ORIGINAL ARTICLE

PERCEPTUAL CONFIDENCE

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1. Introduction

In the distance, you see a figure walking toward you. At some point you might say, "That looks as though it could be Isaac." A minute later, when he's fifty meters away, you might say, "That looks as though it's probably Isaac." Eventually, when he's only a few meters away, you might say, "This is Isaac." All of these reports reflect your confidence at the level of belief—your doxastic confidence. But they also seem to reflect your confidence at the level of perception—what I'll call your "perceptual confidence." Just as you assigned more and more doxastic confidence to the possibility it's Isaac and less and less doxastic confidence to the possibility it's not Isaac, your perceptual experience assigned more and more perceptual confidence to the possibility it's Isaac and less and less perceptual confidence to the possibility it's not Isaac. These two kinds of confidence can come apart, as when you remain perceptually confident it's Isaac, with the same feeling of recognition, even after you learn he's out of town. You might say, "I know he's out of town, but that still looks as though it could be Isaac."

This example supports PERCEPTUAL CONFIDENCE, the view that our perceptual experiences assign degrees of confidence. The goal of this paper is to introduce, clarify, and motivate PERCEPTUAL CONFIDENCE, and then catalogue some of its more interesting consequences, such as the way it blurs the distinction between veridical and illusory experiences, fills a hole in our best scientific theories of perception, and implies that experiences don't have objective accuracy conditions.

The most plausible alternative is POST-PERCEPTUAL CONFIDENCE, the view that while our perceptual experiences represent external objects and their properties, they do not themselves assign degrees of confidence. Applied to our initial example: your perceptual experience eventually represents that it's Isaac, but at no point assigns confidence to that possibility or its negation. Instead, your perceptual experience merely causes and justifies your confidence at the level of belief. Perhaps your perceptual experience initially causes and justifies ten percent confidence it's Isaac because of a background belief like: if my perceptual experience represents Isaac in the distance, I should have

15

ten percent doxastic confidence it's really him. Importantly, proponents of this view can maintain that there are earlier, unconscious states that encode something we might describe as degrees of confidence. These states might even be responsible for our perceptual experiences. Your perceptual experience might represent Isaac because the part of the brain responsible for identifying faces assigns the most confidence to that possibility. As I hope this makes clear, the conflict between PERCEPTUAL CONFIDENCE and POST-PERCEPTUAL CONFIDENCE is about our perceptual experiences, not the unconscious states that precede them.

PERCEPTUAL CONFIDENCE extends an earlier shift in our thinking. In the 1960s and 1970s, many philosophers attributed contents to beliefs but not to perceptual experiences (hereafter just: experiences). These philosophers often described experiences as mere causes of contentful beliefs (e.g., Armstrong [1968, p. 209], Pitcher [1971, p. 65], and later Davidson [1983/2001, p. 146]). In the 1980s, many started attributing contents to experiences, in part because they became convinced that experiences are belief-like in many ways—e.g., they are more or less accurate, they can represent properties and relations, they can provide justification, and they can be trusted and endorsed like another person's beliefs (e.g., Searle [1983, p. 39], Dretske [1981, p. 91], Peacocke [1983, pp. 5–6, 22, 39]). Jumping to the present, many contemporary philosophers attribute degrees of confidence to beliefs but not to experiences. They often describe experiences as mere causes of confident beliefs. According to PERCEPTUAL CONFIDENCE, experiences are belief-like in yet another way: they can assign more or less confidence.

PERCEPTUAL CONFIDENCE is supported by examples. Because some deny that our experiences represent particular people, such as Isaac, the following examples will involve illumination, color, shape, and distance. They'll also involve other causes of perceptual uncertainty, such as poor lighting and unfocused lenses. In each case PERCEPTUAL CONFIDENCE seems to correctly describe how our experience presents the illumination, color, etc., of certain objects. In other words, PERCEPTUAL CONFIDENCE seems to correctly describe how certain objects look to us. In a subsequent section I'll argue that it describes these experiences better than POST-PERCEPTUAL CONFIDENCE.

(1) While you're waiting in a pitch-black room an experimenter tells you that at some point she'll turn on an exceptionally dim light and slowly increase its wattage. Before she turns on the light you'll sometimes report low but positive confidence the light is shining. When the light actually starts shining you'll report similar degrees of confidence, though the average might be a little higher. As the light's wattage increases, you'll report more and more confidence, from twenty-five to fifty percent, until you report near certainty. All these reports reflect your increasing doxastic confidence. But your reports also seem to reflect your increasing perceptual confidence. The light doesn't just look as though it's off and then on. It sometimes looks more likely on than off.

(2) While you're dining in a candlelit room you look at a tablecloth. You might report high confidence it's red rather than brown, but among some shades of red—crimson, scarlet, etc.—you might report the same degree of confidence. As more candles are lit you might report increasing confidence it's

16

crimson rather than scarlet. If enough candles are lit, you might even report near certainty it's crimson. All these reports reflect your increasing doxastic confidence. But they also seem to reflect your increasing perceptual confidence. A tablecloth doesn't just look crimson or scarlet. It sometimes looks more likely crimson than scarlet.

(3) While you're at an optometrist's office she asks you to identify letters on an eye chart with the help of a series of lenses. At first, your experience will be too blurry to give you much confidence that a particular letter is an **E** rather than an **F**, **B**, or **G**. But as she improves your visual acuity you'll report increasing confidence. As a way of approximating this experience, try to identify the letters below[1]:


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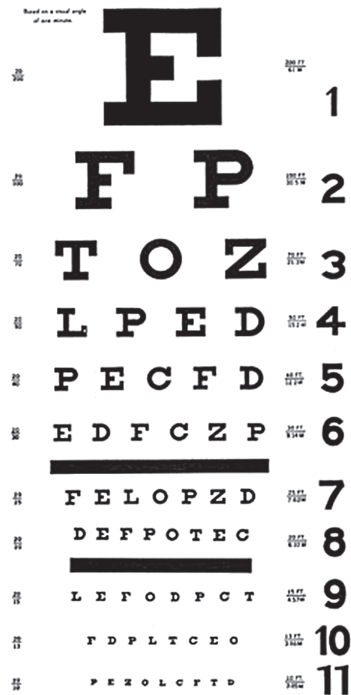
1. This is a mere approximation, because when looking at the image on the left we're inclined to report that the image itself is blurred, but when looking at the optometrist's eye chart we don't have the same inclination. When looking at the optometrist's eye chart the blurriness seems to be a feature of one's relation to the eye chart—a feature of one's perspective on the eye chart—rather than a feature of the chart itself, perhaps because of depth and illumination cues. Still, it's a helpful approximation.

All these reports reflect your increasing doxastic confidence it's an **E** (or **F**, or **B**, or some other shape). But they also seem to reflect your increasing perceptual confidence. Figures don't just look like **E**s. They sometimes look more likely **E**s than **F**s.

(4) You roll a basketball in a straight line, and it stops after five seconds. When asked its distance you might report near certainty that it rolled between 6 m and 10 m but less confidence in any of the particular distances in that range. If you roll another ball and it stops farther away, your reported confidence in the second ball's distance will be distributed over a wider range. These reports seem to reflect your decreased perceptual confidence. Objects sometimes look as though they could have one of several locations, some more likely than others.

I just described your experience as representing the ball's distance in meters, even though your experience presumably represents the ball's distance in arm lengths, eye heights, or some other bodily unit. For simplicity, let's stick with meters.

(5) Hold this piece of paper four inches away, center the far-left cross between your eyes, look straight ahead, and try to estimate the number of bars in the right side of your visual field:
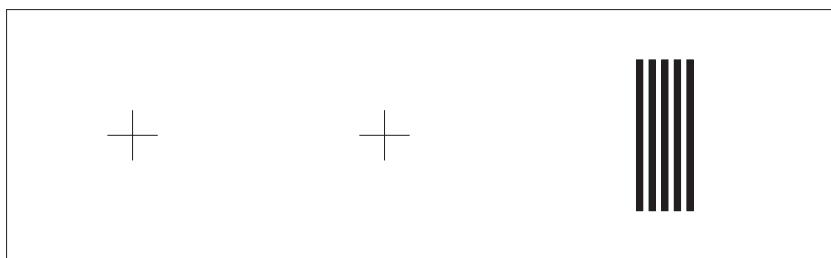

Most people report high confidence that there are more than three bars and fewer than ten bars, but report less confidence about the intermediate possibilities. If forced to decide, they usually guess five or six. Now repeat the same experiment, except instead center the middle cross between your eyes. Most people report high confidence that there are more than four bars and fewer than eight bars, a smaller range. If forced to decide they usually again say five or six, but it feels like less of a guess. These reports might reflect varying degrees of perceptual confidence. It looks as though there could be three bars, four bars, five bars, six bars, seven bars, or eight bars, but most likely five or six bars.

The same is true for other properties represented in the periphery, such as color and shape. While looking at the cross, try to estimate the elongation of the oval on the right (i.e., the ratio of its axes):

17
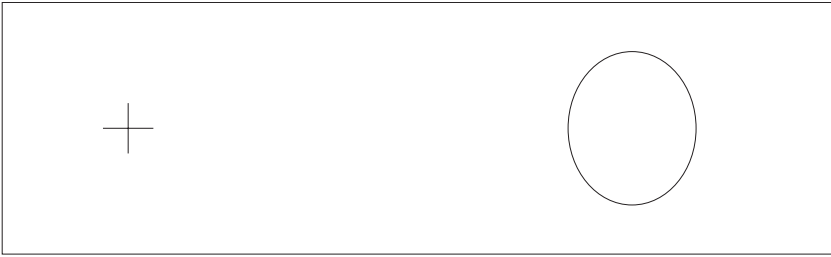
Most people report varying degrees of confidence in different elongations. Likewise, try to decide which of the ovals in the left column most closely approximates the elongation of the oval on the right:
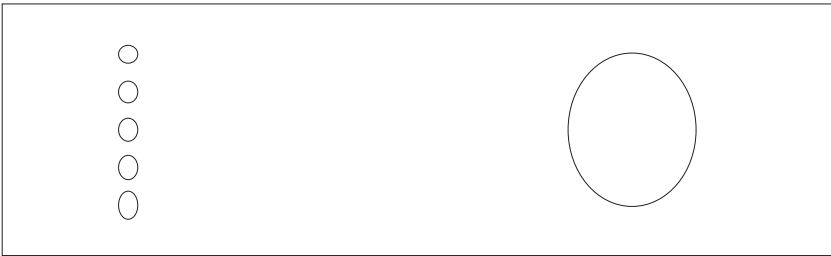
Most people report varying degrees of confidence in different options. If PERCEPTUAL CONFIDENCE is true, then the right oval doesn't just look to have a particular elongation. Instead, it looks as though it could be elongated in a number of ways, some more likely than others.

We just considered several causes of uncertainty in visual perception: when you see something at a distance, under poor lighting, through an unfocused lens, in the periphery, or approaching a threshold for visibility. There are many other causes, including: when you see something that's small, occluded, or moving; when you're distracted, intoxicated, or tired; and when you're seeing it through frosted glass, a dense fog, or a swirling blizzard. If experiences represent predictions about the near future, such as where a struck ball will land on the tennis court, there will still be more causes. If we expand our focus to touching, hearing, smelling, etc., the number of causes multiplies. One could selectively endorse PERCEPTUAL CONFIDENCE in some cases but not others. But it most naturally applies to all or none.

2. Clarifications

Because PERCEPTUAL CONFIDENCE is a new view, some clarifications are in order.[2]

2. I can't find it in either the contemporary or the historical literature. Here are the closest precedents:

19

First, PERCEPTUAL CONFIDENCE is more fully described as the view that confidence is assigned by a state that's conscious, automatic, accessible, dissociable from doxastic states, directed toward perceived objects and properties, and fast enough that we can't detect any delay. While I think it's natural to classify such a state as a "perceptual experience" and the resulting kind of confidence "perceptual confidence", this choice of labels isn't ultimately important. If you have special reasons for using 'perceptual' or 'experience' in another way, feel free to substitute your own labels.

Second, PERCEPTUAL CONFIDENCE does not imply that *all* our experiences assign less than full confidence. Perhaps when none of the above factors are present, such as when you're considering a plum resting on your palm under the midday sun, your experience assigns full confidence to the possibility it's purple.

In fact, PERCEPTUAL CONFIDENCE technically does not imply that *any* of our experiences assign less than full confidence. Experiences that assign full confidence still assign a degree of confidence. Therefore, PERCEPTUAL CONFIDENCE is technically true even if all our experiences assign full confidence. However, the examples that motivate PERCEPTUAL CONFIDENCE also give us reason to think some of our experiences assign less than full confidence. I'll therefore set this variant aside.

Third, when our experiences assign less than full confidence, they assign confidence to at least one other possibility. In simple cases, our experiences assign confidence to a possibility and its negation, like that it's Isaac and that it's not Isaac, or that the light is on and that the light is off. In other cases, our experiences assign confidence to more possibilities. If Isaac looks a lot like your other friend Aaron, your experience might assign confidence to the possibility that it's Isaac, the possibility that it's Aaron, and the possibility that it's neither.

Rescorla [forthcoming] argues that Bayesian models of perception have implications for the philosophy of perception. But he doesn't draw any conclusions about conscious experience, so he's not committed to PERCEPTUAL CONFIDENCE. Conversely, PERCEPTUAL CONFIDENCE is non-committal about the computational processes responsible for perceptual confidences, including whether they rely on Bayes's Theorem.

Hellie [2005, p. 491] briefly mentions the possibility that experiences include a "probabilistic element." It's unclear whether this amounts to PERCEPTUAL CONFIDENCE, because in the next sentence he sets it aside.

Clark [2013] argues that the brain encodes degrees of confidence (specifically: expectations), but he doesn't think that conscious experiences assign degrees of confidence, or at least he resists that inference (see p. 196; see also Hohwy [2013, p. 201f]).

Hume [1977, Section 6] says that an impression can make us more or less confident about what impressions will follow. Within an idealist framework, that's similar to PERCEPTUAL CONFIDENCE, because our confidence it's Isaac is just our confidence that we'll have certain impressions as he approaches. But we're not working in an idealist framework. We're also interested in confidence about what is the case, not just what will be the case.

Descartes [1988, AT 7:43–4] says our sensation of cold is confused because it doesn't distinguish between two possibilities: that cold is a real quality and that cold is the mere privation of heat. He's not thereby committed to PERCEPTUAL CONFIDENCE, because these possibilities aren't weighted and, in addition, they concern the nature of coldness rather than whether something is cold.

Maloney [2001, p. 173] mentions the possibility that our visual representations are posterior probability distributions. But he says it is unclear what it means to say we perceive a probability distribution.

20

For certain properties, like color and distance, the range of possibilities might be less flexible, because our experience distributes confidence over a continuous region of the relevant similarity space.

Regardless of the number of other possibilities, we shouldn't assume that our experiences assign confidences in ways that satisfy the axioms of probability theory. Just as our doxastic confidences can be more or less ideal, our perceptual confidences can be more or less ideal. Your perceptual confidence that it's Isaac and your perceptual confidence it's not Isaac might not sum to one hundred, for example. We should also distinguish between assigning zero confidence to a possibility and failing to represent that possibility. If you're anxiously waiting for Isaac to open the door and someone else opens it instead, your experience might represent but assign zero confidence to the possibility that it's Isaac. In contrast, your experience might fail to represent other possibilities, including the possibility that it's your long-forgotten friend Deborah. I hope this distinction is intuitive enough that we can treat it as a topic for future research.

Fourth, what is it for our experience to *assign* degrees of confidence? One option is that our experience relates us to a number of possibilities and weights each of those relations by a degree of confidence. Another option is that the degrees of confidence are somehow included in the propositional content of our experience. I'll later explore these and other ways proponents of PERCEPTUAL CONFIDENCE might precisify their view. I'll also explain why it's appropriate to describe our experiences as assigning degrees of *confidence* rather than some other quantity.

Fifth, PERCEPTUAL CONFIDENCE doesn't commit one to any view about the relation between perceptual confidence and perceptual phenomenology. But it's natural for proponents of PERCEPTUAL CONFIDENCE to think there's a correlation. Look again at the diagram of the bars. Try to imagine a peripheral experience that's phenomenally exactly like your experience but that assigns confidence to a narrower range of possibilities or that assigns more confidence to the possibility there are four bars. I can't. Likewise, consider your experience of the approaching man. Try to imagine an experience that's phenomenologically exactly like it but that assigns more confidence to the possibility it's Isaac. I can't. These examples support CONFIDENTIALISM, the view that if two experiences have the same phenomenology, they assign confidence in the same way. What is it for experiences to assign confidence "in the same way"? They needn't assign confidence to the same possibilities. Someone on Twin Earth might become more confident it's Twin Isaac as I become more confident it's Isaac. More generally, experiences with the same phenomenology might represent different people, illuminations, colors, shapes, and distances. Nonetheless, they must distribute the same *degrees* of confidence over the same *number* of possibilities. While I'm attracted to CONFIDENTIALISM, my arguments for PERCEPTUAL CONFIDENCE won't presuppose it.

Sixth, PERCEPTUAL CONFIDENCE doesn't commit one to any view about the underlying computations. Our perceptual confidence that the ball is 8 m away might result from Bayesian computations based on hardwired priors and the visual system's most recent measurement. Or it might result from an entirely

21

different kind of computation. PERCEPTUAL CONFIDENCE is about our conscious, perceptual experiences, not the computational processes in the brain that give rise to them. Nonetheless, this is an important issue, and I'll say more about it in the conclusion, when listing topics for further exploration.

I hope to convince you that PERCEPTUAL CONFIDENCE is a promising and important new view about perceptual experience. I will try to convince you it's promising by arguing that compared to its main rival, POST-PERCEPTUAL CONFIDENCE, it better describes how certain experiences present an object's identity, illumination, color, shape, or distance. I will try to convince you it's important by exploring five of its most interesting consequences. Specifically: it potentially generalizes to intuitions and actions; it modifies the standard view that experiences involve relations to propositions; it implies there are often no objective facts about an experience's accuracy conditions; it blurs the distinction between veridical, illusory, and hallucinatory experiences; and it clashes with many disjunctivist theories of the metaphysics of experience. Because my goal in this paper is just to convince you that PERCEPTUAL CONFIDENCE is promising and important, I'll spend less time debating objections. We first need to make sure it's a debate worth having.

Sections 3 and 4 help set the stage. I introduce POST-PERCEPTUAL CONFIDENCE and explain why third-personal, scientific data haven't already settled the debate. Sections 5 and 6 are the main act. I explain why PERCEPTUAL CONFIDENCE seems to better describe certain experiences, namely the experiences listed in the introduction, and explore its consequences.

3. Post-Perceptual Confidence

POST-PERCEPTUAL CONFIDENCE isn't the only alternative to PERCEPTUAL CONFIDENCE. Another alternative is to deny that *any* of our mental states assign degrees of confidence. But it's central to the way we understand ourselves and others that confidence comes in degrees, at least at the level of belief. It would otherwise be hard to understand why Miriam asked the blackjack dealer for another card, or why Aaron took an umbrella to work but didn't wear galoshes. Yet another alternative is to deny that experiences represent external objects or their properties, as in a sense-data theory. It would immediately follow that we don't assign degrees of confidence to possibilities involving external objects or their properties. But such views have well-known problems: they are at odds with our perceptual phenomenology (see, e.g., Merleau-Ponty [1945/2012, Chapters 1–2]), and they have trouble explaining how we can know anything about the external world (see, e.g., Berkeley [1710/1892, Section 20]). The most plausible alternative is therefore POST-PERCEPTUAL CONFIDENCE, the view that while beliefs and other post-perceptual states assign degrees of confidence, experiences merely represent external objects and their properties.

POST-PERCEPTUAL CONFIDENCE is widespread. To take one example, here's how Peacocke suggests we specify the most fundamental level of what our experiences represent:

[F]or each point . . ., identified by its distance and direction from the origin, we need to specify whether there is a surface there and, if so, what texture, hue, saturation and brightness it has at that point, together with its degree of solidity. (Peacocke [1992, p. 63])

Like Peacocke, most if not all authors interested in perception characterize our experiences without mentioning degrees of confidence.[3]

Similarly, here is what Jeffrey says about trying to determine an object's color under candlelight:

It seems that the best we can do is to describe, not the quality of the visual experience itself, but rather its *effects* on the observer, by saying, "After the observation the agent's degrees *of belief* in [the relevant possibilities] were .7, .25, .05" (Jeffrey [1965, p. 154], emphasis added).

In all such cases there is some defined quality of his sensuous experience which leads the agent to have various degrees *of belief* in the various propositions. (Jeffrey [1965, p. 155], emphasis added)

Like Jeffrey, most if not all authors interested in degrees of confidence seem to take it for granted that experiences don't assign degrees of confidence.[4] They seem to think that doxastic confidence is the only kind of confidence.

Why do so many accept POST-PERCEPTUAL CONFIDENCE? I'm not aware of any explicit arguments. But here's my best guess: It is natural to think that perceiving is like painting in that, just as you can't simultaneously paint a surface uniformly crimson and scarlet, you can't simultaneously perceive a surface as crimson and scarlet. Likewise, it is natural to think that, just as you can't simultaneously paint an oval that has two elongations, a letter that's an **E** and a **D**, or a series of lines consisting entirely of four bars and five bars, you can't simultaneously perceive an oval as having two elongations, a letter as an **E** and a **D**, or a series of lines as consisting entirely of four bars and five bars. This might seem to preclude assigning degrees of confidence to alternative colors, shapes, elongations, and numbers of bars. Assignments of confidence would then have to be post-perceptual.

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3. Silins [2011, p. 346] is another helpful example. Suppose you're briefly flashed a card with ten dots. Silins says your experience gives you immediate justification for raising your confidence that there were ten dots as well as immediate justification for raising your confidence that there were eleven dots. Silins infers that, for some x, your experience gives you immediate justification for raising your confidence that there were x dots even though your experience didn't represent x dots. This inference implicitly assumes POST-PERCEPTUAL CONFIDENCE, because it assumes your experience can represent only one possibility. If PERCEPTUAL CONFIDENCE is true, your experience can represent the possibility that there are ten dots as well as the possibility that there are eleven dots.

4. Whether Jeffrey would endorse POST-PERCEPTUAL CONFIDENCE depends on whether he thinks that experiences represent external objects or their properties. That's not clear from the text—he talks only about the qualitative features of experiences.

One needn't think that perceiving is like painting in all respects to find this argument convincing. For example, one might think that perceiving a pine tree involves more than perceiving a pattern of colors, because it involves perceiving a natural kind (see Siegel [2005]). One might also think that perceiving a car crash involves more than perceiving an evolving pattern of colors, because it involves perceiving a causal process (see Siegel [2009]). But perceiving might still be like painting in that, just as you can paint only one pattern of colors at a time, you can perceive only one pattern of colors, plants, collisions, etc., at a time, and that might seem like enough to preclude perceptual experiences from assigning degrees of confidence to alternative patterns.

Nonetheless, I don't think anyone should be convinced by this argument. To see why, temporarily set aside degrees of confidence. Everyone should agree that when you perceive the rolled ball, you perceive a range of distances (e.g., 6m to 10m) without perceiving the ball as simultaneously at every distance in that range. Likewise, everyone should agree that when you perceive the tablecloth, you can perceive a range of colors (e.g., medium red to dark red) without perceiving the tablecloth as simultaneously instantiating every shade in that range. As these examples suggest, you can perceive multiple possibilities without simultaneously perceiving each possibility as actual. When you perceive multiple possibilities, your relation to a possibility isn't the same as when you perceive it alone. As a result, it's unclear why perceiving the ball as *more likely* 7m away than 6m away would imply that you perceive that it is simultaneously at both locations, and it's unclear why perceiving the tablecloth as *more likely* crimson than scarlet would imply that you perceive it as simultaneously crimson and scarlet. It can't be the mere fact that confidence is involved, because you can *believe* that the ball is more likely 7m away than 6m away without believing that it is simultaneously at both locations, and you can *believe* that the tablecloth is more likely crimson than scarlet without believing that it is simultaneously crimson and scarlet. It also can't be the mere fact that your experience has only one phenomenal character, because experiences involving less than full confidence might have their own, distinctive phenomenal characters (see our previous discussion of CONFIDEN-TIALISM). Their phenomenal characters aren't the result of somehow super-imposing several phenomenal characters, for example the phenomenal character of perceiving the ball as 6 am away and the phenomenal character of perceiving the ball as 7m.

There's a lot more to say about these issues. But I hope this is enough to lessen the initial appeal of POST-PERCEPTUAL CONFIDENCE.

4. Is Third-Personal Data Enough?

Many philosophers try to use third-personal data to settle debates about perception. One might hope that third-personal data can help settle the debate between PERCEPTUAL CONFIDENCE and POST-PERCEPTUAL CONFIDENCE. After all, a growing number of psychologists study when, where, and how degrees of

24

confidence are assigned in the brain.[5] One might hope that their data indicates whether our *experiences* assign degrees of confidence. In this section I'll argue there's no such third-personal data, which is why we need to support PERCEPTUAL CONFIDENCE in another way. In the next section I'll support PERCEPTUAL CONFIDENCE using first-personal reflection on the kinds of experiences listed in the introduction.

There are two kinds of third-personal data that seem most likely to support or undermine PERCEPTUAL CONFIDENCE: behavioral data and imaging data.

The most promising behavioral data involve cue integration, the process of integrating information from two or more perceptual modalities, such as vision and touch. Suppose we ask subjects to decide which of two adjacent cylinders is taller while simultaneously viewing the cylinders on a screen and feeling them with their hands. Let's call the left cylinder LEFT and the right cylinder RIGHT. As expected, if LEFT is taller than RIGHT, then under normal conditions subjects will usually report that LEFT is taller. This is expected, because subjects' visual information and tactile information both indicate that LEFT is taller. What's unexpected is what happens when we secretly manipulate the image on the screen to create a conflict between subjects' visual information and tactile information. First, if we show subjects an image in which RIGHT is incorrectly depicted as significantly taller than LEFT, they will usually say that RIGHT is taller. Second, if we show subjects the same image, but we lower the resolution or add static, subjects will instead usually say that LEFT is taller. Third, if we show subjects an image in which RIGHT is depicted as just barely taller than LEFT, they will again usually say that LEFT is taller. What explains this pattern of data?[6]

PERCEPTUAL CONFIDENCE can offer a simple and plausible explanation: When subjects view a high-quality image that clearly depicts RIGHT as taller, their visual experiences assign more confidence to the possibility that RIGHT is taller than their tactile experiences assign to the possibility that LEFT is taller, leading them to report that RIGHT is taller. But when subjects view either a lower-quality image or an image that depicts the cylinders as closer in height, their visual experiences assign less confidence to the possibility that RIGHT is taller, leading them to report that LEFT is taller.

Nonetheless, these data don't support or undermine PERCEPTUAL CONFIDENCE, because two other hypotheses explain the data just as well. First, perhaps the relevant degrees of confidence are pooled in early perceptual processing, producing a visual experience and a tactile experience that represent the same cylinder as taller. Perhaps when subjects view a high-quality image, their visual experiences and tactile experiences both represent RIGHT as taller, and when subjects view a lower-quality image or an image that depicts the cylinders as closer in height, their visual experiences and tactile experiences both represent LEFT as taller. Experiences might result from assignments of confidence without themselves assigning degrees of confidence. Second,

5. See Gold and Shadlen [2007] and Rangel, Camerer, and Montague [2008] for reviews.
6. These data are from Ernst and Banks [2002], though I'm simplifying the experimental design and results in ways that are inessential for our purposes. For similar data on object tilt, see Knill [2006] and Louw et al. [2007].

25

perhaps the relevant degrees of confidence are assigned by states at the level of belief. Perhaps in all these conditions subjects' visual experiences represent RIGHT as taller, but when they view either a low-quality image or an image that depicts the cylinders as closer in height, they report that LEFT is taller based on their *belief* that their visual experiences are less reliable than their tactile experience. Their reports might result entirely from assignments of doxastic confidence. The available behavioral data don't give us a way of choosing between these hypotheses.

This example illustrates a more general point. By studying the links between stimuli and reports, psychologists have accumulated overwhelming evidence that our reports are based on assignments of confidence.[7] But their data don't indicate whether the relevant confidence is assigned pre-perceptually, perceptually, or post-perceptually. Perhaps this reflects an inherent limitation in behavioral data, because statistical correlations between stimuli and reports can't reveal the role of consciousness. Or perhaps it's a merely contingent limitation, because psychologists haven't been clever enough, or because their technology hasn't advanced far enough; perhaps future methodological and technological advances will allow us to design experiments that settle the debate about PERCEPTUAL CONFIDENCE. Regardless, we currently need to support or undermine PERCEPTUAL CONFI-DENCE in another way.

There's another kind of data that might seem likely to support or under-mine PERCEPTUAL CONFIDENCE: imaging data. Perhaps if we knew which parts of the brain assign degrees of confidence and which parts of the brain are responsible for our perceptual experiences, we could determine whether our perceptual experiences assign degrees of confidence. However, we don't know which activities in the brain underlie consciousness, so even if we knew which parts of the brain are responsible for assigning degrees of confidence, we wouldn't know whether the confidence was assigned before, during, or after our conscious perceptual experiences. More generally, we're ultimately interested in whether confidence is assigned by a state that's conscious, auto-matic, accessible, dissociable from doxastic states, directed toward perceived objects and properties, and fast enough that we can't detect any delay. Imaging data don't obviously help us decide whether such a state exists. We'd have to rely on substantive and controversial assumptions about which parts of the brain are responsible for each of these functions, including consciousness.

Unlike these scientists, we'll rely on first-personal reflection on our own experiences. This expanded pool of evidence will allow us to support a con-clusion that has so far proven scientifically untestable. We will thereby fill a gap in our best scientific theories of perception.

Third-personal data still have an important role. Even if we use first-personal evidence to convince ourselves there is perceptual confidence, we'll need to use third-personal evidence to learn more about it, including its

7. For especially helpful surveys of the available data, see Maloney and Zhang [2010], Kersten and Yuille [2003], and Fiser et al. [2010].

26

implementation in the brain.[8] We might also rely on third-personal evidence when measuring degrees of perceptual confidence.[9]

5. Support for Perceptual Confidence

In this section I'll develop an especially simple and direct argument for PERCEPTUAL CONFIDENCE. I'll argue that PERCEPTUAL CONFIDENCE best explains what happens when we completely trust our experience. While the argument isn't decisive, it is supportive.

What is it to *completely trust* your experience? When you completely trust a doctor, plumber, or rabbi, you follow her advice. Likewise, when you completely trust a thermometer, spectrometer, or barometer, you accept its measurement. Continuing this pattern, when you completely trust an experience you endorse the way it presents objects. To put it another way: you believe that *x* is *F* because *x* looks *F*. To put it yet another way: you endorse your experience. We regularly trust our experiences to lesser and greater extents, making this a limit case of a familiar phenomenon.

Three further clarifications might be helpful. First, for our purposes it won't matter if you can't completely trust your experiences at will. It's enough that you can always imagine what would happen if you were to completely trust your experiences. Consider your experience of the Müller-Lyer illusion. Given what you know, it would be hard, if not impossible, to completely trust that experience. But it's easy to imagine what would happen if you did: you'd believe that one line is longer than the other. Likewise, consider your experience of Isaac when he's only a few meters away. Because other people can look like Isaac, it would be hard, if not impossible, to completely trust your experience. But it's easy to imagine what would happen if you did: you'd have one hundred percent doxastic confidence it's Isaac. It's just as easy to imagine what would happen if you completely trusted the experiences listed in the introduction.

Second, for our purposes it won't matter if you lack justification for completely trusting your experience. In fact, you might never have justification for completely trusting your experience, because your experiences are systematically overconfident or, worse, systematically mistaken because nothing is really

8. Shadlen and his colleagues argue that neurons in the lateral intraparietal cortex (LIP) represent degrees of confidence in certain perceptual tasks, such as judging the net direction of motion in a random-dot display. See Roitman and Shadlen [2002], Kim and Shadlen [1999], Gold and Shadlen [2001], Kiani and Shadlen [2009], and Yang and Shadlen [2007]. These neurons might be responsible for what I'm calling "perceptual confidence." But we can't yet rule out the possibility that they are responsible for a pre-perceptual or post-perceptual kind of confidence. We also can't yet rule out the possibility that they are merely mirroring the activity of neurons elsewhere in the brain.
9. Warren et al. [2012], Glaser et al. [2012], Rahnev et al. [2011], and Overgaard and Sandberg [2012] use a number of techniques to study a kind of confidence that might turn out to be perceptual confidence. Their techniques include: asking subjects to report the degree to which a stimulus is visible, asking subjects to place quick bets on visible stimuli, and asking subjects to estimate the likelihood their judgment about a stimulus was correct. None of these techniques are perfect, but they might give us trustworthy estimates, especially when they converge.

27

colored, illuminated, shaped, and so on. This won't matter, because PERCEPTUAL CONFIDENCE isn't a normative thesis; it doesn't imply anything about *when* you're justified in trusting your experiences. It also doesn't imply anything about *why* you're justified in trusting your experiences. You might have default justification for trusting your experiences. Or your justification might depend on antecedent justification for believing your senses are reliable. These are further issues. PERCEPTUAL CONFIDENCE is just about how your experiences present objects and properties.

Third, completely trusting someone or something doesn't always result in certainty. If you completely trust your doctor and she's forty percent confident that your leg is fractured, you'll end up with forty percent confidence that your leg is fractured. Likewise, if you completely trusted Nate Silver's [2012] models of the 2012 presidential election on November 5th, you would have ended up with ninety-two percent confidence that Obama was about to win. When you completely trust a source, you let that source guide your beliefs, even if it guides you to a state of uncertainty.

Here's the datum: Suppose you completely trust your experience of the approaching man. You won't suddenly transition from zero percent doxastic confidence to one hundred percent doxastic confidence it's Isaac. Instead, at some point you'll end up with slightly more doxastic confidence that it's Isaac than not. Say: fifty-five percent. What explains your slightly asymmetrical distribution of doxastic confidence?

PERCEPTUAL CONFIDENCE can offer a simple and plausible explanation: you had slightly more perceptual confidence it's Isaac, and you endorsed your experience. This is a familiar kind of explanation. Suppose as a result of completely trusting your experience you believe that the man has red hair. The simplest explanation is that your experience represented his hair as red.

POST-PERCEPTUAL CONFIDENCE can't offer as simple an explanation. Suppose your experience represents the man as Isaac. By trusting your experience you should therefore end up with full doxastic confidence it's Isaac. Likewise, suppose your experience represents someone other than Isaac. By trusting your experience, you should therefore end up with zero doxastic confidence it's Isaac.

Proponents of POST-PERCEPTUAL CONFIDENCE must explain the apparent discrepancy between your actual degree of doxastic confidence and your expected degree of doxastic confidence given what your experience represents. I'll consider and critique the five approaches that strike me as most promising.

Indeterminacy

Proponents of POST-PERCEPTUAL CONFIDENCE might appeal to *indeterminacy* in what your experience is representing. What kind of indeterminacy? Let's survey the options.

One way for it to be indeterminate whether your experience is representing Isaac is for your experience to represent a disjunction that includes Isaac. Perhaps your experience represents that it's either Isaac or Aaron. But that

28

wouldn't explain why you end up with slightly greater doxastic confidence it's Isaac, rather than some other distribution of confidence, such as equal confidence in both possibilities, slightly more confidence it's Aaron, or significantly more confidence it's Isaac. Your experience wouldn't push you to have slightly greater confidence it's Isaac.

Another way for it to be indeterminate whether your experience is representing Isaac is for your experience to represent a type of object and for Isaac to be a borderline instance of that type. But if you're placing complete trust in your experience, then you shouldn't end up with more than fifty percent doxastic confidence it's Isaac. Analogously, if you place complete trust in your friend's testimony and she tells you she's dating a bald man, then you shouldn't end up with more than fifty percent doxastic confidence she's dating a man who's borderline bald, let alone Samuel, a particular man fitting that description.

A third way for it to be indeterminate whether your experience is representing Isaac is for your brain to be in a state that falls between representing Isaac and not representing Isaac, like a light switch positioned between on and off. But if you're placing complete trust in your experience, it's unclear why you'd end up with slightly more confidence it's Isaac. There's one exception: Continuing the light switch metaphor, if the down position corresponds to zero confidence, the up position corresponds to full confidence, and intermediate positions correspond to intermediate levels of confidence, then when the switch is slightly closer to the up position than the down position, we'd expect you to end up with slightly more confidence it's Isaac. But that's just PERCEPTUAL CONFIDENCE. Relatedly, unless this is just PERCEPTUAL CONFIDENCE in disguise, we wouldn't expect your doxastic confidence to increase as Isaac approaches. If anything, we'd expect your doxastic confidence to remain equally split until you determinately represent that it's Isaac.

These aren't the only options. But they suggest a general problem with blaming indeterminacy: even if there is widespread indeterminacy in what your experiences represent, it is unclear how that could explain your slightly greater confidence it's Isaac.

Access

Another approach is to blame the discrepancy on an access failure. Perhaps you have fifty-five percent doxastic confidence it's Isaac because, even though you don't know what your experience is representing, you're slightly more confident it's representing Isaac.

But why can't you know what your experience is representing? You can know that your experience is representing Isaac when your experience is representing him as only a few meters away. Why would you have more trouble when your experience is instead representing him as farther away? Analogously, you wouldn't have more trouble accessing your beliefs about Isaac just because you also believe he's vacationing far away in Mongolia. This isn't to say that we always have perfect access to what our experiences are

29

representing. If two shades are sufficiently similar, we might not know whether we're representing one shade rather than the other. But our access shouldn't depend on irrelevant factors such as whether our experience is also representing Isaac as near or far. So, what explains this access failure?

One possibility is that your experience uses a different vehicle to represent Isaac when he's represented as far. Perhaps your experience represents Isaac as far away by containing a minuscule but fully formed image of him and your experience represents Isaac as nearby by containing a larger version of the same image. If it's harder to access minuscule images than large images, that might explain why you have fifty-five percent doxastic confidence it's Isaac when he's represented as far but one hundred percent doxastic confidence it's Isaac when he's represented as near. However, this again takes the analogy between perceiving and painting too far. We can discover that a painting contains a minuscule and fully formed image of a certain historical figure by moving closer to the canvas. But you can't "move closer" to your own experiences. More generally, even if there are hidden textures to your experience, there's no reason to think that your experience contains minuscule and fully formed images of particular people, and that these images retain the same level of detail as they grow. If we describe our experiences as containing images, it is more plausible that when Isaac is far away our experience contains a blurry and incomplete image that doesn't yet have enough detail to represent Isaac rather than someone else. There are also general problems with such models of experience, such as their tendency to collapse into sense-data theories, because we're directly aware of images in our visual field rather than people out in the world.

Another possibility is that you can't know your experience is representing Isaac, because your experience is subjectively indistinguishable from experiences that represent other people. Perhaps your experience is subjectively indistinguishable from an experience that represents Aaron instead of Isaac. Disjunctivists often make this general sort of move, claiming that we can't know we're hallucinating, because hallucinations are subjectively indistinguishable from veridical experiences (see, e.g., Martin [2004]). Disjunctivists might hope to make a similar move here. However, it's not plausible that your experience is subjectively indistinguishable from an experience representing Aaron. Your experience includes a weak but noticeable feeling of recognizing Isaac. An experience representing Aaron wouldn't include such a feeling. It would instead include a feeling of recognizing Aaron. Further, if you can't access whether your experience is representing Isaac because it is subjectively indistinguishable from an experience representing Aaron, then you should end up with at most fifty percent doxastic confidence it's Isaac, not fifty-five percent confidence, unless you're illicitly relying on the background belief that one experience is more likely than the other.

Finally, it might be tempting to appeal to modes of presentation. If your experience is representing Isaac under one mode of presentation (say: that man), then you might not know that it's representing Isaac under another mode of presentation (say: the person you remember from college). However, that wouldn't explain why you end up with fifty-five percent doxastic

30

confidence that it's Isaac under the second mode of presentation. You should just end up with full doxastic confidence it's the person picked out by the original mode of presentation. One exception is if your experience is representing Isaac under a mode of presentation such as: the man who looks as though he could be Isaac. But that's just a variant of PERCEPTUAL CONFIDENCE.

Belief

A third approach is to deny the datum. Despite your best efforts, perhaps you failed to completely trust your experience because you relied on an antecedent belief like: If my experience represents Isaac in the distance, I should have fifty-five percent confidence it's him. More generally, perhaps you relied on an antecedent belief of the form: When my experience represents Isaac as F I should have fifty-five percent confidence it's Isaac. This belief might be based on past experiences. Perhaps when you've had similar experiences in the past, it turned out to be Isaac in fifty-five percent of the cases.

For this approach to succeed, it's not enough that an antecedent belief played a role in causing your experience (in the jargon: it penetrated your experience). We're interested in how your experiences present the world, regardless of how those experiences were caused. The relevant belief must be responsible for the transition from your experience to your fifty-five percent doxastic confidence it's Isaac.

An immediate drawback is that you don't feel as though you're *resisting* your experience, such as when an object looks red but you're certain it's white. You also don't feel as though you're *discounting* your experience, such as when an object looks red but you believe your experience is unreliable. More generally, it doesn't seem as though you're relying on an antecedent belief. All other things being equal, that's a reason to think you're not. Likewise, it doesn't seem as though you're relying on an antecedent belief when your experience of the Müller-Lyer illusion leads you to believe that one line is longer, and that's a reason to think you're not. Introspection is fallible, but it still provides valuable evidence about why we form certain beliefs.

Some philosophers should find this point especially convincing. These philosophers reject sense-datum theories because you don't seem to be relying on beliefs about sense-data when you form beliefs about the external world, including that it's Isaac approaching. It would be awkward for these philosophers to turn around and insist that, despite how it seems, you're relying on an antecedent belief when you transition from your experience to fifty-five percent doxastic confidence it's Isaac. It's unclear why introspection would be reliable in the first case but not the second.

Another drawback is that a belief should be sensitive to your background beliefs. But even if you believe Isaac is out of town, you'll still have a feeling of recognition, and it will still incline more confidence it's Isaac than not. As reported in the introduction, you might say, "I know he's out of town, but that really looks as though it could be Isaac." When the lookalike is standing directly in front of you, the feeling will strengthen, and it will incline you to have even

31

more confidence it's Isaac. You might say, "I know Isaac is out of town, but it's as though he's standing directly in front of me." Because this inclination comes apart from your background beliefs, it doesn't seem as though a belief is responsible for your fifty-five percent doxastic confidence when you trust your experience. Likewise, even if you believe it's an illusion, your experience of the Müller-Lyer illusion still inclines the belief that one line is longer, suggesting that another belief isn't responsible for this inclination.

It might be tempting to conjecture that the relevant belief is embedded in a quick, automatic, and encapsulated mechanism. Perhaps when your experience represents Isaac in the distance, this mechanism quickly and automatically generates the inclination to adopt fifty-five percent confidence it's Isaac, regardless of your background beliefs. But why call that state a *belief*? Given how we're using 'perceptual', it is more perceptual than doxastic, because it's automatic, consciously accessible, dissociable from doxastic states, directed toward perceived objects and properties, and fast enough that we can't detect any delay. Moreover, this alternative would postulate two levels of conscious representation—one that merely represents one possibility (e.g., that's Isaac) and another that represents and weights several possibilities (that's Isaac, that's Aaron, that's neither)—when only the second level is needed to explain the datum. PERCEPTUAL CONFIDENCE provides a simpler explanation.

Poverty

A fourth approach is to deny that our experiences represent particular objects such as Isaac (see, e.g., McGinn [1996, p. 51]). Perhaps our experiences represent only bundles of colors and shapes, and recognition always occurs at the level of belief. You might end up with fifty-five percent confidence it's Isaac because you believe the approaching figure is short like Isaac but walks more like Aaron. Unlike before, you wouldn't feel as though you were resisting or discounting your experience, because your experience wouldn't be taking a stand on whether it's Isaac. In the jargon: your experience would be representationally impoverished.

However, it's hard to deny that our perceptual experiences represent Isaac, given how we're using 'perceptual experience'. Recognition is conscious, automatic, accessible, directed toward perceived objects and properties, and fast enough that we can't detect any delay. It's also dissociable from our doxastic states, because you can have the feeling of recognizing Isaac even after you learn he's out of town. Given how we're using 'perceptual experience', that's all it takes for our perceptual experiences to represent Isaac.

Moreover, the same challenge extends to our examples involving illumination, color, and shape, and nobody should deny our experiences represent these properties. Let's refocus the argument on our shape experiences, in part because this will also give us an opportunity to consider what happens when the alternatives vary continuously.

Suppose you completely trust your experience of the peripheral oval, endorsing whatever it tells you about that oval's elongation. You're likely to

32

end up with doxastic confidences that are bell-shaped, peaking at one elonga-
tion and then trailing off in both directions. Your confidence might peak at ◯
and then trail off in the direction of ◯ and the direction of ◯. What explains
this bell-shaped distribution of confidence?

Once again, PERCEPTUAL CONFIDENCE can offer a simple and plausible expla-
nation: your perceptual confidences are bell-shaped, and you endorsed your
experience.

Once again, POST-PERCEPTUAL CONFIDENCE can't offer as simple an explana-
tion. Suppose your experience represents an oval with a specific elongation.
Say: ◯. By trusting your experience you should end up with full confidence the
oval has that elongation. Alternatively, suppose your experience represents a
range of elongations. Say: from ◯ to ◯. By trusting your experience you would
end up with doxastic confidences that are plateau-shaped: equal confidence in
elongations within the relevant range, and no confidence in elongations outside
that range. You wouldn't end up with a bell-shaped distribution of confidence.

We find ourselves in the same position as before: proponents of POST-
PERCEPTUAL CONFIDENCE must explain the apparent discrepancy between your
actual degree of doxastic confidence and your expected degree of doxastic
confidence given what your experience represents. Denying that our experi-
ences represent particular objects such as Isaac thus doesn't give proponents of
POST-PERCEPTUAL CONFIDENCE an easy solution.

Some proponents of POST-PERCEPTUAL CONFIDENCE might try to divide and
conquer, finding a different way to resist each example. They might argue: Our
experiences don't represent particular objects like Isaac; we can't know what
our peripheral experiences represent; our experiences represent only
illumination-dependent colors like dark-red-under-candlelight, so we know
exactly what color the tablecloth looks even if we don't know how it will look
under normal lighting; we're implicitly relying on background beliefs when we
have fifty-five percent doxastic confidence the experimenter's light is on; we
represent letters with fuzzy borders rather than **E**s or **F**s at the optometrist's
office; any uncertainty about the ball's location results from converting our
visual system's built-in unit of measurement to a reportable unit of measure;
and so on for all the other examples that challenge their view. I doubt they'll
succeed. Moreover, even if we can't decisively refute each response, PERCEP-
TUAL CONFIDENCE might still be preferable, because it offers a simple and
uniform analysis of all these cases.

Not Confidence

I've been describing our experiences as assigning degrees of *confidence*. A pro-
ponent of POST-PERCEPTUAL CONFIDENCE might resist that description. She
might insist that there aren't enough similarities with degrees of doxastic
confidence to use that label. So that we don't prejudge the discussion, let's
momentarily redescribe our experiences as assigning degrees of *emphasis*, an
arbitrary label for whatever degrees our experiences assign. There are three
reasons why I think it's fitting to describe degrees of emphasis as degrees of
confidence.

33

First, if an experience assigns a high degree of emphasis and endorsing that experience yields a high degree of doxastic confidence, then the simplest explanation is that emphasis is a kind of confidence. Similarly, if an experience represents a man's hair as ϕ and endorsing that experience yields the belief that his hair is red, then the simplest explanation is that ϕ is redness.

Second, the feelings associated with degrees of emphasis—a lesser or greater feeling of recognition, a lesser or greater feeling of something being in view—are aptly described as involving a kind of confidence. This is reflected in the way we talk about experiences. It's natural to describe your experience as *telling you* that Isaac is approaching. But we wouldn't describe a friend as *telling you* that Isaac is in town unless she says it with sufficient confidence; if she shrugs her shoulders or adjusts her pitch, it might sound as though she's guessing or asking. It is also natural to say that the approaching man *seems* tall. But we wouldn't say that a number *seems* prime to your friend unless she is sufficiently confident. If she's merely hoping or supposing that it's prime, we don't say that it seems prime to her.

Third, one might argue that, like degree of doxastic confidence, degrees of emphasis are more or less ideal to the extent they preserve the axioms of probability theory. The precise form of this argument depends on many details that would distract from the main thread. But let me outline one version of this argument to illustrate what such an argument would look like. One might argue that degrees of emphasis assigned to competing possibilities aren't ideal if they sum to less than one hundred, and degrees of emphasis assigned to a conjunction (red and far) aren't ideal if they are disproportionate with the degree of emphasis assigned to the conjuncts (red, far). One might even argue that degrees of emphasis ideally satisfy the axioms of probability theory *for the same reason* that degrees of doxastic confidence ideally satisfy those axioms. Joyce [1998] and others argue that degrees of doxastic confidence ideally satisfy the axioms of probability theory, because (i) the function of doxastic states is to accurately represent the world, and (ii) doxastic states more accurately represent the world if they assign confidences that satisfy the axioms of probability theory. Many philosophers of perception already accept the analog of (i) for perceptual states (see, e.g., Burge [2010, Chapter 6]). While the details might take a while to fill in, the reasons to accept (ii) also seem like reasons to accept the analog for perceptual states and degrees of emphasis. If degrees of emphasis and doxastic confidence aim toward a shared ideal, it would be fitting to categorize them under the same label. That's the third and final reason to describe our experiences as assigning degrees of *confidence*.

This isn't to overlook important normative differences between perceptual and doxastic confidences. When your doxastic confidence shifts in response to new information, you often regard that information *as evidence*. But when your perceptual confidence shifts in response to new information (e.g., new retinal stimulations), you never regard that information as evidence, because you're unaware of it, just as you're unaware of the other information used to generate your perceptual experience. Relatedly, if your perceptual confidences in competing possibilities sum to more than one hundred, then they're not ideal, but that doesn't make them *irrational* or *unjustified*, because your perceptual confi-

34

dences are out of your control. It follows that, while your perceptual confidence it's Isaac can justify your doxastic confidence it's Isaac, justification never flows in the other direction.

We also shouldn't overlook important structural differences between perceptual and doxastic confidences. Your doxastic confidences are distributed over many more possibilities, including possibilities involving the distant future, and the set of those possibilities is usually taken to be closed under negation and countable unions, making it a σ-algebra (see Krantz, Luce, Suppes, and Tversky [1971, p. 199]). The set of possibilities represented by your perceptual experiences might not be a σ-algebra, because your experiences might not represent every countable union. This might be another respect in which they fall short of the ideal.

While these normative and structural differences are important, they don't undercut the reasons I listed for describing our experiences as assigning degrees of *confidence*, rather than some other quantity. For example, there's nothing in our concept of confidence that implies that it can shift only in response to evidence regarded as such. We can easily imagine a creature that's unaware of the barometric pressure, but whose brain is hardwired so that as the barometric pressure drops, the creature automatically becomes more confident that there will be rain. More generally, our concept of confidence is elastic enough to encompass degrees of confidence with different normative and structural features.

The differences between perceptual and doxastic confidences also don't undercut our argument for PERCEPTUAL CONFIDENCE, which is that it offers the simplest explanation of your greater doxastic confidence that it's Isaac. To appreciate why, consider a case that doesn't involve degrees of confidence: Suppose that as a result of completely trusting your experience, you believe that it's a man with red hair. As noted before, the simplest explanation is that you perceived his hair as red. The simplicity of this explanation isn't undercut by the normative and structural differences between your perception and belief, including that only your belief was the result of evidence regarded as such, only your belief was thereby justified, and only your belief is the kind of mental state capable of representing the distant future. Returning to our argument for PERCEPTUAL CONFIDENCE, the simplest explanation is that your perceptual confidence it's Isaac was greater, and the simplicity of this explanation isn't undercut by the normative and structural differences between your perceptual and doxastic confidences.

Nothing I've said constitutes a decisive argument for PERCEPTUAL CONFIDENCE. Proponents of POST-PERCEPTUAL CONFIDENCE might search for a sixth approach or develop one of these five approaches into something more satisfying. But even if they succeed, we should still regard PERCEPTUAL CONFIDENCE as a promising new view, which is all we're trying to establish.

Certain philosophers will be especially compelled by this argument for PERCEPTUAL CONFIDENCE. According to the philosophers I have in mind, if the functional role of an experience is to produce the belief that p, then the experience represents that p (see, e.g., Lewis [1980]). These philosophers will be inclined to think that, if the functional role of an experience is to produce a

35

certain degree of doxastic confidence in p, then the experience assigns that degree of confidence to p. A good way to study the functional role of an experience is to study what happens when nothing interferes, as when we completely trust it. These philosophers will therefore be especially compelled by our argument for PERCEPTUAL CONFIDENCE.

6. Consequences

In order to illustrate the potential importance of PERCEPTUAL CONFIDENCE, here's a list of five of its most interesting consequences. These are in addition to a consequence we already discussed: it would fill a hole in our best scientific theory of perception. By listing these consequences, I don't mean to suggest that PERCEPTUAL CONFIDENCE is important only in virtue of what follows from it. The attempt to properly characterize our perceptual experiences has rightfully been the subject of intense and perennial philosophical attention for its own sake, and PERCEPTUAL CONFIDENCE would make an important contribution to that investigation.

6.1. Intuitions and Actions

PERCEPTUAL CONFIDENCE naturally generalizes to other kinds of mental states.

My intuition that lying is wrong is weaker than my intuition that incest between consenting adults is wrong. Moreover, because I don't *believe* that incest between consenting adults is wrong (thanks to Sebo [2006]), the strength of these intuitions is independent of my beliefs.[10] Building on PERCEPTUAL CONFIDENCE, perhaps the relative strengths of my intuitions correspond to different degrees of *intuitive confidence*.[11]

Similarly, as a salt shaker slides across the table you might feel more and more confident that you can reach out and grab it. Moreover, because this feeling would persist even if you knew there was an invisible forcefield, its strength is independent of your beliefs. Something can feel within reach even if you know it's not. Perhaps the strength of this feeling corresponds to different degrees of *action confidence*.[12]

A thorough inventory of the mind might reveal still other kinds of confidence.

6.2. Perceptual Contents

PERCEPTUAL CONFIDENCE has consequences for the standard account of experience. Let's introduce the standard account with our example involving the

10. Likewise, even though he knows otherwise, Dogramaci [2013, p. 380] finds it intuitive that there are more non-prime numbers than prime numbers.
11. Intuitive confidence might correspond to what Dogramaci [2013, p. 378] calls "temptation" and what Sosa [2007, p. 60] calls "attraction." If so, I think it's more helpful to describe it as confidence, given the parallels to perceptual confidence and doxastic confidence.
12. Vishwanath [2014, p. 174] argues that action confidence is included in our perception of depth.

rolled basketball. According to the standard account, when you look at the stopped basketball, your experience relates you to a proposition. For concreteness, let's suppose your experience relates you to the proposition:

The ball is 8m from my head.

This is your experience's *propositional content.* There's an active debate about the structure and constituents of the propositional contents of experiences, but we can remain neutral. It will be helpful to have a label for your relation to this propositional content. Let's say that you *perceptually entertain* it. By stipulation, then, perceptual entertaining is a propositional attitude like believing and desiring.

If PERCEPTUAL CONFIDENCE is true, then we need to modify or enrich the standard account. We could reconceive of perceptual entertaining as a three-place relation between a subject, proposition, and degree of confidence. Your total experience at any given time would then involve many perceptual entertainings. Alternatively, we could replace the perceptual entertaining relation with a series of relations indexed to various degrees of confidence, such as perceptually-entertains-with-fifty-percent-confidence and perceptually-entertains-with-forty-percent-confidence.[13] Once again, your total experience at any given time would involve many of these relations. Finally, as mentioned earlier, we could reconceive of perceptual entertaining as a many-place relation to a number of propositions and their associated degrees of confidence. Your total experience would then involve only one of these relations.

Some will think these modifications of the standard account correspond to different views about the metaphysics of experience. Others will regard them as mere notational variants. We don't need to pursue this issue.

Another approach is to enrich the standard account by including degrees of confidence in the propositional content. This approach must be carefully executed. For example, we shouldn't say that your experience's propositional content includes a component such as:

There is a fifty percent chance that the ball is 8m from my head.

If the ball is 8m from your head, there is a one hundred percent chance that the ball is 8m from your head. If the ball is not 8m from your head, there is a zero percent chance the ball is 8m from your head. Thus, the above proposition entails that the ball neither is nor isn't 8m from your head. That's implausible. The mistake lies in confusing confidence and chance. For similar reasons, we shouldn't confuse confidence with non-epistemic kinds of possibility, like physical possibility. The sense in which the ball *could be* 8m away is different than the sense in which it *could be* moved 8m away.

13. While discussing perceptual dogmatism, Pautz [2011, p. 397] says it is unclear what it would mean for perceptual entertainment to come in degrees. I think PERCEPTUAL CONFIDENCE gives us an intuitive grip.

37

A more promising suggestion is that your experience's propositional content includes a component such as:

This experience assigns fifty percent confidence that the ball is 8m from my head.

Your experience would then be reporting its own degree of confidence. Another promising suggestion is that your experience's propositional content includes a component such as:

I should have fifty percent confidence that the ball is 8m from my head.

Your experience would then be telling you how much confidence you should have. There are many different analyses of this *should*. It might correspond to an epistemic claim such as: This experience supports having fifty percent confidence. Or it might correspond to an imperative such as: Assign fifty percent confidence! Because imperatives lack truth-condtions (i.e., sets of possible worlds in which they're true), this second option would imply that the propositional content of your experience lacks truth-conditions. Whether it's still appropriate to call it a "proposition" is merely terminological.

Keep in mind that this is supposed to be just *one* of the components of your experience's propositional content. Other components assign confidences to other possibilities. Together, they distribute confidences over a range of possibilities, thereby constituting a probability distribution.

One might worry that degrees of confidence are too sophisticated to be in propositional contents. But consider Searle's [1983, p. 65f] claim that an experience's propositional content includes causal relations between objects and that very experience. In that case, your experience's propositional content also has a component such as:

There is a ball that's a cause of this experience.

If Searle's proposal is acceptable, then we can't deny there are degrees of confidence in propositional contents on the grounds that degrees of confidence are too sophisticated. In defense of both proposals: perhaps only those with the necessary concepts and training can fully articulate the relevant relations.

Up until this point I've been assuming that our experiences assign precise degrees of confidence, like sixty percent. But there are many other options. Our experiences might assign ranges of confidence, like sixty to eighty. They might also indicate just minima and maxima, perhaps by just telling us our confidence should be greater than sixty percent. Rather than numbers, they might also supply us with updating instructions, such as: Double the ratio of your confidence it's Isaac to your confidence it's not Isaac. Moreover, these options aren't exclusive. Different experiences might assign confidence in different ways. One way to pursue this issue would be to consider what happens when we completely trust different kinds of experiences.

38

Many philosophers of perception talk freely about the accuracy conditions of experiences. What are accuracy conditions supposed to be? They are supposed to be the conditions in which an experience is completely accurate. As before, suppose your experience has the propositional content:

The ball is 8m from my head.

This experience is completely accurate if the ball is 8m from your head. Its accuracy conditions therefore include all the conditions in which the ball is 8m from your head (see, e.g., Siegel [2011, Chapter 2]).

PERCEPTUAL CONFIDENCE undermines this framework. Instead of representing just one possibility, PERCEPTUAL CONFIDENCE implies that your experience (or at least your *total* experience) assigns a range of confidences distributed over a range of possibilities. To make things easier, let's suppose your experience of the ball represents only four possibilities: that the distance to the ball is 6m, 7m, 8m, and 9m. Your experience might assign confidence as follows:
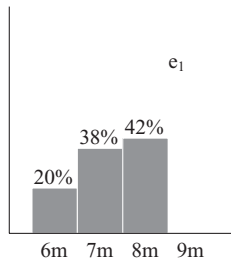
When is e_1 completely accurate? It depends how we're calculating accuracy. If we value only the confidence e_1 assigns to the ball's actual location, then it is never completely accurate, because it is most accurate when the ball is 8m away and even then is less accurate than experiences that assign full confidence to 8m. Thus, if we value confidences in this way, e_1 is never completely accurate and therefore lacks accuracy conditions. Alternatively, if we equally value the confidence e_1 assigns to distances within 1m of the ball's actual distance, then it is completely accurate when the ball is 7m away. Thus, if we value confidences in this way, e_1 can be completely accurate, and therefore has accuracy conditions. Moreover, there seems to be no unique, objective way of deciding between these different ways of valuing confidences; we'd have to choose arbitrarily or rely on interest-relative considerations. Thus, there seems to be no objective fact about whether this experience has accuracy conditions. For the same reason, there's no objective fact about when e_1 is maximally accurate.

This doesn't mean that there are *no* objective facts about accuracy. If an experience assigns full confidence to the ball's actual distance, it is completely accurate. But even for that experience, there's no objective fact about its accuracy conditions, because there's no objective fact about whether it would still be fully accurate if the ball were a little closer. Likewise, if an experience assigns confidence only to distances that are far greater than the ball's actual distance, it might be completely inaccurate. But that doesn't establish that there's an objective fact about the conditions in which it is completely accurate.

There's a helpful, if imperfect, comparison with a certain kind of relativism about beauty. According to these relativists, there are no objective facts about beauty. Whether sentences such as 'That statue is beautiful' are true or false is relative to different standards of beauty and there's no objective way to choose between these standards. Likewise, according to proponents of PERCEPTUAL CONFIDENCE, there are often no objective facts about accuracy conditions. Whether an experience is completely or maximally accurate in one condition or another is often relative to how we're evaluating accuracy, and there's often no objective way to choose. PERCEPTUAL CONFIDENCE thus leads to a kind of relativism about accuracy conditions. That's not to deny there are dissimilarities with relativism about beauty. While people with different standards of beauty might take themselves to be disagreeing, people with different ways of evaluating experiences shouldn't take themselves to be disagreeing, except insofar as they disagree about which kind of evaluation is most useful given their shared interests.

As I said, many philosophers of perception talk freely about the accuracy conditions of experiences. For some of these philosophers, PERCEPTUAL CONFIDENCE would require only a shift in rhetoric. But for other philosophers, it would require a more substantive adjustment. Let's briefly survey two examples.

A first adjustment is by those who claim the propositional content of an experience is just its accuracy conditions (e.g., Dretske [1981], Stalnaker [1998]). As we just established, PERCEPTUAL CONFIDENCE implies that the accuracy conditions of some experiences are relative to how we're evaluating their accuracy, an arbitrary or interest-relative decision. But the propositional content of an experience isn't supposed to be arbitrary or interest-relative. It's supposed to be an objective fact about the experience; some even claim an experience's propositional content is essential to it (see, e.g., Pautz [2009, p. 492f]). Thus, by Leibniz's Law, PERCEPTUAL CONFIDENCE implies the propositional content of an experience isn't just its accuracy conditions. These philosophers need to replace accuracy conditions with something more structured, such as a distribution of confidences over possibilities, which is what we used to describe e_1.

A second adjustment is by those who endorse Chalmers's [2006] theory of propositional content. According to Chalmers, while each experience has several propositional contents, one of them grounds the rest, namely: the set of worlds where the experience is completely accurate (in his terminology: "perfectly accurate"). Chalmers calls these worlds "Edenic" and the corresponding

40

propositional content "Edenic content". This might be the right account of some experiences. But if PERCEPTUAL CONFIDENCE is true, it isn't the right account of all experiences, because experiences which assign positive degrees of confidence to several possibilities, such as peripheral experiences, might not be objectively and perfectly accurate in any world. As a result, PERCEPTUAL CONFIDENCE implies such experiences lack Edenic content, the cornerstone of Chalmers's approach.[14]

I doubt these are the only philosophers who would need to make adjustments. Anyone who appeals to accuracy conditions, whether to explain concept acquisition or perceptual justification, ought to reexamine her account in light of PERCEPTUAL CONFIDENCE.

Before moving on to the next consequence, I think it's helpful to consider why relativism about accuracy conditions doesn't follow from mere indeterminacy in what an experience represents. Suppose it is indeterminate whether an experience represents a ball as 6m or 7m away. It would then be indeterminate whether an experience is maximally accurate when the ball is 6m away or 7m away. But relativism doesn't follow. There'd still be a perfectly objective and non-relative fact about its accuracy conditions: that it is indeterminate whether its accuracy conditions include conditions where the ball is 6m away or conditions where it is 7m away.

6.4. Veridical and Illusory Experiences

It is natural to think there's a fundamental and sharp distinction between veridical and illusory experiences. However, PERCEPTUAL CONFIDENCE implies there is only a superficial and fuzzy distinction between *seeing* that a ball is 6m away and *misperceiving* that a ball is 6m away.

Let's start by explaining why it is natural to think this is a fundamental distinction. If PERCEPTUAL CONFIDENCE is false, you might perceptually entertain:

The ball is 8m from my head.

Suppose the ball is actually 6m away. Your experience is therefore illusory. The distinction between veridical and illusory experiences therefore seems as fundamental as the distinction between what's instantiated and what's uninstantiated.

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14. If Chalmers's ultimate goal is just to establish that our experiences represent Edenic *properties*, he could argue that our experiences distribute their confidence over possibilities in which objects instantiate Edenic properties. But it's unclear in what sense these properties would still be Edenic, because none of them would perfectly match our experience—there wouldn't be a one-to-one pairing of properties and experiences. At a minimum, Chalmers would have to refine what he means by 'Edenic'.

41

PERCEPTUAL CONFIDENCE implies this is a superficial distinction. Consider seven experiences that differ in how they assign confidences to four of the ball's possible distances:
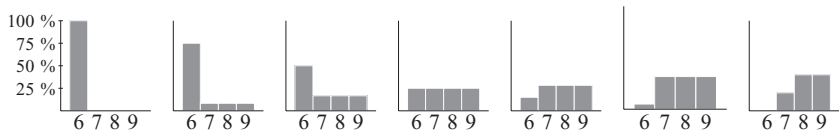
For the sake of argument, let's grant that these experiences are ordered from most to least accurate. Starting from the left, at what point do the experiences become illusions? If any experience that assigns confidence to non-actual possibilities is illusory, then too many of our experiences will be illusions; your experiences of colors in the extreme periphery and of people near the horizon would never be veridical, because they always divide their confidence among several possibilities. Your experience of Isaac wouldn't be veridical until you're perceptually certain it's him. At the other extreme, if an experience that assigns any confidence to the actual situation is veridical, then too many experiences will be veridical; your experiences of peripheral colors and distant people are most likely to be veridical because they distribute confidences so widely that they're most likely to assign some confidence to the actual color or person. Your experience of Isaac would be veridical even if it assigned more perceptual confidence to the possibility it's Aaron. But where else should we draw the line? This doesn't seem like a deep question. If PERCEPTUAL CONFIDENCE is true, then at the most fundamental level of description there is just a range of different ways an experience might assign degrees of confidence, and any line would reflect an arbitrary convention rather than a fundamental division. That's why PERCEPTUAL CONFIDENCE implies that the distinction between veridical and illusory experiences is superficial.

Let's now consider why this distinction might seem sharp even if it's superficial. Returning to the seven experiences diagramed above, if the ball is 6m away, then each experience is more accurate than experiences to its right. Draw an arbitrary line and say that experiences to its left are veridical and experiences to its right are illusory. Even if this way of dividing experiences is arbitrary and superficial, it is sharp—all seven experiences are categorized in one way or another. More generally, one might still think in each situation it's possible to rank all experiences from most to least accurate, and therefore arbitrary lines can be used to sharply distinguish veridical and illusory experiences.

PERCEPTUAL CONFIDENCE blurs the ranking of experiences by degrees of accuracy. Consider e_1 along with another experience, e_2, that might have resulted from a different angle of elevation, pattern of illumination, or lens curvature:

42
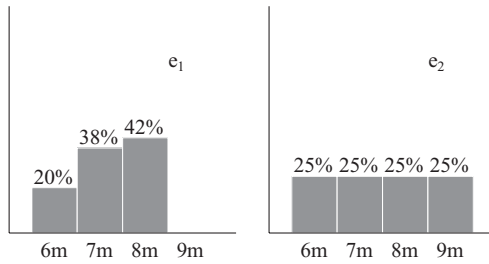
If the ball is actually 6m away, which of these experiences is most accurate? As before, it depends on how we're calculating accuracy. An approach we haven't considered is to value confidences along a sliding scale, valuing confidences in the actual location the most, valuing confidences in the closest alternative a little less, valuing confidences in the next closest alternative a little less, and so on. As a helpful convention, let $e_i(x)$ be the degree of confidence that experience e_i assigns to the possibility the ball is x meters away, so that $e_2(6)$ is the degree of confidence that e_2 assigns to the possibility the ball is 6m away. We might calculate accuracy as follows:

$$\frac{e_i(6)}{1} + \frac{e_i(7)}{4} + \frac{e_i(8)}{9} + \frac{e_i(9)}{16}$$

According to this proposal, e_1 is the most accurate. But there are many other equally plausible proposals, such as:

$$\frac{e_i(6)}{1} + \frac{e_i(7)}{2} + \frac{e_i(8)}{3} + \frac{e_i(9)}{4}$$

According to this proposal, e_2 is the most accurate.

As before, there doesn't seem to be a unique, objective way of deciding between these proposals; we'd have to choose arbitrarily or rely on interest-relative considerations. Thus, there doesn't seem to be a unique, objective way of ranking these experiences by their degree of accuracy.

There's a parallel question of how to rank beliefs if we have varying degrees of confidence in different possibilities. Instead of insisting that we evaluate beliefs in a particular way, formal epistemologists typically try to identify constraints that any plausible ranking must satisfy and study what, if any, interesting consequences follow (e.g., Joyce [1998], Pettigrew [2015]).

The lack of an objective ranking of experiences blurs the distinction between veridical and illusory experiences. To appreciate why, suppose that e_1 is the least accurate veridical experience. Is e_2 also veridical? There's no objective fact of the matter, because according to some rankings it's more accurate than e_1, and therefore veridical, but according to other rankings it's less accurate, and therefore illusory. Thus, there can be only a fuzzy line distinguishing

43

veridical and illusory experiences, a fuzziness that's more metaphysical than linguistic, because it isn't due to the vagueness or ambiguity of 'accurate'.

For these reasons PERCEPTUAL CONFIDENCE implies that the distinction between veridical and illusory experiences is superficial and fuzzy. In the next subsection we'll explore further implications for those who think this distinction carries a lot of metaphysical weight.

As an aside, I want to point out a related implication of PERCEPTUAL CONFIDENCE. Suppose we want to calculate the average reliability of Esther's experiences in a certain set of conditions. For concreteness: when the ball is 6m away, 7m away, 8m away, and 9m away, and each of these conditions is just as frequent. Without PERCEPTUAL CONFIDENCE we might hope to calculate the average reliability of her experiences by measuring the inaccuracy of her experience in each condition and then averaging those measurements. But PERCEPTUAL CONFIDENCE implies there's often no objective way to measure the inaccuracy of her experience in each condition. Suppose that Esther and Delilah always have the same experiences, except when Esther has e_1, Delilah has e_2. As a result of the considerations above, there's no objective fact about whether Esther's experiences are on average more reliable than Delilah's, and thus there's often no objective way of calculating the average reliability of Esther's experiences in those conditions. That's surprising regardless of whether one thinks there's a reliability condition on justification or knowledge.

6.5. Metaphysics of Perceptual Experience

PERCEPTUAL CONFIDENCE isn't a view about the metaphysics of experience. Even if our experiences often assign confidences to alternative possibilities, that might not be part of the nature of experience in general or the nature of individual experiences. Nonetheless, there are three reasons why PERCEPTUAL CONFIDENCE is incompatible with most so-called "disjunctivist" views about the metaphysics of perceptual experience.[15]

First, according to most disjunctivist views, experiences involve relations only to present objects and the properties they instantiate. PERCEPTUAL CONFIDENCE implies that many experiences, including some veridical experiences, involve relations to objects that are absent (or even non-existent) and properties that are uninstantiated.

Second, according to most disjunctivist views, experiences do not involve relations to abstracta, such as numbers. But PERCEPTUAL CONFIDENCE implies that experiences involve relations to degrees of confidence, and even if degrees of confidence aren't numbers, it is natural to think they are abstracta. It is also unclear how we could accept PERCEPTUAL CONFIDENCE while denying that experiences involve relations to propositions, another kind of abstracta.

15. Not *all* disjunctivist views, at least if we're including views according to which hallucinations, illusions, and veridical experience all involve relations to propositions, despite other metaphysical differences. See, e.g., Schellenberg [2011] for a view along these lines. For an especially helpful overview of disjunctivist views, see Byrne and Logue [2009].

Third, according to most disjunctivist views, veridical experiences and hallucinations are different kinds of mental states without any common factor, and every experience belongs in one category or the other. The distinction between veridical experiences and hallucinations is therefore supposed to be fundamental and sharp. But PERCEPTUAL CONFIDENCE implies that distinction is superficial and fuzzy (see above).

Objections to disjunctivism typically focus on what it says about illusions and hallucinations. An interesting feature of the first two objections is that they are equally about what disjunctivism says about veridical experiences. PERCEPTUAL CONFIDENCE thus challenges disjunctivism from a new direction.

Of course, dedicated disjunctivists will respond by rejecting the support for PERCEPTUAL CONFIDENCE. I doubt I've said anything to convince them otherwise; the supporting argument wasn't decisive. Nonetheless, those who aren't antecedently committed to disjunctivism but who are attracted to PERCEPTUAL CONFIDENCE should be swayed towards other views about the metaphysics of experience.

7. Further Questions

Convincing you that PERCEPTUAL CONFIDENCE is true would require a much longer discussion of its merits and demerits. But even if you're just convinced it's plausible and interesting, it's still worth trying to fill in the details. Here are some further questions we'd like answered:

(1) We'd like to know the extent to which our perceptual confidences are influenced by our background beliefs ("cognitive penetration") and the extent to which it's influenced by hardwired assumptions.

(2) We'd like to know whether our perceptual confidences exhibit signs of learning. Phoneme perception is a plausible example. We're more confident a physically ambiguous sound was one phoneme rather than another if we just heard that phoneme.

(3) We'd like to know whether, at a computational level, our visual system is exploiting Bayes's Theorem, and, if so, what fixes the values of the priors. Building on the questions listed above: Are the priors informed by our beliefs? If not, do they nonetheless change over time, perhaps as a result of learning? Or are they hardwired?

(4) We'd like to know the extent to which our perceptual confidences are non-ideal—e.g., whether they assign confidences to competing possibilities that sum to less than one hundred percent.

(5) We'd like to know when and why our experiences treat events as more or less dependent. When you look at the tablecloth under candlelight your might be perceptually uncertain whether it is crimson or scarlet but perceptually confident that it is the same color everywhere. Thus, the colors of the tablecloth's regions are dependent events.

(6) We'd like to know whether there are absolute minima. Just as there are spatial locations too small for our experiences to represent them, there

45

might be degrees of confidence too small for our experiences to assign them. More generally, we'd like to know which degrees of confidences our experiences can assign. Any degree along a continuous scale? Or only certain degrees, separated by fixed jumps?

(7) We'd like to know whether perceptual uncertainty is the result of computations involving either a single measurement or a series of measurements. If it's the result of a series of measurements, we'd like to know whether it's the mean, variance, or some other function that's the basis of the relevant computations.

(8) We'd like to better understand the distinction between assigning zero confidence to a possibility and failing to represent that possibility.

(9) We'd like to know more about the relation between perceptual confidence and perceptual phenomenology. CONFIDENTIALISM is just a first step.

There's clearly room for a lot more research.

Acknowledgments

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