

## **Does heterophenomenology concede too much? Experiments on the Folk Theory of Consciousness<sup>1</sup>**

It is fairly common in the modern debates over qualia to find assumptions being made about the views of non-philosophers. It is often assumed that the concept of qualia is part of the folk theory of consciousness. In fact, the point is even conceded by prominent skeptics about qualia, who admit that their views run counter to common sense. I illustrate this by considering the work of Daniel Dennett, focusing on his standard articulation of the debate concerning his heterophenomenological method. While Dennett is often accused of not going far enough (excluding qualia from the catalog of what needs to be explained by a science of consciousness), I argue that he goes too far in accepting that folk psychological utterances should be interpreted in terms of beliefs about qualia. I support this contention by calling on the results of six empirical studies testing Dennett's theory of the folk theory of consciousness.

In the modern debates over phenomenal consciousness and qualia it is not uncommon to find assumptions being made about people who lack training in philosophy or psychology (the folk). It is frequently assumed that the concepts of phenomenal consciousness and qualia are folk psychological concepts. For example, Daniel Dennett seems to hold that these concepts are part of the "folk theory of consciousness" (2005, 26). Accordingly, the debate over the existence of qualia has often centered on whether this bit of folk theory is accurate or mistaken, best accepted or eliminated from our mature scientific theorizing. Unfortunately, this dialectic has occurred in the absence of empirical investigation of the folk theory of consciousness.

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<sup>1</sup> I would like to thank the audiences at the first *Consciousness Online* conference (especially Adam Arico for his thoughtful commentary) and the *Southern Society for Philosophy and Psychology* 101st Annual Meeting. I would also like to thank Edouard Machery, Peter Gilkenhuys, and Catherine Stinson for their comments on a previous draft of this paper, as well as Josh Weisberg for pushing me on my interpretation of Dennett at an early stage in this project.

Developing an empirically adequate theory of the folk theory of consciousness is of clear philosophical interest. This is no simple task, however, and is complicated by the familiar disagreements between philosophers about the concepts of phenomenal consciousness and qualia. As such, in this paper I will simplify matters by focusing on the views espoused by one prominent participant in the philosophical debates—Daniel Dennett. I show that Dennett holds that the concept of qualia plays a significant role in the folk theory of consciousness, reflecting the folk’s acceptance of the view that in perception we are acquainted with qualities (such as colors, sounds, smells, pains) that do not exist in the world outside the skull. Dennett holds that the folk take these qualities to be qualia, locating them in the mind/brain. In this paper I present evidence that Dennett is mistaken and that, by and large, the folk do not treat the qualities that they are acquainted with in ordinary perception as qualia.

Here is how I will proceed. In Section 1, I discuss Dennett’s assumptions about the folk theory of consciousness, relating these to the debate over his heterophenomenological method. In Section 2, I briefly review two prominent projects in the recent experimental literature on the folk psychology of consciousness; overall, these studies provide tentative support for the claim that Dennett is mistaken about the folk theory of consciousness. In Section 3, I present the results of six new studies that support this conclusion.

## **1. Dennett and the Folk Theory of Consciousness**

Many different terms are used in the philosophical literature to discuss what I am here calling “phenomenal consciousness” and “qualia”; and, of course, there is much disagreement concerning exactly what these various terms mean. Unfortunately, space prevents me from delving into the issue here (but see Sytsma, ms). Instead I simply focus on a common

understanding of these terms, one which corresponds with what Dennett often refers to as “conscious experience.” On this understanding, there is something it is like to be in certain mental states (Nagel, 1974); these mental states are phenomenally conscious in virtue of having distinctive qualities known as qualia. It is often held that each of us is acquainted with (at least some of) our own qualia. Common examples are the redness that I am acquainted with in looking at a ripe tomato or the painfulness I am acquainted with when I stub my toe. Such qualities are considered to be *mental* qualities (to be qualities of one’s phenomenally conscious mental states).

While Dennett denies that there are qualia, he holds that ordinary people believe otherwise. That is, he both holds that the folk take themselves to be acquainted with qualities such as redness and that they take these qualities to be mental. This is suggested at a number of points in his writings. Consider Dennett’s discussion of the secondary quality view in *Consciousness Explained* (1991, 371):

Locke’s way of defining secondary qualities has become part of the standard layperson’s interpretation of science, and it has its virtues, but it also gives hostages: the things produced in the mind. The secondary quality *red*, for instance, was for Locke the dispositional property or power of certain surfaces... to produce in us the *idea of red* whenever light was reflected off those surfaces into our eyes.

On this view, the colors that we take ourselves to be visually acquainted with are not to be found in the world outside the skull, rather they are qualities produced in each of us. In looking at a ripe tomato, for example, the redness that I am acquainted with is not a quality of the tomato, but is a quale (the “idea of red” as Dennett puts it). Although it is unclear what group Dennett means to be singling out in talking about the standard layperson<sup>2</sup>, there is reason to think that he has

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<sup>2</sup> We might, for example, take Dennett to be talking about non-professionals with some academic training in the relevant sciences, for example, rather than the folk in general. I want to thank Richard Brown for drawing this reading to my attention.

people in general in mind. Thus, he takes the banishment of colors from the external world to be part of “the common wisdom” (370). He writes:

Modern science—so goes the standard story—has removed the color from the physical world, replacing it with colorless electromagnetic radiation of various wavelengths, bouncing off surfaces that variably reflect and absorb that radiation. It may look as if the color is *out there*, but it isn’t. It’s *in here*—in the “eye and brain of the beholder.” (370)

These qualities in the beholder are qualia, suggesting that Dennett takes an acceptance of qualia to be common; this offers a first indication of his understanding of the folk theory of consciousness.

Dennett’s understanding of the folk theory can also be seen in the stance that he takes toward his own contrasting position, motivating his frequent claims that his position is counterintuitive (1991, 37; 2005, 128). Thus, he holds that his position is at odds with how things seem: “I am denying that there are any such properties. But (here comes that theme again) I agree wholeheartedly that there seem to be qualia.” (1991, 372). This is meant to be a general point, indicating not just that it seems to him (or to philosophers) that there are qualia, but also that it seems this way to people more broadly. The generality of the claim is most evident when we consider the role it plays in Dennett’s defense of his method for cataloguing the phenomena of interest for a science of consciousness (his heterophenomenological method). What we find is that the assumption that there seem to be qualia is conceded by the heterophenomenologist:

Exactly! *There seems to be phenomenology*. That’s a fact that the heterophenomenologist enthusiastically concedes. But it does *not* follow from this undeniable, universally attested fact that *there really is* phenomenology. (1991, 366)

Recognizing that Dennett uses the term “phenomenology” as essentially a synonym for qualia (1991, 45), it is clear that he holds that it seems to each of us that there are qualia (this is an “undeniable, universally attested fact”).

That Dennett concedes that phenomenal consciousness is part of the folk theory of consciousness is clear in his treatment of the debate concerning heterophenomenology. Dennett's goal in articulating his heterophenomenological method is to offer a means for collecting all and only the data concerning consciousness that are accessible from the third-person perspective. As qualia are only thought to be observable from the first-person perspective, however, they are excluded from the collection; nonetheless, the heterophenomenologist happily includes folk psychological utterances that are interpreted as expressing beliefs about qualia. The subsequent debate concerning the heterophenomenological method has focused on this dividing line.

My concern comes prior to the divide between beliefs about qualia and the qualia themselves, however. I am concerned with how readily Dennett interprets folk psychological utterances as expressing beliefs about phenomenal consciousness. His willingness to do so can be clearly seen in his standard defense of heterophenomenology:

We can see the problem most clearly in terms of a nesting of proximal sources that are presupposed as we work our way up from raw data to heterophenomenological worlds:

- (a) 'conscious experiences themselves'
- (b) beliefs about these experiences
- (c) 'verbal judgments' expressing those beliefs
- (d) utterances of one sort or another....

For heterophenomenologists, the *primary* data are the utterances, the *raw*, uninterpreted data. But before we get to a theory, we can interpret these data, carrying us via (c) speech acts to (b) beliefs about experiences. These are the primary *interpreted* data, the pretheoretical data. (2003, 3)

The issue I am concerned with is whether theory actually only enters at the divide between (b) and (a). I hold that (b) is not pretheoretical data, but that moving from (d) to (b) involves assumptions about how best to interpret folk psychological utterances—assumptions that reflect

one's theory of the folk theory of consciousness.<sup>3</sup> Put another way, it appears that Dennett's willingness to interpret such utterances as expressing beliefs about qualia follows from his belief that it is a universally attested fact that there seem to be qualia.

At points, Dennett discusses his beliefs about the folk theory of consciousness directly. For example, in his (2005) volume he suggests that the folk theory finds expression in Nagel's "what it is like" and writes that worries about phenomenal consciousness are widespread amongst the folk:

*We—nudge, nudge—know about our consciousness because we communicate about it all the time. In our everyday dealings with each other we presuppose a vast sharing of understanding in all our public representations of consciousness, and as we contribute to that common stockpile, our presupposition is apparently vindicated.*

The folk theory of human consciousness is a hugely successful mutual enterprise, but it does have its well-known puzzle-points. (30)

One prominent puzzle-point that Dennett notes is Locke's problem of spectrum inversion; he suggests that the folk theory is committed to the possibility of such inversions (as follows from the belief that the folk hold a secondary quality view of colors). He believes that people generally treat the colors they take themselves to be acquainted with as qualities of their mental states and not as qualities of mind-independent external objects. Accepting this view, it means that two people looking at one object might nonetheless be acquainted with two radically different colors. They might have inverted color spectra.

Although Dennett's critics have tended to accept this view of the folk theory of consciousness, focusing instead on his supposedly counterintuitive denial of the actuality of qualia, I hold that this is a mistake. Bluntly: The structure of the folk theory of consciousness is an *empirical question* and our treatment of it should be guided by empirical investigation.

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<sup>3</sup> Although Dennett recognizes that theory is involved in interpreting subjects' utterances, he downplays it in this context. He writes (2003, 3fn1): "Doesn't interpretation require theory? Only in the minimal sense of presupposing that the entity interpreted is an intentional system, capable of meaningful communication."

## **2. Experimental Work on the Folk Theory**

In recent years, a number of researchers have begun to empirically investigate the common assumptions about the folk that Dennett draws on. In fact, Joshua Knobe and Jesse Prinz's (2008) pioneering work on this topic suggests that the folk do have the concept of phenomenal consciousness. Notably, in their second study Knobe and Prinz asked subjects to evaluate how natural it is to ascribe a range of mental states to Acme corporation. They found that the folk were unwilling to ascribe those states that philosophers take to be phenomenally conscious to the corporation, while being disposed to ascribe mental states like beliefs and desires to it. Knobe and Prinz interpret these results as indicating that the folk have the concept of phenomenal consciousness, distinguishing between mental states that are phenomenally conscious and those that are not.

This conclusion has been brought into question, however (Arico, forthcoming; Sytsma and Machery, 2009). In particular, Edouard Machery and I have challenged the conclusion that the folk possess the concept of phenomenal consciousness. We contend that there is a natural alternative to Knobe and Prinz's explanation of their data: Corporations differ in some significant behavioral and functional ways from individuals and it might be that those differences lie behind people's refusal to attribute certain sorts of mental states to Acme. We concluded that Knobe and Prinz's study does not establish that the folk share the concept of phenomenal consciousness.

In fact, in a subsequent study we produced evidence that the folk do not share the concept of phenomenal consciousness (Sytsma and Machery, under review). We reasoned that if they did, then the folk should treat paradigmatic examples of phenomenally conscious mental states similarly. Specifically, both the folk and philosophers should deny that an entity that lacks

phenomenal consciousness can either see red or feel pain. Our first study tested this by giving philosophers and non-philosophers a description of an agent (either a simple robot or a human) manipulating a red box. Our goal was to describe the robot as being simple enough that if a subject had the concept of phenomenal consciousness, then they would be unlikely to ascribe it to the robot. In half of the scenarios, the manipulation was successful and participants were asked whether the agent “saw red”; in the other half, the agent was electrically shocked and participants were asked whether the agent “felt pain.” As expected, philosophers treated feeling pain and seeing red analogously. They were unwilling to ascribe either state to the robot, but were willing to ascribe both to the human. Contrary to the hypothesis that ordinary people and philosophers understand these states in the same way, however, the folk treated them quite differently. Non-philosophers were willing to attribute seeing red to the robot, but were not willing to attribute feeling pain to it. We concluded that this is preliminary evidence that the folk do not share the philosophers’ concept of phenomenal consciousness.<sup>4</sup> If our conclusion is correct, then this indicates that Dennett is mistaken about the folk theory of consciousness.

### **3. New Experiments**

In this section I offer further support for the contention that Dennett’s view of the folk theory of consciousness is mistaken. Specifically, while I accept with Dennett that the folk take themselves to be acquainted with qualities in perception, I deny that they generally take those qualities to be mental and thus deny that they take those qualities to be qualia. Recall that

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<sup>4</sup> During the presentation of this paper at the *Consciousness Online* conference, a number of audience members raised objections to this study; several of these objections are dealt with in the original article (Sytsma and Machery, under review) or in my subsequent article (Sytsma, forthcoming). Notably, Adam Arico questioned our assumption that the simple robot that we describe is simple enough that if the subject has the concept of phenomenal consciousness, then she will be unlikely to ascribe it to the robot. Unfortunately, there is not space to respond to this objection in detail here (but see Sytsma and Machery, 2009, for a discussion of our choice of agents). At the end of the day, however, Arico raises an empirical objection in need of testing and we are currently conducting a series of studies to do this.



Dennett holds that the folk belief in qualia reflects their acceptance of the secondary quality view. For the case of colors this view involves locating the colors that one is acquainted with in the mind/brain and raises the problem of spectrum inversion. In contrast, it might be that the folk generally take the colors that they are acquainted with in ordinary visual perception to be qualities of physical objects outside the skull.<sup>5</sup> If this is the case, then they do not take those qualities to be qualia. I ran six studies to test this.

### *3.1 Study 1: Questions about Colors*

In my first study, subjects were given a brief paragraph followed by four questions:

There is an old puzzle that many people are familiar with: “If a tree falls in the woods and no one is there to hear it, does it make a sound?” Philosophers have posed a similar question about vision: “If there was nobody there to see it, would a ripe tomato still be red?” Some philosophers have argued that tomatoes (and other objects) are not really colored, rather the red is produced in your mind when you look at the otherwise uncolored tomato. Other philosophers have disagreed, arguing that the tomato itself is truly red—that the red that we see is the red of the tomato. We are not interested in which of these positions is “correct” (or even if there is a correct answer to these questions). *What we want to know is how you think about colors—we want to know your intuitions about these questions.*

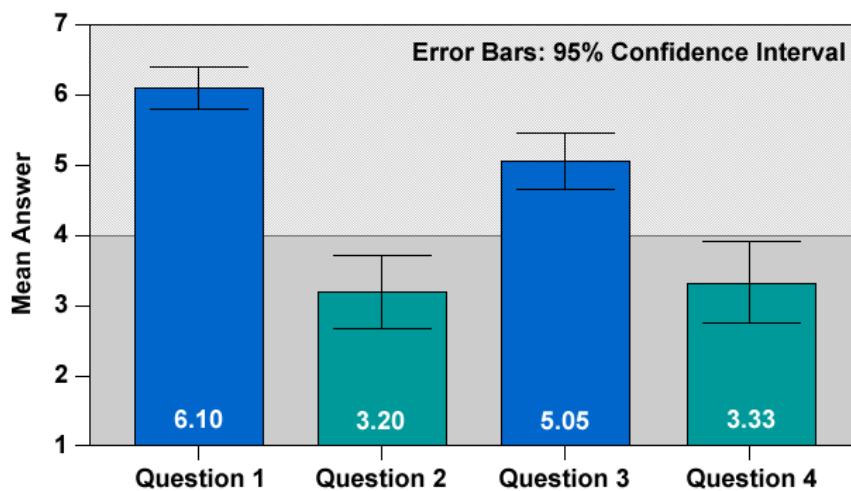
- 1.** Do you think that a ripe tomato would still be red even if there was nobody around to see it?
- 2.** Do you think that the red you see when you look at a ripe tomato is in your mind?
- 3.** Do you think that the red you see when you look at a ripe tomato is in the tomato?
- 4.** Do you think it is possible that somebody else might actually see the color that you call “blue” when they look at an ordinary ripe tomato, despite having normal visual acuity (i.e., without being color-blind)?

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<sup>5</sup> It is worth noting that this might be the case even if the folk think of some colors as being mental (and thus arguably share the philosophical concept of qualia): It might be that the folk generally take themselves to be acquainted with colors in cases of unordinary perception (during dreams or hallucinations, for example) and that these are held to be located in the mind/brain. (I want to thank Josh Weisberg for raising this point.) It might then be argued that the folk view of colors is inconsistent; or, more charitably, that the folk view is best described as a type of disjunctivism.

Each question was answered on a 7-point scale anchored at 1 with “clearly no,” at 4 with “not sure,” and at 7 with “clearly yes.” The survey was given to 52 undergraduates at the University of Pittsburgh. One subject was removed because she had taken the survey previously; an additional 11 subjects were removed because they had training in philosophy or psychology.<sup>6</sup> The remaining 40 subjects were 62.5% female, with an average age of 20.4 years, and ranging in age from 18 to 41 years old.

While low answers to questions 1 and 3, and high answers to questions 2 and 4, follow the secondary quality view of colors, the mean responses for these subjects showed the opposite pattern (see Figure 1). As predicted, the mean responses for the first and third questions were significantly above the neutral point of 4, while the mean responses for the second and fourth questions were significantly below 4.<sup>7</sup> What we find is that a majority of the folk tested hold that colors are qualities of objects outside the skull, that a majority deny that colors are mental or mind-dependent, and that a majority deny that spectrum inversion is possible.



**Figure 1: Study 1 results.**

<sup>6</sup> Subjects were counted as having training in philosophy or psychology if they indicated that they had completed some graduate work in philosophy or psychology or had completed/were completing an undergraduate major in philosophy or psychology.

<sup>7</sup> Question 1:  $M=6.10$ ,  $SD=1.172$ ,  $t(39)=11.329$ ,  $p<0.001$  (one-tailed); Question 2:  $M=3.20$ ,  $SD=1.951$ ,  $t(39)=-2.594$ ,  $p=0.007$  (one-tailed); Question 3:  $M=5.05$ ,  $SD=1.568$ ,  $t(39)=4.235$ ,  $p<0.001$  (one-tailed); Question 4:  $M=3.33$ ,  $SD=2.235$ ,  $t(39)=-1.910$ ,  $p=0.032$  (one-tailed).

The results of this study suggest against Dennett's understanding of the folk theory of consciousness. Perhaps color is an aberration, however, and the folk theory of consciousness is in line with Dennett's assumptions for other prototypical examples of qualia. An extreme case is pains, where the philosophical consensus strongly supports the secondary quality view. Do the folk also conceptualize pains in this way?

### 3.2 Study 2: *Questions about Colors and Pains*

In my second study I adapted the probe used in Study 1 to the case of pains.<sup>8</sup> For comparison, subjects were randomly given either the pain probe or a revised version of the color probe:

**Color Questions:** There is an old puzzle that many people are familiar with: "If a tree falls in the woods but no one is there to hear it, does it make a sound?" Philosophers have posed a similar question about vision: "If there is a ripe tomato on the table but no one is there to see it, is it still red?" Some philosophers have argued that tomatoes, for example, are not really colored; rather, they hold that the red is produced in your mind and is merely caused by the tomato. Other philosophers have disagreed, arguing that the red is really in the tomato and is simply seen by the mind.

1. Which of these two positions do you agree with more?<sup>9</sup>
2. Do you think that there is still red in a ripe tomato even when there is no one there to see it?
3. Do you think that the red you see when you look at a ripe tomato is in your mind?
4. Do you think that the red you see when you look at a ripe tomato is in the tomato?

**Pain Questions:** There is an old puzzle that many people are familiar with: "If a tree falls in the woods and no one is there to hear it, does it make a sound?" Philosophers have posed a similar question about pain: "If a person has badly injured her leg but isn't paying attention to it, is there still a pain?" Some philosophers have argued that when you stub your toe, for example, the pain is not really located in the injured toe;

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<sup>8</sup> This study was suggested by David Chalmers during the discussion period for the *Consciousness Online* conference.

<sup>9</sup> While questions 2, 3, and 4 were answered on the same scale used in Study 1, question 1 was answered on a 7-point scale anchored at 1 with "the red is produced in your mind and is merely caused by the tomato," at 4 with "not sure," and at 7 with "the red is really in the tomato and is simply seen by the mind."

rather, they hold that the pain is produced in your mind and is merely caused by the injured toe. Other philosophers have disagreed, arguing that the pain is really in the injured toe and is simply felt by the mind.

1. Which of these two positions do you agree with more?<sup>10</sup>
2. Do you think that there is still pain in a badly injured leg even when the person is not aware of it?
3. Do you think that the pain you feel when you forcefully stub your toe is in your mind?
4. Do you think that the pain you feel when you forcefully stub your toe is in the toe?

340 subjects completed the survey online.<sup>11</sup> 42 subjects were removed because they had taken the survey previously or because they were under 18 years of age; an additional 59 subjects were removed because they had training in philosophy or psychology. The remaining 239 subjects were 70.3% female, with an average age of 35.6 years, and ranging in age from 18 to 83 years old.

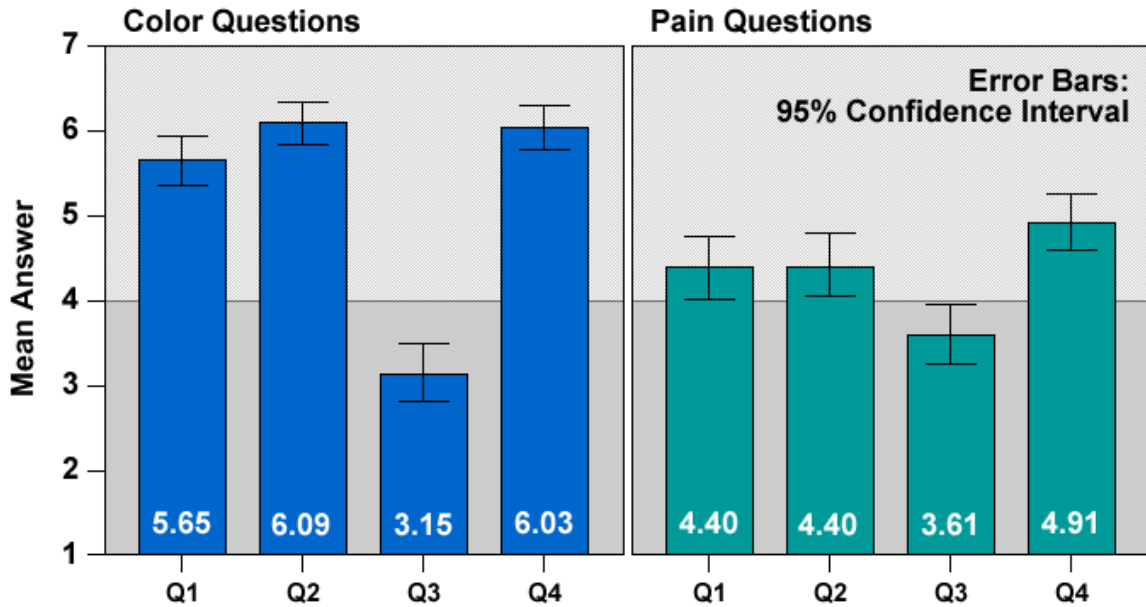
While high answers to question 3 and low answers to the other three questions follow the secondary quality view, the mean responses for the subjects for each probe showed the opposite pattern (see Figure 2). As predicted, the mean responses for the first, second, and fourth questions were significantly above the neutral point of 4, while the mean responses for the third question were significantly below 4.<sup>12</sup> What we find is that a majority of the subjects tested deny the secondary quality view for both colors and pains, holding that these qualities are qualities of objects outside the skull and denying that they are mental or mind-dependent.

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<sup>10</sup> While questions 2, 3, and 4 were answered on the same scale used in Study 1, question 1 was answered on a 7-point scale anchored at 1 with “the pain is produced in your mind and is merely caused by the injured toe,” at 4 with “not sure,” and at 7 with “the pain is really in the injured toe and is simply felt by the mind.”

<sup>11</sup> The results were collected through the Philosophical Personality website (<http://PhilosophicalPersonality.com>).

<sup>12</sup> Color: Question 1:  $M=5.65$ ,  $SD=1.992$ ,  $t(122)=9.190$ ,  $p<0.001$  (one-tailed); Question 2:  $M=6.09$ ,  $SD=1.699$ ,  $t(122)=13.642$ ,  $p<0.001$  (one-tailed); Question 3:  $M=3.15$ ,  $SD=2.406$ ,  $t(122)=-3.898$ ,  $p<0.001$ ; Question 4:  $M=6.03$ ,  $SD=1.674$ ,  $t(122)=13.466$ ,  $p<0.001$  (one-tailed). Pain: Question 1:  $M=4.40$ ,  $SD=2.413$ ,  $t(115)=1.770$ ,  $p=0.040$  (one-tailed); Question 2:  $M=4.40$ ,  $SD=2.253$ ,  $t(115)=1.896$ ,  $p=0.031$  (one-tailed); Question 3:  $M=3.61$ ,  $SD=2.283$ ,  $t(115)=-1.830$ ,  $p=0.035$  (one-tailed); Question 4:  $M=4.91$ ,  $SD=2.092$ ,  $t(115)=4.705$ ,  $p<0.001$  (one-tailed).



**Figure 2: Study 2 results.**

### 3.3 Studies 3 and 4: Unfelt Pains

In my third study subjects read a description of a situation in which, if one holds that pains are qualities of the afflicted body parts, it would be natural to hold that a pain existed unfelt:

It is common for people who have been badly injured and are in ongoing pain to report being distracted from the pain by an interesting conversation, an intense movie, or a good book. Afterwards, the person will often reflect that for a period of time they hadn't noticed any pain at all! In such a situation, do you think that the injured person still had the pain and was just not feeling it at the moment? Or, that there was no pain during that period?

Subjects answered the question on a 7-point scale anchored at 1 with “clearly in pain, but not feeling it,” at 4 with “not sure,” and at 7 with “clearly not in pain.” The survey was given to 55 undergraduates at the University of Pittsburgh. One subject was removed because she had taken the survey previously; an additional five subjects were removed because they had training in philosophy or psychology. The remaining 49 subjects were 61.2% female, with an average age of 19.6 years, and ranging in age from 18 to 43 years old.

The average response was significantly below the neutral point of 4, indicating that contrary to the philosophical consensus, the folk surveyed hold that pains can exist unfelt (see Figure 3).<sup>13</sup> This finding is predicted by the view that the folk, by and large, hold that pains are qualities of the afflicted body parts: If the pain is taken to be a quality of part of the body, then there is little reason to think that it goes away when it is not being perceived.

It could be argued that the use of the term “distracted” in the probe for Study 3 might have led subjects to believe that the pain was ongoing (as you cannot be distracted from something that is not there).<sup>14</sup> My fourth study controlled for this, updating the text of the probe and removing the offending term:

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?

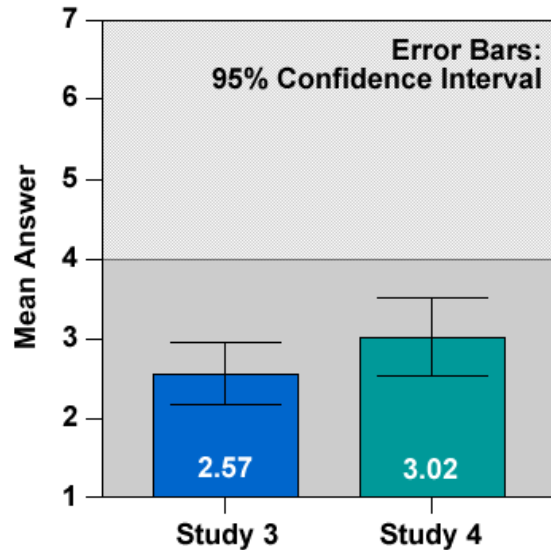
Subjects answered on the same scale used in Study 3. The survey was given to 50 undergraduates at the University of Pittsburgh. Nine subjects were removed because they had training in philosophy or psychology. The remaining 41 subjects were 56.1% female, with an average age of 21.9 years, and ranging in age from 18 to 55 years old. The mean response was again significantly below the neutral point of 4 (see Figure 3).<sup>15</sup>

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<sup>13</sup>  $M=2.57$ ,  $SD=1.671$ ,  $t(48)=-5.985$ ,  $p<0.001$  (one-tailed).

<sup>14</sup> This objection was raised by Byrony Pierce during the discussion period at the *Consciousness Online* conference. Note that the probe used in Study 3 and the pain vignette given in Study 2 differ in their use of the term “distracted”: In Study 2 the person is distracted from her *injured leg*, not specifically the *pain*.

<sup>15</sup>  $M=3.02$ ,  $SD=1.877$ ,  $t(40)=-3.328$ ,  $p=0.001$  (one-tailed).



**Figure 3: Study 3 and 4 results.**

### *3.4 Studies Five and Six: Shared Pains*

If the folk locate pains in the afflicted body parts, then we would expect them to hold that pains can be shared, at least in those atypical cases in which the afflicted body part is shared. My fifth and sixth studies presented subjects with descriptions of two such cases and asked them whether the numerically identical pain was felt by two different people. In Study 5, I gave subjects the following two scenarios in sequence, counterbalanced for order:

Henry and Johnny are normal undergraduates at a state university. They are distinct people with their own beliefs and desires. One day they were participating in a three-legged race in a park with Henry's right leg tied to Johnny's left leg. While running toward the finish line their "third-leg" forcefully kicked a large rock that, unbeknownst to them, was hidden in the grass. Henry and Johnny both grimaced and shouted out "Ouch!"

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!"

After each vignette, they were asked whether the runners felt one and the same pain or two different pains. They answered on a 7-point scale anchored at 1 with “clearly same pain,” at 4 with “not sure,” and at 7 with “clearly different pains.” The survey was given to 41 undergraduates at the University of Pittsburgh. Six subjects were removed because they had training in philosophy or psychology. The remaining 35 subjects were 51.4% female, with an average age of 20.9 years, and ranging in age from 18 to 35 years old.

The mean responses for the two scenarios were significantly different, with the mean for the three-legged race scenario significantly above the neutral response of 4 and the mean for the conjoined twins scenario significantly below 4 (see Figure 4).<sup>16</sup> The results are shown graphically in Figure 4. Again, this finding is in keeping with the hypothesis that the folk by and large locate the pains they are acquainted with in the afflicted body parts: In these scenarios, it is the number of afflicted appendages, not the number of perceiving brains, that best corresponds with the number of pains reported.

In Study 6, I found a similar result for a somewhat more fanciful scenario. Subjects were given the following vignette:

As part of an experiment, a mad scientist attached two men who had lost their arms to the same donor hand! To do this, the scientist carefully connected each of the patients’ nerve fibers to the new appendage. The two of them now share the one hand. After the operation, the doctor tested their ability to use the new hand. He found that while the two patients have some difficulty picking things up with the shared hand, they show normal pain responses. In particular, when the doctor cut the palm of the shared hand, both patients grimaced and shouted out “Ouch!” Upon questioning, they told the doctor that it had hurt when he cut them.

They were then asked whether the patients felt one and the same pain or two different pains, answering on the same scale used in Study 5. The survey was given to 61 undergraduates at the University of Pittsburgh. Two subjects were removed because they were under 18 or had taken

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<sup>16</sup> Comparison:  $t(34)=5.703$ ,  $p<0.001$  (two-tailed); Three-legged Race:  $M=5.40$ ,  $SD=1.355$ ,  $t(34)=6.114$ ,  $p<0.001$  (one-tailed); Conjoined Twins:  $M=3.29$ ,  $SD=2.122$ ,  $t(34)=-1.991$ ,  $p=0.028$  (one-tailed).



the survey previously; two additional subjects were removed because they had training in philosophy or psychology. The remaining 57 subjects were 56.1% female, with an average age of 21.8 years, and ranging in age from 18 to 54 years old.

The mean response was significantly below the neutral point of 4, with the majority of the subjects indicating that the two patients felt the same pain.<sup>17</sup> Once again, it is the number of afflicted appendages, not the number of perceiving brains, that best corresponds with the number of pains reported. The results for Studies 5 and 6 are shown in Figure 4.

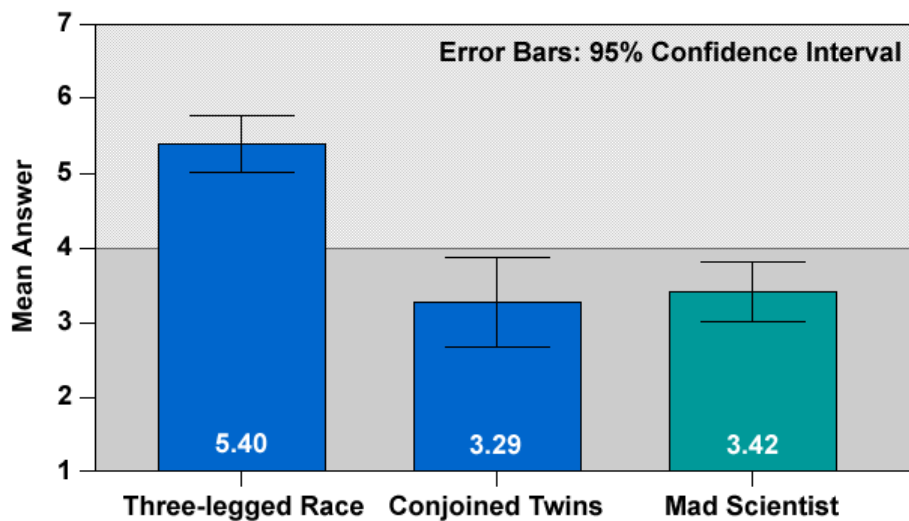


Figure 4: Study 5 and 6 results.

#### 4. Conclusion

Discussions of phenomenal consciousness in recent philosophy often make assumptions about folk psychology. On both sides of the debate it is held that the philosophical concept of qualia reflects what is found in the folk theory of consciousness. In fact, this view is prevalent enough that the qualia-eliminativist Daniel Dennett simply accepts that his view is counterintuitive. But, folk psychology is not such an open book; in the absence of empirical evidence that the folk

<sup>17</sup>  $M=3.42$ ,  $SD=1.861$ ,  $t(56)=-2.349$ ,  $p=0.011$  (one-tailed).

theory is committed to the existence of phenomenal consciousness and qualia, there is ample room for doubt. Fortunately, experimental evidence on the topic is beginning to be produced. In this paper I looked specifically at Dennett's views about the folk theory of consciousness. I considered his belief that the concept of qualia is part of the folk theory, reflecting their acceptance of the secondary quality view. I then discussed the results of six new studies that indicate that the folk do not generally hold the secondary quality view for colors or pains. I conclude that Dennett's theory of the folk theory of consciousness is in error.

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