the experience may have been "overwritten" by strong negative feelings occurring at the same time. Here, physiological data (or a procedure prompting participants to report their experiences immediately after the surprise feeling emerges) may have come in handy. As I mentioned before, the experience of surprise should not only be analyzed for the most blatant negatively marked stimuli, but it should be at least compared with other – neutral and positive – stimuli. In that way, the category of surprise may be distinguished from strong emotions, which are naturally triggered by graphic pictures, and are sometimes accompanied by the feeling of surprise. In the current case the cognitive aspect of being surprised (if not the category as a whole) is totally overshadowed by strong, negative emotions.

« 9 » The generative method presented in the target article is a promising step towards understanding the nature of relations between the two seemingly incompatible sets of data. However, in order to become a leading method in the field the authors will have to deal with its detriments.

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Progress in First-Person Method: A Few Steps Forward, a Few Steps Back

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> Upshot • Supplementing physiological measures with first-person data involves several benefits and challenges. The collection and analysis of the two types of data might not be optimal within the same procedural framework. Therefore, the synthesis of the two remains problematic.

« 1 » Writing about research as a work in progress, although rare, has several merits. It abandons the pretense of viewing one's work as a finished product; it cuts down the energy spent on defending one interpretation of results against alternatives; and, it orients attention to the approach, method, and possible outcomes of research. We can see, in addition to what the researchers have actually done, the line of reasoning (itself as a work in progress) that attempts to justify their pursuit. In this commentary, while applauding Natalie Depraz and her co-authors for their comprehensive and ambitious program, I offer a few comments and questions that they might wish to consider as they continue their interesting work.

« 2 » The collection and analysis of first-person data, presented in the target article, offers a number of advantages. First, it can capture differences in how participants experience the procedure (§55). The same image, for instance, could evoke a more or less cognitive, visceral, or moral response across different participants. Second, the method can capture ambiguities or instabilities in experience, as in the case of not knowing one's emotional response at first (§42). Third, the method can capture the reflections participants may have upon their immediate experience, as in the case of talking to oneself, reflecting on the sequence of sub-components of an experience, e.g., first stunned, then outraged (§§52f).

« 3 » Despite the richness of the first-person data, the procedure that provided the basis for this data, i.e., the situation upon which participants were asked to reflect, resembled the procedures commonly used in experimental research. Specifically, participants sat in front of a screen and watched a series of words and images, which aimed to induce a feeling of surprise in them. The reason for controlling the properties of events in an experimental procedure is the constancy such control offers over the immediate, low-level physiological and sensorimotor response. The same control may not be necessary if one aims to study attributes of experience and behavior, which (a) emerge later than the immediate response and (b) depend on the particularities of each individual's history. For example, investigation of the neural response in the primary visual cortex would benefit from controlling the exact features of the visual events used in the investigation. But studying the meaning of jealousy, enjoyment, or surprise might be hindered by the same kind of control, because the meaning and the particular sensorimotor associations of these concepts vary across individuals. In order to achieve some degree of invariance in first-person data with regard to, say, the meaning of jealousy, it might be more effective to allow variance at the level of particular events. That is to say, to obtain general attributes of the experience of jealousy, it might be most effective to allow participants to talk about their experience of jealousy, based on the particularities of their life history (Giorgi 2009). This leads to my first question: **Why did the authors employ such a uniform, controlled procedure in their attempt to capture the experience of surprise? (Q1)**

« 4 » Related to my first question, it is worth pointing out that the procedure confounded surprise with negative valence, a decision that seems far from trivial given the authors' focus on depression. Needless to say, not all instances of surprise (if we define surprise as violation of expectation) are negative. The reason for not dissociating surprise from negative valence was not clear.

« 5 » Turning to the first-person data, there appears to be no limit to how far the dissection and analysis of this data could go. The categories of experience, listed in the target article, could be further subject to analysis and combination, producing an increasingly large set of categories. This, of course, is not a new problem. The style of early experimental psychology, as espoused by

Edward Titchener during the late-19th and early-20th century, aimed precisely at analysing first-person data in terms of elementary components (Titchener 1898). The method resulted in an impractically large number of so-called "elements" without a clear understanding of how the elements enhance our understanding of actual lived experience. What was neglected, perhaps above all, was that the list of elements was not the result of a finite process of discovery, but an infinite process of creation. I believe Depraz et al. acknowledge this when they describe their approach to first-person data as generative (§§12f), but I am unsure whether they embrace the implications of this assertion. **Given that the first-person domain does not consist of a finite set of facts, whose discovery would constitute the success of the research program, what criteria do we use in selecting and organizing the data? (Q2)**

« 6 » From a different standpoint, one could also ask whether certain assertions require the collection of first-person data. **To what extent are the first-person results empirical, and to what extent are they deducible from a set of common-sense axioms (Smedslund 1997)? (Q3)** At the outset of the target article, the authors assert that their approach does not involve "deductive a priori" analysis (§3). Yet, other statements in reference to the first-person data do not fit this initial characterization. A statement is not empirical if its negation leads to a contradiction. Let me provide two examples.

« 7 » The authors state, as a hypothesis, that the more striking an event, the better it would be recalled (§10). If, however, we negate the statement we would have to say, *the more striking the event, the less it would be recalled*. This statement is a contradiction, by virtue of the conceptual (a priori) relationship between the concepts *striking* and *memorable*. The original statement is, therefore, not contingent and it cannot serve as a hypothesis. Similarly, the authors claim to have discovered that in a series of events described as "surprise," one does not first encounter an emotional response, but a perception (§62). Put differently, the emotion of surprise depends on a prior act of perception. Negating this statement, we would have to say, *the perception that results in the emotion of surprise (and, therefore, causally and temporally precedes it) has to come after the emotion*. This would be a contradiction, since X cannot both cause Y and occur after Y. Therefore, the original statement is not empirical.

« 8 » But perhaps the central vulnerability in the program is that it does not yet contain a method for synthesizing first- and third-person data. Both sets of data are open to analysis in a way that does not require the other, and it is difficult to imagine their synthesis. One obstacle against synthesis is the delay between the time at which the two sets of data are collected. The third-person data is collected spontaneously upon encountering the visual events on the screen, whereas the first-person data is collected retroactively during an interview. This limits the applicability of the term "correlation" when referring to the two data sets. In clarifying the future steps of their method, the authors would have to demonstrate the ways in which first-person findings could constrain interpretation of third-person data, and vice versa.

« 9 » In short, the present formulation of Depraz et al.'s research program encounters several challenges: (a) the role of the research procedure used to induce the experience of surprise needs further justification, and it would perhaps need to be augmented with a procedure that is less uniform and controlled (at the low-level physical features of stimuli); (b) the seemingly infinite generation and analysis of first-person data requires additional principles for selection and organization; (c) the empirical status of first-person results ought to be distinguished against the conceptually necessary, a priori, statements that do not require data; (d) the method of synthesising the first- and third-person data requires a clearer formulation. However, such challenges are to be expected in such a remarkable program of research. And I eagerly await the upcoming developments in the authors' project.

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Unforeseen Influences on the Classification of Categories Reflecting the Structure of Experience

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> Upshot • The generative method outlined in the target article produces some interesting results, demonstrating the value of cardio-phenomenology. The proposed division of categories reflecting the structure of experience into sub-categories suggests that prior theoretical commitments may have influenced the process of analysis in ways the authors might not have foreseen or intended. This commentary discusses potential areas for future work, proposing that some modifications to the methodology might lessen possibly unforeseen influences on the central process of classification.

Introduction

« 1 » Natalie Depraz et al.'s target article is a complex and ambitious piece of work, part of a wider body of research by these authors, incorporating several potentially fruitful strands. The content I will focus on in this commentary is the division of the generic categories reflecting the structure of experience. These initial categories – time; language; body; emotion; and cognition – were identified a priori by the authors (§12). They were then divided into new sub-categories that were generated by the analysis of micro-phenomenological interviews about subjects' experiences of viewing paired images in conjunction with data about physiological responses collected during the viewings. I will discuss both the specification of the original categories and their sub-division in the light of the results of the study. I also wish to explore briefly which aspects of the methodology of the study itself might potentially be modified in future work to produce an even more illuminating structural framework.

The selection of initial categories

« 2 » I will start by considering the extent to which the new categories can legiti-