistemic reasons; reasons that concern the type of evidence one possesses, and the methods one has used in forming one's belief. By contrast, when one undergoes an episode of practical anxiety, one is concerned with one's decision aligning with relevant practical and moral norms. As one is trying to figure out how one should act in a given instance, the reasons one will consider are practical and moral reasons.

The functional role of epistemic anxiety can then be summarized in the following way: epistemic anxiety is a kind of anxiety which monitors and controls our cognitive activities towards acquiring and maintaining accurate representations (or true beliefs) in high-stakes contexts. Epistemic anxiety is a signal that there is a high degree of

Footnote 10 continued

contrasting epistemic anxiety with other recognized forms of anxiety, and by filling up the picture of its psychological nature.

¹¹ I develop my account of the nature and epistemic function of the mechanism of epistemic anxiety elsewhere in greater detail. As exposed here, I argue that epistemic anxiety is a kind of anxiety which distinctively tracks problematic *epistemic* uncertainties—uncertainties about the accuracy of our beliefs—and distinctively functions to promote acquiring and maintaining epistemic accuracy.

uncertainty as to whether one accurately believes that p (that one's passport is in one's bag, for example), and it functions to make us feel that this level of uncertainty about the truth value of such a proposition is *problematic* given the subjective utility attached to it. It is thus an emotion that is both sensitive to epistemic uncertainty in our cognitive operations, and to the goal-relevance of the context in which those cognitive operations unfold. If this characterization of the phenomenon of epistemic anxiety is valid, then we have reasons to believe that our ability to experience epistemic anxiety plays a role in enabling us to remain sensitive to the importance of properly settling the matter of whether p in a way which is proportionate to how costly a mistake would be for one.¹²

While Levy argues that the state motivating Sylvia's worries is anxiety, I argue that different kinds of anxiety motivate different questions, and that Sylvia's questions are distinctly epistemic. Because anxiety is an emotion that tracks uncertainty, Levy's intuition that it is well placed to trigger questioning and doubt is correct. However, I argue that because *epistemic anxiety* is a kind of anxiety that tracks *epistemic uncertainty*—or so I claim—it is best placed to raise the kind of questions Sylvia has in mind: questions that concern the epistemic quality of her beliefs. Given the characterization of epistemic anxiety provided above, we have reasons to believe that the specific kinds of worries that Sylvia is experiencing have their root in epistemic anxiety.

Epistemic anxiety is a mechanism which triggers an inquiry that is aimed at answering the question: “do I correctly (dis)believe that p ?” and investigative behaviors that are characteristically guided by epistemic norms. Accordingly, Sylvia is focused on questioning herself about what she *knows*, what she *remembers*, and whether and to what extent she is justified in *believing* that a certain state of affairs (the stove if off) obtains. She is ruminating about such questions as: “did I get distracted while the coffee was on the stove?”, “did I smell some burning as I was walking out?”, and the final aim of her inquiry is to figure out whether or not she has left the stove on. Positing the role of epistemic anxiety in the case of Sylvia allows us to understand why she finds herself endlessly introspecting her memories and belief-forming mechanisms (rather than her surroundings or her decision-making process, etc.), unable to move on.

We might be tempted to think that Sylvia's anxiety is an environmental kind of anxiety directed at the prospect of her house burning. However, Sylvia is *not* ruminating and worrying about *whether her house will burn down*; she is ruminating and worrying about *whether she correctly believes that she has turned off the stove*. That this question is the content of her worries is manifest in Sylvia's actions: what she does while sitting in her car is consider the evidence she possesses, revisit her memories of the morning, assess their reliability, etc. By contrast, having the question “will my house burn down?” as the content of one's worries would rather lead one to consider the probability, given that one knows that one has left the stove on, of this danger (the

¹² Importantly, epistemic anxiety is a conscious emotional reaction which makes us aware of an uncertainty regarding the epistemic accuracy of some proposition, and motivates us to inquire into it. Having a conscious emotional reaction of that sort (as opposed to a compulsion similar in format to a compulsion to drink when thirsty and water is at hand) is of great value in that it allows us to exploit the information (of the problematic epistemic uncertainty) in reasoning and decide whether to follow this inclination to inquire (at the expense of other potentially conflicting ongoing desires). While we can use the information provided by this signal, we are not subjected to its command in an imperious way, so that we may decide to give precedence to other desires if these are assessed as more pressing.

house burning) actually occurring, and the magnitude of its possible consequences. If Sylvia were experiencing environmental anxiety, she would be questioning herself, not about the epistemic accuracy of her epistemic states, but about the probability that her house would burn, and the possible consequences involved.

To make the functional roles of the different kinds of anxiety clearer, consider the following sequence of events. Imagine that Sylvia were to actually form the judgement that she has left her stove on. Having firmly settled on this belief, she might then start worrying about whether her house could burn down as a consequence of her having left the stove on. This would qualify as *environmental anxiety*. Now suppose that, later in the day, Sylvia were to actually find out that her house has in fact burnt down. She would then be faced with the decision to report that she had left the stove on that morning, or not. Upon filing the report with the insurance company, she will likely experience *practical anxiety*: the anxiety about whether one is making the right choice, given one's conflicting moral or prudential attitudes. If she then were to actually take the decision not to report it, this might in turn render Sylvia *socially anxious*: will her community judge her negatively if they find out about the fraud? Each of these episodes qualify as episodes of anxiety, but they each target distinct kinds of uncertainties (social, epistemic, practical, environmental), and our understanding of the distinct mental states and activities they involve is furthered by specifying the type of anxiety at play.

If her inquiry about *whether she correctly believes that she has turned off the stove* were to lead Sylvia to the conclusion that she did leave her stove on this morning, then the awareness of this possible danger would trigger environmental anxiety, shifting her focus on the corresponding questions: (1) will the danger actually occur? (2) how will it affect me?/what will the consequences be for me? However, since the question of whether her house will burn down directly depends on whether she has left the stove on in the first place, until she has not reached an answer to the question "did I turn the stove off?", this is what she is primarily going to keep trying to figure out. In order for Sylvia to even start considering how likely it is that her house would burn, and what the consequences would be, she has to *suppose* (take or regard as true) that the stove is on. Unless she accepts "the stove is on" as a necessary premise in her reasoning, she has no reason to start envisaging that her house could burn today.¹³

We could perhaps take this to mean that epistemic anxiety is not a separate emotion, but rather a preliminary step or a constitutive part of other kinds of anxiety: when we are unsure about the justification of our epistemic position, and we apprehend potential danger, we start off by worrying about the validity of our epistemic states. However, it is only in those cases in which the inquiry prompted by epistemic anxiety leads one to conclude that there is indeed a risk of danger, that other kinds of anxiety might be elicited. In those cases in which we conclude that the envisaged danger is in-existent (I have turned the stove off), then epistemic anxiety is the only kind of anxiety that will

¹³ It is possible that Sylvia will, at times, engage in hypothetical imagination and suppose the "the stove is on" indeed obtains (although she is aware that she does not know this). As she hypothetically imagines what it would be like to know that the stove at her house is on, Sylvia might very well develop environmental anxiety on the basis of this imagining. However, given that she does not know whether the stove is on (and this is precisely what bothers her!), she is focused on this question at this point.

be experienced.¹⁴ Epistemic anxiety is thus not a constitutive part of some other kind of anxiety: it is a kind of anxiety in its own right.

Another indication that practical and epistemic anxiety do not only refer to a conceptual distinction, but to two distinct mechanisms can be found in research on Obsessive–compulsive disorder (OCD). Indeed, distinct recognized sub-types of OCD may be viewed as manifesting specifically dysfunctions of these two mechanisms. “Scrupulosity” is a sub-type of OCD which involves recurring and persistent uncertainty concerning the rightness of one’s actions, or whether one’s actions are coherent with relevant rules and norms (Abramowitz, 2008). An example of a manifestation of scrupulosity is a patient repeatedly seeking reassurance about whether swallowing one’s own saliva amounts to breaking the Ramadan. We may understand the excessive concern for the concordance of one’s actions with the relevant rules as resulting from a dysfunction of practical anxiety.

Another sub-type of OCD specifically involves the incapacity to achieve a sufficient level of subjective confidence regarding questions such as “whether the front door is locked”. The so-called “checking” sub-type of OCD is characterized by repeated and time-consuming checking activities resulting in an inability to pursue other goals (Colas, 1999; Neal et al., 2017). In this case, the patient seems to chronically find themselves in a state of constant doubt regarding the adequacy between their own beliefs and the actual state of the world. The uncertainty in this case does not concern the adequacy between one’s actions and the relevant rules and norms, it concerns the adequacy between the propositions one believes in and truth. Accordingly, I have elsewhere suggested to understand this sub-type of OCD as resulting from a chronic dysfunction of epistemic anxiety (Vazard, 2019).

One might still object: as she questions whether the stove is off, what Sylvia is concerned about *is* the possibility of her house burning down. It is crucial here to point out an important distinction between the *cause* of an emotion (the reasons *why* one is having an emotion) and its *object* (what the emotion is *about*). For instance, social anxiety is partly caused by the fact that we care about maintaining our social status. In this sense, the reason why we worry about making a good impression is that we wish to keep our job, get the promotion, impress the in-laws, etc. We have goals (safety, success, etc.) and these goals are manifest in our different affective reactions. However, while the goal of keeping my job is a precondition for my feeling social anxiety (it is necessary that I *care* about my job in order for me to feel socially anxious at the meeting), what my social anxiety is *about* is the possibility of being judged negatively during the meeting, not the possibility of losing my job. In the same manner, it is true that Sylvia’s worry about the truth value of her belief regarding the stove is partly caused by her desire to preserve her home. A more technical way of expressing this distinction is to say that the desire to preserve her home features in the *cognitive base* or in the psychological preconditions to her anxious response. In this

¹⁴ This case can also be made for other emotions: one emotion often gives way to another distinct type of emotion as the information one obtains or the set of evidence one considers changes. For instance, hope that one might be able to make it on time to the birthday party is likely to give way to excitement as one’s confidence increases, or if one were for an instant to suppose or hypothetically imagine what it would be like if one were to actually make it to the party.

sense this desire is presupposed by her anxious response, but it is not the intentional object of her response; it is not what her episode of anxiety is about.

In the same way as our aversion to social errors can be understood as stemming from a general concern for maintaining the goods and opportunities that we enjoy, our aversion for epistemic errors can be understood as originating from the same concerns. We have an aversion for social costs (being judged negatively) in part because we have learned to associate social judgement with a risk of losing opportunities, chances, and rewards of all sorts. The same applies to our aversion to epistemic errors. However, these background concerns manifest through occurrent mental states of different nature (epistemic or social anxiety), depending on the nature of the possible error that is being apprehended. The different kinds of anxiety each constitute forms of aversion to distinct kinds of errors. Ultimately, the reason why we have a disposition to be averse to these specific errors is that we wish to preserve the goods and opportunities we enjoy. But this does not change the fact that we approach distinct kinds of errors with distinct mental states and reactions, depending on whether the possible errors are of an epistemic, social, or moral nature.

The ability to distinguish types of anxiety, with their specific objects, allows us to be more precise when analyzing cases such as Sylvia's. Viewing anxiety as a family of distinct emotions, I have argued, allows us to understand the specific normative concerns that drive Sylvia's worries, and the distinct types of thought patterns and behaviors she is likely to engage in. I have argued that epistemic anxiety is, within the anxiety family, best placed to trigger the kind of questionings that Sylvia is undergoing, because Sylvia's ruminations and worries are aimed at figuring out whether she correctly believes that the stove in her house is off, or whether she might be misremembering or falsely believing it. While this is already a substantive refinement of Levy's view, in the next section I want to go further and propose a model of *how* epistemic anxiety generates the chain of mental events that is characteristic of Sylvia's state of mind.

4 Epistemic anxiety and the shift from intuitive to reflective mode

Cases such as Sylvia's are relatively common, yet they are also puzzling. One reason why they puzzle us is that they force us to revise the traditional view of doubt as a mental act that is within our control and sensitive to our doxastic commitments. Sylvia judges her own doubting as senseless. Yet, she seems unable to stop doubting, because she cannot shake off the scary thought of a possible state of affairs in which her stove is on. And while she ascribes a low probability to this possibility, the thought of it nonetheless motivates her in certain ways. Sylvia doubts in spite of her reflectively endorsed judgement, and reflecting on the low odds does not seem to help her extinguish the doubt. Accounting for such cases of doubt requires us to posit that this kind of doubt emerges at a level of cognition that is distinct from the level at which Sylvia judges that her doubts are unjustified. Sylvia cannot reason herself out of doubt, because the signals which trigger her doubt emerge and persist at lower levels of cognition.

Several prominent accounts of the cognitive architecture of the human mind concord to identify distinct levels at which cognitive activities are performed (Evans &

Stanovich, 2013; Clark, 2015; Carruthers, 2015). Certain of the cognitive activities underlying human judgment, reasoning and decision making, are performed at a level where we may ascribe mental properties like beliefs and desires. That is the “personal” level. Others are performed at a level where information is processed without the person having access to its contents. We may call it the “sub-personal” level (Evans & Frankish, 2009). For instance, affective processes are thought to occur at the sub personal level. Emotions are elicited involuntarily, automatically, and we do not have direct conscious access to the operations leading to the emergence of emotions. By contrast, reflection—or the processes through which we scrutinize our own mental states—is voluntary, requires controlled attention, and we have conscious access to the content that is being scrutinized, and to the inferential steps that are taken to scrutinize it. According to certain dual-process theories, we can consider that there are accordingly two broad modes of cognition: the *intuitive mode*, and the *reflective mode* of cognition (Evans & Stanovich, 2013). Although I will be using the terms of intuitive and reflective processes, my claims are not committed to *dual process theories* of the mind and can be applied within other frameworks. The claims I will make merely require that the functions of the various modules range from “sub-personal” level operations to “personal” level ones.

Sub-personal operations are deployed to deal with familiar, low-stakes, and routine tasks, while the personal level operations are called into play to deal with unusual, unfamiliar, or high-stakes problems. Moreover, it is generally understood that the vast majority of our cognitive operations is performed at the sub-personal level, which is therefore “the default” level at which cognitive activities occur. Whenever a decision is to be made, sub-personal operations automatically generate an answer, and we generally take this answer for granted. In other words, we generally tend to “exploit” our prior knowledge (of our environment, its objects, their causal relations, etc.) and apply it to the situations we encounter. Only when prompted to do so will we shift to the more costly personal level cognition (or “reflective mode”) and deploy higher-level processes such as reflection and reasoning to “explore” alternative answers.

As we have said, emotions are generally thought to be automatic and involuntary processes elicited at the sub-personal level. However, given that emotions often occur to signal the presence of unusual, unfamiliar, surprising, or problematic stimuli, the rising of an emotion (depending on its nature and intensity) often triggers the recruitment of higher-level processes (Koriat, 2000). In other words, anxiety is one among the many mechanisms which function to signal that a problem requires us to exit our “autopilot” mode of routine sub-personal processes. It is plausible that the signals which prompt us, on some occasions, to shift to the reflective mode of cognition take the form of feelings causally grounded in metacognitive mechanisms. Indeed, it has been argued that *feelings of rightness* serve the function of “approving” the answer automatically generated by type 1 processes (Thompson, 2009).¹⁵ If this is so, we can imagine that the signals which instead prompt us *not* to rely on our intuitive answers, but generate alternative possible answers, are of the same form: feelings causally

¹⁵ When feelings of rightness are directed towards an intuitive answer, subjects feel more confident and are less likely to rethink or change this answer.

grounded on metacognitive mechanisms, such as the feeling of *problematic epistemic uncertainty* or epistemic anxiety.

Epistemic anxiety signals epistemic uncertainty on the basis of a “quick and dirty” monitoring of our current cognitive operations. However, a full-blown episode of epistemic anxiety systematically triggers the ramping up of higher-level cognitive processes, which are recruited to address and respond to the problematic uncertainty it has signalled. While anxiety itself is an intuitive form of evaluation, it typically triggers a shift to a reflective mode of cognition. When we start feeling anxious, we shift from one frame of mind of unreflective judgement and unquestioned assumptions, to self-conscious worries. In short, epistemic anxiety is a signal which ultimately prompts a shift in our mode of cognition, and thus in our way of relating to our belief, from an intuitive to a reflective attitude. Now, what happens once epistemic anxiety has signalled the need to engage higher-level cognition?

The kind of higher-level cognition that epistemic anxiety typically deploys can be referred to as *hypothetical thinking* (Evans, 2019). Hypothetical thinking broadly refers to thinking that is about possible states of the world, and which involves capacities such as counterfactual and deductive reasoning, supposition, and imagination of these possible states of the world. Given that epistemic anxiety signals epistemic uncertainty in high-stakes contexts, it typically leads us to (1) reason about how we might have mistakenly formed the belief that the stove was off, (2) mentally represent a world in which it is true that we have left the stove on, (3) suppose that we have left the stove on, and simulate the detrimental consequences implied by this scenario. All of these operations occur at the personal level; we have access to the content we represent, suppose, and reason about.

Here is thus the model I propose of the cascade of events occurring in Sylvia’s mind. When Sylvia is sitting in her car reviewing the earlier events of the morning, she stumbles on the memory of the coffee making. There, when she first considers the question “have I left the stove on?”, her first, automatically generated intuitive response is “no”. Then epistemic anxiety arises, signalling problematic epistemic uncertainty in her belief-forming mechanisms. This, in turn, triggers an automatic shift where higher-level cognition is recruited to assess and correct the problem. At this point, Sylvia considers the question again, from this new cognitive basis. This new basis is one where mental representation of hypothetical scenarios containing possibilities of error (together with their detrimental consequences) is accessible. This means that Sylvia is now in a position to mentally represent the different ways in which she might be wrong in assuming that the stove is off. The result is that, once hypothetical thinking is engaged, it becomes harder and harder for Sylvia to assert with confidence that she knows for sure that the stove is off. Once these alternative possibilities have been made salient to her, it is hard to dismiss them as potential defeaters to her *prima facie* justified intuitive response.

Now, although we understand why it is hard for Sylvia to dismiss these scary possibilities once they have been made salient, why is it that Sylvia gets caught in entertaining them in the first place? If epistemic anxiety is, as I have proposed here, an adaptive mechanism which helps us avoid costly epistemic mistakes, how can it also be the mechanism which leads Sylvia to experience persistent ruminations about remote possibilities? How could epistemic anxiety be both the mechanism which

triggers our justified doubts, and the mechanism which leads Sylvia to worry unreasonably? We view Sylvia's doubt as unjustified because, while she herself judges that the possibility (the she has left the stove on) is implausible, she cannot dismiss this possibility, because she cannot silence lower-level signals of problematic epistemic uncertainty. Epistemic anxiety relies on a metacognitive mechanism which is both sensitive to the epistemic quality of our cognitive states, and to their goal-relevance (what is at stake if my judgements are inaccurate). In this sense, a well-calibrated and appropriate epistemic anxiety is likely to motivate reasonable doubts (Hookway, 1998, 2008). However, affective mechanisms can misfire, and they can also be based on dysfunctional cognitive states.

This opens up several ways in which epistemic anxiety might lead to the unreasonable kind of doubt experienced by Sylvia. Sylvia may be suffering from a temporary dysfunction at the level of her affective mechanism, where her epistemic anxiety is hyperactive and signals innocuous cognitive content as problematically uncertain. Alternatively, Sylvia may be suffering from a temporary dysfunction at the level of the generation of the cognitive content that anxiety picks up on. Within a predictive processing theory of cognition, we could imagine that anxiety is underlied by a metacognitive mechanism which monitors the predictions about incoming inputs that are generated. A dysfunction at the level of the mechanisms which produce these predictions could result in unreasonable anxious doubts.

This is the hypothesis that Levy has put forward regarding the etiology of Obsessive-compulsive disorder. Levy (2016) argues that the dysfunctional tendency of OCD sufferers to assign probabilities for threatening events arises from a prior dysfunction related to attention. On this account, both the symptoms and the particular cognitive dispositions of OCD sufferers arise from overly precise "pushmi-pullyu" sensory and motor representations (Millikan, 1995). Dysfunctionally heightened attention brings excessive precision to pushmi-pullyu representations which predict catastrophic scenarios. Assuming a continuity between the chronically unreasonable doubt of OCD sufferers and the temporarily unreasonable doubt of Sylvia, we can thus imagine that the everyday unreasonable doubt that Sylvia is going through is due to (2) dysfunction at the level of the mechanisms which produce the cognitive content that anxiety responds to.

As I have proposed here, while epistemic anxiety relies on "quick and dirty" metacognitive mechanisms, it triggers a ramping up of cognitive processes to address the problematic uncertainty. Once higher-level processes such as the ones underlying reflection and reasoning are at work, we can consciously assess the validity of the assessment made by the metacognitive mechanisms on which anxiety relies, and we can decide to follow, dismiss, or revise this assessment. That is, while we generally take the evaluations provided by our emotions at face value, we are nonetheless in a position to dismiss these emotional signals and not exploit them in practical reasoning if we judge them to be inaccurate or irrelevant. For instance, upon experiencing epistemic anxiety about the possibility that we might not be sitting on the right train, we may then quickly use our reasoning to conclude that our belief that we are on the right train is after all correct, thereby revising the initial assessment of anxiety, and slowly turning off the alarm.

In the next section, I show how my model of the mechanism of epistemic anxiety implies a significant revision of Levy's model regarding the interaction between anxiety and the thoughts and imaginings that are part of hypothetical thinking. Levy suggests that anxiety is caused by the imaginings of threatening possibilities that pop into Sylvia's mind, causing rumination and worries. I will suggest that anxiety is instead primary in this process: it is not triggered by imaginings and thoughts of possible threats and their negative outcomes, it actually is what prompts these imaginings and thoughts in the first place.

5 Epistemic anxiety, hypothetical thinking, and imagining

Because anxiety typically triggers the high-level cognitive processes constitutive of hypothetical thinking, we often think of anxiety itself as inextricably linked to our capacity to represent possible negative outcomes through mental imagery. To experience anxiety is to have in mind (at least) two ways in which the future could unfold, with one made salient against the backdrop of the other. As I anxiously contemplate the possibility that I have not been selected for the job, I am aware that there is also a possibility that I have.¹⁶ This "two ways" anxious state of mind relies on cognitive processes such as the mental representation of the outcomes of each scenario, and the evaluation of each scenario in terms of plausibility and goal-relevance, that are part of hypothetical thinking.

However, it is clear that these hypothetical representations are an *effect* of the ramping up of higher-level processes prompted by the initial evaluative signal of anxiety, rather than antecedent to or constitutive of anxiety itself. Anxiety signals potential threat, which then triggers a ramping up of higher-level cognitive processes, including representations of the possible forms the threat could take if it were to materialize. Of course, we may reflectively convey threatening states of affairs to mind (which might in turn trigger our anxiety to rise). However, according to dominant models in cognitive science I have introduced in the last section, this is not how we typically manage everyday cognitive tasks. Typically, cognitively costly reflective processes are not exploited as a default in everyday routine cognitive tasks. Instead, they are recruited when a problem has been signalled, which cannot seemingly be dealt with by lower-level processes. And thus, typically, it is not that hypothetical thinking (imagining, representing "what if" scenarios, etc.) triggers anxiety, it is rather that anxiety signals a need to shift from an automatic intuitive mode to a mode in which one is able to represent hypothetical states of the world in order to better face a problematic uncertainty.¹⁷

¹⁶ This has led some researchers to suggest that anxiety might not be a *sui generis* emotion, but might instead be constituted of an alternation of the emotions of fear and hope; an awareness that events might unfold in a negative *or* in a positive manner (that is, in a manner in which our goals are promoted or thwarted) (Miceli & Castelfranchi, 2010; Sassaroli & Ruggiero, 2003).

¹⁷ Once imagination is at work, though, it might reinforce the assessment provided by anxiety, according to which one is indeed facing a possible threat. Running these possible scenarios in imagination allows us to gauge their likelihood and the potential magnitude of the threat. As a result of running this simulation, we might be led to either dismiss anxiety's initial assessment, or to accept that we are under a possible threat. This, in turn, will trigger the cautious and protective action tendencies typical of anxiety.

This model is consistent with another recent hypothesis on the nature of obsessive thoughts. Obsessive thoughts are the recurrent mental contents which drive patients with OCD to persistently doubt (about whether their hands are clean, whether they might have left some appliance on, etc.). While patients with OCD are (typically) not delusional and judge these doubts as unfounded and unreasonable, they nonetheless experience great difficulty in dismissing the threatening possibilities presented by the thoughts. While the doubt of OCD patients is considered pathological in that it is recurrent, highly persistent, and disabling, Sylvia's doubt can instead be viewed as an "everyday" case of unreasonable doubt. In the first case, the psychological mechanisms responsible for the emergence of this kind of doubt seem to be chronically dysfunctional, while in the second they are only temporarily malfunctioning. Nonetheless, these are both instances in which an agent antecedently believes that p (the stove is off) and is unable to shake off or dismiss the possibility that $\text{not-}p$ might be the case.

To resolve the epistemic puzzle posed by the presence in OCD patients of both a good level of insight, and a deeply felt doubt, it has recently been argued that obsessive thoughts are best conceived as "what-if?" question-directed attitudes, rather than as beliefs or degrees of beliefs (Taylor, 2020).¹⁸ Thus, in the same manner as Levy (2016) argues that Sylvia's (everyday unreasonable) doubt is not satisfactorily explained by types of beliefs, Taylor (2020) argues that the obsessive thoughts which motivate the (pathological) doubt of OCD patients are not satisfactorily explained by types of beliefs. While Levy views the thoughts that trigger anxiety in everyday unreasonable doubt as *imaginings*, Taylor conceives of obsessive thoughts as question-directed attitudes. However, while both agree that anxiety is at play in these cases, little is said regarding the causal chain of mental events which connects anxiety to imaginings or "what-if?" attitudes.

The model I introduce here represents an elaboration of both Levy's and Taylor's claims. In this model, epistemic anxiety signals a problematic epistemic uncertainty, which automatically launches reflective processes part of hypothetical thinking. Hypothetical thinking both involves *imagining* the possible state of affairs in which the stove is on, and deploying counterfactual reasoning to ask "what-if" it were true that I am mistaken in believing that the stove is off. It is plausible that both everyday cases of unreasonable doubt such as Sylvia's and pathological cases of doubt in OCD manifest a similar chain of mental events involving both epistemic anxiety and hypothetical thinking. In other words, Levy is right in highlighting the role of *imaginings* of threatening possibilities in such cases of doubt. And so is Taylor in suggesting that obsessive thoughts are "what-if" attitudes; that is, mental states through which we represent a world in which it is true that the stove is on, with all the consequences implied.

Both Levy and Taylor are correct in that, when we start anxiously doubting our beliefs, we typically *end up* imagining what the world would be like if we were indeed mistaken in believing p , and deploying hypothetical thinking to entertain the idea of a world in which $\text{not-}p$ is the case. Both imagining and being in a "what-if" attitude rely on higher-level cognitive processes part of hypothetical thinking. However, in both Levy's and Taylor's model, the question of what prompts hypothetical

¹⁸ Taylor's argument is that conceiving of obsessive thoughts as "what-if" question-directed attitudes makes the state of mind of OCD patients less puzzling, in that entertaining a question-directed attitude about whether $\text{not-}p$ might be the case is doxastically compatible with a state of knowledge that p .

thinking is left unanswered. The model I put forward here fills such a gap by proposing that epistemic anxiety first detects problematic epistemic uncertainty and triggers hypothetical thinking in order to control for it. In turn, hypothetical thinking makes salient both the ways in which one could well be mistaken is assuming that p is the case, and how costly it would be for one to be mistaken about such an issue.

This calls for a revision of Levy's model. In Levy's model, the thoughts that cause anxiety are conceived as *imaginings*. In the causal chain of events proposed by Levy, imaginings pop into Sylvia's mind, and cause anxiety to rise. Anxiety, in turn, causes rumination and worries about the threatening possibility. In other words, it causes her to focus on "what-if" scenarios; to entertain the scary thought of a world in which not- p is true. However, if imagination (conceived as a mental representation of possible states of affairs) is dependent on higher-level cognitive processes, and if such processes are not deployed as a default but are instead typically prompted in order to resolve detected problems, then it is implausible that such imaginings are what starts off the chain of mental events in Sylvia. More precisely, given what we know about the interaction between lower-level and higher-level cognitive processes, the interaction between imaginings and anxiety is likely to be the other way around: typically, imaginings do not cause anxiety; they are caused by it.

The model I propose here invites us to revise our view of the interaction between anxiety and the imaginings that are part of hypothetical thinking. While folk psychology suggests that anxiety is triggered by thoughts of possible threats and their negative outcomes, I suggest that anxiety is primary in this process: it is once anxiety has prompted the deployment of higher-level processes that one is in a cognitive position to consciously think about and imagine these possible and threatening states of affairs. What this means with regard to the psychological reality of doubt is that it involves the process of shifting from an *intuitive and assertive* attitude (of believing, knowing, assuming, etc.) to a *reflective and interrogative* attitude towards a proposition, as a result of experiencing signals of problematic uncertainty.¹⁹

6 Conclusion

In this paper I have proposed a model as to how anxiety, and particularly epistemic anxiety, might be said to trigger doubt about the quality of one's epistemic state with regard to some proposition. Importantly, this model is in line both with current models of human cognitive architecture, and with existing philosophical and psychological work on anxiety. I believe that the model I have proposed in this paper enriches and enlightens the original claim put forward by Christopher Hookway, according to which epistemic anxiety motivates our reasonable doubts.

¹⁹ While I believe that this is how doubt about one's beliefs generally plays out in everyday life, it is also possible to consciously decide to use doubt as a method or a cognitive strategy of inquiry. One could argue in this regard that Descartes' doubt (1641) consists in using the reflective mode of cognition as a default mode of inquiry into the epistemic quality of one's cognitive states. It consists in using reflection and reasoning to convey possibilities which undermine the strength of one's evidence in p , reduce one's confidence, to the point of making it ultimately unreasonable for one to assert anything. Using the reflective mode of cognition as a default mode of inquiry is not, as I have argued, the typical way of inquiry into the epistemic quality of our cognitive states.

Doubting is the process whereby we move ourselves from an assertive and unreflective attitude towards a proposition, to an interrogative and reflective attitude towards it. I have argued that epistemic anxiety, like other kinds of anxiety, relies on a metacognitive mechanism which tracks and signals those problematic uncertainties which we should attend to. I have moreover suggested that epistemic anxiety causes doubt by triggering a shift from an intuitive mode of cognition in which the truth value of a proposition is taken for granted, to a reflective mode of cognition in which higher-level processes are deployed to question it, thereby making salient possibilities of error and potential defeaters.

This model also brings clarity to the interactions between lower-level processes such as anxiety, and higher-level processes such as counterfactual reasoning and imagining, as they concur to give rise to our everyday doubts. Although questioning the accuracy of one's epistemic states is typically associated with our higher-order capacity for reflection and counterfactual reasoning, it is plausible that this type of inquiry is typically first prompted by affective states which serve the function to detect problematic uncertainties in our cognitive operations.

Acknowledgements I wish to thank Fabrice Teroni, Jérôme Dokic, Charlie Kurth, Jane Friedman, Jennifer Nagel, Anne Meylan, Elisabeth Pacherie, and Michael Brady for their insightful comments and rich discussions on the dissertation chapters which inspired this paper.

Funding Open access funding provided by University of Geneva.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Abramowitz, J. S. (2008). Scrupulosity. In J. Abramowitz, D. McKay, & S. Taylor (Eds.), *Clinical handbook of obsessive-compulsive disorder and related problems* (pp. 156–175). Johns Hopkins University Press.
- Brady, M. S. (2010). Virtue, emotion, and attention. *Metaphilosophy*, 41(1–2), 115–131.
- Brady, M. S. (2013). *Emotional insight: The epistemic role of emotional experience*. OUP Oxford.
- Carruthers, P. (2015). *The centered mind: What the science of working memory shows us about the nature of human thought*. OUP Oxford.
- Clark, A. (2015). Radical predictive processing. *The Southern Journal of Philosophy*, 53, 3–27.
- Colas, E. (1999). *Just checking*. Simon and Schuster.
- Deonna, J. A., & Teroni, F. (2012). *The emotions: A philosophical introduction*. Routledge.
- Deonna, J. A., & Teroni, F. (2015). Emotions as attitudes. *Dialectica*, 69(3), 293–311.
- Descartes, R. (1641). *Méditations métaphysiques*. Garnier-Flammarion.
- De Sousa, R. (1987). *The rationality of emotions*. MIT Press.
- Endler, N. S., & Kocovski, N. L. (2001). State and trait anxiety revisited. *Journal of Anxiety Disorders*, 15(3), 231–245.

- Evans, J. S. B. (2019). *Hypothetical thinking: Dual processes in reasoning and judgement*. Psychology Press.
- Evans, J. S. B., & Frankish, K. E. (2009). *In two minds: Dual processes and beyond*. Oxford University Press.
- Evans, J. S. B., & Stanovich, K. E. (2013). Dual-process theories of higher cognition: Advancing the debate. *Perspectives on Psychological Science*, 8(3), 223–241.
- Gendler, T. S. (2008). Alief and belief. *The Journal of Philosophy*, 105(10), 634–663.
- Goldie, P. (2002). Emotions, feelings and intentionality. *Phenomenology and the Cognitive Sciences*, 1(3), 235–254.
- Gordon, R. M. (1969). Emotions and knowledge. *The Journal of Philosophy*, 66(13), 408–413.
- Hookway, C. (1998). Doubt: Affective states and the regulation of inquiry. *Canadian Journal of Philosophy*, 28(sup1), 203–225.
- Hookway, C. (2008). Epistemic immediacy, doubt and anxiety: On a role for affective states in epistemic evaluation. In G. Brun, U. Doguoglu, & D. Kuenzle (Eds.), *Epistemology and emotions* (pp. 51–65). Ashgate Publishing.
- Koriat, A. (2000). The feeling of knowing: Some metatheoretical implications for consciousness and control. *Consciousness and Cognition*, 9, 149–171.
- Kurth, C. (2018a). *The anxious mind: An investigation into the varieties and virtues of anxiety*. MIT Press.
- Kurth, C. (2018b). Emotion, deliberation, and the skill model of virtuous agency. *Mind & Language*, 33(3), 299–317.
- Levy, N. (2016). Have I turned the stove off? Explaining everyday anxiety. *Philosophers*, 16, 1–10.
- Maibom, H. (2005). Moral unreason: The case of psychopathy. *Mind & Language*, 20, 237–257.
- Miceli, M., & Castelfranchi, C. (2010). Hope: The power of wish and possibility. *Theory & Psychology*, 20(2), 251–276.
- Miceli, M., & Castelfranchi, C. (2005). Anxiety as an “epistemic” emotion: An uncertainty theory of anxiety. *Anxiety Stress and Coping*, 18(4), 291–319.
- Miceli, M., & Castelfranchi, C. (2015). *Expectancy and emotion*. Oxford University Press.
- Millikan, R. G. (1995). Pushmi-pullyu representations. *Philosophical Perspectives*, 9, 185–200.
- Nagel, J. (2010). Epistemic anxiety and adaptive invariantism. *Philosophical Perspectives*, 24, 407–435.
- Neal, R. L., Alcolado, G. M., & Radomsky, A. S. (2017). *Responsibility, checking, and reassurance-seeking in OCD*. Wiley.
- Roskies, A. (2003). Are ethical judgments intrinsically motivational? Lessons from “acquired sociopathy.” *Philosophical Psychology*, 16, 51–66.
- Sassaroli, S., & Ruggiero, G. M. (2003). La Psicopatologia Cognitiva del Rimuginio. *Psicoterapia Cognitiva e Comportamentale*, 9, 31–46.
- Schwitzgebel, E. (2010). Acting contrary to our professed beliefs or the gulf between occurrent judgment and dispositional belief. *Pacific Philosophical Quarterly*, 91(4), 531–553.
- Solomon, R. C. (2007). *Not passion’s slave: Emotions and choice*. Oxford University Press.
- Tappolet, C. (2016). *Emotions, values, and agency*. Oxford University Press.
- Taylor, E. (2020). Discordant knowing: A puzzle about insight in obsessive–compulsive disorder. *Mind & Language*, 1–21.
- Thompson, V. A. (2009). Dual process theories: a metacognitive perspective. In J. S. B. Evans & K. Frankish (Eds.), *Two minds: Dual processes and beyond*. Oxford University Press.
- Vazard, J. (2019). (Un)reasonable doubt as affective experience: Obsessive-compulsive disorder, epistemic anxiety and the feeling of uncertainty. *Synthese*. <https://doi.org/10.1007/s11229-019-02497-y>