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on Maja Smrdu's "Kaleidoscope of Pain"

The Experimental Phenomenological Method: A Scientific Approach Closer to the 5E Approach

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> Abstract • I argue that a research method solely focused on subjective experience (phenomenological method) provides scarce scientific evidence to evaluate its support for the 5E theory. Instead, I suggest the experimental phenomenological method, which integrates the scientific study of human subjectivity and research procedures based on experimental psychology.

«1» In her target article, Maja Smrdu proposes "to examine and evaluate empirical support for the 5E theory of pain by inducing possible new features from the interviews while deducing existing features from the theory" (§32). In this commentary, I argue that a research method solely focused on subjective data collection (phenomenological method) generates a vague and generic interpretation within the framework of the 5E theory, being unable to establish a clear and direct correspondence between subjective experience and their embodiment. For a more fruitful enactive analysis based on the first-person perspective, I show how the experimental phenomenological method allows the study of subjective ex-

perience through the phenomenological method together with research procedures coming from experimental psychology, providing a closer analysis with the dimensions of embodiment of the enactive approach.

What is the affinity between the phenomenological method and the 5E theory?

«2» In *The Embodied Mind* (1991), Francisco Varela, Evan Thompson, and Eleanor Rosch reject the Cartesian dualism widespread in cognitive science, according to which the mind is situated in the brain while the body is a biological entity. Following the phenomenologist Maurice Merleau-Ponty, they state that our physical body is a subjective body immersed in the natural, social, and cultural environment: a lived body that accompanies us in every instant of our existence and from which is originated every cognitive act.

«3» Five years after the book that gave rise to the enactive approach, Francisco Varela proposed the neurophenomenological program as the adequate method to scientifically explain human experience in its two essential attributes: biological and subjective (Varela 1996). However, the neurophenomenological program is not the only scientific method that can contribute to developing the enactive approach. In order to achieve her research objective, Smrdu instead applied the phenomenological method. It presents strengths in its experimental design, such as the phenomenological interview and the researcher's attitude during subjective data collection and analysis, making this a reliable method with scientific validity in studying human experience (Olivares et al. 2015). From my perspective, though, this method

presents limitations in finding structural compatibilities between subjectivity and the enactive approach. One of the main arguments is that the traditional phenomenological method puts all its research interest in subjectivity without assuming any of the methodological peculiarities in the natural scientific study of the human being. This implies that the only element available to the author to assess empirical support for the 5E theory of pain is the vivid and concrete experience of the person with chronic pain. These results do not provide any details on the person with chronic pain's physical characteristics or the environment in which the person is embedded. This creates a discrepancy between a research method focused on subjectivity and a theory that needs to be explained through the qualitative and natural attributes of the human being.

«4» Although the phenomenological method allows Smrdu to carry out the objective specified in her article, the limitations of this method cause the analyses to be very global and generic, losing the ability to relate the concrete experiences of people with chronic pain to the specific physiological, cultural and environmental aspects of that experience. Furthermore, this discrepancy creates an asymmetry between the concreteness and the singularity of subjective experience and its generalization in a much broader explanatory framework, being unable to make explicit how the body, the environment, and the subjectivity contribute to that experience. In other words, while the phenomenological result refers to the understanding of a particular and singular experience, the enactive analysis has a generic and broad character: blurring what the concrete contribution is between the ex-

perience and the neurobiological, subjective and environmental processes.

« 5 » Subscribing to the assumptions of the 5E theory implies that the qualitative dimension of experience is intimately intertwined with the processes of organismic regulation, sensorimotor coupling, and intersubjective interaction. Unfortunately, however, the phenomenological method does not encompass any procedure that provides continuity of analysis between the collection of subjective data and the natural sciences (e.g., biology, neuroscience). In experimental terms, this means that when the interviewer inquires about a pain experience, she does not experimentally control for the natural or the environmental context. More importantly, there is no procedure to verify that the relived experience in the interview comes from an experimental condition common to all participants.

« 6 » I share Smrdu's motivation to give more relevance to qualitative data in the 5E theory, and more so considering that this approach has neglected the studies of subjectivity (Stilwell & Harman, 2021). From my point of view, it is necessary to implement a research method that establishes a closer affinity between phenomenology and natural science, which would result in a more precise analysis of the natural and subjective attributes of the phenomena studied in the 5E theory.

Why does the experimental phenomenological method have a closer affinity with the 5E approach?

« 7 » As one of the possible approaches to achieve a better reconciliation of the phenomenological method with the research conditions of natural science, I propose the experimental phenomenological method. This method consists of discovering the structure of the experience as it appears in consciousness through a research design that incorporates the peculiarities of experimental psychology and phenomenological psychology (Vergara et al. 2022). This approach integrates two essential aspects of the 5E theory: on the one hand, a reliable and scientifically valid method for the study of subjectivity, and on the other hand, the manipulation of the factors that influence neurobiological responses through a laboratory-controlled environment.

« 8 » To analyze the characteristics of the experimental phenomenological method in detail is beyond the purpose of this commentary. Instead, I will focus on how a phenomenological interview can be generated under laboratory-controlled conditions, the results of which can be related to established knowledge in the natural sciences.

« 9 » As Smrdu details in §30 of her target article, the interview was focused on "one situation in which the participant's pain was reduced and one in which it was increased." The only condition for the participant to choose her experience was that it "had to be vivid, clear and as recent as possible" (ibid). From the point of view of experimental psychology, one has to critically note that the conditions under which the research objective is constructed lack adequate experimental control. Consequently, although all participants are being interviewed for a pain experience, the original experience from which the relived experience is drawn is not consistent among the study participants. For example, some participants may have experienced a sharp pain in a specific part of the body as their original experience, while others may have experienced a more extensive dull pain throughout the body. Some participants may have experienced their original experience alone, while others were accompanied by loved ones. It could also be that some people had the pain while lying in bed, while others experienced it during a sporting activity. Another possibility could be that some participants had their original experience of pain after having gone through a period of intense stress, while in others, the pain appeared during a period of personal calm. In conclusion, although all participants are interviewed about the pain experience (relived experience), each participant differs in the physical, cultural, social, and environmental context of their primary experience (original experience).

« 10 » In order to take control of the factors that influence the object of study, the usual procedure applied in experimental psychology is the construction and validation of a stimulus applied under laboratory conditions to all participants. This procedure would allow experimental phenomenology to create an experimental condition similar for all participants (e.g., chronic-

pain patients seated on a chair watching images on a TV screen) to examine their singular and concrete experiences while looking at the stimuli.

« 11 » Another key element to achieve better reconciliation of the phenomenological method with the analysis of the 5E theory is the selection of an experimental paradigm with scientific validity that consistently produces neurobiological responses (e.g., Burgmer et al. 2010; Taylor et al. 2016). In this way, the phenomenological findings of the participants' relived experience could be directly related to neurobiological findings. Recently, our research group implemented the experimental phenomenological method in the study of empathy for pain in healthy young adults based on this procedure (Vergara et al. 2022¹). In Martínez-Pernía et al. (2020) we have also used this experimental design in neurodegenerative diseases to collect third-person data. The phenomenological results of these studies allowed us to relate the phenomenological attributes of the experience of empathy for pain with the brain activity and physiological responses of studies developed in social neuroscience. In the same papers we presented how these subjective attributes are related to the three dimensions of embodiment of human consciousness (organismic regulation, sensorimotor coupling, and intersubjective interaction).

« 12 » To conclude, in her article Smrdu draws attention to a crucial topic in the study of pain. She collected reports on the subjective experience of people with chronic pain through the phenomenological method, and analyzed how these data could be associated with the 5E theory. In order to proceed more satisfactorily, I suggested using the experimental phenomenological approach as a research method, which is closer to the theoretical and empirical principles of the enactive approach. This method would allow greater control over the study variable (subjective experience of chronic pain) and data collection on an experimental condition common to all participants.

1 | Another paper titled "I am feeling tension in my whole body": An experimental phenomenological study of empathy for pain" by Victoria Silva-Mack et al. is currently under review.

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Can There Be a Unified 5E Theory of Pain?

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> Abstract • We agree with Smrdu that pain cannot be reduced to a neurophysiological event and we welcome a (micro-) phenomenological investigation of pain experience. However, we do not think such an investigation can provide sufficient support for either a 5E theory of pain, or (just) an enactive one. A 5E theory of pain would require a clarification of how the 5Es fit together. An enactive account would require a “circulation” between first- and third-person data.

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«1» Maja Smrdu situates her target article in the context of so-called “4E approaches” to cognition, according to which cogni-

tion is embodied, embedded, enactive, and extended. Following Peter Stilwell and Katherine Harman (2019), she also introduces a fifth E and claims that cognition is emotive. These approaches all oppose internalist or “brain-based” accounts of cognition (Newen, De Bruin & Gallagher 2018). Accordingly, Smrdu argues for a 5E theory of pain that she explicitly introduces as an alternative to biomedical and biopsychosocial models. Whereas the former focus only on the neurophysiology of pain, the latter also take psychological and social factors into account, but compartmentalize them and ultimately prioritize neurophysiological factors (§8). Smrdu's 5E approach is meant to emphasize that pain cannot be reduced to its neurophysiological underpinnings. To support this point, she reports and discusses the results of a micro-phenomenological study of chronic pain she conducted. She argues that this study supports a 5E approach to pain because the participants' reports can be analyzed with reference to notions of embodiment, embeddedness, enaction, extension, and emotion.

«2» We agree that pain cannot be reduced to neurophysiological processes, and we welcome a phenomenological investigation of pain experience. However, we think that Smrdu's proposal has a number of problems. First, we do not think that a phenomenological/qualitative investigation *per se* can lend support to a 5E theory of pain. 5E approaches are not just about experience, but about the physical vehicles or underpinnings of a certain mental or experiential phenomenon. Exploring participants' pain via micro-phenomenology can provide interesting insights into their experience (including their experience of the body and the environment), but cannot answer the question of whether we should regard bodily processes and/or parts of the environment as proper parts of the physical underpinnings of pain. Rather than supporting a 5E theory of pain, what Smrdu has done is interpret the results of her phenomenological study of pain experience through the lenses of the concepts of embodiment, embeddedness, and so on. This approach may be useful to analyze pain experience, but is far from lending support to a 5E theory of pain.

«3» In addition, it is not clear how exactly Smrdu thinks of the relation between the 5E approach and enactivism. As she