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A new puzzle about belief and credence

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ABSTRACT
I present a puzzle about belief and credence, which takes the form of three independently supported views that are mutually inconsistent. The first is the view that S has a modal belief that p (e.g., S believes that probably-p) if and only if S has a corresponding credence that p. The second is the view that S believes that p only if S has some credence that p. The third is the view that, possibly, S believes that p without a modal belief that p. [Word Count: 85]

1. Introduction

My thesis is that there is an interesting, new puzzle about belief and credence. The puzzle takes the form of three independently supported views that are mutually inconsistent. The first is,

- S has a modal belief that p (e.g., S believes that probably-p) if and only if S has a corresponding credence that p (e.g., S has a moderately high credence that p).

This view is a component of *credal expressivism*, a popular view among philosophers working on epistemic modals.[1] The second is,

- S believes that p only if S has some credence that p.

This view is entailed by most theories about the relationship between belief and credence. The third is,

- Possibly, S believes that p without a modal belief that p.

This view is supported by intuitive judgments about cases.

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This puzzle advances the literature in at least a couple of ways. First, it connects three areas of philosophy: the semantics of epistemic modals,[2] the nature of belief,[3] and the relationship between belief and credence.[4] These connections are not easy to see, and it is valuable to see how views in one area have implications for views in another area. Second, the puzzle provides a proponent of any one of the three views with the dilemma of having to reject one of the other two independently supported views. It is valuable, for example, to see that credal expressivism faces a dilemma, since it is a relatively new and popular view.

2. First proposition of the puzzle

Credal expressivism is a view about epistemic modal sentences (in short, 'epistemic modals') in ordinary language. Epistemic modals include sentences of the form, 'Probably, p,' 'Very probably, p,' 'It might be that p,' 'Definitely, p,' and so on. The truth values of epistemic modals have traditionally been taken to be dependent on individuals' information states. 'The lights might still be on' could be true when uttered by me, since I left the room, but false if uttered by Marie, who is still in the room. 'Thirty-six is probably the answer to math problem A' would be true if uttered by someone who just heard his very reliable fellow student sincerely assert that the answer is thirty-six, but that sentence would be false if uttered by the teacher, who knows the answer is not thirty-six and is aware of a hidden trick in the problem. These examples distinguish epistemic modals from metaphysical modals and statistical probabilities, the truths of which are independent of knowers. The truth of *it is metaphysically possible that the lights are on* is independent of any knower, and *there is a 100% probability that thirty-seven is the answer to problem A* is true regardless of who's working on the problem.

Traditionally, epistemic modals have been understood in terms of a base of evidence or knowledge.[5] 'It might be raining,' for example, might be understood as 'For all I know, it's raining,' or, appealing to evidence, 'Our evidence does not rule out that it is raining.' Similarly, 'It will probably rain' might be understood as 'What we know supports the proposition that it will rain' or 'Our evidence supports the proposition that it will rain.' As we will see below, credal expressivists do not understand epistemic modals in these ways, but these examples should get the relevant sort of probability and possibility on the table.

Following Seth Yalcin (2012, 133–134), I'll take credal expressivism to entail the following:

(A) *S* believes that probably-p if and only if *S* has a moderately high credence that p.

(B) In sentences of the form, 'S believes that probably-*p*,' 'probably' does not contribute to determining the content of *S*'s belief but instead indicates *S*'s moderately high credence toward *p*; the content of *S*'s doxastic attitude is just *p*.

Although A and B do not amount to a complete definition of credal expressivism, they will help us to understand it. A is straightforward. If one has a moderately high credence that it will rain, then one believes that it will probably rain; if one believes it will probably rain, then one has a moderately high credence that it will rain. This credence need not be *precise*. When I say, 'Fred has moderately high cholesterol,' I am not attributing a precise amount of cholesterol to him, but an amount within an interval (with, perhaps, vague boundaries). So it can be with an attribution of a moderately high credence.

B is a semantic thesis about epistemic modals. Consider,

(1) 'Fred believes that Sally is probably happy.'

According to B, the epistemic modal operator 'probably' in (1) does not contribute to determining the content of Fred's belief and only indicates that Fred has a moderately high credence with the content *Sally is happy*. So, the object of Fred's attitude, according to B, is not *Sally is probably happy*, but merely *Sally is happy*. On credal expressivism, there is no proposition that *Sally is probably happy* that can be believed or be true or false.

In contrast, the traditional *descriptivist view* says that 'probably' *does* contribute to determining the content of Fred's belief. (1) should be interpreted straightforwardly as saying that Fred has a belief with the content *Sally is probably happy*, which, as mentioned above, might be understood as *my evidence supports the proposition that Sally is happy*. On descriptivism, 'Sally is probably happy' does express a proposition that can be believed and be true or false.[6]

Other propositions that credal expressivism entails can be determined by replacing 'probably' in A and B with epistemic modal operators like 'very probably', 'it might be that', and 'definitely', and then providing corresponding replacements of 'a moderately high credence' (with, respectively, 'a high credence', 'a non-zero credence', and 'a credence of 1').[7] I can now formulate a more complete definition of credal expressivism. Let 'M' be a variable ranging over epistemic modal operators and 'X' be a variable ranging over numbers and intervals between 0 and 1 inclusive. Credal expressivism has two main components:

A*) *S* believes that M*p* if and only if *S* has X credence that *p* (where M and X correspond to each other).

B*) In sentences of the form, 'S believes that Mp', 'M' does not contribute to determining the content of S's belief but instead indicates the corresponding X credence toward p; the content of S's doxastic attitude is just p.[8]

A* is the first proposition of the puzzle.

An illustration by Yalcin will both explain why someone might affirm credal expressivism and also be relevant to later parts of the paper. Yalcin occasionally tosses his dog Fido a bone at dinner, but not usually. When Fido runs into the room and waits by Yalcin's chair, Yalcin says,

(2) 'Fido thinks I might give him a bone.'

Yalcin writes,

> Unless you have a particular theory of epistemic modals, I doubt you would flinch at this remark. But what exactly am I saying? Does my remark in part mean, as standard versions of descriptivism would recommend, that Fido believes that it is left open by what he knows that I will give him a bone? This is a bit much. The truth of [2] does not turn on recherché facts about canine self-awareness. Surely [2] may be true even if Fido is incapable of such second-order states of mind (2011, 308).[9]

Yalcin thinks that descriptivism overintellectualizes the requirements for Fido to believe *he might give me a bone*. Credal expressivism more reasonably only requires that Fido have a nonzero credence that *he will give me a bone*.[10]

It is beyond the scope of this paper to engage with the many sophisticated arguments for credal expressivism.[11] What *is* important is that it has been supported, and hence, A* has been supported. Furthermore, notice that one need not be a credal expressivist to accept A*; one could deny B*, accept descriptivism, and still accept A*. Hence, A* is logically weaker, and thereby more plausible, than credal expressivism.[12] So, A* has a decent amount of support in its favor. When I later show that A* conflicts with two other independently supported views, we will see that there is a genuine puzzle.

3. Second proposition of the puzzle

The second proposition of the puzzle is

BEC) If S believes that p, then S has some credence that p.

In slogan form, 'Belief entails credence.' In this section, I do three things. First, I explain how I will use the terms 'believes' and 'credence'. Second, I present my method for determining whether someone believes or has a

credence in a particular case. Third, I explain why many are inclined to hold BEC.

I intend for 'believes' in BEC to mean what it means in ordinary English. Hence, unlike some philosophers, I do not use 'believes' in a technical way.[13] Belief is probably picked out more naturally by the word 'thinks'. For example, it is more natural to say of a man who is fumbling in his pocket, 'He thinks that the keys are in his pocket,' than, 'He believes that the keys are in his pocket.'[14] In ordinary language, 'believes' talk is often reserved for attitudes about religious, ethical, or political matters. Still, 'believes' *is* an appropriate term for the situation with the man and his keys, and I will take 'believes' and 'thinks' to be synonymous.[15]

We often form plausible, intuitive judgments about the presence or absence of belief.[16] Suppose a student pulls out a chair and sits on it. We can form the plausible judgments that the student believed that she pulled out a chair, and that she didn't believe it was a dangerous wolf. In this paper, I will assume that such intuitive folk psychological judgments, though fallible, are for the most part true. I will also try to remain neutral among the various theories of belief defended by philosophers of mind, depending instead on intuitive judgments that will likely be agreed upon by proponents of the different theories.[17]

Let us now discuss 'credence'. Philosophers often use the word in a non-standard way. In ordinary English, 'credence' picks out *evidential support*, e.g., 'The new video tape lends credence to Fred's claim about the witness'; it is thereby picking out something *normative*. Also, 'credence' is nearly always preceded by words such as 'lends', 'provides', and 'gives'. *Philosophers*, on the other hand, often use sentences of the form, '*S* has high/low/X credence that *p*,' but such expressions are seldom used in ordinary English.[18] And, as we shall see, philosophers often use 'credence' to pick out something *nonnormative*.

Consider how philosophers introduce credence into their discussions in recent literature. Elizabeth Jackson (forthcoming-b) writes,

> While I am roughly 100% confident that 1 + 1 = 2, I am closer to 99% confident my car is in the parking lot outside, and more like 50% confident that a Republican candidate will win the next US election. I will follow many epistemologists in calling this… attitude *credence*.

Benjamin Lennertz (2015) writes,

> In addition to full beliefs, agents have attitudes of varying *confidence*, or *credences*. For instance, although I do not believe that the Boston Red Sox will win the American League East next year, I am at least a little bit *confident* that they will – i.e., I have a positive credence that they will (1, my emphasis).

Matthew McGrath writes,

> Some of the things we believe, we believe with more confidence than others. A person might suspend judgment on two different propositions but be more

confident of the truth of one of the propositions than the other... What does it take for such confidences (or "credences" in the lingo) to be epistemically appropriate? As we'll see, many philosophers think that to be *rational*, our credences as a whole must obey the axioms of probability (Goldman and McGrath 2015, 251).

Lastly, in his exposition of credal expressivism, Seth Yalcin (2007) writes,

> Now suppose Cleopatra says, "Antony's fleet probably outnumbers the enemy's." On the Bayesianism-inspired interpretation of the semantics I want to consider, Cleopatra here expresses her state of high credence, *or her confidence*, in the proposition that Antony's fleet outnumbers the enemy's (1020, my emphasis).[19]

Jackson, Lennertz, McGrath, and Yalcin all use 'credence' and 'confidence' interchangeably throughout their articles. It appears that some recent philosophers are dropping the ordinary meaning of a word ('credence') and then replacing it by using the ordinary meaning of another word ('confidence').

I think this is more complicated than necessary. Why do philosophers use 'credence' in this way? Why not just stick to 'confidence' talk and let 'credence' keep its ordinary meaning? The first question is difficult. The use of 'credence' in something like the above way has a history, going back at least to Russell (1948, 248), Carnap (1962, 305), and Lewis (1980).[20] Explaining why these philosophers used 'credence' in this way, and why it caught on, is beyond the scope of this paper.[21] Regarding the second question, I think it *would* be preferable to just stick to 'confidence' talk. However, as McGrath says, it is the 'lingo' in current philosophy and of those I am engaging with, so, for this paper, I will follow that convention.[22]

BEC is a metaphysical thesis, not an epistemological one; it makes a modal claim about how two mental states are related. I note this because much of the literature on belief and credence quickly shifts to discussions about how the *epistemic norms* of belief and credence relate.[23] Those discussions often focus on lotteries and closure principles, sometimes with technically formulated axioms and theorems applying only to ideally rational agents. I think that this is because it has normally been *decision theorists* or *formal epistemologists* who have explored the nature of credence and its relation to belief. Philosophers of mind, who have tended to be more interested in metaphysics questions and less in normative questions, have tended to only explore the nature of belief and not the nature of credence and its relation of belief. Although discussions about normative issues are valuable and often relevant to BEC, I will take a *metaphysics-first* approach. I believe there is value to discussing BEC directly, not just indirectly via the epistemic norms of credence and belief.

Why would someone believe BEC? To answer, I will first note that BEC is not trivially true. The mental state picked out by 'believes' and the mental

state picked out by 'confidence' *might* be such that it is metaphysically possible that the former exist without the latter. Or it *might* be that the mental state that explains the behaviors associated with belief, and the mental state that explains the behaviors associated with credence, are such that the former can exist without the latter. BEC is a substantive claim that requires argument.

Since BEC is an entailment, sufficient support for it will not come from showing, using empirical psychology, that every actual person who believes *p* also has some credence that *p*. (Every human has been born near the surface of the earth, but *being human* does not entail *being born near the surface of the earth*.) It must be that, for any *possible* case in which *S* believes that *p, S* has some credence that *p*. So, a better argument will go like this. It is plausible that every considered possible case of belief that *p* is accompanied by credence that *p*; therefore, it is plausible that belief entails credence.[24]

BEC is also entailed by the well-known *threshold view*. It states that belief that *p just is* a sufficiently high credence that *p*, believing that ~ *p just is* a sufficiently low credence that *p*, and withholding belief that *p just is* a credence that *p* that is in between the previous two thresholds.[25] It is left open exactly how the threshold should be set, but however it is set, BEC will follow from the threshold view.[26]

Lastly, even those who reject the threshold view will likely still accept a view that entails BEC. In fact, I am aware of no philosopher who has explicitly argued against BEC![27] So, many will be inclined to accept BEC.

4. The third proposition of the puzzle

4.1 *The puzzle stated*

Let 'modal belief' denote whatever doxastic attitude one has when one believes that probably-*p*, might-*p*, definitely-*p*, and so on. Here is the third proposition, alongside the other two propositions in the puzzle:

A*) *S* believes that M*p* if and only if *S* has X credence that *p* (where M and X correspond to each other).

BEC) If *S* believes that *p*, then *S* has some credence that *p*.

~BEM) Possibly, *S* believes that *p* and *S* has no modal belief that *p*.

In slogan form, ~BEM says, 'Belief doesn't entail modal belief.' (Correspondingly, 'BEM' says 'Belief entails modal belief.')

Here is the argument that the three theses are inconsistent. Suppose ~BEM is true. Then there is some possible being, call it 'Fred', who believes that *p* but has no modal belief that *p*. It follows from BEC that Fred has some credence that *p*. It then follows from A* that Fred has a modal belief that *p*. This contradicts the earlier point that Fred has no modal belief that *p*.

4.2 *First argument for ~BEM*

Although arguments for A* and BEC exist in the literature, ~BEM has never even been considered. I will thereby provide two arguments for it. Consider,

> Thirst Scenario: Bleary-eyed, you wake up in the middle of the night needing a drink. You get up, stumble around the cat, and walk to the bathroom. In the process, you unreflectively form beliefs in propositions such as *I need a drink, there's the cat*, and *the bathroom's right over there*.

It seems that you believe *I need a drink, there's the cat*, and *the bathroom's over there*. It does *not* seem that you believe *I probably need a drink, there's probably the cat*, and *the bathroom's probably over there*. In fact, it seems that you have no such modal beliefs. These intuitive judgments support ~BEM.

I'll consider three objections. First, someone might object that attribution of the belief that *probably, there's the cat* feels unnatural only because it puts into the reader's mind the thought that you don't believe it is *very* probable that there's the cat or that *definitely*, there's the cat.[28] Hence, our intuitions are misled. In response, even if we replace 'probably' with 'very probably' or 'definitely', it just does not seem that you have the relevant modal beliefs. For example, perhaps in *some* situations, you wake up believing *I definitely need a drink*, but not always, and it seems unnatural to think that you believe that *definitely, there's the cat* and *the bathroom is definitely over there*. It seems that you don't have any of these modal beliefs.

Second, my claims about the Thirst Scenario might meet resistance from those who affirm a dispositionalist theory of belief. Consider that you *would say*, 'Why, of course it's probable that there's the cat!' if you were *asked* about the probability of there being the cat. This indicates that you have the *disposition* to consciously affirm that *there's probably the cat*, which further indicates that you believe this. On some dispositionalist theories of belief, having this disposition *just is* (at least part of) what it is to believe that *there's probably the cat*.[29]

In response, no plausible dispositionalist theory will affirm that the disposition to consciously affirm *p* is sufficient for believing *p*. There are propositions that we clearly do not believe, but that we *would* consciously affirm if asked. This is obviously so in the case of insights that we have never considered. ('Have you considered that Susan would be a good candidate?' 'Ah, no, I had not considered it, but yes, Susan would be a good candidate!') In such a case, one does not believe until *after* one has been asked. So, the disposition to consciously (or verbally) affirm p doesn't entail that you believe that p. Similarly, in our specific case, it also does not become clear that you believe that *there's probably the cat* until *after* you are asked. Before then, it seems that you simply believed that *there's the cat* (without any

modal belief). Note that nothing I have said here conflicts with disposition-alist theories *per se*, but only with those with an implausible sufficient condition on belief.

Here is the third objection.[30] In the Thirst Scenario, you have a number of *behavioral dispositions* that are associated with believing that there's prob-ably the cat. You are disposed to tip toe around the cat or to pet the cat (if it walked up to your leg and purred). A more sophisticated dispositionalist might say that these behavioral dispositions, along with the disposition to consciously affirm that there's probably the cat, are *sufficient* for believing that there's probably the cat. Why think you have the behavioral disposi-tions that go with believing that there's *probably* the cat? It's because these are the very same behavioral dispositions that go with believing that *there's the cat*! Therefore, since we attribute belief that there's the cat, we should also attribute belief that there's probably the cat.

I am skeptical of a premise in this argument, specifically, the claim that the behavioral dispositions associated with believing *there's the cat* are identical to those associated with believing *there's probably the cat*. The following two claims seem plausible:

(3) A behavioral disposition to say 'p' is a more central disposition to believing that p than to believing that probably-p.
(4) A behavioral disposition to say 'probably-p' is a more central disposi-tion to believing that probably-p than to believing that p.

Of course, the disposition to say 'p' is not a necessary condition for believing p; mute people can believe p. It is also not sufficient; some people are disposed to lie. Still, dispositionalists are likely to think that there is a set of dispositional properties – a stereotype (following Schwitgebel (2002, 250–253)) – that goes along with any belief that p, with some dispositional properties being more central (e.g., the disposition to consciously affirm that p) and others more at the periphery (e.g., the disposition to appeal to p while engaged in complex reasoning when p's relevance is not obvious). This is the sort of centrality that is appealed to in (3) and (4). But if (3) and (4) are true, then the dispositional profiles of believing p and believing prob-ably-p are distinct; then the argument of the previous paragraph is unsound.

To be clear, I am not appealing to (3) and (4) to argue *for* the conclusion that you have no modal belief in the Thirst Scenario. I don't see a good argument there, and my main reason for thinking you don't have a modal belief in the Thirst Scenario is straightforward intuition. Furthermore, while I think that (3) and (4) are plausible claims that a dispositionalist should hold, it is open to the dispositionalist to deny them. Now I suppose that, after considering the puzzle, a dispositionalist might be moved to develop a view, according to which, for every belief that p that one forms in Thirst Scenario,

one also has the dispositions to ground believing Mp (for some M). That is certainly possible, and it would be interesting if reflection on ~BEM and the puzzle moved people to develop dispositionalist views along these lines.

So, some versions of dispositionalism will determine that you believe that there's probably the cat, and others will not. As I said earlier, I will remain as nonpartisan about substantive theories of belief as I can. Furthermore, even if one does not accept a dispositionalist theory of belief, one might still think that, in the Thirst Scenario, you have the modal belief *tacitly or implicitly*. There are different understandings of what an implicit belief is, and settling whether you have the relevant implicit modal belief will take us away from the main line of argument I wish to focus on in this paper.[31]

Admittedly, then, the Thirst Scenario will not convince everyone of ~BEM; there are a lot of complications. However, it will convince some. A large number of philosophers are not dispositionalists, and it will seem to many of them that you do not form a modal belief in the Thirst Scenario, even implicitly.[32] This category of philosophers, which includes myself, will regard the Thirst Scenario as disproving BEM.

4.3 *The second argument for ~BEM*

This section's argument is plausible only if it is also plausible that nonhuman animals believe things. Fortunately, this is plausible. Consider the following example, adapted from Norman Malcolm (1973):

> A dog is chasing a cat. The latter runs toward a tree but suddenly swerves and disappears behind the corner of the house. The dog doesn't see this maneuver and arrives at the tree, rearing up on his hind legs, pawing the trunk as if trying to scale it, and barking excitedly into the branches above.

We would naturally say, 'The dog thinks that the cat went up the tree.' Furthermore, this is not just loose talk; upon reflection, it seems true.

This is unlike the sentence a person utters when saying, 'The door sensor knows you're passing through.' If you asked, 'Does the door sensor *really know* that you're passing through?' the person would probably say, 'No.' On the other hand, if you asked the observer, 'Does Malcolm's dog *really think* that the cat went up the tree?' she would probably say, 'Yes.'[33] It really does seem that Malcolm's dog has beliefs.[34]

Now consider,

> Organism Case: The simplest creatures with beliefs will lie somewhere between bacteria, which do not have beliefs, and higher mammals, which do. Creatures that are not complex enough to have beliefs might still have mental states that are indicative of states of the world; they might have a kind of *indicator content*.[35] Imagine an organism, call it 'Organism', that not only has mental states with content *but also* the minimal level of complexity

required for belief.[36] It will likely be very simple, say, the belief that *there is something*. It will also likely be accompanied by other beliefs, such as that *there is something here* and *there is something there*, which Organism uses to maneuver through its environment.

It is unimportant that the belief has the specific content *there is something*; it could be *there is food*.

People will disagree about what type of animal Organism is (A bee? A deer?).[37] However, *when* it seems correct that Organism has the minimal complexity required for believing that *there is something* (we can imagine Organism moving about and avoiding knocking into objects), there is no intuition that Organism believes there is *probably* something. In fact, it will seem that Organism lacks that modal belief. Suppose that Organism is a deer. When a deer sees some alfalfa, calmly walks over, and chews it, the deer believes that *there is food*. It does not believe *there is probably food*, or *there definitely is food*. It just believes that there is food, without any modal belief.[38]

Unlike the person in the Thirst Scenario, Organism doesn't even have a *disposition* to assent (verbally or mentally) to any modal belief, and so it is harder to motivate the claim that Organism believes, even implicitly, that *there is probably something*. Hence, this case provides stronger support for ~BEM in this regard. It does not appeal to intuitions that some disposition-alists have independent reason to reject, and it is clearer that Organism does not implicitly believe that *there is probably something*.

Notice that to affirm BEM – that *belief entails modal belief* – leads to *modal belief explosion*. There is not only the implausibility that Organism believes that *there is probably food*. Organism must have a modal belief for *every* ordinary belief it forms about its environment. In addition to believing that *there is food*, the deer also believes *there is my offspring, there is a leaf*, and so on. If belief entails modal belief, then the deer must also have a corresponding modal belief for each of these beliefs. Notice that I am not affirming that such animals *never* have modal beliefs. For example, when Fido waits by Yalcin's heel, perhaps Fido does believe that he might receive a bone. I agree with Yalcin that that is intuitive. What's implausible is that Fido has a modal belief for *every* belief he has about his environment.

To sum up, I have provided two cases, the Thirst Scenario and Organism Case, against BEM. The Organism Case has the advantage that one cannot easily appeal to a dispositionalist theory, or to implicit beliefs, to claim that Organism has modal beliefs. The Thirst Scenario has the advantage that it does not appeal to beliefs of simple animals. We all know what it's like to wake up thinking that we are thirsty. We do not all know what it is like to be an organism that has the minimal complexity required for belief. Although

both cases have their drawbacks, they together provide significant support against BEM.[39]

In conclusion, A*, BEC, and ~BEM each have significant support. Since they cannot all be true, we have a genuine puzzle.

5. Responses

I have encountered many responses to this puzzle. The first rejects A* and accepts both BEC and ~BEM. Those who take this response will often take the Organism Case or Thirst Scenario to be a case of credence without modal belief, and hence, to be a counterexample to A*. Credal expressivists, of course, have not been enthusiastic about this option. The plausibility of this response will depend on how good the arguments *for* A* are. Critiquing those arguments is the next step for those who take this first response.

The second response rejects ~BEM (accepts BEM) and accepts both A* and BEC. Now, I think it is hard to be a descriptivist and accept BEM. If one accepts descriptivism, then the difference between '*S* believes that *p*' and '*S* believes that M*p*' is that the latter ascribes a belief with a different content to *S*. But then it seems that it *would* be metaphysically possible to have the former without the latter, and my cases would illustrate this possibility.

A more natural way to accept BEM is to accept B*. The following speech informally captures a natural line of reasoning one could take:

> 'The only thing that makes us hesitant to affirm that Organism has the modal belief is the assumption that descriptivism is true, which says that ascription of modal belief is ascription of belief with a complex content. Clearly, Organism doesn't have *that*. However, if B* is true, then the ascription of modal belief can be true just in virtue of Organism's having a moderately high credence. That makes it plausible that Organism has the modal belief after all.'[40]

More concisely,

(i) The assumption of descriptivism is what drives the intuition that Organism does not have the relevant modal belief.
(ii) If B* is true, then Organism has modal beliefs.

One could make similar claims about the Thirst Scenario.

As one who denies BEM, I will suggest some reasons to resist this proposed solution to the puzzle. Against (i), I deny that what makes us hesitant to affirm that Organism has the modal belief is the assumption of descriptivism. Speaking for myself, I am agnostic about whether B* or descriptivism is true, but it still seems to me that the deer does not believe

that *there is probably food* or *there is definitely food*. It seems even more implausible that the deer has a modal belief for *every* belief it has.

However, *suppose* (i) is true. If the assumption of descriptivism drives our intuitions about Organism, then this reveals that we have a deep, pre-theoretic intuition that descriptivism is true. However, this does not imply that that intuition is untrustworthy. After all, something's being intuitive is normally evidence for its truth. So, our intuitions about Organism might reveal that we have additional intuitive evidence for descriptivism that we did not originally realize we had.

Let us move to (ii). My response to it is similar to the point just made. Instead of affirming that Organism has modal beliefs, perhaps we should instead reject B*. Note that the credal expressivists who defend A* and B* are normally philosophers of language who respect our intuitions about what seems true or false. The intuition that Organism doesn't have the relevant modal beliefs could itself be reason to doubt B*. Now, in providing these replies to (i) and (ii), I do not take myself to have *proven* that this second response – which affirms A*, BEC, and BEM – is incorrect. After all, credal expressivists have challenging arguments *for* B*. However, I believe I have shown that it's not obviously the solution to the puzzle.

The third response rejects BEC and accepts both A* and ~BEM. I find this response most plausible. It seems that the Thirst Scenario and Organism Case exhibit cases of belief without credence. We would naturally say that the deer thinks that there's food. But is it *confident* that there is food? Is confidence the sort of thing we should attribute to a deer? I think not, and this leads me to reject BEC. Furthermore, note that A* and ~BEM (and the arguments in their favor) could serve as premises in an argument *for* BEC. Unfortunately, these brief remarks do not constitute a full defense of the denial of BEC, which must wait for another time.[41]

Even though I have presented this puzzle as a choice between rejecting one of A*, BEC, or ~BEM, I could have presented it as a choice about how to think about Organism (or the Thirst Scenario). The one who rejects A* and accepts BEC and ~BEM will likely think that Organism has a credence without a modal belief. The one who rejects ~BEM and accepts A* and BEC will likely think that Organism has both a credence and a modal belief. The one who rejects BEC and accepts A* and ~BEM will likely think that Organism has neither a credence nor a modal belief. One must make similar choices about Thirst Scenario. So, there is also the puzzle of how best to think about these cases.

Some have objected, 'This isn't an interesting puzzle. Obviously proposition __ is the one to reject!' not knowing that other competent philosophers have said the same thing about the other propositions. I take this diversity of reactions to be due to a diversity of intuitions, some of which are probably due to differing background theoretical commitments, which are

probably further due to the puzzle's drawing from different areas of philosophy. Now, if my objectors agreed on *which* proposition to reject, then I would be worried. However, the *diversity* of responses reveals that it is not, in fact, so obvious which proposition to reject, which provides confirmation that the puzzle is, in fact, an interesting one. It reveals that philosophers in some areas are taking as obvious claims that would be questionable in other areas.

Some have objected that my puzzle is not novel. I will end, therefore, by drawing attention to some of its novel components. Nobody has made explicit cases like the Thirst Scenario and the Organism Case and discussed their relevance to the descriptivism/expressivism debate. Nobody has drawn from the different literatures and precisely formulated the three sentences and shown how they're inconsistent. Nobody has explored and laid out the various ways of responding to the puzzle. So, the puzzle and discussion are novel. This completes the defense of my thesis: there is an interesting, new puzzle about belief and credence.[42]

Notes

1. For defenses, see Yalcin (2007, 2011, 2012), Swanson (2011), Rothschild (2012), and Moss (2013).
2. See Schneider (2010), Crabill (2013), Dorr and Hawthorne (2013) and the references in footnote 1.
3. See Dretske (1988), Fodor (1987, 1990), Cohen (1992), Smithies (2012), and Schwitgebel (2002, 2015).
4. See Patrick Maher (1993), Mark Kaplan (1996), Christensen (2004), Huber (2009), Fantl and McGrath (2009), Foley (1993, 2009), Wedgwood (2012), Buchak (2014), Ross and Schroeder (2014), Sturgeon (2008, 2010, 2015), Locke (2014), Tang (2015), Carter, Jarvis, and Rubin (2016), Moss (2018), and Jackson (forthcoming-a, forthcoming-b).
5. This largely due to Kratzer (1977).
6. See Yalcin (2011; 296–300, 2012; 134) for more explanation of descriptivism. I follow Yalcin (2012, 133–134) in formulating this semantic component of credal expressivism as B; some credal expressivists might formulate it differently. Fortunately, it is the biconditional component of credal expressivism, A (or A*, to be presented), which is part of the puzzle, not the semantic component, so it does not matter that they would state it differently. Thanks to Bob Beddor and Simon Goldstein for helpful discussion.
7. It is standard to assign the number 1 to the highest credence that p (when one is certain that p) and the number 0 to the lowest credence that p (when one is certain that ~ p) and the numbers in between 0 and 1 to the varying credences in between. There are potential issues with this (specifically, the identification of credence 1 with certainty), but they are orthogonal to this paper. See Moss (2018, p. 57).
8. This isn't all that credal expressivists hold. Central to credal expressivism will be not just a theory of 'S believes M*p*', but also 'M*p*'. They will think that an utterance of 'M*p*' does not express the proposition that M*p*, but instead

expresses, for example, the advice, *have such-and-such credence that p* (e.g., see Moss (2013)). This is similar to the more well-known moral expressivism, which holds that 'X is wrong' does not express the proposition that *X is wrong*, but instead expresses, for example, *boo X* or *don't do X*.

9. Fido also appears in a similar example in Yalcin (2007).

10. For a reply to the use of this case against descriptivism, see Moon (2018, 1840).

11. See footnotes 1 and 2 for discussions of credal expressivism.

12. Of note, Sarah Moss (2018) would likely accept something close to (A*) (once we correct for the issue I mentioned in footnote 7). However, she rejects both credal expressivism (as I've formulated it, following Yalcin) and descriptivism. Both views accept that the content of a modal belief is a proposition. For the expressivist, it's p; for the descriptivist, it's Mp. On Moss' view, the content of a modal belief is Mp, *but* Mp is not a proposition; it's a set of probability spaces. The point is that despite what one holds about the semantics of the modals, (A*) can be accepted.

13. For philosophers who do not use the ordinary meaning of 'belief', see the citations in Greco (2015).

14. This example comes from Malcolm (1973), although he uses it for a different purpose.

15. For a defense of this synonymy, see Hawthorne, Rothschild, and Spectre (2016), as well as Myers-Schulz and Schwitzgebel (2013, 377) and footnote 1 of Weisberg (forthcoming).

16. Exactly *how* we make such judgments is a complex issue researched by those studying the *theory of mind*. See Goldman (2012) for an overview.

17. For a useful summary of these theories, see Schwitgebel (2015).

18. My Google search found only 577 hits for 'has credence that', with many of the results either being references to sentences in philosophy papers or references to ordinary English sentences that were clearly not picking out propositional attitudes. Compare that with 361,000 hits for 'lends credence to,' with many of the results including sentences that picked out evidential support.

19. For another example, see Yalcin (2012, 125).

20. I thank Branden Fitelsen for the first two references and a referee for the third reference. Carnap and Lewis define 'credence' in terms of 'degree of belief'. This is problematic since beliefs do not come in degrees, as I argue in Moon (2017). Furthermore, those who use 'degrees of belief' talk are often mixing up degrees of belief with degrees of confidence (p. 762), which, in the end, brings us back to confidence. So, the current move to understand 'credence' directly in terms of degree of confidence is an improvement to understanding it in terms of degree of belief (since belief doesn't come in degrees).

21. For more on the history of 'credence', see Jackson (forthcoming-a).

22. This leaves open the hard question of what credences (or confidences) *are*. Some might define it in terms of betting behavior; this has received strong criticisms by Plantinga (1993, 118–119), Foley (1993, 150–153), and especially Eriksson and Hajek (2007, 187–194). Others might define it by use of representation theorems; for discussion, see Eriksson and Hajek (2007, 196–197), Dogramaci (2016), and especially Meacham and Weisberg (2011).

23. See, for example, Patrick Maher (1993), Foley (1993, 2009), Kaplan (1996, 91), Sturgeon (2008, 2010), Wedgwood (2012), Locke (2014), Buchak (2014, 289–293), and Carter, Jarvis, and Rubin (2016).

24. Thanks to Liz Jackson for helpful discussion.

25. The threshold view is discussed and evaluated in many places, e.g., Patrick Maher (1993), Foley (1993, 2009), Kaplan (1996, 91), Sturgeon (2008, 2010, 2015), Buchak (2014, 289–293), Carter, Jarvis, and Rubin (2016) and Weisberg (forthcoming), as well as in the references in the next footnote.

26. One way to set the threshold is pragmatically, as discussed in Weatherson (2005), Ganson (2008), Fantl and McGrath (2009, 160), Ross and Schroeder (2014), and Locke (2014).

27. This isn't to say that BEC is universally endorsed. Buchak (2014), Ross and Schroeder (2014), Holton (2014), Carter, Jarvis, and Rubin (2016), and Weisberg (forthcoming) argue for claims that are friendly to the denial of BEC, even if they don't entail it. For example, on Ross & Schroeder's view, belief and credence have distinct functional profiles, and as far as I can see, there is nothing that rules out a creature's having the functional profile of belief while failing to have the functional profile of credence. Thanks to Jonathan Weisberg for helpful discussion.

28. Thanks to Bob Beddor for the objection and helpful discussion of this paragraph. This is in line with Grice's maxim of quantity, that we should *assert the stronger*.

29. See Cohen (1992), Schwitgebel (2002), and Smithies (2012). Thanks to Declan Smithies for helpful discussion of this objection.

30. I thank a referee for this interesting objection.

31. Cf. Harman (1986, 13–14), Staffel (2013, 3539–3540), and especially Schwitgebel (2015, sect. 2.2). Thanks to Julia Staffel and Kevin McCain for helpful discussion about tacit or implicit beliefs.

32. On Audi's (2011, 69–70) view, you might be merely *disposed to* believe that there's probably the cat, without *actually* believing it. Similarly, on his view, you can have an *implicit* belief that there's probably the cat, without actually believing it.

33. Thanks to Blake Roeber for helpful conversation, which helped me develop these points.

34. For more discussion of this case, see Davidson's (1985) criticisms of Malcolm's paper, Jeffrey's (1985) reply to Davidson, and §4 of Schwitgebel (2015). One of those criticisms applies to Malcolm's specific example and not to my adaptation. Malcolm has his observers ascribing to the dog the belief that the cat went up an *oak tree*, which requires that the dog has the concept of an oak tree, which is implausible. Jeffrey notes that this is not essential to Malcolm's case, so I left it out accordingly. Thanks to Blake Roeber and Kevin McCain for helpful discussion.

35. Consider the example of a frog's exhibiting a specific neural pattern when seeing a fly zoom by; the neural pattern might not exemplify *belief*, but it does indicate the presence of the fly. See other interesting examples of indicator content in chapter 3 of Dretske (1988).

36. For classic representationalist accounts of how this might happen, see chapters 3 and 4 of Dretske (1988) and chapter 4 of Fodor (1990).

37. Gallistel (1990, 1) argues that the Tunisian desert ant *Cataglyphis bicolor* uses knowledge of where its nest is to find its way back to its nest, and Peter Carruthers (2006) argues that bees have very simple beliefs that guide their flying patterns back to their hive. I am more skeptical that these creatures have beliefs than I am, say, that Malcolm's dog does, because I think that consciousness is required for belief, and I am skeptical that ants and bees are

conscious. For discussion of whether consciousness is required for belief, see Smithies (2012) and the essays in Kriegel (2013).

38. Clarke (2013) and Greco (2015) have argued for views that could determine Organism to have credence 1. By A*, it would follow that Organism believes *there definitely is food* (or *there surely is food* or *there necessarily is food*). But intuitively, Organism has no such modal belief; Organism does not believe that *there definitely is food*. One must thereby reject either ~BEM, A*, or that Organism has credence 1. I would deny the last option. Thanks to Julia Staffel for helpful discussion.

39. Sarah Moss (2018) presents interesting arguments, especially in sections 3.5 and 3.6, that we do not ever believe propositions; rather we *only* believe probabilistic contents (or *only* have modal beliefs, using the terminology of this paper). The Thirst Scenario and Organism Case provide intuitive reason to reject her claim. When you recall your walk to the bathroom, it seems that you just believed that *there's the cat*, not that you believed there's definitely or probably the cat. Similarly, it really seems that Organism just believes the simple content *there is food*. (However, Moss might say that her view is only supposed to apply to more sophisticated believers (see pp. 27–28).) Of course, the intuitions about these cases must be weighed against Moss' formidable arguments *for* her view, which I do not have space here to do justice.

40. I thank Bob Beddor, Kenny Boyce, Blake McAllister, Matthew Lee, Blake Roeber, Declan Smithies, and Philip Swenson for helpful conversation about this objection.

41. As Jackson (forthcoming-b) mentions, if BEC is true, then we also have an answer to the Bayesian Challenge, which asks whether beliefs are explanatorily superfluous if everything can be explained by credences. In the Organism Case and Thirst Scenario, creatures are guided only by beliefs and not by credences; hence, beliefs are not explanatorily superfluous.

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