

*Pain priors, polyeidism, and predictive power: a preliminary investigation into individual differences in our ordinary thought about pain*

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Accepted Version

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(2021) Pain priors, polyeidism, and predictive power: a preliminary investigation into individual differences in our ordinary thought about pain. *Theoretical Medicine and Bioethics*, 42 (3-4). pp. 113-135. ISSN 1573-1200 doi: <https://doi.org/10.1007/s11017-021-09552-1> Available at <https://centaur.reading.ac.uk/94642/>

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To link to this article DOI: <http://dx.doi.org/10.1007/s11017-021-09552-1>

Publisher: Springer

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# **Pain Priors, Polyeidism, and Predictive Power: A preliminary investigation into individual differences in our ordinary thought about pain\***

## **Abstract**

According to standard philosophical and clinical understandings, pain is essentially a *mental* phenomenon (typically, a kind of conscious experience). In a challenge to this standard conception, a recent burst of empirical work in experimental philosophy (e.g. by Sytsma and Reuter [1-3]) purports to show that people ordinarily conceive of pain as an essentially *bodily* phenomenon – specifically, a quality of bodily disturbance. In response to the bodily conception, other recent experimental studies have provided evidence that the ordinary “folk” conception of pain is more complex than was previously assumed: rather than tracking *only* bodily, or *only* mental, aspects of pain, it can actually track either of these aspects. The ‘polyeidic’ (or ‘many ideas’) analysis of the folk concept of pain, as proposed by Borg, Harrison, Stazicker, and Salomons [4], captures this complexity. Whereas previous empirical support for that view has focused on the *context-sensitivity* of the folk concept of pain, here we discuss *individual differences* in people’s ‘pain priors’, i.e. their standing tendencies to think of pain in relatively mind-centric or body-centric ways. We describe a preliminary empirical study and present a small number of findings, which will be explored further in future work. The results we discuss are part of a larger programme of work, which seeks to integrate philosophical pain research into clinical practice. For example, we hypothesise that variations in how chronic pain patients are thinking about pain could help predict their responses to treatment.

## **1. Introduction**

There seem to be different ways of thinking and talking about pain. Sometimes we focus on mental aspects, as when pain is said to be something that feels a certain way, and other times we focus on bodily aspects, as when pain is said to have a certain bodily location. The first way of thinking accords with how philosophers have standardly understood pain. For example, Kripke [5] analyses pain as a kind of feeling. In clinical settings, too, pain can be conceived of mentalistically. For example, the International Association for the Study of Pain (IASP) defines pain as “An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage”. In an accompanying note, pain is stated to be “always a psychological state”(which is not to deny, of course, that treatment often targets

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\* We are grateful to Justin Sytsma and to an anonymous reviewer for this journal for helpful comments which much improved the paper. We would also like to thank the Editors for their help throughout the publication process. We are especially grateful to all those service users whose expertise has helped to shape our research materials. This research was funded by the Joint Academic Board of the University of Reading and the Royal Berkshire NHS Foundation Trust.

the bodily damage thought to be causing the pain or that clinicians' focus is often on the somatic aspects of a patient's pain). Recently, though, a group of experimental philosophers have argued that the second way of thinking about pain accords with the ordinary "folk" conception, according to which lay people distinguish between the existence of pain, on the one hand, and the feeling of pain, on the other. Pain itself, on this view, is held to be always and only a *bodily* property [1-3, 6], with only the *feeling* of pain qualifying as a mental state. If correct, this would show ordinary thought (and talk) about pain to be importantly discontinuous with philosophical orthodoxy, which had previously been assumed to enjoy considerable intuitive appeal.<sup>1</sup> Elsewhere, we have argued that the experimental evidence for the bodily view is unconvincing, and that what is needed is a more complex view of the ordinary concept of pain – one which is able to accommodate both mind-centric and body-centric ways of thinking [4, 9]. This more complex analysis of the folk concept of pain, dubbed the 'polyeidic' (or 'many ideas') view, is empirically supported by a series of recent experiments (reported in an unpublished manuscript by Borg, Hansen, Harrison, and Salomons, entitled 'Is pain "all in your mind"? Examining the general public's view of pain').

We should note that the empirical evidence does not conclusively refute either the bodily view or the mind-centric view, for various rejoinders remain available to proponents of either stance. For instance, it might be argued that the surface form of our pain talk is sometimes not a good guide to its true underlying form. In this way, a proponent of the bodily view might argue that uses of language which don't fit easily with the bodily account are actually instances of loose talk (e.g. 'I have a stabbing pain' is really loose talk for *my pain feels a certain kind of way, like I'm being stabbed*). Equally, though, we should note that the very same move is available to proponents of a purely *mentalist* view (so that, e.g., saying 'I have a pain in my leg' is really loose talk for *I have a cause of pain in my leg*). While no doubt these strategies require further discussion, we note that the polyeidic view is not driven to reanalyse language in this way (and nor is the alternative polysemy approach proposed by Liu [10]). Instead, descriptions of pains can simply be taken at face value. So, while mentalistic and bodily views could seek to avoid challenge by arguing that the surface form of some particular bit of our language is misleading, for the remainder of the paper we will put this response to one side. In what follows, then, when people indicate that they are happy to describe pain as a feeling, we will assume that they are

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<sup>1</sup> We note that there are philosophical views which do not acknowledge the putative dichotomy between mental and bodily aspects of pain. The view is perhaps most famously associated with Wittgenstein [7], but also seems to underpin the work of McDowell, who writes, for instance [8, p. 304]:

[W]hat warrants the assertion that another person is in pain, on one of the relevant occasions, is the detectable obtaining of the circumstance of that person's being in pain: an instance of a kind of circumstance – another person's being in pain – that is available to our awareness, in its own right and not merely through behavioural proxies.

thinking of pain in this way, and not merely engaging in loose talk. And when they are happy to describe pain as a bodily phenomenon, we will assume that they are thinking of pain in that way.<sup>2</sup>

Our earlier empirical studies focused on *contextual variation* in people's views about pain (i.e. their ability to adopt a more mind-centric or more body-centric view, depending on the scenario presented to them) but an important remaining question is whether there are also *individual differences* in people's views of pain. That is to say, do some people tend towards a more mind-centric view of pain and others towards a more body-centric view (independently of the particular situation they are faced with)? And are these 'pain priors' more or less important than contextual effects on their judgements?<sup>3</sup>

These are important questions because we hypothesise that they could have clinical repercussions. We are especially interested in the treatment of chronic pain patients, including the degree to which these patients are able to benefit from psychological pain management techniques. The way patients are thinking of pain (as more bodily or more mental) may, we suggest, affect the extent to which they think their pain can be managed or improved by changing patterns of thought and behaviour, rather than thinking of their pain as something which can only be ameliorated through, say, surgical interventions.

In this paper we report some preliminary observations on data gathered as we begin to investigate differences in individuals' 'pain priors', i.e. their tendency to think of pain in a relatively mind-centric or body-centric way. The structure of the paper is as follows: §2 introduces the mental conception of pain in a little more detail and explores the claims associated with it, while §3 explores the bodily conception. In both discussions, we indicate the kinds of materials that we think could successfully be used to probe subjects' views on these claims. §4 summarises the differences between the mental and bodily conceptions of pain, and briefly introduces the pluralistic polyeidic view. §5 then reports selected findings from a preliminary empirical study, which begins to investigate the differences in individuals' pain

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<sup>2</sup> Some other descriptions are relatively neutral and could, in principle, be understood in either way. Thus, prompts concerning the 'amount' of pain could potentially be understood in different ways – as concerning the intensity or severity of a feeling, or the extent or degree of bodily damage. Likewise, when a protagonist is described as being 'in pain', this would seem to be compatible with mentalistic or bodily ways of thinking. Justin Sytsma (pc) has suggested that he might want to pursue a different kind of route, treating 'in pain' as idiomatic. However, we will not consider this further here.

<sup>3</sup> There are significant challenges in teasing apart the effects of individuals' priors from context effects. As will become apparent below, one way in which we have sought to do so is by probing intuitions on short, simple statements, rather than the kind of rich scenarios we used in earlier empirical work, as this reduces the complexity of the context. We are grateful to an anonymous reviewer for stressing the relevance of this.

priors, and to distinguish these from contextual effects. Finally, §6 sets out why an investigation of both factors is important, outlining the clinical role they might play.

## 2. Pains as Mental Properties

According to a standard view in the philosophical literature, people ordinarily conceive of pains as being *mental* states or properties (albeit ones that are typically caused by disturbances in body parts).<sup>4</sup> In principle, such states or properties need not always be part of our conscious experience, given that some of our mental life is unconscious. However, if pains could be *unconscious*, that would raise the following question: what distinguishes mental states which *are* painful from those which are *not*, if it is not the way they feel? There are various possible answers that might be given here: for example, painful states might be thought of as those which have certain functional profiles (e.g. [11]), representational contents (e.g. [12]), or neural signatures (see [13]). However, more commonly, pain is simply analysed as a *conscious* mental phenomenon (e.g. [5]). For current purposes, then, we focus on the proposal that people ordinarily conceive of pains as *feelings* of a particular kind. This is what we mean when we talk about the ‘mental conception’ of pain.<sup>5</sup>

As discussed in [4, pp. 36-37], simply asking someone directly whether they believe that pain is ‘in the mind’ is unlikely to elicit whether they are thinking of pain mentalistically (due, at least in part, to the fact that this way of speaking is commonly heard as insinuating that the pain isn’t real). A more appropriate strategy, then, and one which is commonly used in the experimental literature, is to probe intuitions about a cluster of more specific claims. By breaking down the monolithic claim that ‘pain is a mental state’ into more nuanced subclaims, we both operationalise the claim (making it possible to ask subjects for their views more directly) and provide a framework able to capture the fact that individuals’ views could pattern differently across these more specific claims (discussed further in §5). For these reasons then, we break down the mental conception of pain into seven component claims, organised in rough order of centrality to the overarching view (noting, though, that they are not necessarily exhaustive of it). We begin with the core definitional claim:

(2.1) Pains are conscious mental experiences.

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<sup>4</sup> One might think of pains as essentially being *objects* of one kind or another; for further discussion, see [9].

<sup>5</sup> According to the polyeidic view discussed below, people do sometimes think of pains in this way, which can be thought of as lying at one end of a spectrum ranging from mind-centric to body-centric thinking about pain. Whether or not people *also* sometimes think of pains as unconscious mental properties is a question we leave for future research.

As noted above, it is theoretically possible to hold a broadly mentalistic conception whilst denying (2.1), by holding that pains can be *unconscious* mental states. However, we suspect that ordinarily people do not tend to make this distinction; instead, where they are minded to adopt a mentalistic perspective, they are likely to think of pain simply as a kind of feeling, as per the narrower mental conception of pain we are concerned with here. Thus (2.1) is, we take it, central to a common-sense mentalistic way of thinking about pain. It may be possible to probe whether people agree with (2.1) by asking them to assess the truth of statements like: 'Pain is part of how we experience things that happen in the body' or 'The International Association for the Study of Pain is right to define pain as "always a psychological state", even if it is caused by an injury'. The definitional claim in (2.1) entails the following necessity and sufficiency claims:

(2.2) Feeling pain is necessary for pain to exist.

(2.3) Having a feeling as of pain is sufficient for pain to exist.

Where someone adopts a purely mental conception of pain, whereby pains are just feelings, they should endorse (2.2), denying that pains can ever exist unfelt. Thus, they should agree with a statement like 'All pains hurt'.<sup>6</sup> Equally, if someone thinks that having pain just *is* feeling pain, then they should endorse (2.3).<sup>7</sup>

On the flipside, someone operating with a purely mental conception of pain would *not* consider bodily disturbance to be necessary for pain:

(2.4) Bodily disturbance is not necessary for pain to exist.

According to the mental conception of pain, someone could have pain despite having suffered no damage at the relevant bodily location. When someone is operating with a mental conception of pain, then, they would *disagree* with a statement like 'If we feel pain, some part of our body must be damaged'. Alternatively, they may agree with a statement like: 'Although pain evolved to warn us about bodily damage, sometimes pain doesn't perform any useful role in informing us about the state of our bodies'. As will be discussed in §6, we believe this may have important clinical ramifications.

The mental conception of pain similarly denies the *sufficiency* of bodily disturbance for pain:

(2.5) Bodily disturbance is not sufficient for pain to exist.

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<sup>6</sup> Note that agreement with this claim may indicate only that someone believes pains must hurt *at some point*, not that they must *always* hurt.

<sup>7</sup> A related claim is that pain is *incorrigible*, i.e. one cannot be wrong about whether or not one has it. Whether or not people hold this view may depend on whether conscious experience, in general, is thought to be incorrigible. For further philosophical discussion of the (in)corrigibility of conscious experience, see [14-16].

In other words, it is thought to be possible, at least in principle, for someone to suffer bodily damage without having pain. When someone is operating with a mental conception of pain, then, they should disagree with a blanket statement like ‘Pain does not go away until the injury that causes it goes away’. Alternatively, they may agree with a statement like ‘It is possible to overcome pain mentally’. Again, the potential clinical implications of this will be discussed in §6.

Likewise, the mental conception of pain denies that the *amount* of pain someone has is determined entirely by the amount of bodily damage they suffer:

(2.6) The amount of pain is not fixed by the amount of bodily damage.

If pains are experiential they may dissociate from the injury that causes them – specifically, it will not *necessarily* follow that the greater the injury the greater the pain, or that the more minor the injury the more minor the pain (although this may *usually* be the case). Instead, a range of other factors (such as the individual’s pain threshold, their general psychological state, their views on the meaning or usefulness of their pain) could intervene to modulate the amount of pain that exists. Whether or not an individual holds this view could perhaps be confirmed by eliciting agreement with a statement like ‘Thoughts and feelings can influence the amount of pain someone has’; or *disagreement* with a statement like ‘More tissue damage always equals more pain’.<sup>8 9</sup>

### 3. Pains as Bodily Properties

In contrast with the mental conception, the bodily conception takes pains to be properties of physical disturbances in the body (see [1-3, 6]). Presumably, not *all* bodily disturbances are taken to be painful; for example, itches and tickles appear to be forms of bodily disturbance which are not painful. We assume, then, that when someone is operating with a bodily conception of pain, they would be thinking of pains as properties of bodily *damage*, or *injury* (leaving open exactly which disturbances will qualify as such). So, just as we might intuitively ascribe a range of properties to other physical phenomena – size, colour, temperature, loudness, and so on – the idea here is that bodily injuries have *pain* as a property.

It is important to note that the bodily conception of pain, as we understand it here, locates the pain at (typically peripheral) bodily locations where injury has occurred. So, for example, pains

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<sup>8</sup> We are assuming here that people may think the intensity of a feeling can be influenced by other thoughts and feelings but will *not* think the extent of tissue damage can be influenced in this way. The interpretation becomes less clear, though, on an alternative version of the bodily view (i.e. one which appeals to nociceptive states rather than bodily damage/ injury – see below, footnote 11).

<sup>9</sup> We note that some of the statements put forward for probing people’s views of pain include modal language, raising questions about exactly how this is being understood by experimental participants. However, this is beyond the scope of the current research, which takes a comparable approach to that of previous empirical studies.

are thought to be properties of stubbed toes, cut fingers, sunburnt noses, and so on.<sup>10</sup> A different view might allow for pains to be located elsewhere in the body, for example in a malfunctioning nervous system or a disturbed neural pathway.<sup>11</sup> Although this might be considered a 'bodily' conception of pain, broadly construed, it is not our target here. Instead, when we talk about the 'bodily conception' of pain, we confine our attention to the classic version of the view, as elaborated by Reuter and Sytsma.

As before, we identify below seven key claims of the bodily conception of pain, listed in rough order of centrality (noting, again, that these claims are not necessarily exhaustive of the view). First is the definitional claim, which contrasts with (2.1) above:

(3.1) Pains are properties of bodily damage.

This might be probed directly by asking people to assess the truth a statement like the following: 'When someone says "I am in pain" they are talking about a property of their body'.

The bodily conception denies the necessity and sufficiency claims associated with the mental conception (2.2 and 2.3 above), generating the following negative claims:

(3.2) Feeling pain is not necessary for pain to exist.

(3.3) Having a feeling as of pain is not sufficient for pain to exist.

When someone is operating with the bodily conception, then, they should allow for the possibility of unfelt pain; and they should agree with a statement like the following: 'When someone gets distracted from pain, the pain is still there, the person just doesn't notice it'.<sup>12</sup>

Equally, having a feeling as of pain is not considered to be sufficient for having pain (as against (2.3) above) – and such a feeling is clearly not considered to be incorrigible on the bodily

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<sup>10</sup> We set aside what are clearly tricky cases for advocates of the bodily view, concerning 'referred' pain or 'phantom limb' pain, where bodily damage is not located at the place where the damage is felt to have occurred. For further discussion of how such phenomena might be accommodated by the bodily conception of pain, see [17, pp. 157-158] and, for discussion, [4, pp. 32-33].

<sup>11</sup> While laypeople are unlikely to have sophisticated nociceptive conceptions of pain, they may think of pain in terms of nerve activity of some kind (we are grateful to an anonymous reviewer for stressing this point). While this is right, and would be a version of the bodily view that avoids a number of the worries to be discussed below (relating to the connection between pain and bodily injury), the well-attested point that pain is not simply a "direct readout of nociceptive input" (as Wiech puts it in [18]) will cause difficulty for this view as well: for pain to exist, it might be thought that nerve activity must cause an experience of pain in the subject. In that case, the approach collapses into a mentalistic view.

<sup>12</sup> A more moderate version of this claim would be that pains need not be *continuously* felt in order to exist but that they must be felt *at some point*. In other words, a pain can exist unfelt for a period of time but it cannot exist if it is *never* felt. However, we will continue to restrict our focus here to the bodily conception discussed by Reuter and Sytsma, which makes the stronger claim that pain can exist even if it is never felt (for further discussion, see [3]).

conception. Thus, the view predicts agreement with a statement like ‘It is possible that someone can be wrong when they feel like they are in pain’.

Conversely, the bodily conception is committed to the necessity claim the mental conception rejects (as per (2.4) above):

(3.4) Bodily damage is necessary for pain to exist.

According to the bodily conception, pain *only* arises with bodily damage; therefore, it cannot arise in the absence of bodily damage. In slogan form: *there is no pain without injury*. Someone operating with this conception of pain, then, should agree with a statement like ‘If we feel pain, some part of our body must be damaged’. As will be discussed in §6, we believe this point could have important clinical implications.

The bodily conception of pain appears to generate the following sufficiency claim, which is denied under the mental conception (in (2.5) above):

(3.5) Bodily damage is sufficient for pain to exist.

According to (3.5), pain always exists when there is bodily damage (regardless of how a subject feels). Strictly speaking, the bodily conception of pain need not be committed to this claim. However, if it were rejected, that would immediately raise the question of what distinguishes bodily damage which *is* painful from that which is *not*. Since it is unclear how someone operating with the bodily conception might respond here – obviously, they could not appeal to any *mental* criteria – we will assume that they do, in fact, endorse the positive sufficiency claim in (3.5). That would imply agreement with the following, for example: ‘Melinda and Mary-Lou are conjoined twins who share a leg. They stub a toe on the foot of the shared leg. Melinda says “ouch”, Mary-Lou doesn’t seem to notice the stubbed toe. In this case, both twins have pain.’ And it may lead to disagreement with a statement like ‘It is possible to overcome pain mentally’. After all, if pain were an inevitable concomitant of bodily injury it would presumably not be the kind of thing which is influenced by how we think or feel about it.<sup>13</sup> Again, we believe this could have important clinical implications, which we return to in §6.

It is less clear whether or not the bodily conception of pain is committed to the following claim concerning the *amount* of pain (which is the flipside of (2.6) above):

(3.6) The amount of pain is fixed by the amount of bodily damage.

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<sup>13</sup> Again, assuming that tissue damage is impervious to how one thinks or feels. We note, though, that if ‘overcome’ here is read as something like ‘cope with’ rather than ‘eliminate’, someone operating with a bodily view could perhaps accept the statement after all.

We will therefore treat (3.6) as being less central to the view than the other claims.

#### 4. The Polyeidic View

Summarising the discussion of the last two sections, the table below shows how the mental and bodily conceptions of pain discussed in the philosophical literature vary across a series of key claims.

**Table 1: Key claims of mental/ bodily conceptions of pain**

Question	Mental	Bodily
1a. Pains are mental properties.	Yes	No
1b. Pains are bodily properties.	No	Yes
2. Feeling pain is necessary for pain to exist (no unfelt pain).	Yes	No
3. Having a feeling pain is sufficient for pain to exist (no pain hallucinations).	Yes	No
4. Bodily damage is necessary for pain to exist (no pain without injury).	No	Yes
5. Bodily damage is sufficient for pain to exist (no injury without pain).	No	Yes
6. The amount of pain is fixed by the amount of bodily damage.	No	Unclear

According to the pluralistic approach of the polyeidic view, pain can in fact be conceptualised in each of these ways (and potentially in various other ways too). Thus, the pure mental and bodily views described above can be thought of as two extremes lying at either end of a spectrum that captures our ordinary thought and talk about pain (which is sometimes relatively mind-centric and other times relatively body-centric). Evidence for this comes from a series of vignette-based studies (reported in an unpublished manuscript by Borg, Hansen, Harrison, and Salomons, entitled ‘Is pain “all in your mind”? Examining the general public’s view of pain’). It is found that, in some scenarios, people tend to adopt a mind-centric perspective while, in others, they tend to think about pain in a bodily way. Thus, the folk concept of pain appears to be more complex and situationally variable than either a purely mental or purely bodily conception allows.

A question raised by these results, however, is whether the way in which someone thinks about pain is *purely* a function of the scenario given, or whether individuals also have varying ‘pain priors’, i.e. pre-existing tendencies to think about pain relatively mind-centrally or body-

centrically. Although the polyeidic view takes the folk concept of pain to be malleable across contexts, it also allows that some individuals may tend towards a mental conception of pain, while others tend towards a bodily conception. As discussed below, determining whether shifts in mind/body perspectives are entirely a result of the context of judgement, or whether they are also influenced by differences in the way a person generally conceives of pain, could have clinical relevance. That is to say, if shifts in view are entirely the result of contextual factors, then it will be extremely important that we think very carefully about the context in which clinician/patient exchanges about pain occur, to ensure these are not accidentally promoting problematic conceptions of pain amongst either party. On the other hand, if standing ‘pain priors’ have a role to play, then identifying these could be valuable as part of any preliminary work with patients, to ensure they are able to benefit as much as possible from various treatment options. Thus, in a preliminary empirical study, we have begun to investigate the potential balance between contextual and individual factors in people’s pain judgements.

## **5. Pilot work on the existence of individual differences**

In a pilot study, we presented participants with a series of statements about pain, designed to probe their intuitions about the theoretical claims discussed above.<sup>14</sup> For each experimental item, participants rated their agreement on a seven-point Likert scale (where 1 was labelled ‘Strongly Disagree’ and 7 was labelled ‘Strongly Agree’). In order to analyse the data, we flipped the scores for all items where responses greater than 4 would have indicated body-centricity. This ensured that body-centric responses were always indicated by scores below 4, while mind-centric responses were always indicated by scores above 4 (allowing us to plot the two alternative views on a single scale). Our preliminary findings suggest that at least some individuals do occupy different positions along a mind-body spectrum, although we must stress that these findings remain to be validated within a larger sample.

### **5.1. Contextual Effects**

As in the earlier vignette studies by Borg et al., some experimental items elicited generally mind-centric responses while others elicited generally body-centric responses. An example of an item that elicited a generally mind-centric response is the following:

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<sup>14</sup> In total, 70 participants were recruited through Amazon Mechanical Turk and paid \$2 for their participation. One participant was removed from the analysis for giving very similar responses across all experimental items, leaving 69 participants (62.32% male, 36.23% female, 1.45% other (e.g. nonbinary),  $M_{\text{age}} = 37.04$  years,  $SD_{\text{age}} = 10.44$  years). Participants were presented with 60 statements, distributed quasi-randomly across eight blocks, with each block being presented on a separate screen. Within each block, the order of the statements was randomised. Participants were required to answer all questions in the block before they could advance. They could not go back to review or change answers in previous blocks.

‘Thoughts and feelings can influence the amount of pain someone has.’

People tended to agree with this statement (the mean score was 5.49). This suggests that, in response to this prompt, pain may have been thought of as dissociable from bodily damage and dependent, at least in part, on subjective experience.<sup>15</sup>

In contrast, below is an example of an item that elicited a generally body-centric response (with a mean score of 2.86 after flipping):

‘When someone is in pain they can sometimes get so wrapped up in other things (like reading a good book or trying to do a puzzle) that they are not aware of their pain for a time, even though the pain still exists.’

People tended to agree with this statement, indicating that pain was being thought of as dissociable from subjective experience (but potentially dependent on bodily damage). In other words, this prompt elicited evidence of bodily thinking about pain, whereas the previous one elicited evidence for mentalistic thinking.<sup>16</sup> This supported the finding from our earlier studies: that individuals are able to conceive of pain in both mental and bodily ways. However, we were interested to explore whether these contextual effects were modulated by individual differences. That is to say, whether a person’s pain judgements are a feature not only of the contextual situation they are presented with but also of their standing view of pain.

## 5.2. Individual Differences

The clearest demonstration of individual differences in pain priors would be to find that some individuals consistently gave mind-centric responses (scoring above 4 on every item), while others consistently gave body-centric responses (scoring below 4 on every item). However, this pattern did not emerge clearly from our pilot data. Taking each individual’s mean response, across all of 60 items, most individuals clustered around the midpoint of 4. This is despite most participants being willing to give ratings towards the extremes of the Likert scale when assessing individual items.

It may be, then, that many people have highly malleable conceptions of pain, whereby they access both mental and bodily aspects of pain fairly flexibly and fluidly, depending on precisely

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<sup>15</sup> Unfortunately, we do not have space here for a detailed discussion of exactly *why* certain items seemed to elicit generally mind-centric responses, while others seemed to elicit generally body-centric responses. However, see section 5.2 below for a little further discussion.

<sup>16</sup> One might worry here that participants were simply *agreeing* with the statements presented to them, regardless of whether agreement would indicate mind-centricity or body-centricity. However, several of the experimental items elicited general *disagreement*. Interestingly, in all such cases, disagreement indicated *mind*-centricity.

what they are being asked.<sup>17</sup> This result would perhaps be unsurprising in light of the polyeidic view, which predicts that people are capable of thinking of pain in both mind-centric and body-centric ways. Indeed, our earlier experimental findings suggest that pain judgements are, at least in part, a function of the context in which the judgement is made. Thus, it is to be expected that individuals will shift along the spectrum somewhat when evaluating different statements.

Nevertheless, the results provide early indicative evidence that responses are not driven *only* by situational factors. First, it is notable that a small number of participants appear to have been operating with a relatively mind-centric view or a relatively body-centric view. A handful of individuals had overall mean scores that were above 4.5 (indicating a consistently relatively mind-centric view), while one or two at the other extreme had overall mean scores below 3.5 (indicating a consistently relatively body-centric view). If these findings were to replicate, this would show that there are some individuals in the general population for whom pain judgements are significantly influenced by their prior, standing-state view of pain (alongside contextual influences).

Secondly, we also found some range in individual responses with respect to the specific sub-claims associated with the mental or bodily conceptions (as set out in sections 2 and 3). That is to say, we found early indications that some items may push participants towards either a mind or body-centric view, while in other cases the effect of the contextual item may be less pronounced. So, for instance, recall that one of the claims associated with the mental conception of pain is that *feeling pain is necessary for having pain*. The figure below plots responses to two of the illustrative statements discussed earlier (see (2.2) and (3.2) above). In our preliminary data, the following statement elicited a mind-centric mean response ( $M=5.32$ ;  $SD=1.54$ ):<sup>18</sup>

‘All pains hurt.’

In contrast, the following statement elicited a body-centric mean response ( $M=2.52$ ;  $SD=1.16$ ):

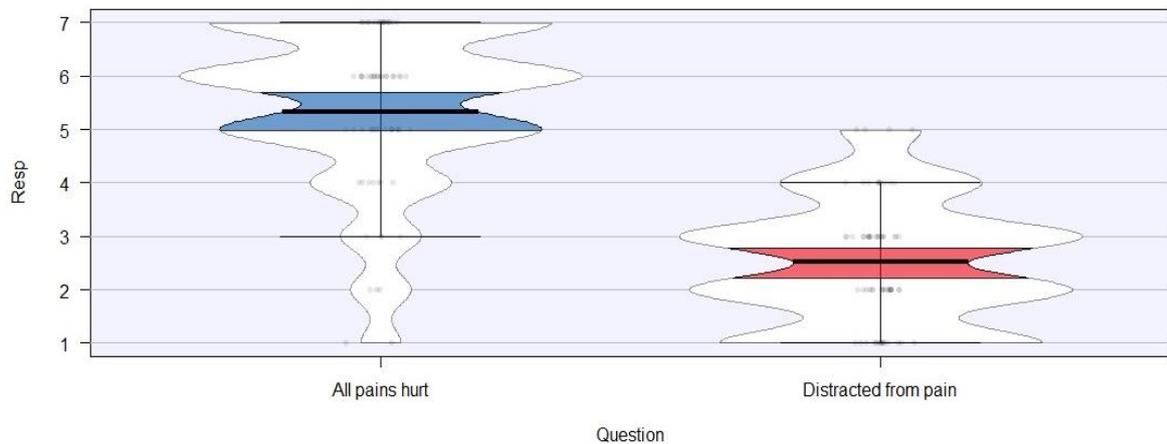
‘When someone gets distracted from pain, the pain is still there, the person just doesn’t notice it.’

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<sup>17</sup> Another possibility is that the experimental items we selected, when taken as a whole, failed to reveal individuals’ true pain priors. In the next stage of research, the battery of items will be further refined, to ensure that they are best placed to do so.

<sup>18</sup> Interestingly, Reuter and Sytsma [3] find that only a minority of their participants say ‘All pains hurt’ when they are also given the following options: ‘Most pains hurt’; ‘Some pains hurt’; ‘No pains hurt’ (albeit ‘All pains hurt’ was the most common single answer – see also footnote 12 above). Although the findings may seem to conflict, that would remain consistent with our broader point – namely that people’s views about pain can be affected by various contextual factors.

**Fig. 1: Illustrative probes of the claim that feeling pain is necessary for having pain.**



The apparent reversal in judgements here highlights the force of contextual effects: asking the question in different ways can, we believe, elicit different views about whether or not bodily damage is necessary for pain to exist. It may be that, at least with respect to items like the two above, pain priors are playing a minor role in people’s judgements, relative to contextual effects. Testing with a larger sample will help us to confirm which experimental items and theoretical claims pattern in this way.

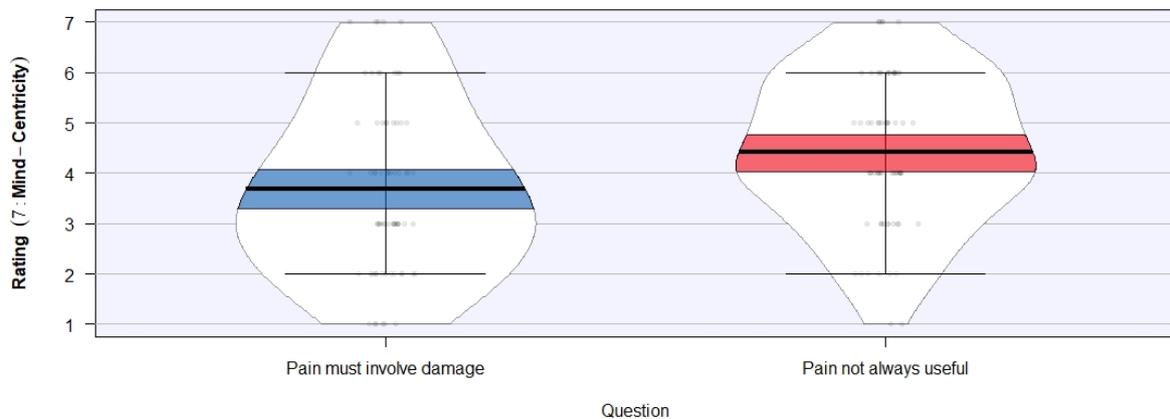
On the other hand, some other experimental items yielded more mixed results. So, for instance, turning to the contrasting necessity claim associated with the bodily conception of pain – that *having bodily damage is necessary for having pain* – the figure below plots responses to two of the illustrative statements discussed earlier (see (2.3) and (3.3) above). In our preliminary data, the following statement elicited a slightly body-centric mean response (of 3.68;  $SD = 1.69$ ):

‘If we feel pain, some part of our body must be damaged.’

Meanwhile, the following statement elicited a slightly mind-centric mean response ( $M=4.42$ ;  $SD = 1.50$ ):

‘Although pain evolved to warn us about bodily damage, sometimes pain doesn’t perform any useful role in informing us about the state of our bodies.’

**Fig 2. Illustrative probes of the claim that having bodily damage is necessary for having pain.**



That said, both means remain fairly close to the midpoint, and the more ‘stretched out’ plots indicate a large spread of responses. Something in addition to the contextual effects generated by the experimental item, then, may be needed to explain this pattern of responses (that is to say, since the experimental item remained constant across all participants but responses were spread, this suggests that some factor(s) in addition to those generated by the experimental item itself is in play). It is too early to conclude with any certainty that this additional effect must be coming from the individual’s standing view of pain, but differences at this level are a good explanatory candidate. That is to say, if some people do just tend to think of pain in a more mentalistic way, while others tend towards a more bodily conception, this might explain divergent answers to experimental prompts like the above pair. Whether or not this is the right hypothesis, though, remains to be shown through testing with a larger sample. Thus although it is too early to say definitively whether pain priors play an important role with respect to at least some pain judgements, our preliminary results do suggest that there may be more to the story than just the contextual effects brought about by experimental items themselves.

Our preliminary results, then, support three findings: first, they are consistent with earlier results showing the existence of contextual effects on pain judgements. Second, they go beyond earlier findings by beginning to demonstrate that contextual effects could be more pronounced with respect to certain kinds of claims about pain than others. Third they indicate that, for at least some claims about pain, the judgements made by individuals may be influenced by more than just the contextual effects of the prompt. We take these results as preliminary evidence that the search for standing-state elements of an individual’s conception of pain is justified.

## 6. Conclusions and Clinical Repercussions

We believe that the way in which people think about pain could have important clinical implications. For instance, if people differ in how they are conceptualising pain in a given context, then communication about pain amongst these individuals is likely to be problematic. Crudely, if, for instance, a clinician comes to an exchange with a particularly bodily conception of pain, focusing on the somatic aspects at the expense of how the pain feels for the patient, while the patient is focused on more affective aspects of the pain, or vice versa, their conversations about pain are unlikely to go well (see [9, section 4] for further discussion). The pilot study surveyed here, then, forms part of a larger programme of work, which seeks to integrate philosophical pain research into clinical practice, demonstrating the relevance of a live debate in experimental philosophy to practical medicine. We are particularly interested in how pain is conceptualised by chronic pain patients (who report pain lasting for longer than three months);<sup>19</sup> and, for example, whether the way these patients think about their pain affects their responsiveness to psychological treatment. Currently, in the UK, there is no standardised method of stratifying chronic pain patients in terms of their likelihood of benefiting from psychological pain management treatments. Furthermore, once they commence treatment, they may be faced with a relatively undifferentiated treatment programme. We are interested in whether, at each of these junctures, outcomes might be improved by establishing how the patient is thinking about their pain, and by tailoring interventions accordingly.

As noted earlier, when someone thinks of pains as being properties of damage at a particular bodily location, they may find a referral for psychological treatment puzzling. For example, a patient may be thinking of bodily damage as being *necessary* for pain (either because the individual has a standing tendency to do so, or because features of the context encourage them to adopt that view). The patient could then be expected to think of their chronic pain as implying that there is damage at the relevant bodily location. On that basis, the most appropriate intervention would be to identify and rectify that damage, rather than to focus on the patient's thoughts and behaviours. Likewise, a patient who is thinking of bodily damage as being *sufficient* for pain would presumably reject the possibility of reducing or eliminating their pain by changing their thoughts and behaviours. As noted earlier, if pain were purely a concomitant of bodily injury, it would presumably be unaffected by such interventions. We would predict, then, that when someone is thinking about pain in a highly body-centric way, they are unlikely to consider psychological treatment to be suitable, and may fail to engage with

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<sup>19</sup> National Institute for Health and Care Excellence, draft guidance:  
<https://www.nice.org.uk/guidance/indevelopment/gid-ng10069/documents>

it (perhaps refusing the treatment upfront, dropping out during the course, or deriving relatively little benefit from it).

Conversely, patients who are – or become – less attached to the bodily conception of pain, as it has been understood here, may be more open to psychological treatment options. The hypothesis guiding our investigation is that, by recognising this, and tailoring information and interventions appropriately, it may be possible to strengthen the patient's therapeutic allegiance with their consultant and, ultimately, improve their ability to manage – or even overcome – the pain. The observations we report here are a first step in exploring this possibility. As such, they bring an extant debate in experimental philosophy closer to bearing on real-world clinical practice.

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