Pain, Amnesia, and Qualitative Memory: Conceptual and Empirical Challenges

Comment on Barbara Montero's *"What Experience Doesn't Teach: Pain-Amnesia and a New Paradigm for Memory Research"*

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Barbara Montero considers whether or not we are able to remember what pain feels like. In order to properly answer this question, she introduces a new type of memory called "qualitative memory", which seems common to exteroceptive sensations. Having concluded that there is arguably no qualitative memory for pain and other bodily sensations, Montero considers possible philosophical implications for areas including rational choice-making and empathy. In addressing the relationship between pain and memory, the paper raises an issue that has not received much attention and indicates various interesting fields of research for which the apparent inability to remember pain might prove relevant. My comment primarily focuses on the core concepts of pain and qualitative memory which are foundational for the paper. I argue that a deeper engagement with some key aspects of these concepts is necessary. A more fine-grained discussion could have made Montero's argument more convincing.

To begin, understanding pain, one of the core concepts of the paper, is of utmost importance. Montero understands pain in terms of a particular phenomenal character: the qualitative feel of what it is like to experience pain. This phenomenal character is supposed to be non-identical to any of the qualities introduced by Melzack & Casey (1968) and prominently tested by the McGill Pain Questionnaire (Melzack, 2005). Accordingly, pain cannot be identified with any sensory, affective, or evaluative quality. Referencing Davis, Kucyi, & Moayedi (2015), Montero identifies pain with a more fundamental "ouch".

A general issue for pain researchers across disciplines is the notorious ambiguity of the English term "pain" (e.g. Borg et al., 2020; Wierzbicka, 2012). The concept of pain as introduced by the neuroscientists Davis, Kucyi, & Moayedi is innovative, but not commonly applied in the literature. Without further elaboration, it remains vague. This is especially true in its relation to other concepts that are in the focus of the philosophical debate. On one hand, the term "pain" can denote the opposite of pleasure, commonly referred to as unpleasantness, painfulness, badness, or suffering (e.g. Bain, 2017; Klein, 2015b). On the other hand, the term "pain" can denote the unique phenomenal character associated with bodily pains, such as labor pain, muscle pain, headache, and the like. These two concepts of pain are not identical (e.g. Bain & Brady, 2014; Fink, 2011; Grahek, 2007). For one thing, various mental phenomena other than bodily pains fall into the category of unpleasant sensations. We might, for example, think of the painfulness of starving, the badness of a panic attack, or the suffering of a grieving child. Moreover, the pains of pain asymbolia patients are often

characterized as cases of bodily pain experienced without unpleasantness or badness (e.g. Bain, 2013; Klein, 2015a).

Both concepts play an implicit role throughout the paper. Montero focuses on examples of bodily pains and distinguishes them from so-called social pains (e.g. loneliness or grief) as well as other bodily sensations from which a person might suffer (e.g. hunger or cold). The expression "ouch," and further considerations on empathy, highlight the unpleasantness of such bodily pains. Adding to the confusion, the unpleasantness of pain is often considered identical to the affective quality that Melzack & Casey introduce (e.g. Corns, 2014) and that Montero explicitly excludes. Further elaboration of the presupposed notion of pain would enable Montero's account to be more fully embedded into the recent philosophical debate. Such elaboration would not only be of conceptual value, but might provide a starting point for memory research by allowing investigators to explain precisely what they are testing for to their participants.

In addition, it should be noted that the term "qualitative" is ambiguous. This ambiguity can lead to misunderstandings, especially in empirical research on pain memory. For example, in Terry & Gijsbers (2000)'s investigation of the consistency of reports of labor pain over time, their most interesting finding concerns the differences between quantitative and qualitative aspects. Subjective reports concerning quantitative aspects, i.e. intensity, were relatively consistent over time whereas the qualitative descriptors varied substantially. Montero interprets this as suggesting an inability to remember the fundamental qualitative feel of pain. However, it is important to note that the qualitative aspects in the study corresponded to the adjectives of the sensory, affective, and evaluative categories presented in the McGill Pain Questionnaire. Thus, the qualitative aspects examined in the study are not necessarily the fundamental qualitative feel that Montero presupposes.

It would be interesting to consider how the fundamental "ouch" of pain that Montero aims to investigate relates to the sensory, affective, and evaluative dimensions introduced by Melzack & Casey (1968), especially as their work still influences and guides recent research. This issue seems especially relevant for understanding how scientists might ultimately test for the memory of pain in accordance with Montero's conceptualization of this research subject.

I now turn to the second core concept of the paper: qualitative memory. In the first section, Montero reviews recent empirical literature on pain memory and amnesia. Her main conclusion is that the available data is ambiguous. This ambiguity is due to confusion over whether subjects report to *know that* they were feeling pain or to *remember what* it was like to feel pain. What is relevant for Montero is the ability of subjects to remember the phenomenal character of an experience and not their ability to know that they underwent an experience. The latter might entirely rely on semantic memory. In the second section, Montero argues for the introduction of the new concept of qualitative memory. Qualitative memory enables a subject to recall the feeling of what it is like to undergo an experience. Qualitative memory is not merely distinct from semantic memory, but also from episodic memory. The introduction of this new type of memory, especially as distinct from episodic memory, seems motivated by two main arguments which I will discuss at length.

First, qualitative memory is supposed to add something to episodic memory. Episodic memory is commonly considered to underlie the ability to reconstruct personally experienced past events and as similar to mental time travel (Tulving, 1985). Unlike semantic knowledge of event-related information, episodic memory operates when the subject is in a different phenomenological state, re-experiencing a past event from a particular perspective, including modality-specific sensory information (e.g. Mahr & Csibra, 2018). Episodic memory allows

us to remember where we were at a certain time, what we have been doing, with whom we have been, and *how we felt* (e.g. Wheeler & Ploran, 2009). Now, imagine the following situation: after an accident, a man remembers that he lost control over his car in the morning near his house. He can remember seeing the frost glittering on the street, feeling the car sliding, and finally hearing his elbow bone breaking. He has episodic memory of various aspects of the event while being able to vividly re-experience corresponding sensations. By contrast, he cannot retrospectively conjure the feeling of what it was like to be in pain, though he might know that he was feeling an intense aching pain in his arm. According to Montero, subjects in such situations have semantic and episodic memory of pain. In order to account for the remaining "qualitative" gap, i.e. the subject's inability to re-experience the pain itself, another type of memory is introduced and said to be absent in these cases.

The plausibility of this argument depends on whether the subject in the described example has episodic memory of pain, as Montero states. Without doubt, the subject has episodic memory of some aspects of the accident related to pain. But is this sufficient to claim that the subject has episodic memory of the pain itself? For example, one could argue that the man's memory has episodic gaps because he cannot remember every aspect of the past episode: he cannot remember how it felt to be in pain. If so, what is missing is episodic memory of pain and, in accordance with Terry et al. (2008), the interesting task for future research is to investigate whether subjects always lack such episodic memory. Information from different sense modalities might be stored and retrieved in different manners and in some cases we might only possess episodic memory related to some of them. This is an interesting observation on its own, but does not necessarily require the introduction of a new type of memory.[1]

Second, qualitative memory is supposed to be decoupled from the memory of a *particular* past event. That is, qualitative memory is not related to the accurate or inaccurate recall of a fact or a past event but to the more general conjuration of a particular feeling. Montero posits that we arguably possess qualitative memory of this kind for exteroceptive sense modalities. For example, one could remember what it is like to see something red without remembering a particular event in which one saw something red. By contrast, such memory is apparently non-existent for bodily sensations, such as pain. Hence, in order to account for this difference, we need to introduce qualitative memory present in the former but not in the latter.

In order to better understand the conjuring of a qualitative feel, and to exclude the possibility of alternative explanations, it will be helpful to further elaborate the relation between episodic memory and other cognitive capacities with which it shares features, such as imagination or dreaming (e.g. Mahr & Csibra, 2018). For example, one might argue that in "decoupled" memories of phenomenal experiences we access and flexibly compound information concerning experiential properties stored in episodic memory when imagining or dreaming what it is like to see a red object.[2] This ability requires previous encounters with red objects, but does not necessarily require capacities other than episodic memory and imagination or dreaming. The relationship between such related cognitive acts is quite complex and its full-blown discussion would exceed the scope of this comment. However, the

[1] Note that my aim is not to show that the considered cases can be explained in terms of gaps in episodic memory. However, a more fine-grained discussion of what it means to possess episodic memory of a past event, and of the corresponding phenomenal aspects of different sense modalities, could have made Montero's argument more convincing.

[2] For a similar argument concerning empathic imagination see Boisserie-Lacroix & Inchingolo (2019).

above considerations are sufficient to suggest that episodic memory might do more work than Montero assumes.

In sum, Montero points to an aspect of memory that is rarely the focus of debate, namely the ability to conjure the feeling of what it is like to undergo a certain experience. Introducing a new concept can be a useful tool to indicate such neglect. However, the argument in favor of a new type of memory would be stronger if the possibility of accounting for the phenomenon in terms of commonly accepted cognitive capacities were considered in more detail. This is especially true as experiential features of different sensations occur at least in the periphery of the philosophical and empirical literature. So far, a definite criterion to identify the presence or absence of qualitative memory is missing, particularly in contrast to episodic memory.

As one of the main claims of the paper, Montero argues for a substantial difference between exteroceptive and various interoceptive sense modalities in our ability to remember their qualitative feel. Arguably, we are able to remember what it is like to see something red, to hear a certain melody, to taste certain food, or to smell a certain odor, either in direct connection to a particular past event or decoupled from such. This appears false with respect to other bodily sensations, especially pain, hunger, or thermal sensations.

In arguing for this claim, Montero primarily relies on first-person experience. Though this constitutes a valid starting point, it may be that others do not share the same intuitions. For example, I am not able to actively conjure the feeling of what it is like to smell fish or to taste cheesecake without a strong and directly related external trigger. Even if I make an effort to remember a specific past event, I can hardly bring about the phenomenal character of olfactory or gustatory sensations. By contrast, just imagining itch is sufficient to generate a corresponding feeling (see FN3) and dreaming of waves of snow crashing over me provides at least a glimpse of the stinging unpleasant feeling of cold. Pain seems to be one of the sensations that is particularly hard to conjure. However, at least some studies indicate that vivid recall of pain is possible, for example, when showing women videotapes of their own labor (see Niven & Murphy-Black, 2000; FN 10). Moreover, it is in principle imaginable that patients who have suffered from chronic pain for years can vividly re-experience the feeling of what it is like to be in pain even after successful treatment.

There may be no dichotomy between those sensations whose phenomenal character we can remember and those which we cannot. There might rather exist gradual differences, i.e. degrees of ease or difficulty with which we can conjure the feeling of certain sensations. Such a picture might be less attractive because it is less radical. However, it allows us to account for gradual differences across sensations (e.g. vision vs. cold vs. pain) and their subtypes (e.g. fracture pain vs. menstrual pain vs. labor pain) as well as for differences concerning the salience or strength of triggers needed to elicit the respective qualitative feel (e.g. conjuring the feeling of pain when thinking about pain vs. seeing a muted tape of a pain-related event vs. adding sound). Moreover, we could account for inter-individual differences and the influence of past experiences (e.g. healthy subjects vs. chronic pain patients). Apparent contradictions among empirical studies concerning the vivid memory of pain (e.g. Morley (1993) vs. Niven & Murphy-Black (2000)) might not then rely on confusions of different types of memory. They might instead be explained by their varying experimental settings. Systematically embedding the discussion of pain memory or amnesia into the available research data is thus of very high importance.

As a final note, I would like to comment on two minor issues. First, Montero claims that pain experiences are poor teachers because we are unable to actively conjure them. If we cannot

remember or imagine pain, then we cannot learn what it is like to have pain. One of the most important things that pains teach us is thus neglected. Pain constitutes a basic mechanism for protecting our physical well-being by guiding our behavior, short-term and long-term. A child that feels pain in the hand when touching a hot plate will immediately withdraw the hand and learn not to repeat such actions in the future. For example, seeing or imagining that one's own hand approaches a hot plate might not conjure the qualitative feel of pain. However, it brings the intrinsic strong motivation to not perform such action which seems to be of significant biological value.

Second, Montero addresses the issue of empathy, assuming that we are unable to experience the fundamental qualitative feel of another person's pain. At least some studies indicate that we are able to experience the affective quality of another person's pain, i.e. its unpleasantness (e.g. Singer et al., 2004). If the fundamental "ouch" of pain is considered identical to this unpleasantness or badness, then these studies suggest that we can feel what it is like for others to experience pain. If not, they still suggest that we can feel a glimpse of the unpleasantness of another person's pain. It may be that we cannot actively conjure the feeling of pain, but we can suffer along with our past selves or others in the light of sufficient external triggers. A more detailed consideration of the concepts of pain and empathy in the light of this recent empirical research would be needed to draw more definite conclusions.

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