

Hallucinating Pain

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The standard interpretation of quantum mechanics and a standard interpretation of the awareness of pain have a common feature: Both postulate the existence of an irresolvable duality. Whereas many physicists claim that all particles exhibit particle and wave properties, many philosophers working on pain argue that our awareness of pain is paradoxical, exhibiting both perceptual and introspective characteristics. In this chapter, we offer a pessimistic take on the putative paradox of pain. Specifically, we attempt to resolve the supposed paradox by undermining the reasons offered for accepting the introspective side of the dualism.

Here is how we will proceed. In Section 1, we lay out the primary reasons that have been offered for thinking that our awareness of pain is paradoxical. We first note the reasons given for adopting a perceptual account of pain (apparent location and nociception), then turn to the reasons given for adopting an introspective account (privacy, subjectivity, and the impossibility of pain hallucinations). In Section 2, we note that previous empirical results cast doubt on the first two reasons given in support of an introspective account of pain. In Section 3, we target the third reason, presenting new evidence concerning lay judgments about the possibility of pain hallucinations. We conclude, in Section 4, that while the current evidence supports adopting a perceptual view of pain, it does not support adopting an introspective view, thereby casting doubt on the purported paradox.

¹To appear in *Advances in Experimental Philosophy of Mind* edited by J. Sytsma and published by Bloomsbury Press. This research was funded in part by a Student-Faculty Collaborative Grant from East Tennessee State University. We would like to thank Courtney Oglesby, who was involved in the early stages of this project, and David Harker for his thoughtful comments on an earlier draft of this paper.

1. The Paradox of Pain

Many prominent philosophers have found pain to be paradoxical.² They argue that our awareness of pains show some features that are associated with outwardly-directed perception and other features that are associated with inwardly-directed introspection. In recent years, Murat Aydede (2006, 2009) and Christopher Hill (2004, 2006, 2009), in particular, have championed this view.³ In this section, we briefly detail the primary reasons that have been offered for each side of this apparent dualism, focusing on those given by Aydede and Hill. We begin with the perceptual side, then turn to the introspective side.

1.1 Awareness of Pain as Perceptual

A perceptual account of pain treats our awareness of pains as being outwardly directed: Pains are taken to be features of body parts. When Joe stubs his toe, for example, the pain is taken to be in his toe; and, in feeling the pain, Joe is aware of a feature of his toe.

Advocates of the paradox of pain have offered two primary reasons for thinking that our awareness of pain is in part perceptual. The first reason is that the apparent locations of pains seem to be in body parts, and that ordinary pain talk supports this claim. The basic assertion is that the phenomenology of feeling pains is such that the pains are located in or on parts of our bodies. It is then held that people, in general, just take the phenomenology at face value, reporting pains to have their apparent spatial locations. When people are asked to state the

² We will follow Hill in talking about ‘the paradox of pain’; it is worth noting, however, that it might be better (if less elegantly) described as ‘the paradox of our awareness of pains’—as Hill (2006) and Aydede (2006) have emphasized.

³ These philosophers come to different conclusions, however: Whereas Aydede claims that our awareness of pain is dominated by the introspective strand, Hill favors an eliminativist view on the concept of pain. Other philosophers have also pointed out the dual nature of pain. For example, Michael Tye argues that ‘the term “pain” in one usage, applies to the experience; in another, it applies to the quality represented’ (2006, p. 101). Similarly, Markus Werning claims: ‘There are two ways of thinking about pain. [Pain] is itself a state of experience [or] a content of experience.’ (2010, p. 754).

location of their pains, they don't hesitate to locate them in body parts. They answer, for example, 'I have a strong pain in my ankle' or 'there is a stinging pain in my shoulder'.

Advocates of the paradox of pain assert that it is part of the semantics of such expressions that they ascribe pains to non-mental locations. And if we reject the semantics of pain talk, then it turns out that 'no one has ever made a true claim about the location or intensity of a pain!' (Hill, 2006, p. 89).

The second reason offered for thinking that our awareness of pain is in part perceptual focuses on scientific research into nociception. Brain scientists have produced evidence for the claim that the 'structures and processes that explain the awareness of pain are fundamentally akin to the structures and processes that underlie paradigmatic forms of perceptual awareness' (Hill, 2004, p. 342). In other sense modalities, we can tell a causal story that begins with the activation of certain receptors, leading to processing in the relevant areas of the brain, and bringing about awareness of the stimuli. But a similar causal story can also be told for the processing of pain stimuli: Noxious stimuli activate nociceptors, leading to processing in relevant areas of the brain, and bringing about awareness of the stimuli. Given that awareness in other sensory modalities, such as vision and audition, have been plainly thought to be perceptual, the similarity of nociception has been taken as evidence that there is a perceptual aspect to the awareness of pain as well.

1.2 Awareness of Pain as Introspective

In contrast to perceptual accounts, introspective accounts treat our awareness of pains as being inwardly directed: Pains are not taken to be features of body parts; rather, they are understood in terms of mental states. When Joe stubs his toe, for example, the pain is not taken to be in his toe, but in his mind.

Three primary reasons are offered for thinking that awareness of pain is inwardly directed—the privacy of pains, the subjectivity of pains, and the impossibility of pain hallucinations. Before turning to a discussion of these arguments individually, however, it is worth noting that each can be derived from a common claim in philosophical work on pain—that it is impossible to distinguish the appearance from the reality of pain (see, for example, Bain, 2007; Dretske, 2006; Kripke, 1980). The reason that is typically given for this claim is not based on extravagant thought experiments or sophisticated arguments; rather, it is simply claimed that the lack of an appearance-reality distinction is part of the common-sense (or ‘folk’) conception of pain. Not only do philosophers claim that their own intuitions favour that the appearance and reality of pain cannot come apart, but they typically maintain that this is how the ordinary person thinks and talks about pain as well. As David Lewis (1980, p. 222) puts it: ‘Pain is a feeling. Surely that is uncontroversial.’⁴

Accepting that pains are feelings, it follows that they are private. In standard cases of perception, however, the objects that are perceived are typically taken to be public. Cakes can be seen, smelled, felt and (most importantly) tasted by everyone. In contrast, the pain in your stomach that results from having eaten too many cakes, cannot be shared by another person. It is only you who has that pain. Another person might ‘feel your pain’—that person might empathise with your suffering, perhaps even feeling a pain at the corresponding location in her body—but any pain she feels is another pain, not numerically identical with your own. This suggests that awareness of pain diverges from paradigmatic cases of perception. In contrast, the apparent

⁴ Of course, Lewis is far from alone here. For example, Michael Tye (2006, p. 100) writes that the claim that ‘pains are necessarily private and necessarily owned is part of our folk conception of pain’; and the obvious explanation offered for this aspect of our common-sense conception ‘is that pain is a feeling or an experience of a certain sort’. Similarly, Aydede (2009) asserts that ‘the common-sense conception of pain’ holds that ‘pains are sensations with essential privacy, subjectivity, self-intimation, and incorrigibility’.

privacy of pains is in line with cases of introspection, the privacy of one's pain mirroring the privacy of one's thoughts and feelings.

Similarly, if we accept that pains are feelings, then it follows that they are subjective states. To put this another way, to be a pain is to be felt; and, conversely, unfelt 'pains' are not pains at all. And, indeed, it is held that the stomach ache produced by eating too many cakes is only a pain if it is felt. Again this contrasts sharply with objects of ordinary perception. It is generally held that a cake can exist without being seen, smelled, or tasted (with apologies to Berkeley).

Finally, if we accept that pains are feelings, then it seems that pain hallucinations must be impossible. If there is no appearance-reality distinction for pains, then the appearance cannot pull apart from the reality and our awareness of pains must be veridical. And, in fact, the philosophical consensus supports the conclusion that pain hallucinations are impossible. For instance, Ned Block asserts that 'we do not acknowledge pain hallucinations, [i.e.] cases where it seems that I have a pain but in fact there is no pain' (2006, p. 138). Similarly, Hilary Putnam (1963, p. 218) writes:

One can have a 'pink elephant hallucination', but one cannot have a 'pain hallucination', or an 'absence of pain hallucination', simply because any situation that a person cannot discriminate from a situation in which he himself has a pain *counts* as a situation in which he has a pain, whereas a situation that a person cannot distinguish from one in which a pink elephant is present does not necessarily *count* as the presence of a pink elephant.

And Saul Kripke (1980, pp. 152–153) suggests the same when he states:

Pain... is not picked out by one of its accident properties; rather it is picked out by the property of being pain itself, by its immediate phenomenological quality.... If any phenomenon is picked out in exactly the same way that we pick out pain, then that phenomenon is pain.

In contrast, hallucinations are generally thought to be possible in other sensory modalities. As such, accepting the philosophical common sense, it once again appears that awareness of pain diverges from standard cases of perception.

2. Questioning the Paradox

In the previous section, we saw that many hold that pain is paradoxical, finding the awareness of pain to have both perceptual and introspective characteristics. Further, we saw that the reasons given in support of the introspective side of the purported dualism follow from the widely accepted claim that there is no appearance-reality distinction for pains. Despite its widespread acceptance, however, this claim has been challenged in recent years. This challenge puts pressure on the support given for adopting an introspective account of pain, which in turn raises doubts about the purported paradox of pain.

In this section, we detail the recent challenge to the received doctrine, focusing on two articles—Sytsma (2010) and Reuter (2011). Together these articles cast doubt on both the privacy and the subjectivity of pains. In the following section, we build upon this critique, presenting new experimental evidence that casts doubt on the claim that pain hallucinations are impossible. We argue that together these studies raise a significant challenge to the received doctrine and give strong reason to doubt the purported paradox of pain.

2.1 Intuitions about Privacy and Subjectivity

Among the three characteristics that express the supposed appearance-reality distinction of pain—privacy, subjectivity, and the impossibility of pain hallucinations—Sytsma's (2010) studies raise doubts about the first two: He presents the results of empirical studies that tested the judgments of lay people (people with little to no training in philosophy) about the privacy and subjectivity of pains. Of course, the judgments of lay people might well be mistaken, even about the nature of something as familiar as pain. Recall, however, that the support offered for the received wisdom that there is no appearance-reality distinction for pain is that this is part of the folk conception of

pain. As such, the actual judgments of lay people are directly relevant to assessing the support offered for the claim. And Sytsma's studies suggest that *contra* the philosophical consensus, lay people do not generally conceive of pains as being either private or subjective.

In one set of studies, Sytsma investigated the privacy of pains by asking people to consider cases in which two people share part of their body in common. In one case, he asked participants to consider a pair of conjoined twins. Discussing the putative privacy of pains by considering conjoined twins has the advantage of minimising epistemological confusion, since the constraint that most of us do not share our body with anybody else means that we have a privileged access to our own pains regardless of whether they are (a) conditions of body parts or (b) mental states. To illustrate, consider the following statement by Eric Schwitzgebel (2010):

It seems you know your own pains differently and better than you know mine, differently and (perhaps) better than you know about the coffee cup in your hand. If so, perhaps that special 'first-person' privileged knowledge arises through something like introspection.

Perhaps Schwitzgebel is right, perhaps he is not. By merely contemplating people's privileged access to their own pains, however, we cannot deduce whether this is a case of perception of conditions of body parts or introspection of mental states. The case of conjoined twins, though, allows us to dissociate the privileged access we have to our bodies from the privileged access we have to our mental states.

To test whether the commonsense conception of pain really treats pains as being private objects of introspection, Sytsma gave naive participants the following scenario:

Bobby and Robby are conjoined twins that are joined at the torso. While they are distinct people, each with their own beliefs and desires, they share the lower half of their body. One day while running through a park they forcefully kicked a large rock that, unbeknownst to them, was hidden in the grass. Bobby and Robby both grimaced and shouted out 'Ouch!'⁵

⁵ In addition, participants were given a second scenario involving a pair of normal undergraduates running a three-legged race for comparison, with the two scenarios being counterbalanced for order.

After the scenario, Sytsma asked participants to rate whether the twins felt two different pains or one and the same pain. He found that participants were significantly more likely to answer that they felt one and the same pain. Further, Sytsma found a similar result in a further study using a case of two people attached to the same hand by a mad scientist. These results suggest that lay people do *not* tend to conceive of pains as being private objects of introspection. Rather, people seem to treat their pains as being ‘private’ in ordinary cases simply because no one else is in a position to perceive their pains.

In another set of studies, Sytsma tested whether the ordinary conception of pains treats them as being subjective mental states, such that pains cannot exist unfelt. For example, Sytsma gave naive participants the following vignette:

Doctors have observed that sometimes a patient who has been badly injured will get wrapped up in an interesting conversation, an intense movie, or a good book. Afterwards, the person will often report that during that period of time they hadn’t been aware of any pain. In such a situation, do you think that the injured person still had the pain and was just not feeling it during that period? Or, do you think that there was no pain during that period?

In opposition to the claim that pains cannot exist unfelt, participants were significantly more likely to answer that the person still had the pain, although he was not feeling it, than that there was no pain.

Together, Sytsma’s studies suggest against the claim that the privacy and subjectivity of pains is part of the folk conception, casting doubt on the support offered for the introspective view of pain. At the same time, however, it should be noted that there are some philosophers (Hill, 2009; Lycan, 2004; Papineau, 2007), who agree that there are some counterexamples to the claim that pains are considered to be subjective. Not only do they admit that people can be distracted from little pains, suggesting that they still remain present without us being conscious of them, they also consider it plausible to say that pains can wake people up. Despite these counterexamples, Hill

doubts very much that this way of speaking ‘can be said to represent a dominant strand in our common-sense conception of pain’ (2009, p. 171). Further, other cases have seemed to some to support the view that pains are considered to be subjective. For example, Aydede (2006) claims that people do not consider pain to be present in cases where there is tissue damage but painkillers prevent the subject from feeling any pain. Nonetheless, while such cases deserve empirical study of their own, and while there is much more research to be done in this area, we find that the current evidence raises considerable doubts about whether the ordinary concept of pain supports the view that people do not distinguish the appearance from the reality of pain.

2.2 Further Evidence Against the Introspective Account

The putative lack of an appearance-reality distinction regarding pain has not only been questioned by experimental studies investigating people’s intuitions, but other empirical data also support the view that the appearance and reality of pain can come apart.

The intensity we attribute to properties like saltiness, loudness, and colour has a decisive effect on how confident people are in judging that objects really have this property (Lund, 1926). A low degree of confidence will often lead people to give introspective statements (Quinton, 1956), making claims about the way things appear to them (‘the shirt looks blue’) rather than directly about the non-mental objects (‘the shirt is blue’). The correlation between low signal intensity and introspection pervades all sense modalities, but has not so far been identified for pain.

In a web-based statistical analysis Reuter (2011) demonstrates that people mostly use the phrase ‘having pain’ when they describe strong pains, but have a preference for the expression ‘feeling pain’ when they describe less intense pains. This analysis suggests that people are confident in ascribing pain to a body part only if the pain is sufficiently strong, and thus that they

use expressions of pain in an analogous way to expressions in other sense modalities. These empirical results fuel the following argument:

- (1) Empirical data shows that the intensity of pain has a decisive effect on whether people assert that they have a pain or feel a pain.
- (2) ‘Having pain’ and ‘feeling pain’ can be identified as objective statement and appearance statement respectively if their use demonstrates a dependency on the intensity of pain.
- (3) People’s ability to make objective and introspective reports on pain depends on them distinguishing the appearance from the reality of pain.

From (1), (2), and (3) it follows:

- (4) People distinguish between the appearance and the reality of pain.

As such, the results of Reuter’s study offer further support for the claim that people do in fact draw an appearance-reality distinction for pains.

At the same time, one might argue that the intensity effect revealed in Reuter’s study can be explained in another way. For example, one might assert that the intensity effect is a brute fact about the English language, or that people merely imitate the way they express different intensities in the traditional sense modalities. However, Reuter, Sytsma and Werning (in preparation) have been able to reproduce the results in the German language. This data strongly reduces the plausibility of the charge that the intensity effect is merely a linguistic effect. Again, we find that the recently collected data provide evidence against the support offered for the received doctrine that there is no appearance-reality distinction for pain.

3. Studies on Pain Hallucinations

In section 1, we noted that three main lines of support are offered for introspective views of pain—privacy, subjectivity, and the impossibility of pain hallucinations. We saw in Section 2,

however, that recent empirical findings run counter to the view that people by and large think of pains as being private and subjective. While this evidence suggests against introspective accounts of pain, it does not speak directly to the third line of support—the supposed impossibility of pain hallucinations. In this section, we present new evidence against this view.

3.1 Study 1: The Possibility of Pain Hallucinations, Within-participants

To test the received doctrine that it follows from the ordinary concept of pain that pain hallucinations are impossible, in our first study we asked naive participants about the possibility of four types of hallucinations—auditory, pain, visual, and olfactory. Each participant was given the following vignette:

Jane, Jenny, Sarah, and Susan are all participating in a trial for a new antidepressant being developed by a major drug company. The drug company suspects that the antidepressant will have some strange side effects. Jane, Jenny, Sarah, and Susan have each been taking the drug twice a day for the past week.

Participants were then asked the four questions below, counterbalanced for order. Participants answered each question by selecting either ‘yes, it is possible’ or ‘no, it is not possible’:

1. After taking the antidepressant this morning, Jenny is walking down the street when all of a sudden it feels like there is a pain in her ankle. Is it possible that Jenny merely hallucinated the pain?
2. After taking the antidepressant this morning, Jane is walking down the street when all of a sudden it sounds like there is a police siren on her left. Is it possible that Jane merely hallucinated the police siren?
3. After taking the antidepressant this morning, Sarah is walking down the street when all of a sudden it looks like there is a butterfly on her right. Is it possible that Sarah merely hallucinated the butterfly?
4. After taking the antidepressant this morning, Susan is walking down the street when all of a sudden it smells like there is vomit in the gutter. Is it possible that Susan merely hallucinated the vomit?

Responses were collected online from 170 native English speakers, 18 years of age or older, with at most minimal training in philosophy.⁶

The results of this study are shown in Figure 1 below. Most importantly, we found that 55.9% of the participants answered ‘yes, it is possible’ in response to the pain hallucination question. Thus, while the received doctrine would predict that only a small minority of people would endorse the possibility of pain hallucinations, we found that a majority did so. In fact, this proportion was significantly higher (at the 0.1 level) than the 50.0% predicted by chance.⁷

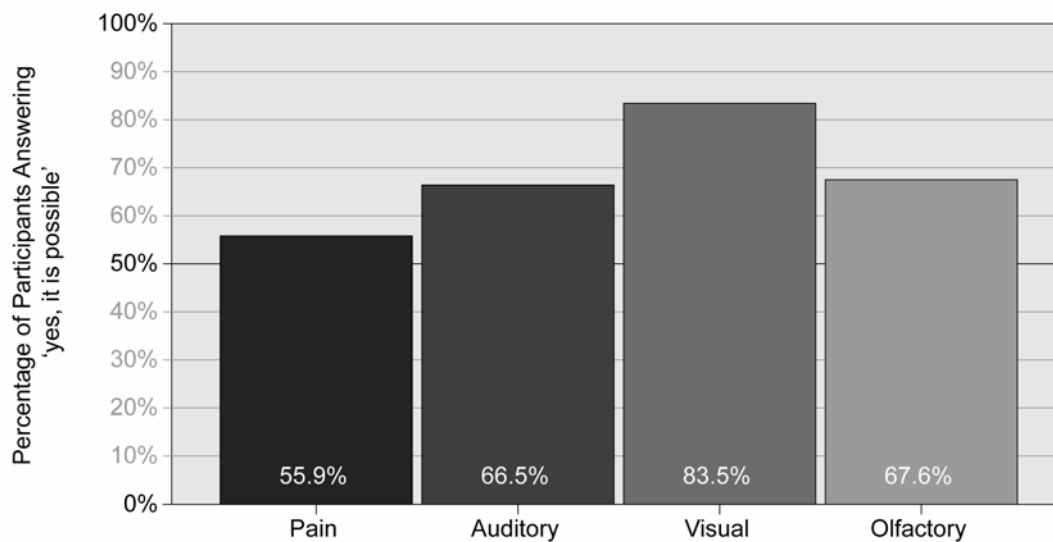


Figure 1: Results of Study 1; percentage of participants answering ‘yes, it is possible’ for each of four types of hallucinations.

3.2 Study 2: *The Possibility of Pain Hallucinations, Between-participants*

The results of our first study suggest that *contra* the philosophical consensus, people tend to hold that pain hallucinations are possible. In fact, there is reason to believe that, if anything, these

⁶ Responses were collected through the Philosophical Personality website (philosophicalpersonality.com). Participants were counted as having more than minimal training in philosophy if they were philosophy majors, had completed a degree with a major in philosophy, or had taken graduate-level courses in philosophy. The participants were 74.7% women, with an average age of 41.1 years, and ranging in age from 18 to 84.

⁷ $\chi^2=2.1235$, $df=1$, $p=0.07253$, one-tailed

results probably understate the case: While there is not generally thought to be any problem with the possibility of auditory hallucinations, only 66.5% of the participants in our first study answered ‘yes, it is possible’ for the auditory case. One plausible explanation for this finding is that some participants were hesitant to suggest that the antidepressant might have caused multiple different types of hallucinations. And, in fact, we found that 83.5% of the participants answered ‘yes, it is possible’ for the visual case. Thus, it might be that the within-participants design used in our first study served to deflate the numbers for the non-visual cases.

To test this possibility, we replicated our first study using a between-participants design.

In our second study, we gave each participant just one of the four probes below:

Pain: Jenny is participating in a trial for a new antidepressant being developed by a major drug company. The drug company suspects that the antidepressant will have some strange side effects. Jenny has been taking the drug twice a day for the past week.

After taking the antidepressant this morning, Jenny is walking down the street when all of a sudden it feels like there is a pain in her ankle. Is it possible that Jenny merely hallucinated the pain?

Auditory: Jane is participating in a trial for a new antidepressant being developed by a major drug company. The drug company suspects that the antidepressant will have some strange side effects. Jane has been taking the drug twice a day for the past week.

After taking the antidepressant this morning, Jane is walking down the street when all of a sudden it sounds like there is a police siren on her left. Is it possible that Jane merely hallucinated the police siren?

Visual: Sarah is participating in a trial for a new antidepressant being developed by a major drug company. The drug company suspects that the antidepressant will have some strange side effects. Sarah has been taking the drug twice a day for the past week.

After taking the antidepressant this morning, Sarah is walking down the street when all of a sudden it looks like there is a butterfly on her right. Is it possible that Sarah merely hallucinated the butterfly?

Olfactory: Susan is participating in a trial for a new antidepressant being developed by a major drug company. The drug company suspects that the antidepressant will have some strange side effects. Susan has been taking the drug twice a day for the past week.

After taking the antidepressant this morning, Susan is walking down the street when all of a sudden it smells like there is vomit in the gutter. Is it possible that Susan merely hallucinated the vomit?

After reading the probe, the participants answered the question by selecting either ‘yes, it is possible’ or ‘no, it is not possible’.

Responses were collected online from 362 participants using the same website and restrictions as in our first study.⁸ The results are shown in Figure 2. We now found that almost two-thirds of the participants in the pain condition endorsed the possibility of pain hallucinations (64.5%). This percentage is significantly higher than the 50.0% predicted by chance.⁹ Once again, our results suggest that contrary to what most philosophers claim, a significant majority of English speakers believe that pain hallucinations are possible. And this in turn suggests that they hold a concept of pain that allows for an appearance-reality distinction.

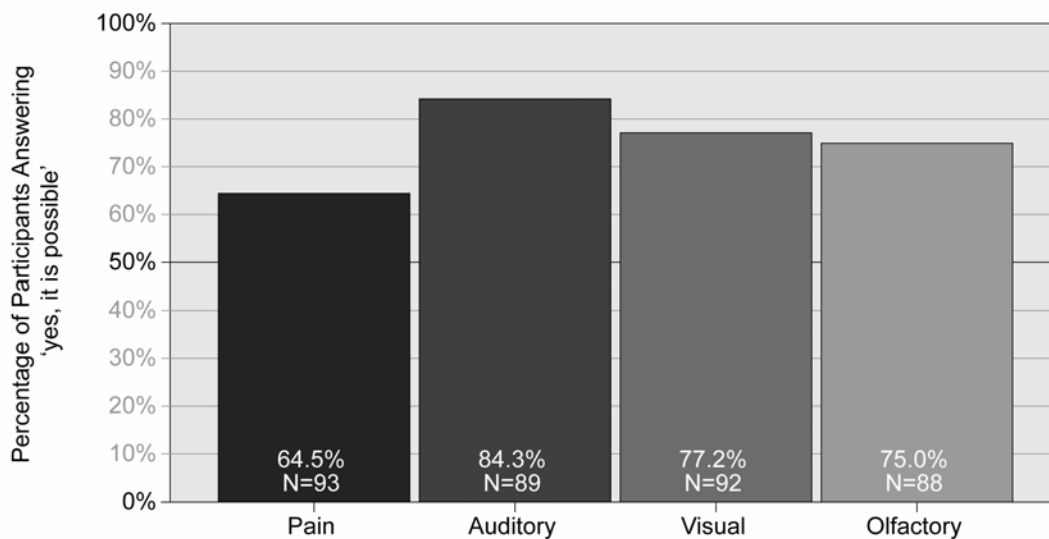


Figure 2: Results of Study 2; percentage of participants answering ‘yes, it is possible’ for each of four types of hallucinations.

⁸ Responses were collected through the Philosophical Personality website (philosophicalpersonality.com). Participants were counted as having more than minimal training in philosophy if they were philosophy majors, had completed a degree with a major in philosophy, or had taken graduate-level courses in philosophy. The participants were 67.7% women, with an average age of 63.6 years, and ranging in age from 18 to 84.

⁹ $\chi^2=7.2688$, $df=1$, $p=0.003508$, one-tailed

At this point, however, it should be noted that the percentage of participants endorsing the possibility of pain hallucinations continues to be lower than the percentage endorsing the other types of hallucinations. Based on this, it might be objected that the lower percentage of positive answers in the pain scenario shows that people are relatively reluctant to endorse the possibility of pain hallucinations. Against this, it should again be noted that participants were in fact *more likely than not* to answer that pain hallucinations are possible. Nonetheless, we do think it is likely that the ordinary concept of pain is not as clear-cut as perceptual concepts for medium-sized dry goods. We deny, however, that this indicates that pains are conceived of as mental states, or that our concept of pain is paradoxical. It seems to us to be more reasonable to take the recent data at face value, acknowledge that a clear majority of people do not believe pains to be private, subjective mental states that cannot be hallucinated, and start to search for new explanations on how to account for the relatively small differences between these perceptual concepts.

One such explanation is the aforementioned constraint that painful body parts are typically connected to only a single mind. It seems very likely that this constraint has led to the development of language games that make it more difficult for people to draw an appearance-reality distinction for pains, even though they clearly locate pains in body parts. Another possibility is that pain language reflects the emphasis that we tend to put on the evaluative element in pain judgments. Awareness of pains does not seem to simply involve perception, but also a valence judgment—people find pains to be unpleasant, to one degree or another, and such judgments are reasonably thought to be subjective.¹⁰

¹⁰ See Sytsma and Machery (2010) and Sytsma (forthcoming) for further discussion of valence with regard to lay mental state ascriptions.

Whereas 83.5% of the participants surveyed in our first study affirmed the possibility of having a hallucination in the visual scenario, this dropped slightly to 77.2% in our second study. If we assume that the mere possibility of visual hallucinations cannot be seriously challenged, then this figure calls out for explanation. One possibility is that some participants misunderstood the question we asked them. We suspect that some of the discrepancy between the expected and actual result for visual hallucinations can be accounted for by the ambiguous use of the term ‘possibility’ in everyday talk.¹¹ For example, when a person asserts that ‘it is not possible that the mayor will be reelected after the sex scandal’, she is not best understood as excluding the theoretical possibility of reelection; rather, she is indicating that she thinks that the event has a low probability of occurring. Applied to our case at hand, we believe that some participants gave negative answers to our questions because they thought that such hallucinations are *unlikely*, not because they thought that they are *impossible*. This means, however, that the real percentage of people believing in the possibility of pain hallucinations will be higher (and not lower) than our result of 64.5% indicates because it is reasonable for people to think that a hallucination is possible but unlikely, whereas it does not make sense to consider a hallucination probable but impossible.

3.3 Study 3: Pain Hallucinations and Pain Illusions

In the pain probe used in our second study, we described a case in which it feels to Jenny that she has a pain in her ankle, then raised the question of whether it is possible that Jenny merely hallucinated the pain. Although this question was intended to investigate whether people hold that pains can be hallucinated, some participants might have interpreted the question as asking whether Jenny could have hallucinated the *location* of the pain rather than the pain itself. In other

¹¹ People’s understanding of the concept of hallucination will be discussed in greater detail below.

words, instead of answering a question about the possibility of pain hallucinations, some people might have given an answer regarding the possibility of pain illusions. While we doubt that such an interpretation is likely to be widespread (given that we asked them explicitly about the hallucination of the pain and not the localization of the pain), we nonetheless hold that further work is called for here.

The possibility of pain illusions is a more controversial issue in the philosophy of mind than the possibility of pain hallucinations. This is mainly due to the existence of phantom pains, a well-known phenomenon in which people who have had a body part amputated, feel pains that seem to be located in their non-existent body parts. While some might be inclined to think of phantom limb pains as cases of pain hallucinations, others have argued that they are merely cases of pain illusions and do not undermine the general claim that there is no appearance-reality distinction for pain. For example, while Hill (2006, p. 76) concedes that phantom pains raise some doubts about whether an appearance-reality distinction is possible for the aspect of location of pains, he downplays the seriousness of the case, insisting that ‘this is the only discrepancy’. He continues: ‘Thus, while we are prepared to say that the victim’s perception that the pain is in the right leg is an illusion, we will allow, and in fact insist, that the pain is in all other respects as it appears to the victim’.

Whether or not the perceived location of phantom limb pains is a special case that does not undermine the more general claim that people cannot distinguish the appearance from the reality of pain, is a question that deserves a full length paper in itself. We do, however, accept Hill’s challenge: If we find that people also consider it possible that other aspects of ordinary pains feel different from the way they really are, then it would seem to be unreasonable to

continue to hold that it follows from the ordinary conception of pains that pain hallucinations are impossible.

In order to test Hill's claim, some of us (Reuter, Sytsma, Werning, in preparation) conducted a study in which we asked participants the following four questions:

Q1. Do you think that it is possible to feel a pain as being more intense than it really is?

Q2. Do you think that it is possible to feel a pain as being less intense than it really is?

Q3. Do you think that it is possible to feel a pain as being in your ankle even though it is really in your foot?

Q4. Do you think it is possible to feel a pain as throbbing when it is really burning?

Participants answered by selecting either 'yes, it is possible' or 'no, it is not possible' for each of the four questions. Responses were collected online from 102 participants using the same website and restrictions as in our previous studies.¹² The results are shown in Figure 3. We found that for each question a significant majority of participants answered that the pain illusion is possible.¹³ Thus, *contra* Hill, it does not seem that apparent location is the only aspect that draws a wedge between the appearance and the reality of pain on the ordinary conception. In fact, only 5 out of the 102 participants surveyed answered 'no, it is not possible' for all four questions.¹⁴

¹² The participants were 71.6% women, with an average age of 36.7 years, and ranging in age from 18 to 75.

¹³ More Intense: $\chi^2=41.4216$, $df=1$, $p<0.001$, one-tailed. Less Intense: $\chi^2=44.0098$, $df=1$, $p<0.001$, one-tailed. Ankle / Foot: $\chi^2=16.4804$, $df=1$, $p<0.001$, one-tailed. Throbbing / Burning: $\chi^2=5.1863$, $df=1$, $p=0.01138$, one-tailed.

¹⁴ It is worth noting that we used the term 'feel' in each question in this study rather than the term 'appear'. We did so because some might find talk of 'appearance' to be ambiguous between a phenomenal and a doxastic sense, potentially leading participants to understanding the questions as asking about incorrigibility rather than the possibility of illusions as intended.

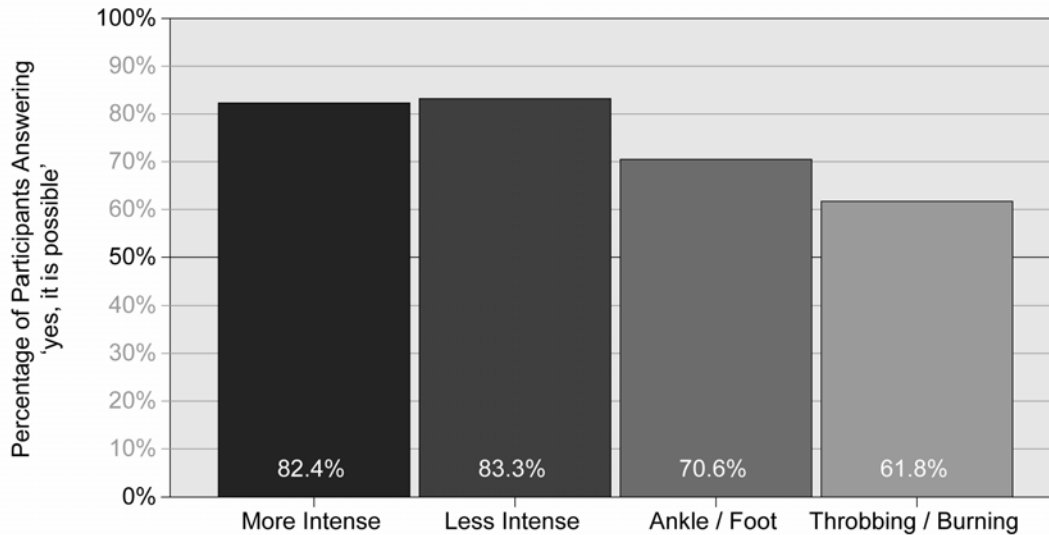


Figure 3: Results of Study 3; percentage of participants answering ‘yes, it is possible’ for each of four types of pain illusions.

3.4 Study 4: Understanding ‘Hallucination’

It might be objected that while participants in our first two studies by and large agreed with the claim that it is possible for someone to have a pain hallucination, this might not reflect true agreement: Given the philosophical consensus, it might be thought to be more likely that participants interpreted the term ‘hallucination’ in some other way than we intended. For example, it might be argued that our participants tended to understand talk of pain hallucination in our probe along the lines suggested by Tye (2006), taking pain hallucinations to be hallucinations of tissue damage (which according to Tye’s theory is not to be identified with pain itself). Aydede (2009) suggests a similar response when he states:

Hallucinations or illusions are possible, in one sense, not about feeling/experiencing pain, but about whether these experiences correctly represent some tissue damage, that is, the object of perception in feeling pain.

According to this objection, our participants might have been operating with a similar interpretation when they answered affirmatively to the pain hallucination questions in our first two studies.

It seems to us that this objection already concedes that even in the context of hallucinations, the term ‘pain’ is often interpreted to mean tissue damage, and not the experience of such a bodily state; but, if the term is used to refer to a bodily state when people localize pain and when they think about pain hallucinations, then it seems a fair question to ask: In which situations do people think of pains as being mental states?

This objection can also be tested empirically. To do so, in our fourth study we asked participants to provide a brief description of how they understood the term ‘hallucination’ in addition to asking them whether they agreed or disagreed with each of the three statements below asserting the possibility of a different type of hallucination. The statements were counterbalanced for order. Participants responded by indicating agreement or disagreement with each statement using a 7-point scale anchored at 1 with ‘Strongly Disagree’, at 4 with ‘Neutral’, and at 7 with ‘Strongly Agree’:

It is possible for someone to have a hallucination of a throbbing pain.

It is possible for someone to have a hallucination of a demonic voice.

It is possible for someone to have a hallucination of a pink elephant.

Responses were collected online from 99 participants using the same website and restrictions as in our previous studies.¹⁵ The results are shown in Figure 4. Not only did we find that participants were significantly more likely to agree with the pain hallucination statement than to disagree¹⁶, but the descriptions they gave for how they understand the term ‘hallucination’ were in accord with the understanding found in the philosophical literature: A large majority of the

¹⁵ The participants were 69.4% women, with an average age of 44.7 years, and ranging in age from 18 to 82 years.

¹⁶ The mean response was significantly above the neutral point: $M=4.96$, $SD=2.044$, $t(84)=4.352$, $p<0.001$, one-tailed. Further, a similar result was found when we removed the question asking participants to describe how they understand the term ‘hallucination’. Responses were collected online from 103 participants using the same website and restrictions as in the previous studies (73.8% women, average age of 43.6 years, ranging in age from 18 to 85 years). Again, the mean response for the pain hallucination statement was significantly above the neutral point of 4: $M=5.03$, $SD=1.817$, $t(102)=5.747$, $p<0.001$, one-tailed.

participants described hallucinations in terms of a sensory appearance of something that is not really there.¹⁷ The results of this study therefore suggest against the objection: It does not appear that the results of our first study can be explained away in terms of participants having a different understanding of the term ‘hallucination’.

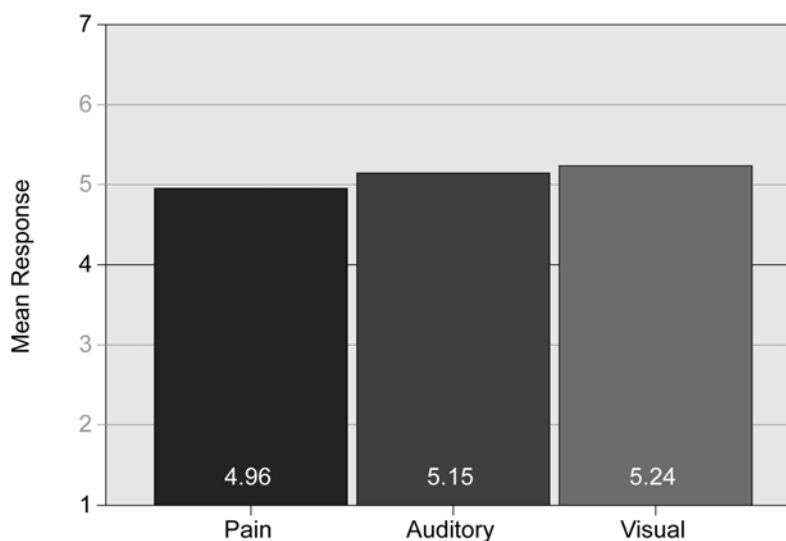


Figure 4: Results of Study 4; mean rating for each of three types of hallucinations.

3.5 Study 5: Aydede’s Challenge

Aydede (2006) raises a more specific semantic challenge to the claim that people generally conceptualise pains as bodily states. He compares the statement ‘I see a dark discolouration on the back of my hand’ with ‘I feel a jabbing pain in the back of my hand’. Aydede argues that while these two sentences have the same surface grammar, they do not have the same truth conditions. He claims that if a person hallucinates the discolouration, then the first sentence is simply false, while the second puts no constraints on the physical condition of his hand.

¹⁷ Coding responses using just the key phrases ‘not there’, ‘aren’t really happening’, ‘not real’, and ‘does not exist’, 75.2% of the participants gave a description in line with that found in the philosophical literature.

In order to test Aydede's challenge, we presented participants with a scenario in which a man named John loses one of his hands in a car accident and goes to see a doctor because it sometimes still appears to him that he has a hand. In one case the lost hand visually appears to the person to have a dark discolouration on it; in the other, the lost hand appears to have a sharp pain in it:

Dark Discoloration: John has recently been in a horrible car accident in which he lost his left hand and suffered a severe head trauma. One month later, John honestly reports to his doctor that he often sees his left hand. For example, John told his doctor, 'Right now I see a dark discoloration on the back of my left hand'. But John no longer has a left hand, as the doctor confirms.

When John told his doctor, 'Right now I see a dark discoloration on the back of my left hand', do you think that his statement was true or false?

Sharp Pain: John has recently been in a horrible car accident in which he lost his left hand and suffered a severe head trauma. One month later, John honestly reports to his doctor that he often feels his left hand. For example, John told his doctor, 'Right now I feel a sharp pain in the back of my left hand'. But John no longer has a left hand, as the doctor confirms.

When John told his doctor, 'Right now I feel a sharp pain in the back of my left hand', do you think that his statement was true or false?

Participants were randomly given one of the two scenarios and answered the question by selecting either 'TRUE' or 'FALSE'.

Responses were collected online from 228 participants using the same website and restrictions as in our previous studies.¹⁸ The results are shown in Figure 5. What we find is that a significant majority of participants in each condition found the statement to be true—83.3% felt that it was true that John felt a sharp pain in the back of his missing hand, while 80.2% felt that it was true that he saw a dark discoloration on the back of his missing hand.¹⁹ As such, the results indicate that Aydede is mistaken when he claims that according to the ordinary conception, the statement 'I see a dark discolouration on the back of my hand' is simply false in the case of hallucination: A sizable majority of respondents answered that this statement is true, despite John having been described as having lost the hand and, hence, there being no dark discoloration to be seen.

¹⁸ The participants were 68.4% women, with an average age of 40.0 years, and ranging in age from 18 to 70 years.

¹⁹ Pain: $\chi^2=44.0098$, $df=1$, $p<0.001$, one-tailed. Discoloration: $\chi^2=44.6429$, $df=1$, $p<0.001$, one-tailed.

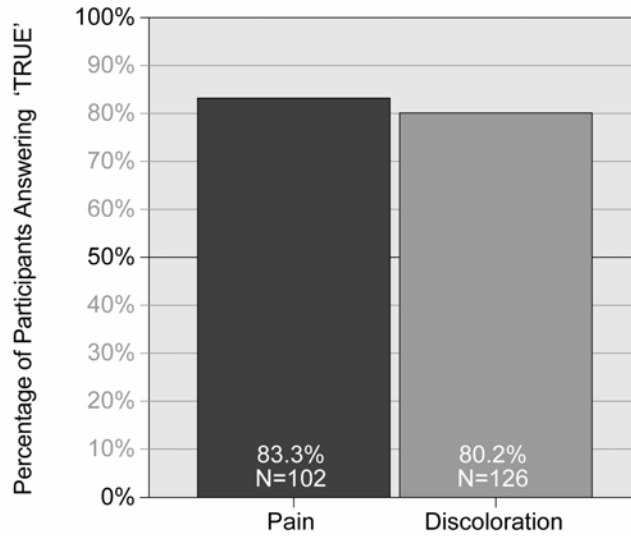


Figure 5: Results of Study 5; percentage of participants answering 'TRUE' with regard to statements about either a pain or a discoloration in a missing hand.

Aydede holds that in the visual case when people realize that they have hallucinated, they correct themselves by switching to talk of the appearance of a discoloration, but that in the pain case they do not need to make any corrections in their pain reports. The results of our fifth study provide evidence against this view. Further, our results undermine the inference from the premise that people do not correct a statement about feeling a certain pain in a bodily location when they realise they hallucinate, to the conclusion that pains are conceived of as mental states. Why? In the visual case, we do not infer that dark discolorations are mental states (or properties of mental states) even though people take John's statement to be true despite the fact that he is hallucinating. As such, it is at best unclear why we should make a similar inference for the pain case. Put another way, Aydede's challenge depends on the expected difference between responses to the visual case and the pain case; but, there is no such difference (as our data suggests), and thus, his conclusion does not follow.

It is worth noting that the results for the visual case are likely to be quite surprising to many philosophers. We expect that philosophers are likely to think of perceptual verbs like ‘seeing’, ‘hearing’, and ‘tasting’ as success verbs. In fact, Aydede seems to take such a reading of ‘seeing’ for granted in his analysis. He might therefore object to our data and interpretation in two different ways. First, Aydede might claim that the success reading of perceptual words is the only semantically correct reading—people use perceptual terms incorrectly if they violate the success condition. To this objection we would simply respond that Aydede (like most philosophers in this debate) highlight that he is analysing ordinary concepts. If most people do not use terms like ‘seeing’ in this way, however, then the supposedly ‘correct’ perceptual concepts would not seem to be the ordinary concepts. And, then, Aydede would owe us a new account of why we should think that his understanding of perceptual concepts is correct.

Second, an arguably more promising objection accepts the two alternative readings of the perceptual concept ‘seeing’, but points out that whereas there is a common-sense reading of ‘seeing’ that is success-based (even if it is not the only reading), no such reading exists for ‘feeling pain’. This objection, of course, depends on the assumption that despite our results, most people do recognize a success reading for ‘seeing’. We are generally open to this possibility and believe that further study is required to understand when and why people use ‘seeing’ as a success-based concept. The objection, however, not only claims that there are two possible readings for ‘seeing’, it also states that no success-based reading exists for ‘feeling pain’. Referring back to our data, this objection amounts to saying that those participants (roughly 17%) who respond by saying that the statement ‘John feels a throbbing pain in his hand’ is false, are mistaken and make some kind of error in their judgements. We find that the evidence suggests against this assertion.

After presenting the participants in our study with the questions shown above, we also asked them why they responded in the way that they did. Those participants who answered ‘FALSE’ in either of the two scenarios gave remarkably similar explanations of why they believed the presented statement to be false—e.g., ‘he no longer has the limb to feel anything’ compared to ‘[the hand] is not there, so he couldn’t see anything’. Thus, both sets of responses suggest that there is a success reading not only in the case of ‘seeing’ but also for ‘feeling pain’. This data shifts the burden of proof onto our opponent to explain why we should accept that success-based readings exist for standard cases of perception but not for feeling pain.

4. Conclusion

Many philosophers have found there to be a paradox of pain: They hold that our awareness of pains exhibits both perceptual and introspective characteristics. We are not convinced, however. Specifically, we have doubts about the support offered for the introspective side of the dualism. The support that has been offered primarily rests on claims about the ordinary conception of pain—that it follows from the ordinary conception that pains are private, subjective, and that they cannot be hallucinated. In this chapter we have argued that these claims about the ordinary conception of pain are mistaken. We began by reviewing empirical evidence from Sytsma (2010) and Reuter (2011) suggesting that lay people do not tend to treat pains as being either private or subjective. We then presented the results of five new studies indicating that in contrast to most philosophers, lay people tend to hold that pain hallucinations are possible. Together, these studies provide strong evidence that the ordinary conception of pain is quite different from what philosophers have tended to claim. And insofar as the case for the paradox of pain depends on claims about the ordinary conception, these studies provide reason to dismiss the purported paradox.

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