An Analysis Procedure for the Micro-Phenomenological Interview

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> Context • The advent of the embodied approach to cognition produced a paradigm shift giving experience a primary place in the different fields of inquiry. This gave rise to the need to develop methodologies for the study of experience from a first-person perspective. In this context, micro-phenomenology emerges as a methodological tool that allows the study of experience in a systematic and rigorous way. **> Problem** • To reproduce and share the micro-phenomenological analysis – crucial for the intersubjective validation of micro-phenomenological research – it is relevant to have a procedure that allows us to trace the different steps of the analysis. As many of the stages of the micro-phenomenological analysis remain implicit, a step-by-step description has not yet been produced. We describe the procedure of analysis of the micro-phenomenological interview, step by step, thus complementing the micro-phenomenological analysis method. **> Method** • In order to specify the analysis procedure, we used the micro-phenomenological interview to explore our experience of abstracting, developing the example of an analysis carried out in the context of a specific investigation. **> Results** • We propose an analysis procedure organized in a concertina-shaped structure. It has fifteen stages organized into five sections. Each surface of the concertina corresponds to one stage of the analysis. We identified grouping as an abstraction operation that participates in the very early stages of the categorization process. This operation participates in the categorization mechanism we called "iterative interrogation." Moreover, we propose that the refinement of the structures results from a process that involves recursively contrasting the description of the experience, the understanding we have gained from it throughout the analysis and the resulting structures. **> Implications** • The proposed procedure allows the tracing not only of the different steps of the analysis, but also of the criteria used to solve the numerous issues that arise throughout it. The iterative interrogation mechanism makes it possible to reveal, in an orderly manner, the principles used by the analyst to establish the diachronic and synchronic units. This greatly facilitates the communication of a process that is highly implicit. We hope this procedure will contribute to the establishment of standards in micro-phenomenological research, facilitating the exchange between researchers and thus consolidating the intersubjective validation procedures that make it possible to evaluate the quality of neuro- and micro-phenomenological research. **> Constructivist content** • The present article proposes a concrete procedure to trace the researchers' criteria in the process of building generic structures of experience. This procedure facilitates the inclusion of the researcher's subjective stance in the construction of knowledge. **> Key words** • **Micro-phenomenology, neurophenomenology, explicitation interview, iterative interrogation, first-person research, embodied approach, categorization, experience, synthesis process.**

Introduction

« 1 » The advent of the embodied approach to cognition produced a paradigm shift giving experience a primary place in different fields of inquiry, such as cognitive science (e.g., Varela et al. 1991; O'Regan & Noé 2001), linguistics (e.g., Lakoff & Johnson 2003), anthropology (e.g., Ingold 2011), affective neuroscience (e.g., Colombetti 2013) and environmental architecture (e.g., Donohoe 2017), to name but a few. This paradigm shift converges with new phenomenological approaches in medicine, psychology and psychiatry that give a central role to body experience for the understanding of health in general, and mental health in particular (e.g., Fuchs & Koch 2014; Fuchs & Schlimme 2009; Khalsa & Lapidus 2016; Levine 2010; Mehling et al. 2011; Caldwell 2016). These theoretical currents have given rise to the need to develop methodologies for the study of experience from a first-person perspective.

« 2 » In this context, micro-phenomenology emerged as a methodology aimed at allowing the study of experience in a systematic and rigorous way. It was originally created in 1994 by Pierre Vermersch as "l'entretien d'explicitation" (*explicitation interview*, Vermersch 2011) and then developed further by Claire Petitmengin (2006) in the area of cognitive sciences. More spe-

cifically, micro-phenomenology unfolds in the context of neurophenomenology, a research program proposed by Francisco Varela, whose aim was to integrate the study of experiential aspects of cognitive phenomena with their neurophysiological correlates, also called "third-person" data (Depraz, Gyemant, & Desmidt 2017; Le Van Quyen & Petitmengin 2002; Lutz, Lachaux, Martinerie, & Varela 2002; Varela 1996). In recent years, micro-phenomenology has demonstrated the viability of the – often-questioned – study of experience from a first-person perspective (Petitmengin et al. 2013), and has also mobilized deep reflection around the challenges this type of research poses (Bitbol & Petitmengin 2011, 2013; Petitmengin & Bitbol 2009; Vörös 2014; Valenzuela-Moguillansky, Vásquez-Rosati & Riegler 2017; Bitbol 2017; Petitmengin 2017; Zahavi 2011).

« 3 » The objective of the micro-phenomenological interview is to obtain detailed descriptions of single experiences, focusing on the procedural dimension and from an embodied perspective (Vermersch 2011; Petitmengin 2001, 2006). In this way, aspects of the experience that are implicit, or that unfold in a pre-reflective dimension, are unveiled. To achieve this, it is necessary, when conducting a micro-phenomenological interview, to guide the interviewee towards the evocation of a specific experience. Evocation can be described as the process of coming into sensory-motor contact with one's past experience, thus recalling it with the sensory (visual, auditory, kinesthetic perceptions, internal sensations, etc.) and motor (movements, muscle tone, or other signals that may account for sympathetic or parasympathetic activity) aspects it comprises. Thus, with a range of specific tools (Vermersch 2011; Petitmengin 2006), the interviewer helps the interviewee to unravel and describe a given experience.

« 4 » In this way, the micro-phenomenological interview avoids the description of experience *in general* or in a depersonalized way, and insists that the description of an evoked experience be concrete and embodied. It also avoids the description of beliefs or judgments pertaining to the experience being studied, as well as the theoretical knowledge that the person may have in relation to it, or what Vermersch (2011) calls "satellite information" of the action. Consequently, the micro-phenomenological analysis focuses on the procedural description of a particular experience, approached from an embodied perspective.[1]

« 5 » Although the conducting of a micro-phenomenological interview requires always being in contact with unique experiences, this method of analysis allows for the identification of their *invariants* or regularities among a group of experiences. This process allows the identification of structures of a *type* of experience. By "structure" we refer to "a network of descriptive categories, independent of the experiential content" (Delattre 1971). The analysis can be done both in the context of case studies, where a *specific structure* of an experience is identified, and in studies involving the analysis of a group of interviews – either from several experiences lived by the same person or from several experiences lived by different people – where the *generic structure* of a type of experience is identified.

« 6 » The micro-phenomenological analysis uses two analytical axes that are also present in the conducting of the interview: the diachronic and the synchronic. The *diachronic axis* refers to the temporal development of a given experience, and allows for the characterization of its genesis and development. The *synchronic axis*, by contrast, allows for the characterization of the experience or an aspect of it at a given moment. In the context of neurophenomenological research, both dimensions are fundamental to establishing a dialogue between the experiential structure of a given experience and the third-person data, which also encompasses its temporal development.

« 7 » In order to understand what the process of constructing the structure of an experience is about, we will draw an analogy with the construction of a terrestrial map. We can say that the earth is a continuum of matter whose composition, height, depth, etc., varies along the earth's surface. In the construction of a map we identify landmarks, borders, geographical features, etc., that allow us to represent a given territory and use this representation as a guide. In the micro-phenomenological analysis – although experience can be considered as an ever-changing stream (James 1891) – milestones are identified that make it possible to fragment the description of an experience into diachronic and synchronic units in order to build a structure (or map), and use this structure as a guide in the study of that type of experience.

« 8 » Just as there are different kinds of maps according to the objective of the cartographer (physical, political, climatic, etc.), the construction of the structure of the experience will be guided to a great extent by the objective of the sort of research we are conducting. This is why, as will be emphasized throughout the description of the analysis procedure, the objective of this research will be our great compass throughout the analysis. However, the map should not make us lose sight of the territory. Although it appears obvious, it is relevant to emphasize that another fundamental point of reference in the analysis is the data from the transcribed interview.

« 9 » It is also important to note that there may be aspects, more implicit than the specific objective of the map, that influence the representation of the territory. For example, we are used to seeing world maps where the northern hemisphere is in the upper half of the map, the southern hemisphere in the lower half and Europe in the center. However, the world map could also be composed "upside down" and still represent the territory. This is also the case with the construction of the structure of an experience. Since the categorization mechanism that underlies it is deeply rooted in our sensory-motor development, we may not be aware of our categorization patterns

1 | The above-mentioned features distinguish micro-phenomenology from other interview and analysis methods, particularly with regard to its focus on the procedural dimension of experience and the epistemological framework from which it arises, which is that of the natural sciences. Even though some of the micro-phenomenological analysis steps and features converge with those of some qualitative analysis methods, to equate micro-phenomenology with qualitative methodologies without considering those particularities might be misleading. Therefore, we consider it more cautious and precise to present it as a methodology in itself. Although relevant, a thorough analysis of the similarities and differences between micro-phenomenology and other qualitative methods is beyond the scope of this article.

(Lakoff 1987). Thus, it is possible that different researchers might identify and organize the diachronic and synchronic units differently according to their categorization patterns and the resulting structures would still be consistent with the experience they were studying. Consequently, the verification of the analysis results relies on the consistency between the resulting structures, their ability to guide us in the elaboration of new interviews regarding the same type of experience, and the new structures resulting from these interviews. In other words, it relies on the capacity of the proposed structure to guide us in the understanding of the phenomenon under study. As Petitmengin and Michel Bitbol put it, for the interview process, in the micro-phenomenological approach "[t]he validity of a description is not evaluated by comparing it with its hypothetical *object,* but according to the authenticity of the process that generated it" (Petitmengin & Bitbol 2009: 390; see also Bitbol & Petitmengin 2013). Similarly, in the analysis process the validity of the proposed structure is not evaluated in terms of correspondence with a given experience but according to the authenticity of the process that generates the structure, also called "performative consistency" (Petitmengin, Remillieux & Valenzuela-Moguillansky 2018). One of the modes of evaluation of the analysis process performative consistency is intersubjective validation, which refers to the researchers' triangulation of the analysis process and its results (Petitmengin et al. 2018).

« 10 » As for the categorization process, many stages of the micro-phenomenological analysis remain implicit, difficult to communicate, so its "step-by-step" description has so far received little attention in the literature (Petitmengin & Bitbol 2009; Petitmengin et al. 2018). In order to be able to reproduce and share the process of analysis – crucial for the intersubjective validation process – it is relevant to have a procedure that allows us to trace not only the different steps of the analysis, but also the criteria that are used to solve the numerous issues that arise throughout it. In line with this challenge, the aim of the present article is to trace a concrete analysis by describing, step by step, the procedure of the micro-phenomenological analysis method (Petitmengin et al. 2018).

Set-up

« 11 » In order to specify the analysis procedure, we used the micro-phenomenological interview to explore our experience of abstracting. We went through the analysis steps as previously described by Petitmengin (1999; 2001) and as developed throughout our experience using this method (e.g., Valenzuela-Moguillansky 2013; Valenzuela-Moguillansky, O'Regan & Petitmengin 2013; Vásquez-Rosati 2017) and applied them to a set of interviews we had collected for a specific study. As we went through the different steps of the analysis process, we interviewed and audio recorded each other. We then used these recordings to describe the analysis process and to identify the aspects of it that still remained implicit, particularly the categorization mechanism.

« 12 » As a result, in the present article we specified a fifteen-stage procedure that was organized into a concertina-shaped structure (Figure 1). Each surface of the concertina corresponds to one stage of the analysis. We identified a categorization mechanism that we called "iterative interrogation" that refers to the process of interrogating the data, allowing for the disclosure of the researcher's categorization path.

« 13 » The concertina-shaped structure permits the tracing of the analysis process whenever necessary, allowing for the evaluation of the rigor and coherence of our procedure, in order to be able to share it with other researchers and intersubjectively validate our results. As we will see, the process of iterative interrogation enables us to disclose the criteria used by the analyst to establish the diachronic and synchronic units, greatly facilitating the possibility of sharing and communicating the analysis process. Thus, instead of proposing fixed criteria that systematize the analysis, the proposed procedure provides a tool to unveil and trace, in an orderly manner, criteria that are in accordance with the coherence of each interview.

« 14 » In order to describe the proposed procedure, in this article we will go through each of the fifteen stages of the analysis by developing a concrete example. As said above, it is an example carried out in the context of a specific study. We will not go into the details of the fundamentals of such

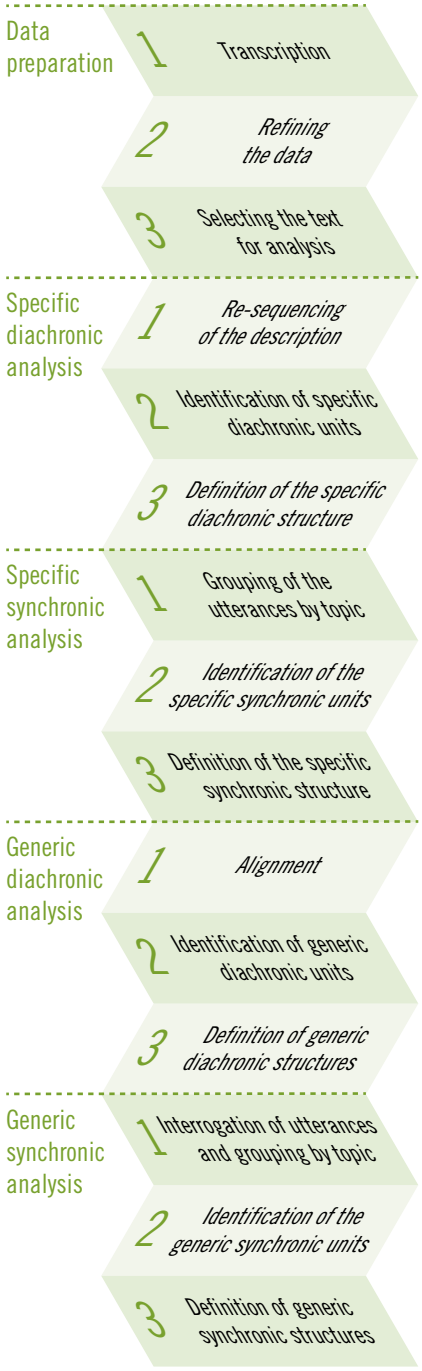

Figure 1 • Organization of the analysis procedure in a concertina-shaped structure. Each surface of the concertina corresponds to a stage of the analysis. The analysis procedure is organized into five sections. Doubts or issues that may arise during the analysis and criteria used to solve them are also noted at each stage.

a study, as this is not the purpose of this article. However, since it will help us to understand our decisions throughout the analysis, it is important to briefly contextualize it and specify the research question.

« 15 » The motivation behind the study was to understand what is measured when we measure interoception by the heartbeat detection task (HBDT). Interoception is a construct that refers to the sensitivity of the body's internal signals (Craig 2002). HBDT is an experimental paradigm widely used to measure interoception (e.g., Schandry 1981; Terhaar et al. 2012; Tsakiris, Tajadura-Jiménez & Costantini 2011). In this task, a person is asked to count her heartbeats – without searching for a pulse manually – during a certain time interval and then the number of beats counted is contrasted with those recorded by an electrocardiogram. The closer the number of beats the person counts to the number of beats recorded, the greater the interoception. What it means for a person to have a higher or lower interoception is a subject of debate in the context of mental-health research. Studies have shown incongruity in relation to the "adaptive" role of interoception measured by the HBDT (Khalsa & Lapidus 2016; Mehling et al. 2011; Schandry 1981). As the construct of interoception is highly related to the method used to measure it, we wanted to understand what is measured when one measures interoception by the HBDT. More specifically, what do people do when they are asked to count their heartbeats? In order to address such a question, we interviewed fifty-five participants using the micro-phenomenological interview method.

« 16 » The first nine stages of the proposed procedure refer to the analysis of a single interview or *specific analysis* and are developed from the analysis of Carmen's interview.[2] The last six stages of the analysis refer to the comparison of the structures of a group of interviews or *generic analysis,* and are developed by comparing four interviews. Carrying out the generic analysis with more interviews would make the task of illustrating the procedure difficult and would make the article very extensive. However, in the final stages we refer to some results obtained from the analysis of a larger number of interviews.

Data Preparation

Stage 1: Transcription

« 17 » The first stage in analyzing an interview is to transcribe it entirely. The type of transcription we perform is verbatim, orthographic transcription, which includes sounds and marks that are part of spoken language like the ones detailed in Table 1. If the interview is video recorded, it is also advisable to include in parentheses specific gestures that the person makes to describe a certain aspect of the experience. For example, it is very common to describe the location of a body sensation without naming the part of the body but through gestures. If the interview is not video recorded, it is useful for the interviewer to annotate the type of gestures made during the interview. In Table 1 we present the proposed conventions for transcription (adapted from Preti 1999).

« 18 » Although the task of transcription can be slow and tedious, it is useful to become familiar with the interview from an analytical perspective. At this first stage, we can already record initial impressions in relation to the experience described, for example, about the intensity and quality of the evocation.

« 19 » Once the interview is transcribed, each line of the whole document is automatically numbered. This has two objectives: firstly, to maintain a reference of the original order of the interview, since during the successive steps of the analysis the interview is fragmented and reorganized. Secondly, to easily find the different utterances used to exemplify each category in the original interview.

Stage 2: Refining the data

« 20 » At this stage we identify the information that is not used in the analysis. As described in the introduction, the micro-phenomenological interview focuses on the procedural description of single experiences, described from an embodied position. Therefore, there is one type of information that is used and another that is discarded from the analysis.

Listening to the audio

« 21 » Firstly, it is suggested that analysts listen to the audio of the interview again while reading the transcription. Although the audio is heard repeatedly during the transcription process, listening to the entire interview again in its normal flow is a fundamental step in order to be able to identify subtleties in the description. In this step it is opportune to record information regarding, for example, specific emphases made by the interviewee or pauses that are important to the understanding of the meaning of the transcript. It is also important to correct or complete the transcript if necessary. This step is especially advisable if the transcript has been relegated to a third party, as it allows us to familiarize ourselves with the interview from an analytical perspective.

Identifying the types of information

« 22 » In order to carry out a procedural description, the interviewee must come into contact with and refer to a specific and single experience. For this, the interviewer must facilitate this process through specific interventions that favor the connection with the experience and minimize induction (Vermersch 2011; Petitmengin 2006). This is why, when identifying those parts of the text that are not used in the analysis, it is essential to take these conditions into account. Descriptions that refer to experiences "in general," or descriptions where the interviewee appears through indefinite pronouns such as "one," are likely to be discarded from the analysis. Descriptions resulting from an inductive question by the interviewer are also considered suspicious and will probably be discarded from the analysis. However, in the latter case, the interviewee may correct the interviewer's induction, which indicates a connection to the experience described and therefore their description might remain for analysis. Finally, satellite information of the action is not what relates to the procedural dimension but what is different from it. Satellite information includes the description of the context in which a certain experience takes place, the description of theoretical knowledge, as well as the beliefs or judgments that we may have in relation to what has been narrated (for more information on the definition of each of these types of information see Vermersch 2011). Although the

2| The participants' names have been altered for reasons of privacy. The whole interview can be found in the supplementary material.

Occurrences	Signs	Example
Misunderstanding of words or segments	(not understood + time stamp)	Yes, so then (not understood 00:12:34) and I try to get in contact with my body*
Emphatic intonation	Capitalize	Or FEEL it, at least. Maybe not listen, but FEEL like something physical
Vowel or consonant extension	:: it can increase to :::: or more	No, it's not a::: GREAT anxiety
Voice volume decreases	Smaller font size	I imagined a darkness... as the wall of, of, of, like traveling in a, in a space, like the digestive tract*
Slowed syllabification/Speech	-	It's i- in co-lors, it's in colors, but not too many because it's a little dark
Short pauses	…	Hmm… I imagined... the walls inside my body
Long pauses	… time in seconds"…	Hmm… 5" how do I connect with my body? How do I connect with feeling?
Para-verbal expressions	((lowercase))	I don't know how really, it's the first time I try it ((laughs))!
Non-verbal expressions (Information provided by the interviewer if a third party transcribes the interview or by video recordings)	[lowercase]	I also tried to go to the, to this area [she indicates with both hands the sides of her neck]
Overlapping, simultaneous voices	Linking the lines	Interviewee: and then [I disconnect from Interviewer: [so you Interviewee: exterior*
Comments that break the thematic sequence of the description: thematic deviation	-- --	I concentrate, I try to disconnect from the outside -- can you pass me that glass please of water please -- I close my eyes and I try to feel the inside of my body*

Other specifications:

- Capital initials for proper names or acronyms only
- Numbers are written in words
- It is possible to combine signs. For example: eh::: … (extension and pause)
- For local speech modes, write the word as it is spoken. The first time that the word appears, write the meaning of it in a footnote.
- Interviewer interventions in bold

Table 1 • Conventions for micro-phenomenological interview transcription. Most of the examples in this table are from the interview that can be found in the supplementary material. However, there are some occurrences that are not present in that interview. In order to exemplify them, we created fictitious examples that are indicated with an asterisk. All translations from the original Spanish are by the authors.

contextual information is considered as satellite, it can be useful for noticing the intensity and quality of the evocation, as well as for indicating the global sense and temporal aspects of the description of the experience. In this sense, distinguishing and maintaining this type of information is recommended in the initial stage of the analysis process.

Stage 3: Selecting the text for analysis

« 23 » Once the different types of information provided by the interviewee have been identified, the fragments describing the procedural dimension of the experience are selected. For a detailed description of how to evaluate the reliability of the descriptive statements see Petitmengin et al. (2018). As mentioned above, although the description of the context is considered satellite information to the procedural dimension of the experience, it is selected at this stage of the analysis as it is useful to have a reference to the overall sense of the description of the experience. If necessary, the questions asked by the interviewer are also selected in order to understand the meaning of a fragment of the interview that is not understood on its own.

« 24 » The cleaning of the data and the selection of the text for analysis can be seen as two sides of the same coin, in the sense that by identifying the satellite information we are, consequently, also identifying that which is not. However, it is important to carry out this step in two different stages as it allows us to keep a record of the criteria used to identify and discard the fragments of the interview, which in turn serves in the process of validating the results.

Selection of utterances

« 25 » When selecting the text, it is convenient to do so in the form of utterances, defined as minimal linguistic units pragmatically interpreted (Austin 1962), i.e., not necessarily anchored to syntactic and/or semantic properties (Moneglia 2011). This facilitates the subsequent steps of the analysis, such as the reorganization of the description of the experience according to its temporal

development and the synchronic analysis. As shown in later stages of the analysis, utterances that exemplify a category become "descriptemes" (Petitmengin et al. 2018). Each utterance should be accompanied by its line number as illustrated in Table 2. This leaves a record of its original location (in the full interview) and facilitates reference to the utterance at later stages of the analysis.

Specific diachronic analysis

« 26 » The diachronic analysis seeks to understand the temporal evolution of the described experience. For this purpose, the description of the experience is broken down into diachronic units[3] that are hierarchically organized according to their level of detail or fragmentation (see Box 1 for a description of the operations of abstraction). In the present section we describe this process.

Stage 1: Re-sequencing of the description

« 27 » Since the chronology of the interview is not the same as the chronology of the described experience, the first stage of diachronic analysis is to organize the selected utterances according to the chronology of the latter. We have included this stage within the diachronic analysis and not in the preparation of the data, since it involves, although perhaps in an implicit manner, a separation of the description into units and its subsequent re-organization. In this sense, this process involves analytical decisions in relation to the temporal organization of the experience, and thus the first stage of the diachronic analysis.

Identification of moments

« 28 » The first step of the re-sequencing of the description is the identification of the different moments of the experience. With "moments," we are referring to an unspecified diachronic unit, since it does not have a precise place in the sequence of the experience nor a specific duration. For instance, in Table 2, we see that the utterances 6, 25, 25.2 and 26 are grouped as corresponding to the same moment.

« 29 » To identify the moments, the list of selected utterances is contrasted with the complete interview and we assign a place to each utterance in the temporal evolution of the experience. As shown in the next stage, if we ask ourselves what makes us distinguish a group of utterances as referring to a certain moment, we see that what we do implicitly is find certain indicators of temporality such as actions, events or linguistic markers.

« 30 » Another aspect to consider is that an utterance may refer to aspects of the experience that are present in more than one moment (for example, a sensation). In this case, the utterance can be replicated with its line number and included in the different moments in which it is present.

Reorganization of moments

« 31 » Once each utterance has been assigned a moment in the described experience, we proceed to reorganize them according to that order. If we are working in a spreadsheet processor, that can be done automatically with the "sorting data" tool.

Stage 2: Identification of specific diachronic units

« 32 » This stage corresponds to the iterative interrogation of the data, which allows for the increasingly fragmented identification of the diachronic units that characterize the temporal evolution of the experience. Thus, at this stage, the diachronic units that composed the diachronic structure of the experience are identified: *phases*, *sub-phases*, *sub-sub-phases* and so on. Generally, a phase corresponds to a set of processes, a sub-phase to a process and a sub-sub-phase to an action. The number of levels of diachronic units present in the structure of an experience and their definition (whether they correspond to a set of processes, a process or an action) depend on the level of detail of the information provided by the interviewee in relation to the temporal evolution of the experience described.

Grouping of moments

« 33 » The result of the previous stage was a list of utterances with their respective line numbers organized according to the chronology of the experience. In this step, these utterances are grouped in order to identify the different diachronic units that make up the temporal structure of the experience. Grouping refers to the operation in which we associate objects in groups without having previously defined the class or category to which they belong. Different from classification, in which we assign an instance to an already established category – in this case a diachronic unit – in grouping (also known as *clustering*) we allow for the association of perhaps heterogeneous elements without necessarily explicitly knowing the grouping attribute yet (Taivalsaari 1996). In other words, the utterances are related by their *extensional* rather than by their *intensional* properties. An *intensional* definition describes a means for determining a given category or concept, while an *extensional* definition describes explicitly the particular objects that the category or concept denotes (Bourdier et al. 2010).

Iterative interrogation

« 34 » In this step the utterances are interrogated in order to make their grouping criterion explicit. For this we ask ourselves: what makes us identify these utterances as part of the same group? This process also allows us to confirm or modify the grouping we made in the previous step. As Table 2 shows, this process results in an incipient diachronic unit (IDU): incipient because throughout the iterative interrogation it will probably be redefined.

« 35 » Generally, the grouping criterion involves the presence of actions, events or the description of states. By "actions" we mean physical activities such as closing one's eyes, running, standing, etc.; materialized actions such as writing, reading, drawing, etc.; and cognitive activities such as thinking, feeling, becoming aware, etc. (Vermersch 2011). The latter can also be referred to as "inner gestures" (Behnke 2012). By an event we mean some occurrence that changes the state or flow of experience. It is also possible for a moment to be identified by the description of a state, such as *Desire*

3| The terms *synchronic unit* and *diachronic unit* are equivalent to the terms *synchronic descriptive category* and *diachronic descriptive category* used in Petitmengin et al. (2018). We refer to *units* since this term also permits us to refer to associations of utterances that have not yet formed a category in its strictest sense, as in the early stages of the categorization process.

#	Utterances	M	Criteria	IDU
6	Hmm, when Carla gave the start signal, hmm... I first felt like an anxiety	1	The utterances talk about the presence of an anxiety or desire to accomplish the task	"Desire to accomplish the task"
25	No, it's not a::: GREAT anxiety.	1		
25.2	Hmm:::... but it's like a desire to fulfill hmm, the task.	1		
26	More than an anxiety, I would say that it is like a desire to accomplish something that I had not done, had not, had never tried. So... hmm, that.	1		
8	first I got inside	2	The utterances talk about going inside	"Going inside"
9	and… just like, without, without any strategy, I got inside	2		
11	Hmm:: It's like isolating myself from the outside	2		
11.2	It's like lowering the eyes to avoid stimuli	2		
12	and… connecting:: first I connected, like imagining myself inside my body	2		
31	Hmm… I imagined... the walls inside my body	2		
31.2	hmm... I imagined a darkness...	2		
31.3	as the wall of, of, of,	2		
32	like traveling in a, in a space, like the digestive tract	2		
32.2	like the skin-walls from the inside, like the bones	2		
33	…like a journey	2		
35	It's i- in colors, it's in colors,.	2		
35.2	but not too many because it's a little dark	2		
35.3	Yes. But it's in colors.	2		
9.2	and I didn't hear anything	3		
13	Like that, and as that strategy didn't work... hmm I decided... I carried on, but incorporating the breathing. Feeling the breathing	4	The utterances talk about incorporating the breathing in order to find the heartbeats	"To incorporate the breathing"
15	I tried for a while, taking a deep breath	4		
38	Yes, I mean, then I, I... yes, I start to follow my breathing	4		
38.2	Like to:: that:: exercise, to follow the breathing as you breathe in and out, like that	4		
14	Hmm: but:: I didn't feel the beats either.	5		
15.2	but:: I didn't feel the beats	5		
41	After that, when nothing happened, I tried to listen…	6	The utterances talk about the attempt to listen inwards.	"To listen inwards"
43	Hmm, with the ears, with the auditory sense, also trying to listen inwards... hmm::	6		
43.2	hmm:: and nothing, I didn't hear anything	6		
47	It's a little bit like an act of imagining a funnel towards the inside, something like that.	6		
41.2	Hmm and nothing…	7		
44.2	And I didn't hear anything either	7		
15.3	And… hmm: I thought that maybe if I ran out of breath, out of air, and managed to blow all the air out, to run out of breath, at that moment I could feel the heartbeats	8	The utterances talk about an attempt to become more sensitive by using breathing to feel the beats.	"Attempt to become more sensitive"
17	So, at the same time I felt the anxiety of time running out and not being able to count ((voice with nervous laughter))	8		
19	But I blew out all the air, I ran out of air and I couldn't feel anything either, nothing.	8		
44	So I also tried to listen from the outside	8		
50	And listening outwards was like trying to come down here [gesture in the chest area], to this area.	8		
51	It was then that I thought I could, if I blew all the air, all the air, all the air, I thought that my heart was going to beat louder and maybe I would be able to hear it that way, from the outside.	8		
55	Or FEEL it, at least. Maybe not listen, but FEEL like something physical, something that could give me some rhythm, or something I could count.	8		
58	I connect with my body	8		
58.2	and… and:::: I try to feel, especially in the upper area, like all sensations above, from the waist up	8		
61	Hmm… 5" how do I connect with my body? How do I connect with feeling? Eh... 5" as sensitizing from, from, from, from the skin maybe, as... hmm... getting sensitive in, in, in I believe that from the skin... yes.	8		
20	I also tried to go to the, to this area [she indicates with both hands the sides of her neck], what are they called? the carotids, carotids?	8		
19	But I blew out all the air, I ran out of air	8		
19.2	And I couldn't feel anything either, nothing. I didn't feel anything.	9		
44.2	And I didn't hear anything either.	9		
22	And no, nothing either.	9		
65	Ah! Like a relief ((laughs)), mainly that.	10	The utterances talk about the felt relief when hearing the end signal.	"Relief"
65.2	Because actually I was no longer, I had lost like the, the... the::: motivation. I don't know if it's the motivation, but didn't care any longer whether I had accomplished the task.	10		

Table 2 • First step of the iterative interrogation process. #: line number; M: moment; Criteria: What is it that makes me group these statements as part of the same moment? IDU: Incipient diachronic unit.

IDU	Utterances	Criteria	IDU
8	first I got inside	They talk about how she isolates herself from the outside	"Isolating oneself from the outside"
9	and… just like, without, without any strategy, I got inside		
11	Hmm:: It's like isolating myself from the outside		
11.2	It's like lowering the eyes to avoid stimuli		
12	and… connecting:: first I connected, like imagining myself inside my body	They describe how the participant connects with her body	"Connecting"
31	Hmm… I imagined... the walls inside my body		
31.2	hmm... I imagined a darkness...		
31.3	as the wall of, of, of,		
32	like traveling in a, in a space, like the digestive tract		
32.2	like the skin-walls from the inside, like the bones		
33	…like a journey		
35	It's i- in colors, it's in colors		
35.2	but not too many because it's a little dark		
35.3	Yes. But it's in colors		
9.2	and I didn't hear anything	Talks about how she did not hear the heartbeats	"She does not hear"

Table 3 • Iterative interrogation of the IDU *Going inside*.

to accomplish the task and *Relief*, as we saw in the example.

« 36 » Once the first interrogation has been conducted, the grouping and interrogation process is repeated to examine whether it is possible to identify actions or events within the IDU that indicate the presence of more fragmented diachronic units. For example, if we examine the utterances grouped under the IDU *Going inside*, as shown in Table 3, we see that we can identify two actions: isolating oneself from the outside and connecting, which correspond to two diachronic units of a higher level of fragmentation or sub-phases.

« 37 » The iteration of this process leads to the identification of progressively more fragmented diachronic units. For example, the utterances grouped under the diachronic unit *Connecting* could now be examined to determine whether there are actions or events that can be identified within that diachronic unit. In this case, the description of the experience indicates that in order to connect, the person imagines herself within her body; therefore, this would be a diachronic unit with a higher level of fragmentation or sub-phase.

« 38 » The process of interrogation described above also makes it possible to reveal the *hinge point* between one diachronic unit and another. The hinge point, also called "transitional event" (Petitmengin et al. 2018) is what marks the transition between diachronic units. It usually corresponds to actions and processes as well as to events and the absence of them. In the case of the example we are developing, it is precisely the person's neither feeling nor hearing her heartbeats that articulates the transition between two phases, as can be seen in Figure 2.

« 39 » According to the research objective, it might also be relevant to characterize the dynamics of the transition between the diachronic units; whether it is abrupt, continuous, slow, fast, etc., as described by Petitmengin (2001).

Naming of the specific diachronic units

« 40 » If the final objective of our analysis is the identification of a generic structure, at this stage of the analysis it is suggested that one name the diachronic units using one or more keywords present in the utterances or that come as close as possible to them, avoiding choosing abstract names or categories. On the contrary, if we are analyzing a case study, the diachronic units are defined and their name is assigned at this stage. The interrogation process carried out in the previous step is also useful for naming the identified diachronic unit, since through this process, the criterion used to designate a group of utterances as belonging to a certain diachronic unit is revealed. It usually corresponds to an action or event.

Stage 3: Definition of the specific diachronic structure

« 41 » At this stage, the diachronic units identified in the previous phase are organized to construct the representation of the diachronic structure of the experience.

Organization of the diachronic units

« 42 » In this step the diachronic units are hierarchically organized (into "phases," "sub-phases," "sub-sub-phases," etc.) with the objective of illustrating the temporal evolution of the experience under study. The diachronic structure also indicates the *hinge points* between the diachronic units and the characteristics of the transition between them.

« 43 » At this step the diachronic units are also defined in *intension,* which is specifying the necessary and appropriate conditions for that diachronic unit to exist. For instance, we could define *Going inside* in intension as "the phase in which the person described a series of actions (physical activities, materialized actions and cognitive activities) referring to directing her attention to her inner space." On the contrary, the definition by *extension* would be to pointing out the set of utterances that gave rise to that phase.

« 44 » It is important to emphasize that it is possible to find diachronic units that do not necessarily follow a sequential order. In the example we are developing,

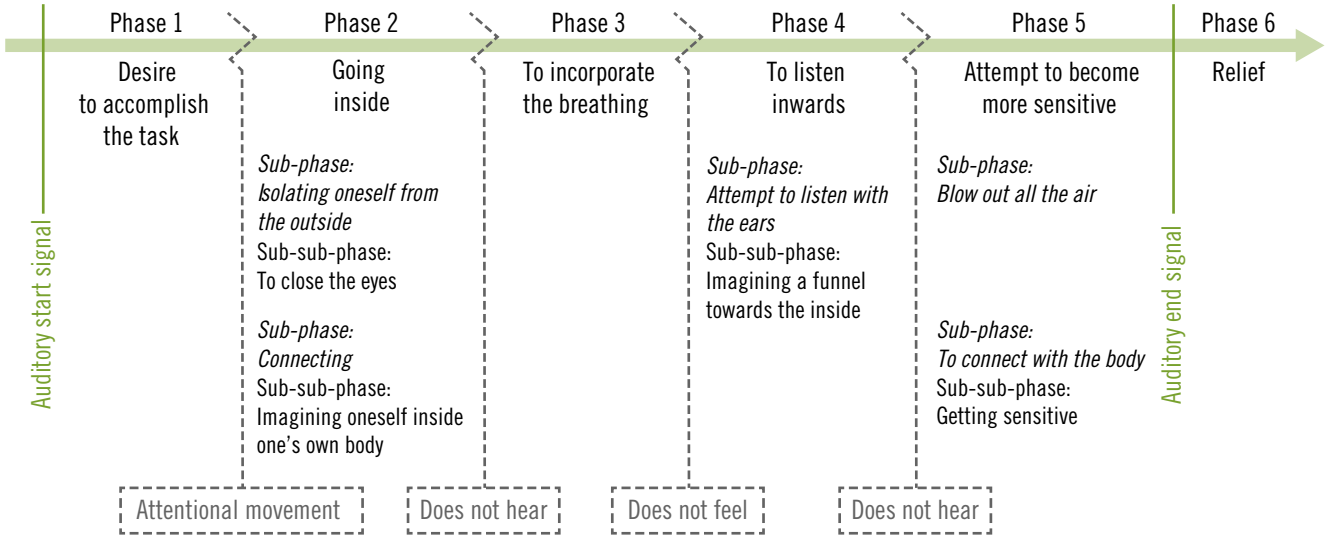

Figure 2 • Example of representation of the specific diachronic structure in the form of a timeline. The horizontal arrow indicates the direction of time. Each column represents a phase. Some phases present different levels of fragmentation, which are represented vertically within each phase. Dotted lines indicate the hinge points between the phases.

according to the information provided by the interview, we cannot know if there is a sequential order between *Isolating oneself from the outside* and *Connecting*. We may be tempted to assume this order by logical reasoning, but it is advisable not to assume sequentially where it was not described and to simply leave them as two processes occurring within the same phase. It is also possible that two or more diachronic units will occur simultaneously and can be ordered in parallel, such as the appearance of sensations while performing an action, or executing two actions simultaneously. As we will see later on, these simultaneous elements form part of the synchronic structure of a diachronic unit.

Construction of the representation of the structure

« 45 » The hierarchical organization of diachronic units goes hand in hand with the construction of the representation of the diachronic structure that is being defined. This is a very fruitful stage of the analysis as having to represent the results graphically forces us to ask ourselves about aspects that until now we had not noticed or to verify criteria that until now were not so clear. For example, in the analysis we are developing, we have identified the hinge points between most of the phases. However, we have not asked ourselves what the hinge point is between the *Desire to accomplish the task* and *Going inside*. It is in the construction of the representation of the structure that we posed that question.

« 46 » The early stages of the construction process are very much "trial and error." Therefore, it is helpful to sketch the relationships we are glimpsing in space, which we can easily manipulate. Thus, in terms of representation tools, it is very likely that during the early stages of this process we feel the need to free ourselves of software and return to pencil and paper.

« 47 » The visualization of the diachronic structure is organized in relation to the axis or form of the temporal dimension revealed in the analysis: horizontal, vertical, circular, etc. The study by Depraz et al. (2017) shows interesting results regarding possible chronological structures. In Figure 2 we see the diachronic structure of the example we are analyzing represented in the form of a timeline.

Specific Synchronic Analysis

« 48 » The synchronic analysis seeks to understand how the structure of the experience is characterized at a given moment. It can therefore refer to the identification and organization of the different aspects that make up the experience at a given time (in a phase or sub-phase) as well as to the identification and organization of the different components that characterize one aspect of the experience at a given time. The objective and research question give us the guidelines as to which moments or aspects of the experience are subject to a synchronic analysis and at what level of detail and depth it is to be carried out. The synchronic analysis is generally performed after diachronic analysis, since in order to characterize the experience of a given moment, such a moment must be defined. However, depending on the nature of the research, its objectives and the descriptions collected, it may be possible to carry out a synchronic analysis independently of the diachronic analysis.

#	Utterances	Criteria	ISU
12	and… connecting:: first I connected, like imagining myself inside my body	They talk about what was imagined, which was the inside of the body	"The inside of the body"
31	Hmm… I imagined... the walls inside my body		
31.2	hmm... I imagined a darkness...		
31.3	as the wall of, of, of,		
32	like traveling in a, in a space, like *the digestive tract*		
32.2	like the skin-walls from the inside, like the bones		
32	*like traveling* in a, in a space, like *the digestive tract*	They talk about how what was imagined was in movement	"Movement"
33	…like a journey		
35	It's i- in colors, it's in colors	They talk about how the inner image was in colors	"Color"
35.3	Yes. But it's in colors		
35.2	but not too many because it's a little dark	They talk about how the inner image was in darkness	"Dark"
31.2	hmm... *I imagined a darkness...*		

Table 4 • First step of the iterative interrogation to *identify the synchronic structure of Imagining oneself inside one's own body*. Criteria: What is it that makes me identify these utterances as referring to the same theme?/What does this utterance tell me? ISU: Incipient synchronic unit. The emphasis of the duplicate utterances is indicated in italics.

ISU First level of abstraction	Criteria	ISU Second level of abstraction
The inside of the body	Talk about what is imagined	"Inner image"
Dark Color	Talk about a visual feature of the image	"Visual features of the image"
Movement	Talk about a dynamic feature of the image	"Dynamic features of the image"

Table 5 • Second step of the iterative interrogation to identify the synchronic structure of *Imagining oneself inside one's own body*. Note that the second level of abstraction has fewer units than the first level of abstraction.

Stage 1: Grouping of utterances by topic

« 49 » The first stage of synchronic analysis is to group the utterances by topic. As described for the diachronic analysis, grouping involves the association of utterances without knowing (explicitly) the grouping attribute or having a predefined category.

« 50 » Let us suppose that we want to understand the synchronic structure of *Imagining oneself inside one's own body.* For this, the utterances corresponding to that diachronic unit are read again and grouped by thematic similarity.

« 51 » It is likely that it will be possible to associate an utterance with more than one topic. In this case, the utterance will be duplicated and placed in the two (or more) groups, as illustrated in Table 4.

Stage 2: Identification of specific synchronic units

« 52 » At this stage we carry out the process of iterative interrogation of the data that allows the identification of synchronic units or categories of different levels of abstraction.

Iterative interrogation

« 53 » Once we have grouped the utterances by thematic affinity, we begin a process of interrogation that results in the identification of the synchronic units and in the explicitation of the criteria that define them. Thus, what we do in this step is to interrogate the utterances to answer the question of what makes us identify them as referring to the same topic. Or what is their structural attribute (regarding their meaning and not their form) that makes us group these utterances together?

« 54 » As we might recall, one of the aims of the micro-phenomenological approach is to redirect a person's attention from the content of her experience, which can vary indefinitely, to her experience of the content, in which we can find stable aspects. We refer to such aspects that are "independent of the experiential content" (Delattre 1971) as structural. A further development of the distinction between *structural* and *content* elements can be found in Petitmengin et al. (2018).

« 55 » In this way, the criterion used to group these utterances is made explicit. This process gives rise to a synchronic unit or incipient synchronic category (ISU): incipient, because at this stage the categories are still subject to new interrogations and will probably be redefined. If there are utterances that we cannot group together, the question is, what is this utterance talking about? This allows us to abstract the core of the utterance and thus specify a potential category.

« 56 » As shown in Table 4, this procedure gives rise to the four incipient synchronic units *The inside of the body, Movement, Color* and *Dark*.

« 57 » A new interrogation can be made about the categories that have been formed to see if it is possible to reach even higher levels of abstraction. This iteration gives rise to categories of a higher level of abstraction, since it is not the utterances that directly participate in the interrogation but the categories that we generated from them that are the ones that are grouped and interrogated.

« 58 » As Table 5 shows, this iteration gave rise to the categories *Inner image, Visual features of the image* and *Dynamic features of the image*. It is still possible to perform another iteration that results in categories with an even higher level of abstraction than the previous iteration.

« 59 » This iteration gave rise to *Features of the image*. We could not abstract another category from *Inner image,* nor from *Features of the image,* therefore the iterative interrogation process ends at that point.

« 60 » It is possible to perform this process by taking different paths of abstraction. For example, in the first iteration it is also possible to group utterances 35, 35.3, 35.2 and 31.2 under the criterion that both refer to visual characteristics of the image and then, in the next iteration one may identify

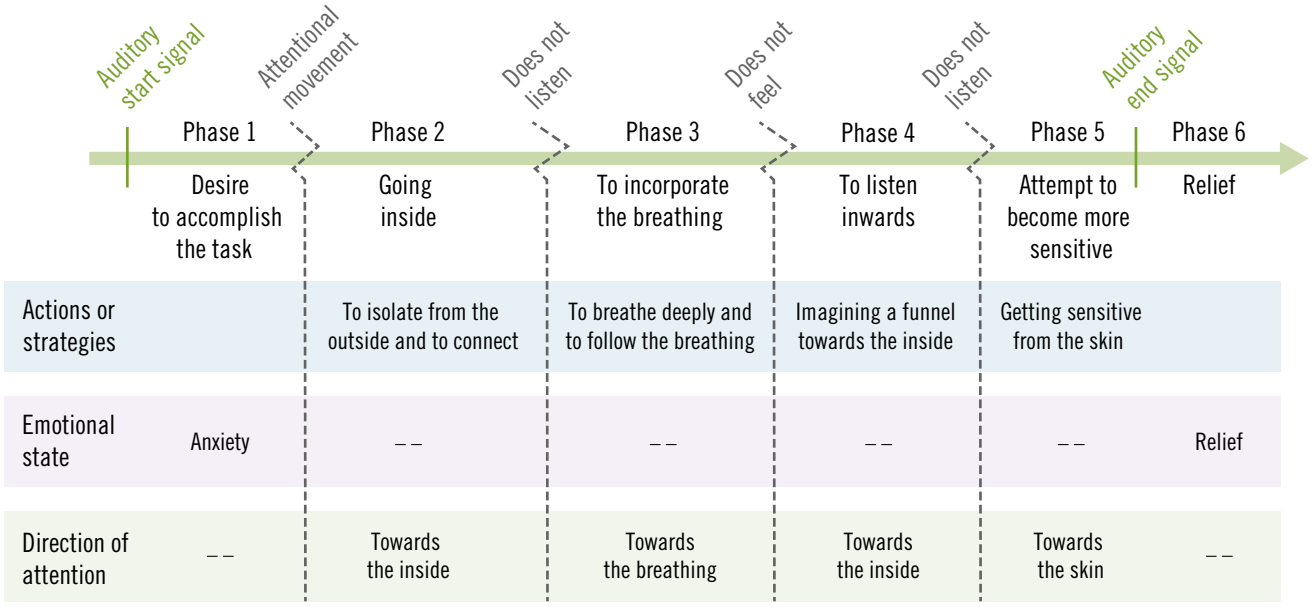

Figure 3 • Example of dynamic lines. The arrow indicates the time dimension. The dotted lines crossing the arrow indicate the temporal fragmentation of the experience into phases and indicate the hinge points. The three rows below the arrow correspond to three dynamic lines. Insufficient information to know the value of the category at a given phase is indicated with "– –".

that they refer to dark and color. As shown at the next stage, these different alternatives correspond to different operations of abstraction that we do naturally in the process of categorization. In any case, what guides us in the categorization process is our research question. So, if we continue with the iteration until it is no longer possible to abstract any other structural component, it is very likely that the different paths will lead us to a similar result.

« 61 » Once the iterative interrogation process is finished, it is advisable to read the utterances again in order to verify that the most abstract categories maintain a relationship with one another, thus also verifying the grouping criteria.

Naming of the specific synchronic units

« 62 » When the purpose of the analysis is the identification of a generic structure, it is advisable to name the categories using the keywords present in the utterances. This facilitates the process of comparison and abstraction that is carried out in the generic analysis. When the purpose of the analysis is in the context of a case study, we define the names of the categories that form part of the synchronic structure in this step. For this, it is recommended that one read the utterances that form part of the category and identify the name that best synthesizes them. In this sense, it has to be a name that allows someone who does not know the interviews, nor what the category is about, to get an idea of what it refers to.

« 63 » As previously stated (Petitmengin 2001; Petitmengin et al. 2018), it is important to consider that naming a category is a delicate process since it crystallizes and delimits it, giving it an identity that might not always correspond to the meaning the utterances conveyed. Particularly, when the interviewee has not been able to find the right words to describe certain aspects of her experience or has referred to something as "indefinable," it is advisable to refer to this in the name of the category.

« 64 » The iterative interrogation process results in a series of categories of different levels of abstraction. In our example, we obtained *The inside of the body* (first level of abstraction); *Dark* (first level of abstraction); *Movement* (first level of abstraction); *Color* (first level of abstraction); *Inner image* (second level of abstraction); *Visual features of the image* (second level of abstraction); *Dynamic features of the image* (second level of abstraction); and *Features of the image* (third level of abstraction).

Stage 3: Definition of the specific synchronic structure

« 65 » At this stage the categories identified during the previous stage are organized and represented in order to build the synchronic structure of a moment of the experience or an aspect of the experience at a given time.

Organization and visualization of synchronic units

« 66 » There are different ways to organize the categories and visualize the synchronic structure. The following describes the type of organization in the form of dynamic lines and semantic networks. These can be used independently or in a complementary way, depending on the objective of the research.

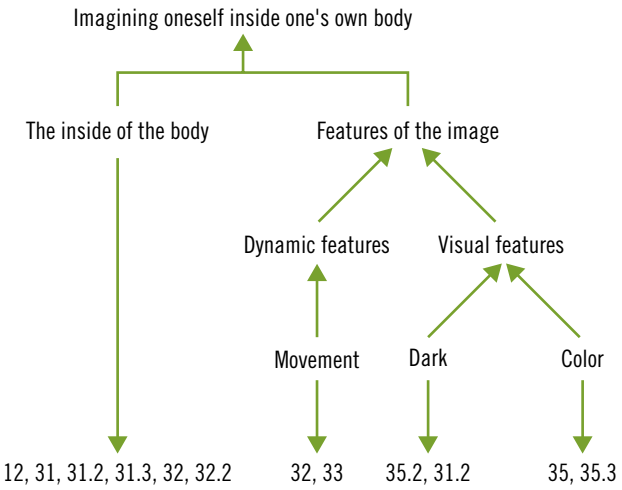

Figure 4 • Semantic network of *Imagining oneself inside one's own body.* The classification operation is represented by the downward arrows, from the category to the descriptemes classified under the category in question. The generalization operation is represented by the upward arrows, from the most specialized to the most general category. The aggregation operation is represented by the upward arrow angular connector, from the categories that are part of the highest aggregation level category. The numbers correspond to the line numbers of the descriptemes.

Dynamic lines

« 67 » The organization of the synchronic units in dynamic lines makes it possible to visualize the evolution of a certain aspect of the experience in time or the main elements of the experience throughout the different phases of the diachronic structure. In this sense, the dynamic lines allow the crossing of the diachronic structure and the synchronic structure of the experience. In this type of organization it is not necessary to include all the synchronic categories identified in the iterative interrogation process, but rather those that account for the main aspects of the experience or those that are particularly relevant given our research objective. In the case of our example, it could be of interest for the researcher to know the obstacles the person faced to perform the HBDT or the bodily sensations present during the execution of the task. Figure 3 shows an example of a representation of the dynamic lines illustrating the actions or strategies that the person used to perform the task, their emotional state and the direction of their attention throughout the different phases.

Semantic networks

« 68 » The organization of the synchronic categories into semantic networks allows us to visualize the semantic relations between all the categories that have been identified in the iterative interrogation process. In other words, it allows us to illustrate the abstraction operations between the categories (see Box 1). This type of representation focuses on the synchronic aspect, allowing us to display all the information we have about that aspect of the experience. We can also make a semantic network to pinpoint our research question or to identify potential lines of inquiry, when we have not yet finished collecting data. Figure 4 shows the synchronic structure represented by a semantic network of *Imagining oneself inside one's own body*.

« 69 » In order to construct the semantic network, we ask ourselves: How do the categories that have been identified relate to one another? Or, what are the operations of abstraction that relate to these categories? (see Box 1). In the case of our example we have characterized the action of *Imagining oneself inside one's own body*. Therefore, all the other categories are organized in relation to that diachronic unit. We see that *Inner image* and *Features of the image* compose this action of imagining. Thus, the relationship between *Imagining oneself inside one's own body* and these two categories is of aggregation. *Visual features* and *Dynamic features* are *types* of features of the image, thus these two categories gave rise to *Features of the image* through a relationship of generalization. In the same way, the categories *Dark* and *Color* gave rise to the category *Visual features of the image* through a generalization. The same thing happened with *Movement* and *Dynamic characteristic of the image* and with *The inside of the body* and *Inner image*. Finally, 31, 35, 35.2 and 32 were first grouped and then classified under the categories *The inside of the body*, *Color*, *Dark* and *Movement* respectively, that is to say, they are instances of these categories.

« 70 » As for the case of inductive approaches, the process that gave rise to the categories was "bottom-up": from the utterances to the categories, in a progressive manner from lower to higher levels of abstraction. A *top-down* identification would be the identification of previously established instances of abstract categories, as in deductive approaches. In microphenomenology, the bottom-up identification is normally favored, since this method shares the phenomenological premise that a requirement for studying the structure of experience is the suspension of the "natural attitude" (Husserl 1983). In this way, in the identification of the structure of the experience, the intention is to "bracket" as much as possible, our preconceptions, theorizations and previous categorizations of the experience under study. In the case of investigations involving the analysis of a large number of interviews, it is likely that after a number of them, certain categories will be stabilized and we will begin to read the descriptions with those categories in mind. However, it is recommended that one try to use the bottom-up identification of categories as much as possible.

« 71 » At this stage the synchronic units are also defined by intension, as indicated for the diachronic units.

Generic diachronic analysis

« 72 » In order to identify the generic diachronic structure, a comparison is made between the diachronic units identified in each interview. For this, it is necessary to return to the result of the second stage of the specific diachronic analysis. Then the phases of each of the specific diachronic structures are organized in such a way that we can visualize the sequence of phases of each interview.

Stage 1: Alignment

« 73 » Generally, when an experience is studied, whether in an experimental or in a biographical context, it is possible to define a time frame with external references in which the described experience takes place. Although this time frame may coincide in some aspects with the experiential time frame, it is not the same. For instance, in the example we are developing, the external time frame would be given by the start signal and the end signal of the task. These signals might be part of the described experience, however, the experiential dynamic includes other temporal elements. It is therefore important to distinguish these two time frames: the diachrony of the described experience and the diachrony of the external referent. Because different specific diachronic structures are generally related to a common external frame of reference, the latter can be used to organize the comparison. Therefore, what we do at this stage is to "align" the specific structures according to the external frame of reference as illustrated in Figure 5.

Stage 2: Identification of generic diachronic units

Grouping

« 74 » Once the specific diachronic structures are aligned, the phases are grouped by similarity. There are at least three criteria that can give identity to a generic diachronic unit:

a its thematic content or the type of action or event it involves,
b its order in relation to the internal time sequence, and
c its order in relation to the external time sequence.

For example, the phases *Withdrawal of the senses*, *To close the eyes*, *To take attention inwards*, *Going inside* and *To focalize on feeling* can be grouped together, using the criterion of similarity by thematic content since they can all be considered to refer to the act of directing attention inward. In Ana's case, the phase *Withdrawal of the senses* occurs in a different order to that of Javier, Carmen and Marcelo, if we consider the external (before the start signal of the task) and internal (before the phase that describes an emotional state) temporal reference. Coherent with our research question, we are interested in the finding that in all cases, either before or after the task start signal, people perform different kinds of actions that involve going inside. Perhaps if our objective had been to understand *the sequence* of the different strategies for counting heartbeats, we would

Box 1. Abstraction operations

In order to identify and organize both diachronic and synchronic units, we implicitly perform different abstraction operations. The main abstraction operations we use are the following:

Grouping refers to the operation in which we associate objects in groups without having previously defined the class or category to which they belong. For example, we used grouping in the second stage of the specific diachronic analysis when we grouped the different "moments" identified in the described experience or in the specific synchronic analysis when we grouped the utterances before identifying the grouping criterion. The inverse operation is *individualization*, which yields individual members of a collection (Taivalsaari 1996).

Classification makes it possible to go from a series of instances to a class of objects. For example, when in the specific diachronic analysis we classified a series of utterances under the diachronic unit of *Going inside* or in the specific synchronic analysis when we classified a set of utterances under the category *Color*. The inverse operation is instantiation, that is, when we go from a class of objects to an instance.

Specialization refers to the operation that divides a class into sub-classes, according to the values of one of the attributes defining the class. For example, in the specific synchronic analysis, we divided the utterances describing the visual features of inner images into two subclasses: *Dark* and *Color* (Figure 4). In the generic synchronic analysis, we divided the utterances describing the "focus of attention" into three subclasses: *Inner space*, *Body part* and *Inner image* (Figure 11). The reverse operation, which groups different subclasses into one class, is an operation of Generalization. In semantic networks, the resulting relationship between the categories is called an "is-a" relationship: *Dark* is a possible *Feature of inner image*.

Aggregation refers to the abstraction operation in which a relationship between objects is considered as a higher-level object. In other words, it refers to the relationship between a set of objects in which they are part of a higher-level object. For example, the different diachronic units are part of the diachronic structure of a given experience or, in the case of specific synchronic analysis, the categories *Inner image* and *Features of the image* are related by aggregation to the category *Imagining oneself inside one's own body*, since we could say that in the described experience *Imagining oneself inside one's own body* is composed of what is imagined and the features of the image. The inverse operation is fragmentation. For example, in the specific diachronic analysis we fragment the experience into "phases" or a phase into sub-phases.

Figure 4 illustrates the formalisms with which the different operations of abstraction are represented as developed by Petitmengin (2001) and Petitmengin et al. (2018). Grouping does not appear in the figure since it is the operation we do at the very early stages of the categorization process.

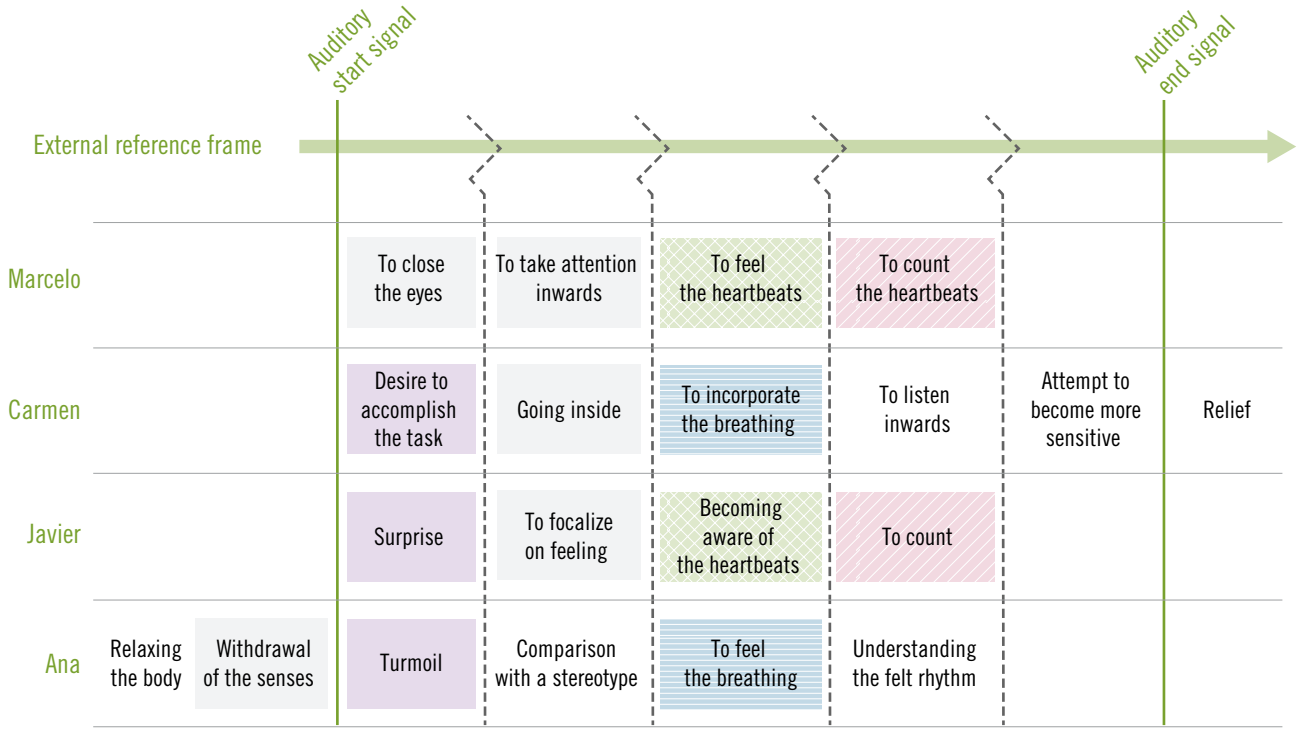

Figure 5 • Example of the first stage of the grouping process. The different colours indicate the thematic groups that are being formed. The grey background indicates the movement of getting in contact; the mauve dotted background indicates a reaction to the start signal; the green diamond background indicates perceiving the heartbeats; the blue horizontally lined background indicates the use of a strategy and the red hatched background indicates counting the heartbeats.

have had another grouping criterion. As we will see, the different order of phases or their presence and absence in a sequence can give rise to different types of generic diachronic structures.

Iterative interrogation

« 75 » In order to identify the grouping criterion, the iterative interrogation process is carried out as previously described. In the generic diachronic analysis, this process has a particularity: in order to identify affinity between the phases, we must consider not only the apparent meaning of the diachronic unit but also the criteria used to define it. This is because unit names that appear to be similar after the alignment procedure might result from different grouping criteria, so the affinity might only be superficial. Therefore, it is always advisable to go back to the descriptemes. For example, if we consider Figure 5, there are two phases placed last in the sequence that explicitly refer to counting the heartbeats and there are two that do not. In this case, the descriptemes corresponding to these phases must be read again to know whether or not they refer to counting the beats. In the case of *Understanding the felt rhythm* the descriptemes show that this phase refers to counting the beats, therefore we also group it together with the other two phases. Then we continue with the interrogation process making explicit the grouping criterion.

« 76 » Generally, during the first iterations there are phases that we are unable to group together. In this case it is advisable to go back to the research question, which always serves as an organizing criterion, and read the descriptemes corresponding to that phase again in order to contextualize them in relation to the other diachronic structures. Taking the case of *To listen inwards* and *Attempt to become more sensitive*, if we return to the research question (what do people do when they are asked to count their heartbeats?) and read the descriptemes, we see that they inform us about a strategy that the person uses to try to count his or her heartbeats. If we interrogate the phases again with this information, we can consider that *Comparison with stereotype* and *To feel the breathing* are also strategies for finding the heartbeats. Therefore, we group them together. Then we continue with the interrogation process and we make the grouping criterion explicit: all these phases speak of strategies used to count the heartbeats. Certainly, it might happen that there are phases that we are able to group only in later iterations, such as, in this case, *Relaxing the body*.

« 77 » The process of grouping and interrogation is repeated until the generic diachronic units are stabilized.

Naming the generic diachronic units

« 78 » Although we name the diachronic units at the same time that we identify them, it is important to review the names once we have stabilized the diachronic units of the generic diachronic structure. As we said before, it is advisable to read all the descriptemes that form part of the diachronic unit and verify that the name we have given

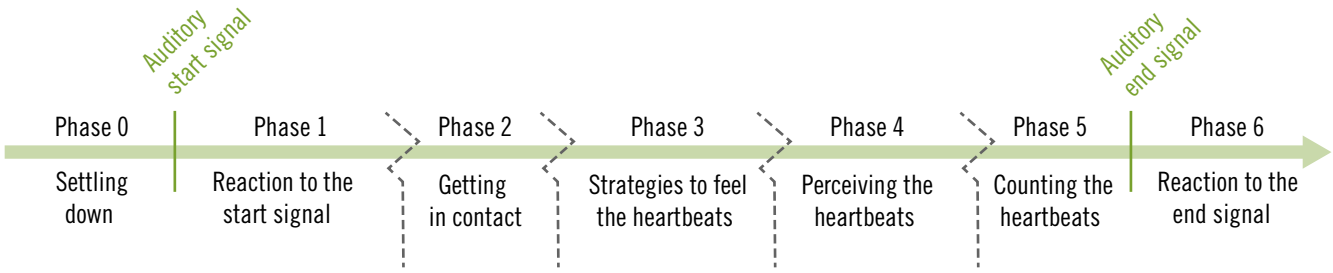

Figure 6 • Example of a generic diachronic structure in the form of a timeline. The horizontal arrow indicates the timeline. Each column represents a phase.

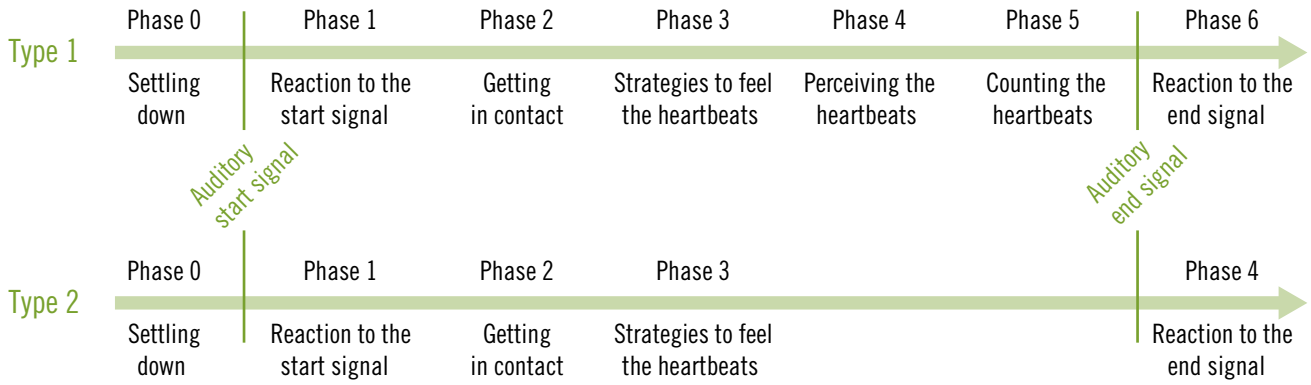

Figure 7 • Types of generic diachronic structures.

to each is the one that best synthesizes it. In our example we arrived at the following phases: *Settling down*, *Reaction to the start signal*, *Getting in contact*, *Strategies to feel the heartbeats*, *Perceiving the heartbeats*, *Counting the heartbeats* and *Reaction to the end signal*.

Stage 3: Definition of generic diachronic structure

« 79 » As mentioned above, it is likely that we will identify diachronic units that, while invariant, appear in a different order in the specific diachronic structures. It is also likely that within a group of interviews, there will be a subgroup that presents some of the diachronic units and others that do not. Therefore, we have different alternatives for constructing the generic diachronic structure. One possibility is to represent all the identified diachronic units in a single structure, as shown in Figure 6.

« 80 » Another alternative is to establish "types" of generic diachronic structures from the different combinations present in the group under study, or at least from those most relevant to the objective of our research. Figure 7 shows two types of generic diachronic structures defined from the four specific structures present in the example.

« 81 » Normally, the greater the number of interviews analyzed, the greater the level of abstraction of the diachronic units of the generic diachronic structures, due to the greater number of iterations carried out in the interrogation process. Figure 8 shows an example of four types of generic diachronic structures established from the analysis of fifty-five interviews.

« 82 » Often an aspect of an experience, which appeared as a diachronic or synchronic unit in the specific structure, is "diluted" in the generic analysis, becoming part of a unit with a higher level of generalization. This is the case with the *Reaction to the start signal* phase, which became part of the *Getting in touch* phase as a synchronic component.

« 83 » When defining the generic structure, both diachronic and synchronic, the following question arises: How "invariant" does a diachronic or synchronic unit have to be to keep it in the generic structure? Since the objective of this type of analysis is to identify the structural aspects of a given experience, our criterion for solving that question is whether the element in question is "essential" for understanding the experience we are studying. By essential we mean an element without which we cannot understand the experience under study, in other words that we cannot do without. For example, *Relief* appears as a phase of Carmen's specific diachronic structure. However, in the generic structures this disappears because in the analysis of several interviews we became aware that this element was not essential to the understanding of the structure of the experience of counting heartbeats. Conversely, if we find in only one specific diachronic structure a phase that appears structural for the experience we are studying, we keep it in the generic structure (for an example of this situation see Valenzuela-Moguillansky 2013: 346)

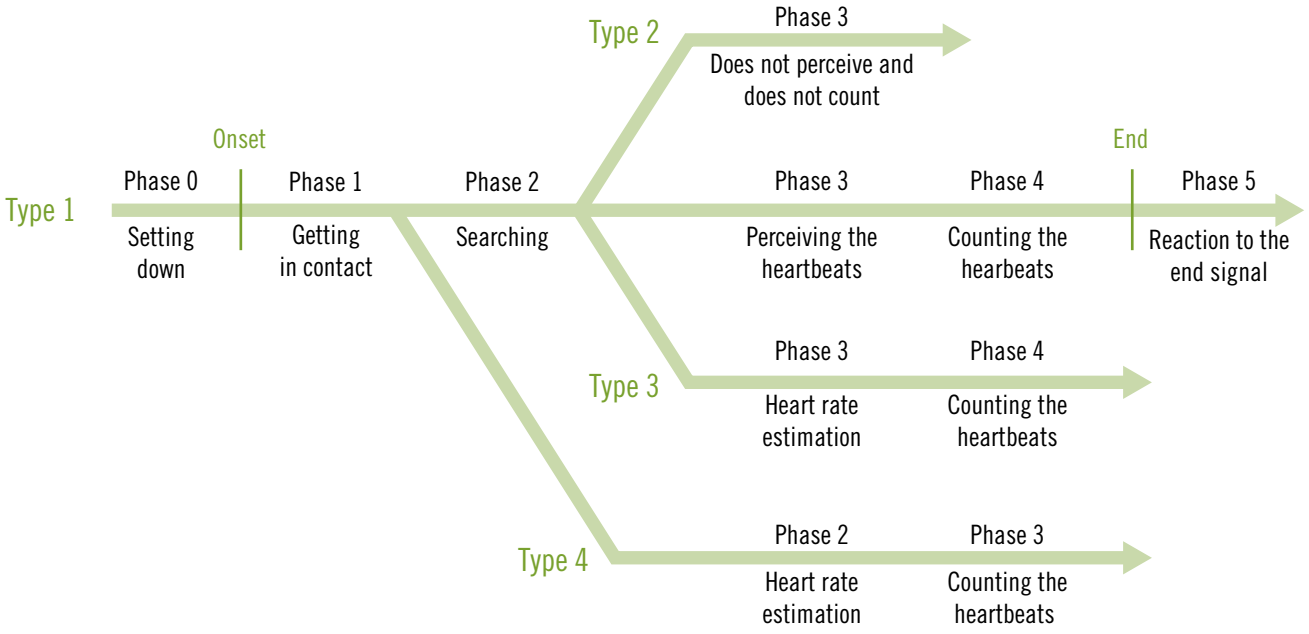

Figure 8 • Types of generic diachronic structures from the analysis of fifty-five interviews. The type of structure indicates its frequency, with Type 1 being the most frequent and Type 4 being the least frequent.

Generic Synchronic Analysis I: From the utterances

« 84 » The generic synchronic analysis can be performed in two ways. The first starts from the utterances and follows a procedure similar to that of the specific synchronic analysis. The second directly compares the result of specific synchronic structures (see next section).

Stage 1: Interrogation of utterances and grouping by topic

« 85 » Let us suppose then that we want to do a generic synchronic analysis of the generic phase *Getting in contact*. If we choose the first alternative, we begin by listing the utterances of all the interviews that correspond to the *Getting in contact* phase. In addition to the line numbers, we add a column with the identification of the interviewee to whom the utterance belongs. As we probably have a fairly long list of utterances, to facilitate the grouping process we assign a keyword to each utterance by answering the question, what is this utterance talking about?

Stage 2: Identification of the generic synchronic units

« 86 » Once we have grouped the utterances, we begin the iterative interrogation process as described for the specific synchronic analysis. In Table 6 we show one possible iterative interrogation path.

Naming of the generic synchronic units

« 87 » At this stage we name the synchronic units following the guidelines described in the previous sections.

Stage 3: Definition of the generic synchronic structure

« 88 » The organization and visualization of the generic synchronic structure follows the same principle as the specific synchronic structure. Depending on the objective of the research, dynamic lines or semantic networks can be constructed. Alternatively, other forms of representation can also be conceived that are more appropriate to the objectives of the research or more coherent with the results obtained.

« 89 » Figure 9 shows the result of the generic synchronic structure in the form of a semantic network. We see that *Getting in contact* is composed of *Direction of attention* and *Sensations*. Participants direct their attention *voluntarily* in order to fulfill their objective. The objective can be *to close the senses* or *to look for*. Participants close their senses through the auditory or visual modalities. Their search is composed of a *strategy* that can be *to listen* or *to feel* and by *what is searched for*, which can be a *body part* or their *internal space*. Conversely, *sensations* have an *involuntary* component, that is, they arise spontaneously. The sensory modalities through which they manifest themselves are *visualization* or *interoceptive*.

« 90 » It is important to note that, after analyzing a larger number of interviews, it is likely that utterances that were classified as belonging to a particular phase will be re-classified in other generic phases of the analysis. For example, in the generic synchronic structure illustrated in Figure 9, we see the category *To look for* as belonging to the phase *Getting in contact*. As will be shown in Figure 12, having more information, given by a greater number of interviews, allows us to re-order the utterances belonging to the previously determined

ID	#	Utterances	First iteration	Second iteration	Third iteration	Fourth iteration
A M	15 18	…as if I take all my senses inward Then I began to pay attention to the inside	Internal space	What is searched for	To look for	Direction of attention
M	72	First I directed my attention towards the heart	Body part			
C	43	Hmm, with the ears, with the auditory sense, also trying to listen inwards... hmm::	Action in order to hear the heartbeats	Strategy		
J	6	And so, I focused on feeling...hmm:::feeling is like, it's almost like building a bridge, a canal between my head and my heart	Action in order to feel the heartbeats			
C A	11 30	It's like lowering the eyes to avoid stimuli And... hmm::::::... then, with the senses I tried to... for instance the ears I tried to… like to close them, like to close the entrance of external stimuli	To avoid stimuli To close the senses	To close the senses	To close the senses	

Table 6 • Iterative interrogation process for the identification of the generic synchronic units. ID: identification of the participant.

generic phases. Thus, the descriptemes that were part of the *To look for* category of the generic phase *Getting in contact* were re-classified towards the generic phase of *Search*. This shows us that the analysis process is recursive. Constantly, as new analyses redefine the categories, we review the previous steps of our analysis: hence the importance of recording the criteria that define our categories and that underlie the changes we make in their definition. Therefore, it is recommended that one start analyzing the interviews during the data collection period, although, of course, this is decided in the design of the experiential protocol and in relation to the objectives and characteristics of the research.

Generic Synchronic Analysis II: Comparison on the basis of specific synchronic structures

« 91 » If we opt for the second alternative, what we do is to compare the specific synchronic structures. Figure 10 shows the specific synchronic structures of the phase *Getting in contact* of the four interviews we have used in our examples.

« 92 » We see that there is a resemblance in the structures. For example, *Withdrawal of the senses* is present in Javier, Ana and Carmen *To focus* in Marcelo, Carmen and Javier; *Effect* in Marcelo and Ana; and *Agentivity* is present in everyone. What we do then is to ask ourselves what kind of relationship exists between the categories of the different structures? That way we are able to organize them and create categories of a higher level of abstraction, if necessary. This process is like the construction of a puzzle, it is not linear and each analyst can have her own "recipe" or strategy. The indication that we can give is that we must constantly return to the question that guides the analysis – in this case how the process of getting in contact is characterized – to the categories that we have to organize and to the utterances they originated from. Figure 11 shows the result of this procedure.

« 93 » According to the four experiences analyzed, we reached the following conclusion: the process of *Getting in contact* is composed of the actions of *Withdrawal of the senses* and *Redirection of attention*. These are voluntary actions that have the effect of sensitizing and making the internal appear. The redirection of attention has a *focus* and is done through a *perceptual modality* that can be *auditory*, *kinesthetic, auditory/kinesthetic* or *visualization*. The focus of attention can be the *internal space*, a *body part* or an *internal image*.

« 94 » In the generic synchronic structure, we can also use the semantic networks to identify possible lines of inquiry. In this case we could ask ourselves, for example, whether there are other perceptual modalities that participate in the redirection of attention.

« 95 » As we can see, both paths of analysis lead to a similar result. Both structures have categories that point to similar experiential qualities, such as closing or retracting the senses; the directionality of attention; the variety of perceptual modalities; and the intentional or voluntary component.

« 96 » Despite their similarities, we also find differences. For example, in the structure resulting from the first analysis path, the category *Direction of attention* presents a higher level of abstraction than in the structure resulting from the second path. This indicates that the actions *Closing the senses* and *Search* have a voluntary attentional component. On the contrary, in the structure resulting from the second analysis path, the direction of attention appears as one of the actions involved in the process of getting in contact.

« 97 » As we can see, both structures have slightly different emphases that are a result of the different categorization paths taken. In the case of the analyst performing both alternatives/options during the analysis, the resulting structures allow us to see different perspectives of the same phenomena. The differences between the structures raise new questions that allow us to further refine our analysis and to arrive at the most "parsimonious" structure. To be able to make this contrast it is highly relevant to leave a record of criteria used during the identification of the synchronic units. In the case of the analyst opting for one of the analytic paths, the resulting structure can also be revised during its refinement, which is described in the following section.

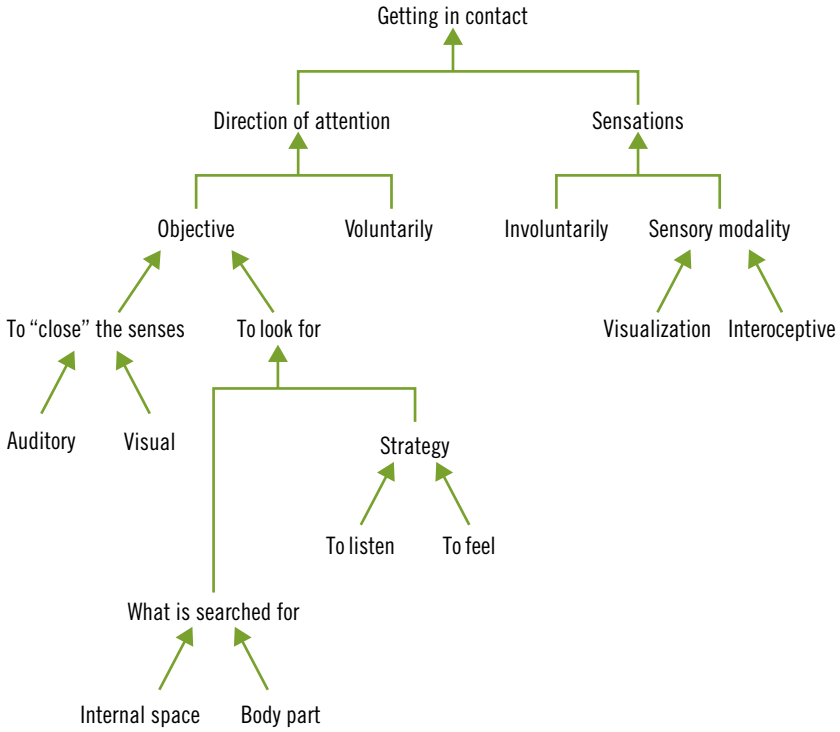

Figure 9 • Generic synchronic structure identified from the utterances represented in the form of a semantic network.

The refinement of the structures

« 98 » Once the structures begin to emerge, either specific or generic structures, it is advisable to step back from the analysis and go back to the original description, to assess to what extent the structures identified "resonate" with the experience described. It is like closing our concertina to listen to its music: does it sound like the experiences we analyzed? What we have found throughout the development of this example is that the refinement of the structures involves recursively contrasting the understanding we have gained from the experience throughout the analysis with the resulting structures. Often, when making such a contrast we become aware that it is necessary to attune the identified structures so they can better convey the comprehension we have gained from the experience. This fine-tuning of the representation of the structures brings in turn new insights to our comprehension of the experience. In this way, we bring together the parts and pieces we have identified throughout the analysis to recognize an organizing shape or gestalt.

« 99 » For example, after contrasting the understanding that we gained from the HBDT experience through the analysis of fifty-five interviews with the resulting structures,[4] we found that the attentional movement, which was originally represented as a synchronic category of the phase *Getting in contact* (as shown in Figure 11), was an element that was present in all phases (therefore it could be better represented in the form of a dynamic line) and that organized the dynamic of the whole experience.

« 100 » At the second stage of refinement, considering that the attentional dynamic was a key organizational aspect of the experience, we became aware that there was a relevant factor that we had not been able to capture so far. Most of the interviewees roughly described experiencing several moments of distraction throughout the task. Precisely because these moments were of "inattention," they were mentioned only vaguely. Moreover, since the original objective of the investigation did not consider this element, the interview questions did not go in that direction.

« 101 » Thus, what we did was to review the interviews again and register all the occasions where being distracted was mentioned. Interestingly, the descriptions suggested that, once distracted, in order to refocus their attention on the task, they had to go through the phases they had already gone through. In other words, if a participant was distracted when she had already perceived her heartbeats, she had to get into contact with her body again and look for her heartbeats in order to feel them again. If she was distracted when she was looking for her heartbeats, she had to come into contact with her body again to continue searching and so on. Therefore, in addition to the linear structure already established, another one emerged that seemed to have the form of a loop that was repeated throughout the different phases of the experience (see Figure 12).

« 102 » What we have found by exploring the analysis process is that this refinement, also called "structural unfolding" (Petitmengin et al. 2018) involves not only being imbued in the description of the experience but also recursively approaching and moving away from it. This makes way for a process of contrast and adjustment in which, at a certain moment, something settles, and the description of the experience, the understanding we have gained from it and the identified structures come together.

4| We show a simplification of the results just to illustrate our point regarding the process of refinement of the structures. A fine-grained level of description of the results regarding the HBDT experience is beyond the scope of this article. We are also omitting all the intermediary structures that came up between the ones shown in the previous examples (with only four interviews) and this one.

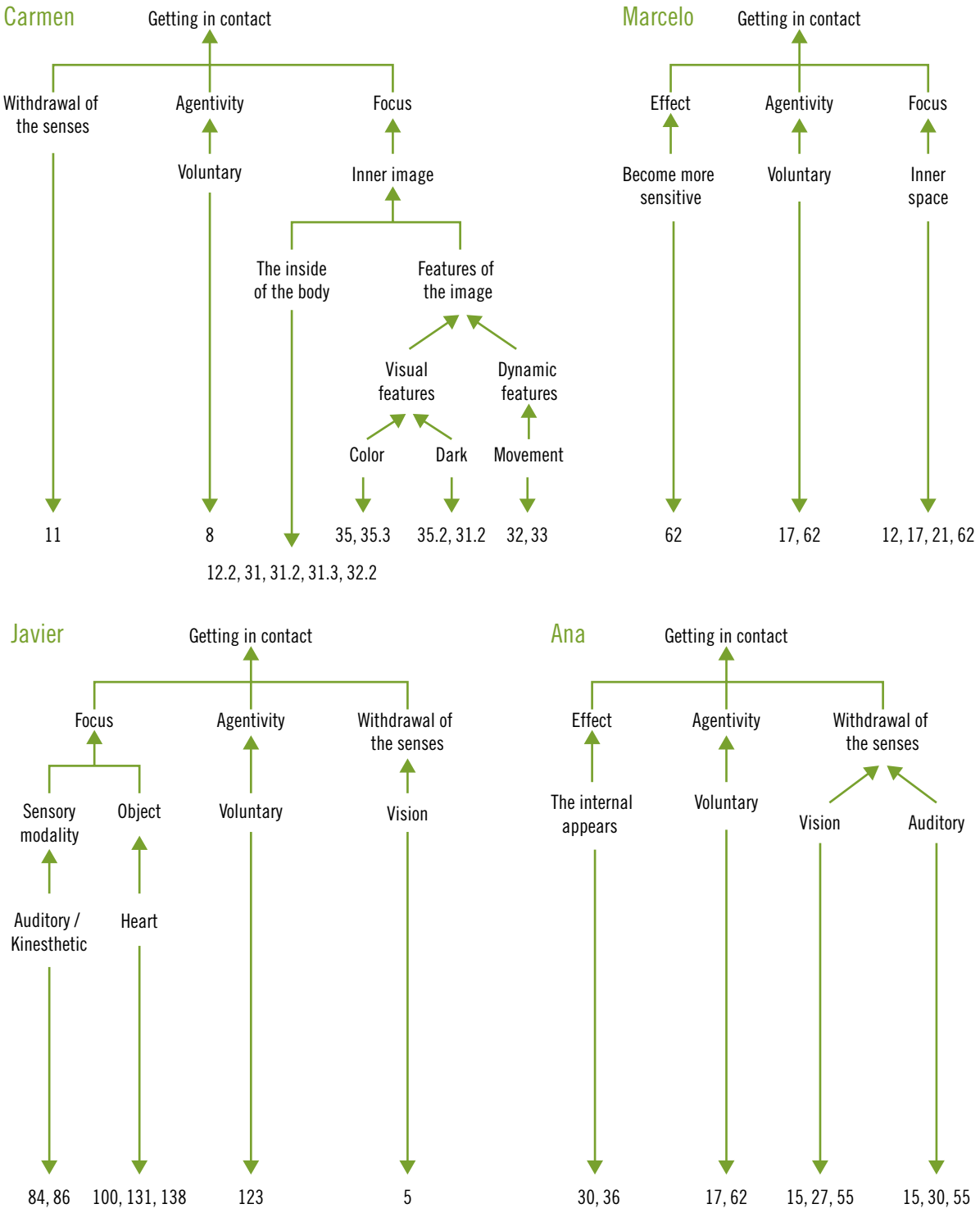

Figure 10 • Specific synchronic structures of Carmen, Marcelo, Javier and Ana.

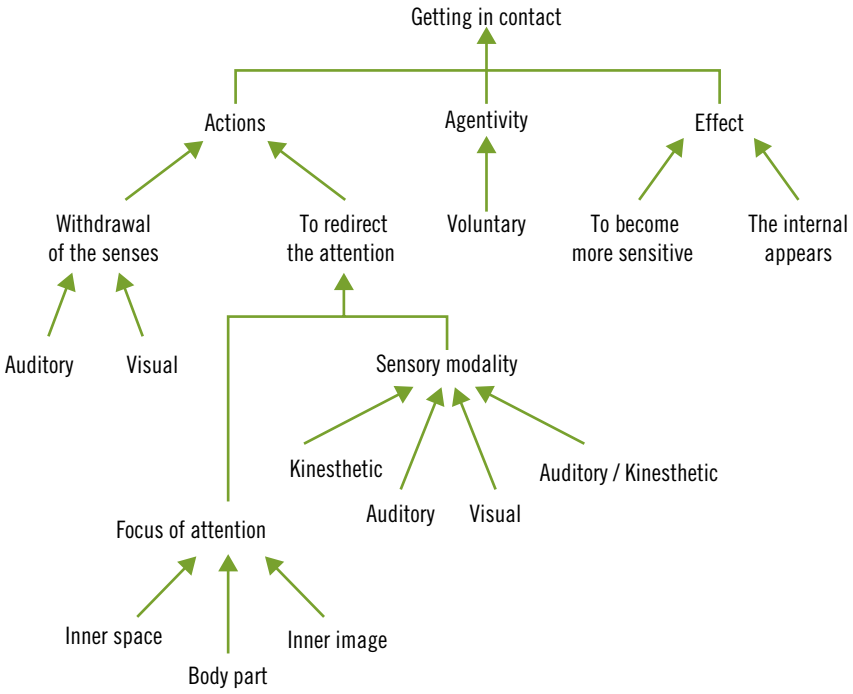

Figure 11 • Generic synchronic structure built through the comparison of specific synchronic structures.

Conclusion

« 103 » This article describes, step by step, the procedure of the analysis of the micro-phenomenological interview through the development of a concrete example of an analysis carried out in the context of a specific piece of research. The proposed procedure has fifteen stages that we organized into a concertina-shaped structure with five sections. Each surface of the concertina corresponds to a stage of the analysis in which the dilemmas and criteria used by the analyst to solve them are also recorded. To track such dilemmas and the criteria used to face them, which commonly remain "invisible," allows us to better understand the analyst's course of action.

« 104 » A novelty of the procedure described is the identification of the iterative interrogation process as a mechanism of categorization. Making explicit the iterative interrogation reveals the criterion used by the analyst to establish the diachronic and synchronic units, greatly facilitating the possibility of sharing and communicating the analysis process. The identification of the iterative interrogation goes hand in hand with the identification of *grouping* as an abstraction operation that participates in the very early stages of the categorization process. Thus, instead of proposing fixed criteria that systematize the analysis, the proposed procedure provides a tool to make explicit and trace, in an orderly manner, criteria that are in accordance with the coherence of each interview.

« 105 » We have proposed that the refinement of structures involves recursively contrasting the understanding we have gained from the experience throughout the analysis with the resulting structures. In this way the description of the experience, our understanding of it and the research question come together.

« 106 » Some aspects of the process of abstraction and categorization still have to be further explored. One of these concerns the early stages of the abstraction process: how do we group the utterances before the categories are formed? Another concerns the refinement process or structural unfolding of the structures: what involves such *coming together* and how, precisely, does it occur? Future research could address these questions by means of micro-phenomenological exploration, for instance, by designing self-explicitation experiential protocols that focus on each of the questions.

« 107 » One of the challenges faced by first-person approaches in general and micro-phenomenology in particular is that interview techniques rely on verbal descriptions. Although we take every precaution to obtain a description of quality, we still come across the problem that verbal descriptions might not be able to fully convey the experience under study. This might be due to many reasons: the way that the person is not able to come into contact with their experience; the way that verbal description is highly determined by socio-cultural factors; the way that there are aspects of our experience that we cannot describe in words. As for any other research instrument, the researcher has to face its limitations, as well as play with its possibilities. As language can be said to stem genetically from lived experience (e.g., Merleau-Ponty 1945; Maturana 1978; Varela 1992), this "inability" might, as well, teach us something about its structure and also how to improve our instrument to approach it. For instance, the micro-phenomenological analysis could expand to consider non-verbal and expressive languages to account for the non-conceptual dimensions of experience. As an example, using plastic expression in interaction with the micro-phenomenological interview (e.g., Valenzuela-Moguillansky 2013) or integrating the analysis of the gestures that accompanied the interviewee's verbal description could allow for complementary ways to access and to communicate the experience under study.

« 108 » In addition to the above work, we are currently conducting a project that integrates the micro-phenomenological interview with a methodology called "body mapping"[5] to explore the experience of "recovering" in fibromyalgia patients.

« 109 » We are also carrying out a project that explores the analysis of gestures.

5| See guide "Body-map storytelling as research: Methodological considerations for telling the stories of undocumented workers through body mapping" by Denise Gastaldo et al. Retrieved from http://www.migrationhealth.ca/undocumented-workers-ontario/body-mapping

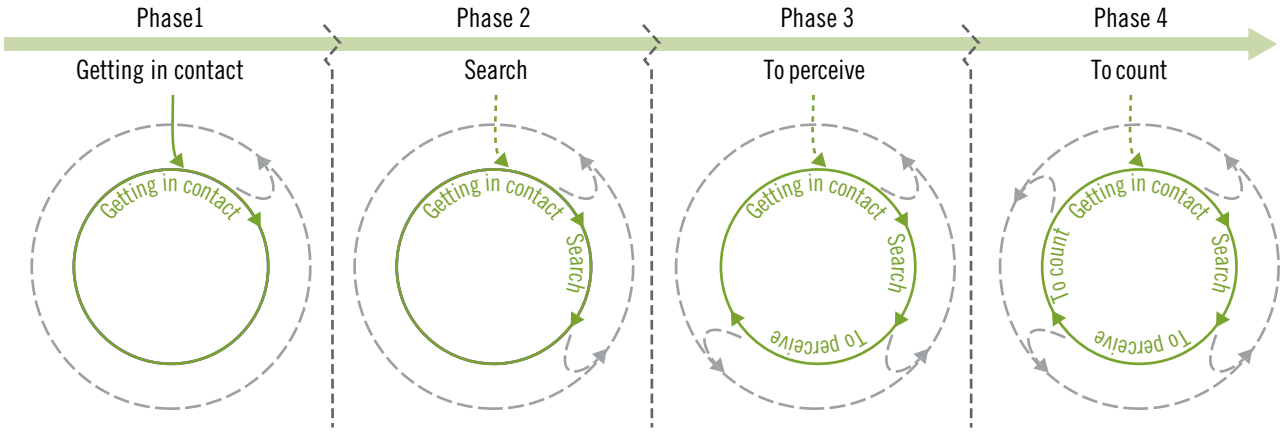

Figure 12 • Diachronic structure emerging during the refinement process. The horizontal arrow represents the diachronic axis. The purple arrow indicates the attentional dynamics represented in the form of a loop, in which to be able "to count" the heartbeats it is necessary to complete the previous phases. The u-shaped arrow indicates distraction events.

It consists of a series of workshops called "Conscious Movement and the Study of Experience" where the micro-phenomenological interview is integrated with conscious movement exercises inspired by the Japanese dance theatre form Butoh to study the experience of presence. In addition to the verbal descriptions, we record the gestures that are performed during the verbal description.

« 110 » We hope that the step-by-step procedure we have proposed will complement the method of analysis of the micro-phenomenological interview and serve as a structure that can be completed, deepened and improved also through dialogue with other analysis approaches (e.g., Vermersch 2012; Van Manen 1990). May this proposal contribute to the establishment of standards in micro-phenomenological research, facilitating the exchange among researchers who use this approach and thus consolidating the intersubjective validation procedures that allow us to evaluate the quality of neuro- and micro-phenomenological research.

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Open Peer Commentaries

on Valenzuela-Moguillansky & Vásquez-Rosati's "An Analysis Procedure for the Micro-Phenomenological Interview"

Micro-Phenomenology and Traditional Qualitative Research Methods

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> Abstract • The target article presents a methodology of micro-phenomenological analysis that gives salience to the idea of researching as an intersubjective meaning-making process. While the methodology belongs to the so-called "first-person research methods," in my commentary I address the questions of whether it is also part of the traditional qualitative methods and whether it is epistemologically consistent.

Epistemological issues of the micro-phenomenological method

« 1 » Before starting with any methodological comparison, it is first necessary to situate the micro-phenomenological interview (MPI) at the epistemological level. What the authors present is the result of a recursive analysis of the micro-phenomenological analysis process, which can be represented as an unfolding spiral of a cognitive research process. The resulting structure of the researcher's experience of analysis shows, quite rigorously, the dialectic between the observer and the observed, which is illustrated by the metaphor of the concertina. The dialectic and recursive process folds up and unfolds as many times as necessary for the stability and invariance of the resulting structure. When the concertina is closed, all the phases are in a dialogue interrogating the data, thereby reframing the whole process. When the concertina is open, a new structure emerges, which becomes the subject of the iterative interrogation process that closes the concertina again. Thus, the research process works as a sense-making cognitive process of first- and second-order cybernetic levels (Foerster 1979): Like a painter with her art work, the researcher goes *in* and *out* through the iterative interrogation mechanism, interrogating the data (first-order system with meaning-making purposes: observer-observed) and, in this way, asking herself recursively (second-order system with meaning-making purposes: observing the observer). Furthermore, another level of analysis is recursively added by the authors while they observe their own observing process and recursively apply the micro-phenomenological analysis to their experience when analyzing an interview, as illustrated in Figure 1. From this perspective, the micro-phenomenological analysis appears to be situated in a constructivist epistemology, as it considers the observer to be an inherent and active part of the observed, forming, in this way, an organized dynamic system of meaning-making processes.

Phenomenology and qualitative research: Paradigms and methods

« 2 » But things get more complicated when thinking about the phenomenological roots of the MPI, and whether it should be considered a qualitative research method. Both phenomenology and qualitative methods come from related but different disciplines, including psychology, sociology, anthropology, neurosciences, and medical sciences, even from interdisciplinary fields such as neurophenomenology. Hence, the development of these methodological approaches is not necessarily tied to any specific discipline (and its background paradigm). This is confirmed in the literature where several authors point out that there are contradictions and overlappings of disciplines, when looking at the disciplinary roots of a given qualitative method, which is the case, in particular, with the so-called post-modern qualitative methods (e.g., Denzin & Lincoln 2008; De Preester 2006; Dowling 2007; Racher & Robinson 2003).

« 3 » Descriptive and interpretive phenomenology are the most representative approaches of phenomenology as a research method. Descriptive phenomenology has been traditionally linked with Edmund Husserl's two propositions about science: (a) the focus on searching essences and specifically the essential structure of experience or consciousness, and (b) the requirement of bracketing preconceptions and biases of the researcher, assuming that they can and should be neutralized so as not to influence the object of study. Both propositions have been considered a Husserlian positivist or at least post-positivist position (Lopez & Willis 2004; Racher & Robinson 2003). In contrast, interpretive phenomenology has been assigned to Martin Heidegger's hermeneutics, which adds the context – such as the relation of the individual to her lifeworld – to the study of subjective experience. Thus, it focuses on looking for meanings embedded in common life practices beyond what an individual consciously knows. Both phenomenological methods pertain to qualitative research methods.

« 4 » Claire Petitmengin, Anne Remillieux and Camila Valenzuela-Moguillansky (2018) define the MPI as a method of descriptive phenomenology developed with the aim of describing any type of lived ex-

perience in the cognitive sciences. In §3 of their target article, Camila Valenzuela-Moguillansky and Alejandra Vásquez-Rosati state that the focus of inquiry of the MPI is on getting detailed descriptions of single experiences from a procedural dimension in accordance with its embodied perspective. To this end the interview guides the interviewee towards the evocation of a specific experience by means of focusing attention on their bodily experience and of avoiding general descriptions, theorizations, judgements, etc. Likewise, for the analysis procedure, the authors strongly recommend that researchers bracket preconceptions, theorizations and previous categorizations in favor of a bottom-up or inductive process of analysis. Taking together the intentional (by the interviewer) evocation state of the interviewee and the bracketing of researcher preconceptions represents a *double bracketing procedure*. From Husserl's perspective, this bracketing procedure means suspending the natural attitude as the form of access to the essential structure of any given experience. In accordance with the post-positivist view of the Husserlian bracketing procedure, the micro-phenomenological interview and analysis could be considered to be grounded in that post-positivist paradigm. Likewise, one could assume that the suspension of the natural attitude represents a form of transcendentalism that is closer to a positivist epistemology than to qualitative constructivist and naturalistic paradigms.

« 5 » However, as Petitmengin, Remillieux & Valenzuela-Moguillansky (2018) explain, one of the principal assumptions of the MPI is its focus on a single and situated experience, assuming that only the exploration of a single concrete experience allows one to practice epoché: to "bracket" or suspend preconceptions and theorizations and, notably, to suspend the implicit belief in the existence of an objective world, independent of experience. It means dropping our natural attitude of being absorbed in the content of experience (the "what"), and reorienting our attention towards the way this experience appears to us (the "how"). Therefore, MPI asks us to focus on *lived experience* itself without assuming that it is a realm that is independent of who is experiencing it.

« 6 » This leads to a contradiction between two ways of understanding the phenomenological reduction or epoché: Using the metaphor of lived experience as the lens for observing phenomena, the post-positivist view reflects on an understanding of epoché as a form of cleaning our lens as much as possible to neutralizes its influence on the object of study, while the constructivist view (i.e., the one in the target article) considers epoché a manner of looking at the lens in use for looking at a particular object that this particular lens is capturing in a particular way. This second understanding of the phenomenological reduction exhibits more consistency with the constructivist foundation of the micro-phenomenological method described above.

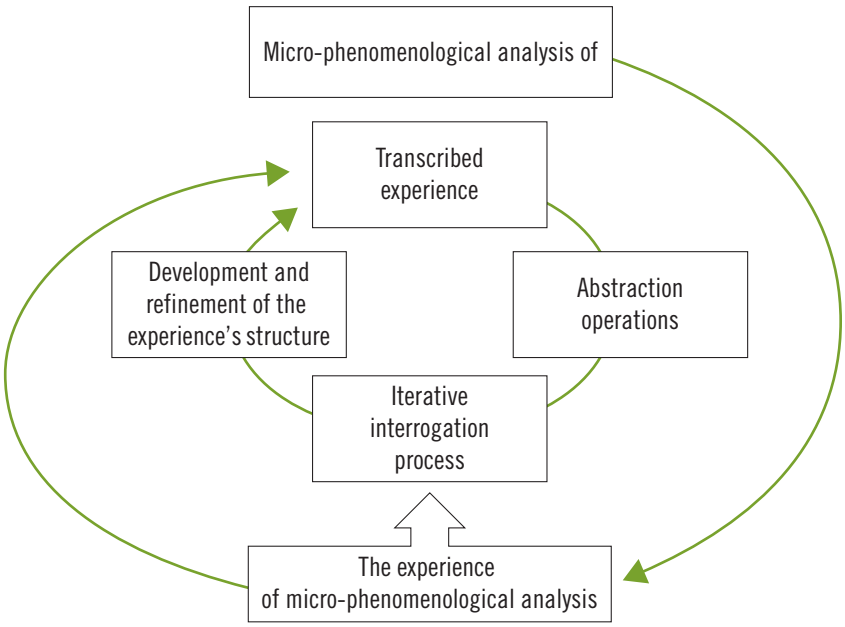

Figure 1 • Description of the unfolding cognitive research process by a recursive method.

« 7 » Even though Petitmengin, Remillieux & Valenzuela-Moguillansky (2018) consider the MPI a method of descriptive phenomenology, they distance themselves from the descriptive phenomenological psychological method (Giorgi, Giorgi & Morley 2017), precisely because it includes only criteria for the analyzing procedures of the collected data but not for assessing the conditions of producing the data (i.e., suspending the "natural attitude" of the interviewee). So, the double bracketing feature of the MPI mentioned above represents the first crucial difference from traditional qualitative research methods. This difference has direct bearing on further methodologically more specific differences, which will be discussed next.

Further differences between micro-phenomenology and traditional qualitative research methods

« 8 » With regard to research design, another difference between micro-phenomenology and traditional qualitative research methods is the focus of study. At first glance, the majority of qualitative methods (micro-phenomenology included) seem to be focused on the study of subjective and situated experiences. But looking more closely, a significant difference appears: most traditional qualitative methods, if not all of them, are focused on the subjective content of a given experience. This means that most of them are interested in exploring the subjective experience at a psychological level of representations, meanings, values, judgements, beliefs, etc. By contrast, micro-phenomenology looks for an embodied, procedural, and concrete description of the experience by actively avoiding general descriptions, reflections, or any other content that is considered to be satellite information. In this way, micro-phenomenology searches rigorously

for an unveiling of the structure (the how) of a given experience. This significant difference is expressed through the whole process of data collection and the analysis procedure.

« 9 » Diachronic analysis is described by Petitmengin, Remillieux & Valenzuela-Moguillansky (2018) as another key feature of micro-phenomenology. Moving subjects from *what* to *how* they are experiencing makes it possible to introduce the temporal dimension of the embodied recall of an unfolding experience. Synchronic and diachronic axes reflect the "binocular" feature of the interview in which the structure of any given experience will be analyzed scene by scene, along with the unfolding movement of the lived experience through time.

« 10 » The binocular perspective of micro-phenomenology has no precedent in any other qualitative research method. There are antecedents of qualitative analysis that take into account only the temporal dimension as narrative studies, and most qualitative analysis focuses only on the content of experience without reference to its temporality. Likewise, the diachronic and synchronic analysis are done by several abstraction operations, one of the early stages being the operation of "grouping," which consists in a sort of "intuitive" procedure of associating units of sense or units that could pertain to the same temporal unit without assigning them to a category at these early stages of the analysis.

« 11 » With regard to the role that interpretation plays in micro-phenomenological analysis, the authors of the target article claim that they avoid, as far as possible, the interpretative stance of the researcher. In §33 they speak about grouping instead of early categorization, a specific way of analyzing data referred to by Petitmengin, Remillieux & Valenzuela-Moguillansky (2018) as yet another difference between traditional qualitative research and the so-called interpretative phenomenological analysis (IPA; Smith, Jarman & Osborn 1999). However, on this point I agree with Francisco Varela and Johnathan Shear (1999) when they say that there is no such neutral approach to experience but an unavoidable interpretive framework while collecting phenomenal data. So, this difference seems to be an intentional attitude of postponing the interpretation of data rather than a genuine way of conducting analysis procedures, and as such, the non-interpretative feature of MPI is not very different from traditional qualitative research.

« 12 » A final significant difference between micro-phenomenology and traditional qualitative methods is the role that bodily experience plays in data collection and analysis procedures. Considering the emphasis on situated experiences, it is not easy to access the pre-reflective level of experiencing if it refers to a general experience of something (e.g., the experience of love) as compared to referring to a concrete and situated one (e.g., the experience of being kissed by one's lover). A concrete and situated experience allows one to deepen the embodied features that organize lived experiences into a sensorimotor enactive relation of the individual with her given experience. Thus, an embodied structure of experience can emerge within its pre-reflective level, which, by means of recursive reflections, could evolve into reflective and representational levels, which are the natural field of inquiry for traditional qualitative research.

Conclusion

« 13 » It is difficult to assign the MPI to a specific paradigm. Still, some assertions could be made: It is part of the general framework of qualitative research, it is also part of the first-person methods and it has a strong constructivist epistemological foundation. Together those assertions are consistent with the applications of MPI in neurophenomenology and in the embodied cognition field of inquiry.

« 14 » With regard to what I said in §4 about the contradiction between positivism and constructivism, Varela's (1996) proposal of a remedy for the explanatory gap between neuroscience and subjective experience of consciousness must be understood as a methodological solution or dissolution of the dualism of subject and object (Bitbol 2012), emphasizing that the embodied lived experience is fully embedded in the environment by means of a sensorimotor living body. Thus, he did not express any intention of subscribing to any of the dominant epistemological positions between subjectivism and objectivism. I propose that his pragmatic stance takes part of the methodological framework of the MPI and, thus, encounters some of the same difficulties, when attempting to assign the MPI to a specific paradigm of this classical controversy between objectivism and subjectivism.

« 15 » My analysis could be considered a reflection on the history of phenomenology from Husserl until now. It builds on and integrates the Husserlian notion of phenomenological reduction, but without separating consciousness from its context of relating to objects, in accordance with Heidegger's (1927) constructivist view of *Dasein* ("being there"). MPI also integrates the ideas of Maurice Merleau-Ponty (1962) about the phenomenology of perception. Merleau-Ponty conveys to perception the primacy for experience, and puts forward the idea of a deeply embodied pre-reflective experience of the so-called lived experiences. Together, they highlight the importance of a primary experience through and within a living body, which gives sense to the embodied cognition paradigm's being the natural frame for micro-phenomenology. Thus, it could be said that the micro-phenomenological approach presented in the target article as an emergent scientific paradigm combines concepts from constructivism, descriptive phenomenology, and embodied cognition.

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Horizons of Analysis

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> Abstract • I question the viability of a qualitative analysis method's taking the form of a rigid step-by-step recipe. Instead, I argue for the identification of core aspects influencing the research results. Using two studies in which I participated, I aim to demonstrate the impact of the research horizon – i.e., the researchers' expectations, assumptions as well as attitude towards the material.

« 1 » From its very beginning, science has been operating with non-numerical data, yet it was quite late that qualitative research managed to establish itself as an accepted methodological approach. One interesting characteristic of qualitative research resources is a disproportionately larger amount of attention given to the analysis of data compared to data acquisition. This also applies to so-called "phenomenological qualitative approaches," where Amedeo Giorgi (2009) and Max van Manen (2014) are noteworthy pioneers, along with the more novel "interpretative phenomenological analysis" (Smith & Osborn 2004).

« 2 » The recent alliance of cognitive science, contemplative studies and phenomenology (Varela & Shear 1999; Varela, Thompson & Rosch 1991) is offering qualitative research techniques that are – in their depth and ability to access pre-reflective experience – in a whole different league from the aforementioned older phenomenology-inspired qualitative approaches, Claire Petitmengin's micro-phenomenology being a prominent example of the former. Interestingly, in this emerging field (sometimes dubbed "second-person research"), the balance between the descriptions of data analysis versus those of data acquisition tips the other way: greater emphasis is given to descriptions and improvements of techniques for data acquisition (i.e., interviews), whereas the question of what to do with the acquired data receives less attention. In this context, the contribution of Camila Valenzuela-Moguillansky and Alejandra Vásquez-Rosati is most welcome.

« 3 » However, this emphasis also means that their target article is entering the already well-established field of qualitative data analysis. While the authors do indicate connections and differences (§4, Footnote 1), and substantiate the attempt at a fresh look, the article seems to "invent" some techniques already established and utilized in qualitative research for quite some time. Referencing techniques from the existing quantitative analysis approaches could make the one suggested by the target article clearer and more approachable to seasoned qualitative researchers. More importantly, a detailed study of the existing body of knowledge might help avoid repeating certain mistakes.

« 4 » Next, I will present two examples from the research practice of our laboratory,[1] challenging the authors to discuss the soundness of detailed step-by-step recipes for analysis. At first glance, the issue seems very technical. It is nevertheless not without epistemological weight. The ability of an analytical tool to unveil the research horizon – i.e., those aspects that steer the research process and consequently influence the outcomes – reveals the epistemological ground it is constructed on. Is research the extraction of data about the state of things, or is it the construction of viable negotiation strategies in the sense of Varela, Thompson & Rosch (1991)?

Recipe for analysis?

« 5 » To evaluate the soundness of a "step-by-step" description and its necessity "for the intersubjective validation process" (§10), it is sensible to take a historical perspective. The methodological framework that has entered contemporary science as "qualitative research" was established by Barney Glaser and Anselm Strauss's *The Discovery of Grounded Theory* (1967). Their rigidly structured set of instructions was

1| At the time of the publication of the research mentioned as the first example, the group I am referring to was still an informal cooperation of qualitative researchers. Since then, the group, now named Observatory – a laboratory for empirical phenomenology (working within the Center for cognitive science, University of Ljubljana, Faculty of Education), has been solely focusing on research into lived experience.

conceived as an attempt to convince natural scientists that the analysis of interviews can contribute to the body of knowledge of "proper"[2] science. In order to imitate quantitative research designs as closely as possible, Glaser and Strauss described the analytic process in the form of an algorithm (so-called "coding"). Prescriptions of detailed coding procedures as a bullet-proof defense against the influence of the researcher's subjectivity can be found in most of subsequent qualitative approaches.

« 6 » The trap of rigorously adhering to such step-by-step analysis recipes can be illustrated by a study we performed with graduate students. Three groups[3] were formed, all three analyzing the same series of life-story interviews with a homeless person. Each group used a different method. The first group analyzed the data strictly following the system proposed by Glaser and Strauss (consisting of six phases, starting with the definition of the coding units, ending with relational coding and the formation of a grounded theory), the second group used the quick coding approach (where categories are simply ascribed to parts of the text and relationships among them are semi-intuitively determined), and the final group was instructed to read the text thoroughly and (without any steps in between) write up a summary of their insights in the form of a grounded theory.

« 7 » The outcome of the study did reveal differences between the resulting theories. Surprisingly, it also revealed that the differences were not related to the utilized analytical procedure. Instead, they were connected to the professional background of the students performing the analysis and the degree of their interest in the topic. The attitudes towards the topic ranged from perceiving it as just another task for completing the course to perceiving it as an interesting challenge, worthy of investigative effort. Furthermore, following a precisely defined procedure served as a crutch to those that lacked the motivation (or know-how) to curiously and persistently probe the raw data.

« 8 » I agree with Valenzuela-Moguillansky and Vásquez-Rosati's description of micro-phenomenological analysis as "implicit" (§10). From getting in contact with experience all the way to the analysis of phenomenological data, all layers of experience research include implicit and intuitive gestures. Most of these gestures cannot be described as a set of propositional rules. Curious, open-ended and persistent probing is an indispensable element in reflectively exploring one's own experiential field, as well as in scientific data analysis.

« 9 » I see the analysis of phenomenological data primarily as a curious search for patterns, connections and underlying generalities. Such an attitude allows for an openness to changing the course of analysis according to insights gained along the way. I wonder what a strict adherence to a fifteen-stepped recipe will mean for the researcher. Is there enough room within the suggested framework for a curious and intuitive analysis? (Q1)

Acknowledging the research horizon

« 10 » The consideration of the efficacy and meaning of a detailed recipe does not mean that I advocate an *ad hoc* approach to data interpretation. The aforementioned study hints at the importance of motivated and curious researchers. However, their insights undoubtedly need clear instructions for the grounding in data, and such instructions are indeed provided throughout the target article.

« 11 » In addition to providing a procedure for grounding the results in raw data, an analytical tool has to enable a way of explicating the circumstances of research necessary for possible replication. This second feature is especially critical in the qualitative research field because of the need to acknowledge the constructive role of the researcher. The field has largely accepted the interpretative character of the research process, including the analysis (some authors speak about "interpretive research," Lincoln 1995). Prescriptions for dealing with this characteristic rarely go beyond the general advice that all steps and activities of the research process should be recorded and reported (Glaser & Strauss 1967).

« 12 » Anyone who has ever tackled tens or hundreds of hours of raw audio data knows how complex, non-linear and long-winded that process is. Noting each and every step along the way (often riddled with dead ends) is not feasible. Any attempts in that direction have the potential to stifle a coherent presentation of results.

« 13 » The prescription of detailed "algorithms" as a preventive measure against the researcher's subjectivity (as has been attempted by Glaser and Strauss), is ineffective and – from a constructivist viewpoint – impossible. By accepting the constructive role of the research process, we accept that the results do not necessarily reflect the researched phenomenon, but the interaction between the phenomenon and the research process (Kordeš & Demšar 2018). Accepting that one cannot record all the gestures performed along the way, the challenge becomes identifying (and subsequently recording) aspects of the process that significantly contribute to this co-construction. The identification of relevant aspects is an epistemologist's task, whereas the methodologist's task is their inclusion in an analytical tool.

« 14 » Epistemological considerations (Kordeš 2016), as well as the praxis of the qualitative analysis (as exemplified above) indicate the importance of the attitude and expectations with which researchers approach their data. Let me illustrate this point with another study from our research. One could argue, as Petitmengin, Anne Remillieux and Valenzuela-Moguillansky (2018) do, that the analysis of phenomenological data has so many peculiarities that the comparison with non-phenomenological cases lacks relevance. To illustrate this, let me refer to our neurophenomenological study of visuospatial working memory.

« 15 » The study, already briefly described in Oblak & Kordeš (2018), aims at the replication of standard psychometric research paradigms with the addition of a phenomenological perspective. As a basis we used standard change-detection tasks in

2| Glaser and Strauss's efforts were at that time directed primarily towards medicine, which had trouble accepting their excellent study on the palliative care wards, presented in *Awareness of Dying* (Glaser & Strauss 1965).

3| Our study was published in Kordeš, Gimpelj & Bojc (2012), which is available only in Slovene. In the original study, a fourth group participated, but I only mention the three that are comparable, as the fourth group was the one that conducted the interviews and therefore had more background information.

which participants are asked to memorize a stimulus and then decide whether the second stimulus is identical or different (Rouder et al. 2011). Typical stimuli were oriented lines, presented in groups of four for 2.5 seconds. Reaction times and response accuracy were gathered.

« 16 » The phenomenological addition was prompted by the extraordinarily large variability of results of psychometric research on working memory. Our hypothesis was that research on individual experiential strategies for memorizing might contribute to the understanding of the processes involved. That is why, along with the psychometric part, we conducted interviews at randomly selected moments during the testing to inquire about the co-researcher's experience of attempting to memorize the stimuli. The findings (the whole scope of which would exceed the purposes of this commentary) have shown that despite the stimulus being visual, visual memorization is not a commonly applied strategy. Some co-researchers do utilize a visual experience, but the majority do not – a plethora of kinesthetic, verbal and other experiential strategies were detected.

« 17 » More relevant for this discussion is the following. After weeks of analyzing more than 100 hours of interviews we have found that our focus on memorization strategies blinded us to the element that, arguably, most significantly determines the acquired data: the influence of the research setting on the co-researchers – so called "demand characteristics" (Orne 1962).

« 18 » Initially, we have mostly ignored reports describing "information chaos," the emotional stress of trying to find the appropriate strategy, as well as those describing the task as being a fun challenge. This does not mean that these data points were not included in coding – they were, but only as a description of a general experiential state of the co-researcher. Several rounds of analysis were performed before we became aware how our research horizon directs us towards a very specific view of the data. This awareness transformed the research on the experiential aspect of visual working memory into research on experiential gestures related to attempts at adequately solving visual working-memory tasks. Our current hypothesis is that viewing the data as describing experiences of *trying to adequately solve* a task better explains not only the phenomenological part, but also psychometric data. (In the future, we intend to additionally employ neuroimaging in order to test the second part of this hypothesis.)

« 19 » I cannot resist comparing our neurophenomenological study with the phenomenological study of the heartbeat detection task that serves as an example in the target article. There, too, one can find indications of experiences related not directly to the task, but to attempts to perform adequately. For example: "Hmm, when Carla gave the start signal, hmm… I first felt like an anxiety" or "… but it's like a desire to fulfill hmm, the task" (Table 2). Perhaps the newly adopted horizon of our analysis might shed a new light on those reports?

« 20 » It is interesting that just like in our first attempts at analysis, the subsequent stages of the process presented in the target article leave out such data points (they disappear between Table 2 and Table 3). The horizon compels the authors to find out how people approach observing their own pulse and obfuscates the question of how they approach the *task* of observing their own pulse. In our case, a new understanding of our results fundamentally reframed the whole of our research. It would be interesting to know whether the findings of the study presented by Valenzuela-Moguillansky and Vásquez-Rosati also warrant reframing. And if they do, how would this change the final result? Did the study produce data on how people observe their own pulse or on attempts to correctly solve a psychometric task?

« 21 » Even in the event that it turns out to be the latter, this does not mean that the findings on the experiential gestures of observing one's pulse are not valid. They are, but only conjoined with a clearly articulated research horizon. As we aimed to show in Kordeš & Ema Demšar (2018), the attitude with which we approach our research is inseparably part of the resulting findings. Therefore, becoming aware of and articulating one's horizon seem to be essential aspects of an analytical tool.

« 22 » The phenomenological study of the rubber-hand illusion (Valenzuela-Moguillansky, O'Regan & Petitmengin 2013) and the phenomenologically valid replication of Richard Nisbett and Timothy Wilson's experiments (Petitmengin et al. 2013) show the potential of the micro-phenomenological method to reveal unexamined assumptions in psychometric tests. Why stop there? It would be a great achievement for the analytic tool to enable even further explication of the research horizon, and, more importantly, to include those explications as an integral part of the findings.

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On The Linearity and Non-Linearity of Analysis

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> Abstract • I raise questions about the use of metaphor in the article as well as the linearity of the micro-phenomenological analysis process. Is there a way to represent a more accurate and complete overview of this process?

« 1 » I welcome the steps that are now being taken to reflect on and clarify the analysis process of the micro-phenomenological interview. Camila Valenzuela-Moguillansky and Alejandra Vásquez-Rosati's target article represents an essential contribution in this regard. That the authors build their account of the analysis process on a study that they have conducted is commendable, since this makes the article go beyond mere theory, but it could also be asked whether the account may be a product of reflection on the heartbeat detection task described. There are several further issues that can be raised, including to what extent the micro-phenomenological interview (MPI) is necessarily embedded within a framework of embodiment, and the issue of what epistemological and ontological presuppositions may be hidden behind the prescriptions made by the MPI procedure as a whole. However, I will focus on one issue that is more directly connected to the article and the aim of clarifying the analysis process of the MPI. This is related to the question of what the point of the concertina metaphor is and whether the analysis is linear or not. I will address these issues in that order, and it can be noted that the former issue is less substantial than the latter.

« 2 » The authors present the analysis process as having a concertina structure. It is unclear to me why this metaphor was chosen. It is mentioned or commented on in three places in the article (§12f, §98). In §12 the authors state that "in the present article we specified a fifteen-stage procedure that was organized into a concertina-shaped structure […]. Each surface of the concertina corresponds to one stage of the analysis." We learn that the analysis process proceeds in stages, but what is the reason for the concertina structure? In §13 they continue: "The concertina-shaped structure permits the tracing of the analysis process whenever necessary, allowing for the evaluation of the rigor and coherence of our procedure." So, it seems that the concertina structure may be related to evaluation – but how? §98 describes taking a "step back from the analysis" and returning to the interviews themselves so that it can be checked whether the analysis resonates with the accounts of the experiences. This is compared to closing "our concertina to listen to its music." It may be that I do not understand how a concertina works, but as far as I know, a closed concertina does not make a sound. Again, the metaphor is unclear. What exactly is the point of using the metaphor of a concertina? It seems to me that the metaphor does not help us understand the analysis process better. The idea that there are five stages and fifteen steps to the analysis can be presented without it.

« 3 » Furthermore, the analysis process is presented as consisting of a linear structure. From my experience in doing micro-phenomenological and other forms of qualitative research, there is both a linear and a non-linear aspect to analysis. The suggested linear structure fails to account for this. I do agree that there is a preliminary data-preparation stage consisting, for instance, of transcription. However, there can be cases where one goes back to check the original audio, for example, if the transcript seems inaccurate or erroneous, and this should, of course, lead to a revision of the transcripts, which means that the linear structure has been broken. Still, even though such cases may be pointed out, I agree that there is a general linear tendency proceeding from data preparation to analysis.

« 4 » However, I do not agree that the specific diachronic analysis (stage 2) necessarily comes before the specific synchronic analysis (stage 3). Although this is something one could claim by simply drawing on experience, it is, more importantly, something that arguably has to do with the nature of synchronic and diachronic structures, or simply experience. A diachronic structure cannot be identified before identifying a synchronic structure because for a diachronic structure to be constituted there need to be at least two synchronic elements that are connected in a

sequence. We can also say that, on a basic level, no synchronic structures can exist without relating to something diachronic. A synchronic element can be a simple sentence or a word. But both of these are time phenomena. If we continue this line of thought, it would seem that neither synchronic nor diachronic structures can be constituted. An answer to this is to say that synchronic and diachronic aspects are co-constituted, although we can also identify structures that emphasize one over the other. Still, both in practice and on a fundamental level, the analysis of diachronic and synchronic aspects run in parallel; when trying to find what belongs to which aspect, and trying to build an analysis of which processes are inherent in the material, one goes back and forth between diachronic and synchronic aspects. If we take a simple sentence such as "First I had a desire to accomplish a task," it should be easy to see that this element is ambiguous; it describes something happening at one moment in time, but the word "first" signals that it is part of a diachronic process. In other words, the material analysed cannot be neatly organized into that which is diachronic and that which is synchronic.

« 5 » A similar argument can be made for the identification of specific and generic structures; a specific structure cannot be identified without something generic being present and vice versa. For the sake of brevity, I will not spell out the details of the argument; it would follow the same form as the argument for the co-constitution of synchronic and diachronic dimensions. I would admit that in practice there is a flow from first focusing on specific experiences and then finding generic structures. But it is good practice to check whether a generic structure that has been identified changes our view of specific structures. It might, for instance, be tempting to leave out certain specific structures that do not fit with a generic one or we might have to check an earlier specific analysis with later generic structure to check whether we have missed or misidentified something.

« 6 » To sum up what I have tried to argue: There is a general linear flow from data preparation to specific and generic analysis, but there are important cases where this linear flow may be broken. The analysis of diachronic and synchronic aspects is, however, less linear, and can be found to run in parallel, both on the specific and generic level. In contrast, the transition from specific to generic aspects is more linear, but generic structures may be presupposed in the identification of the specific elements, and hence it would be good for an analyst to continue to go back and forth between text, specific and generic structures. Valenzuela-Moguillansky and Vásquez-Rosati do indicate that something like this takes place with their comments on the refinement of the structures (§§98–102). However, this means that Figure 1 is incomplete, if not misleading. A linear structure may be helpful as a guideline when doing analysis, but given that there are non-linear aspects to the analysis, as I have argued here, could there not be a way to graphically represent the whole process in a way that yields a more accurate and complete picture? (Q1)

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Problems of Categorization in Micro-Phenomenological Analysis

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> Abstract • The authors describe how the structures of experience unfold in the course of micro-phenomenological analysis step by step by suggesting iterative interrogation. The proposed abstraction operations ultimately deserve more thorough discussion concerning the categorization process, specifically as to the potential necessity of integrating more hierarchical steps.

« 1 » Since the publication of the now classic book *The Embodied Mind* by Francisco Varela, Evan Thompson and Eleanor Rosch (1993), there have been promising new methodological developments that attempt to overcome the gap between the natural sciences, as dealing with objective and third-personal observations, and the humanities, as dealing with subjective experience and meaning. Among these new methods is the *neurophenomenological research program* (NP). NP seeks to explore the possibility of mutual influence between experimental participants' neural activities and their subjective, first-person experiences (Lutz 2002). The so-called micro-phenomenological interview technique (Petitmengin 2006, 2007, 2011, 2017) offers access to ostensibly subjective experience correlated with neural activations. This allows, as an example, for the detection of symptoms preceding epileptic seizures according to first-person descriptions (Petitmengin, Baulac & Navarro 2006).

« 2 » The micro-phenomenological interview aims at producing a model for the generic structures of experience, accounting especially for its unfolding (Petitmengin, Remillieux & Valenzuela-Moguillansky 2018). This model is derived from the interview data, and the results of micro-phenomenological analysis are then incorporated into an analysis of the dynamic structures of the third-person data identified in neural activities. As such, NP promises to generate experiential data that can be used to inform and shape third-personal scientific investigation.

« 3 » However, developing a neurophenomenological method to investigate dynamic experience and its neurological correlates remains challenging. This is partly because, up to the present, most neuroscientific experiments have been carried out in a structure- and function-oriented manner, but the analysis of the temporal structures from neuroimaging data might be more efficient if using a neurodynamic approach (cf. Lutz et al. 2002; Lutz & Thompson 2003). Another problem is whether NP can effectively investigate the "how" of an experience (e.g., the pre-reflective bodily feel), rather than the "what" (e.g., the particular content). Micro-phenomenological *interview* techniques that have been developed to cope with this problem have been methodologically advanced, subsequently directing the focus of recent re-

search towards the micro-phenomenological *analysis* method. The very recent paper "Discovering the structures of lived experience: Towards a micro-phenomenological analysis method" by Claire Petitmengin, Anne Remillieux and Camila Valenzuela-Moguillansky (2018) and this target article are initial attempts to discuss methodologies for effectively analyzing the structures of experience.

« 4 » From the cognitive science point of view, "structures of experience" can be understood as the structures of a cognitive process (Petitmengin 2006: 259). Logically, the structures of experience that can be identified through the micro-phenomenological analysis of first-person data should be comparable to the structures of neural activity underlying a cognitive process. Against this background, a micro-phenomenological analysis that allows researchers to investigate the dynamic microgenesis of experiential structures – in conjunction with a neurodynamic approach to analyzing the self-organizing development of neural structures (Arbib 1998: x) – could be expected to contribute to the establishment of a dynamic approach used by NP to investigate cognitive processes, as opposed to the largely structural and functional approaches to neurocognition currently in use.

« 5 » The target article focuses on the procedure of the iteration of abstraction operations: an analysis procedure for the micro-phenomenological interview allowing for the refinement of abstracted categories, starting from collected first-person descriptions, through which an experiential structure is progressively built (Petitmengin, Remillieux & Valenzuela-Moguillansky 2018: section 4.1.3). An "experiential structure" is defined both by Petitmengin et al. (ibid) and by the target article as "a network of descriptive categories, independent of the experiential content" (Delattre 1971, as cited in §5). In §12, the authors call this procedure of the iteration of abstraction operations – which is also involved in the identification of generic structures of experience described as the "*invariants* or regularities" of experience (§5; see also Petitmengin 2006: 259; Petitmengin et al. 2018: section 1) – "iterative interrogation." Petitmengin and colleagues also discuss such a procedure, which they refer to as "the process of structural unfolding" (ibid: section 5.1) – in other words, the process of "iterative unfolding and refinement of the structure of the experience" (ibid: section 1). The authors of the target article aim to describe an analysis procedure for the micro-phenomenological interview based on iterative interrogation.

« 6 » Compared to Petitmengin, Remillieux & Valenzuela-Moguillansky (2018), in the target article the authors make more explicit that the abstraction operations they suggest (see Box 1 in the target article) are categorization mechanisms. For instance, in Footnote 3 they introduce the terms *synchronic unit* and *diachronic unit* in place of *synchronic descriptive category* and *diachronic descriptive category* in Petitmengin, Remillieux & Valenzuela-Moguillansky (2018). Indeed, the authors' terms do justice to the standard approach to taxonomy in which categories are built at the uppermost level, starting with those forms of appearance that are subsumed under types, classes and categories, but do not yet serve as categories themselves. But it is not clear how an abstraction operation that leads to *units* differs from an abstraction operation that allows researchers to form *categories*.

« 7 » Let me trace the authors' argument more precisely. They introduce the terms *incipient diachronic unit* (IDU) in §34 and *incipient synchronic unit* (ISU) in §55 to stress that IDUs and ISUs could be refined during the course of iterative interrogation. IDUs and ISUs however do not seem to be identical with the "minimal units of meaning" (Petitmengin, Remillieux & Valenzuela-Moguillansky 2018: section 4.1.4) that researchers can identify in structural statements; these are referred to as *descriptemes* by Petitmengin et al. and by the authors as well. Descriptemes are considered at the first level in the categorization process. But as Tables 2 and 4 illustrate, IDUs and ISUs result from an abstraction operation that the authors call *grouping*, and they are not yet categories. So, it must be asked: If categories result from a further abstraction of IDUs and ISUs, are those abstraction operations that the authors suggest at the subsequent level – classification/instantiation, generalization/specialization and aggregation/fragmentation – following grouping to form categories from IDUs and ISUs? And, if yes, are there no steps between grouping and categorization operations? (Q1)

« 8 » These questions are posed because the concept of "category" deserves thorough discussion, especially considering the traditional approach to taxonomy in which categories are built at the uppermost level of the abstraction process, including those operations leading to types or classes, e.g., prior to categories. What is the theoretical framework of the semantic networks that serves as a basis for their categorization system? (Q2) Such semantic network-based operations seem appropriate to investigate the synchronic structures of experience, as they incorporate as many aspects of structure involved in experience as possible.

« 9 » In general, integrating hierarchical steps of abstraction between descriptemes and categories would be helpful in understanding the relationship between the components of regular and invariant experiential structures that can be assumed to be mechanisms underlying a cognitive process; this is rudimentarily seen in the preliminary results of an analysis of micro-phenomenological interviews on the feelings experienced by pianists in conjunction with their performance, currently under study within the scope of a neurophenomenological research project co-headed by the present author in collaboration with the International Psychoanalytic University Berlin (see Table 1 for an as yet unpublished classification of the aesthetic experience of pianists).

« 10 » When investigating a cognitive process through the analysis of first-person descriptions, a challenge is determining which components of experiential structures are most fundamental to that process, and thus can be regarded as its underlying mechanisms. Up to the present, neurocognitive research using neuroimaging techniques has tried to reveal such mechanisms. Taking as examples the present author's analysis of first-person descriptions related to the aesthetic experience of pianists (as shown in Table 1), researchers may be able to find out more about the fundamental mechanisms underlying "feeling into" the performance[1]

1| Theodor Lipps' theory on aesthetic empathy ("Einfühlung"), developed in the context of psychological aesthetics at the end of the 19th century (Lipps 1900), holds that the aesthetic object and a person's feelings experienced in conjunction with this object cannot be strictly sepa-

p	Descriptemes	Character	Type	Class	Subcategory	Category
4	Pianissimos felt good in this part.	sounds feel good	good-feeling sounds	positive auditory sensations	positive auditory sensations	feeling into music (aesthetic empathy)
5	These sounds, how they change, I just think: so wonderful.	sounds feel good				
6	This chord sounds perfect.	sounds feel good				
4	These sounds that make me free feel very warm.	sounds feel warm				
4	I felt myself extraordinarily free.	feeling free	feeling free and relaxed	relaxation and peace	aesthetic enjoyment	
4	My soul was free. It moved and danced.	feeling free and moved				
6	I feel anyway that I am relaxed, balanced, very free.	feeling free, stable and relaxed				
6	This part in the middle was more – was freer, somehow, restful	feeling free and relaxed				
5	At the end everything calms down and then maybe inner peace comes.	feeling peace	feeling peace and stability			
5	I just play quietly, just feel this inner peace, security.	feeling peace and security				
4	[These sounds] are comforting, so simple. I felt safe and stable, so satisfied.	feeling stability and satisfaction	feeling satisfaction	satisfaction		
6	I feel at peace somehow, so saturated.	feeling peace and satisfaction				
6	Nothing, nothing is missing at the moment.	feeling fulfilled				
4	I enjoyed the "trio" part.	enjoying the performance	enjoying the performance			
5	Everything keeps going like this, flow[ing].	feeling flow	feeling flow	flow	unification with music	
6	I try to calm down in this world of sounds, so the piano sounds together with me.	feeling flow				
6	The music and my feelings are together.	feeling connected with the music	feeling connected with the music	connection with music		
6	This is a very intimate moment. I am mostly attentive. I am so involved in the music.	feeling connected with the music, focused				
5	I try to play [the piece] with a bit more attention.	playing with focused attention				
5	I hear a chord and then this part here, [my] upper body is really relaxed.	feeling physically relaxed	feeling physically relaxed	positive physical reactions	positive physical reactions	
5	And I breathe very calmly, and, "yes."	feeling physically relaxed				
6	But for me it is mostly physical relaxation.	feeling physically relaxed				
6	I feel somehow heat or warmth beneath my chest.	feeling physical warmth	feeling physical warmth			
4	I see something, but not a concrete picture – something like a wave, up and down.	perceiving sounds accompanied by (visual) imagery	perceiving sounds accompanied by (visual) imagery	(visual) imagery	(visual) imagery	
6	I see very natural pictures somehow.	perceiving sounds accompanied by visual imagery				
6	[These sounds] are rich, sated and dark green. They are more visual.	perceiving sounds accompanied by visual imagery				

Table 7 • The present author's ongoing analysis of the feelings experienced by pianists in conjunction with their performance. p: participant.

– which the present author refers to as "aesthetic empathy" (Kim 2013, 2015) – by investigating the relationship between subcategories such as positive physical reactions, (visual) imagery a micro-phenomenological nd aesthetic enjoyment. In advancing neurophenomenological research, in which the structures of experience could be compared to the structures of neural activity, thorough investigation of the extent to which the process of categorization of first-person descriptions collected by micro-phenomenological interviews can allow researchers to reveal hierarchical structures of experience appears necessary. Intense discussion in the near future about an appropriate micro-phenomenological analysis method, tying in with a few papers including the target article, would therefore be desirable.

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First-Person Experiences, Privatism and the Evaluation of Structural Content

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> Abstract • I analyze how the micro-phenomenological analysis deals with the challenge of "privatism," before noting some remaining questions concerning the justification of the procedure and its findings.

Introduction

« 1 » The nature of first-person data is still a matter of scientific controversy. Just as controversial is the question of how we get access to mental states and processes in cognitive psychology, neuropsychology, psychophysics and consciousness studies. While it is undisputed that, after the turn to cognitive science in psychology, first-person conscious experiences are legitimate objects of scientific inquiry (Baars 2003), the question remains as to whether first-person data are "directly accessible only to the subjects" experiencing them (Piccinini 2009: 3). Gualtiero Piccinini calls this position "privatism" and claims that its consequence is to invalidate any intersubjective or public evaluation of first-person data (ibid). He gives two reasons for this conclusion:

a private data cannot be "reproduced by independent observers" and
b he data gleaned from first-person experience cannot be validated (or falsified) by publicly accessible means (ibid: 4).

« 2 » As I interpret it, the target article by Camila Valenzuela-Moguillansky & Alejandra Vásquez-Rosati on the micro-phenomenological interview method establishes exactly the converse. Subjects, they maintain, do indeed have direct access to their pre-reflectively conscious states and processes. The analytic procedure of the micro-phenomenological interview technique explicates, however, how the reliability of first-person data can be intersubjectively assessed. In the following comments, I show how the analytic procedure of the micro-

phenomenological interview technique attempts to establish this, but I also note some issues that remain for future research, especially with regard to the structural content of micro-phenomenological analysis.

Evocation, experience and categorical analysis

« 3 » As the authors point out in §3, it is the aim of the micro-phenomenological interview method to obtain detailed procedural descriptions of individual implicit experiences on the part of interviewees. Thus, it is important to keep in mind that the stages of data preparation from the "transcription of the interview" to the "refinement of the data" and the "final selection for analysis" (§§17–25) are based on first-person experiences of the interviewees. Experiences themselves are thus, from the outset, an integral part of the micro-phenomenological approach. Interviewers encourage their interviewees step by step and in a controlled way to *evoke* their embodied experiences (Petitmengin 2006: 245). Interviewees should refrain, for instance, from theorizing about their pre-reflective experiences and focus instead on the procedural dimension of concrete conscious bodily phenomena, such as experiencing their heart rates "from the inside." The proponents of micro-phenomenology have developed indirect criteria to evaluate the authenticity of this process, something they term "performative consistency" (sometimes also "called performative coherence," Bitbol & Petitmengin 2013: 271). This is one indication of how, pace Piccinini, the *reliability* of first-person experiences of conscious phenomena can be evaluated by publicly accessible means without reducing them to observable behavior for purely textual descriptions (for a further contrasting position see Dennett 2003).

« 4 » A further decisive element in validating the micro-phenomenological interview procedure is that it moves from the *fleeting* single first-person experiences to their *invariant underlying structure* in a Husserlian sense (Marbach 2007). In §5, the authors specify this structure as a network consisting of descriptive categories that are *independent of the experiential content*. How should we understand this "independence claim"? (Q1) Let me go into this question in a bit more detail. To obtain synchronic or diachronic structural units from utterances, the authors specify that the initial grouping of utterances used to identify different diachronic units be related to their *extensional properties*. This is in accordance with the overall approach of micro-phenomenology of developing categories out of the interview data without pre-specified concepts that would require an explicit definition (intensional specification) of the properties of classes. But a question arises here. How can this approach justify the independence claim when the process of abstraction and development of semantic networks or synchronic units is accomplished exclusively in strict relationship to concrete instances of the (transcribed) experiential content? I shall return to this question in the final section.

« 5 » The methodological foundation of the authors' categorical approach involves the above-mentioned "invariance" properties of the structure. In §83 the question is raised as to how "invariant" a synchronic or diachronic unit has to be in order to be viewed as part of a generic structure representing types of experiences and their relations. What is at stake here is that, in the last instance, a modal characterization of the structure is being sought. What the interviewees need to analyze and decide is whether the category or unit of utterance in question is *indispensable* for the understanding of the experiences/units in question. In other words, to reduce – in the spirit of the phenomenological reduction – the varieties and richness of the described experiences to their essences means to specify their necessary components. This gives us the fundamental answer as to how micro-phenomenology seeks to avoid the consequences of privatism. Phenomenal experiences communicated by interviewees are transcribed by a team of trained interviewers and assessed in a methodologically controlled way in order to obtain findings such as *types* of synchronic or diachronic experiences.

« 6 » Even though the procedure aims at discovering necessary components within first-person experiences, the entire research process is open to falsification. This is so because each outcome is the result of a complicated "network analysis" that is focused, for instance, on the synchronic enfolding of "getting into contact with one's own body (heartbeats)." To specify the necessary properties (invariances) – including those at different stages of abstraction – requires a holistic and hierarchical explication of the entire structure, an explication that is reminiscent of the *hermeneutical circle* (Stanghellini & Aragona 2016: 34f). Thus, the specification of single units (parts) with regard to the entire structure (and vice versa) is by no means immune to errors, so that the results are always open to public correction and further refinement. In addition, one can archive or test the findings, for instance, by repeating the entire interview procedure or by going back to the stage of re-sequencing the textual descriptions to identify units in the stream of experiences.

Exploring the access to categorical content

« 7 » Consideration of these processes raises another question. On what basis does a micro-phenomenological analysis identify the underlying structural units of phenomenal descriptions? (Q2) In the concluding paragraph, the authors indicate that this question is an explanatory challenge for the micro-phenomenological method, since the grouping process is supposed to start without any pre-specified categories. If this is the case, however, then there are no (categorical) criteria for selecting and combining the extensional properties in the first place. The analysis requires – from the outset – *intensional properties* as well; otherwise it could not even get off the ground. To solve this challenge is decisive for the justification of the entire micro-phenomenological research project. If intensional properties are already operative at the pre-reflective level of the grouping analysis, then one must clarify how we can get methodologically controlled access to them at the reflexive phenomenological level as well. Such a procedure is required because, so long as the generation of structure as such remains a "blind spot," one cannot rule out the possibility that the determination of synchronic and diachronic units might simply be outcomes of individual and cultural biases.

« 8 » As the authors indicate, this challenge is not insurmountable, since one could also analyze the extraction of inten-

sional properties or invariants in further micro-phenomenological analyses. This proposal implies, however, that the underlying categorical content (structure) of such experiences as "getting in contact with my own body" can itself be transformed into an explicit object of experience and analysis. In the philosophical tradition, this capacity is known as intuition. George Bealer, for instance, has defined "intuition" as an intellectual ability to gain access to conceptual, logical, mathematical or modal content on an *evidential basis* that is *independent* of observational (sensory-mediated) experience (Bealer 1999: 249). This approach potentially offers an interesting further ground for the independence claim. If there exists a human faculty allowing access to structural properties, this might help us understand how to begin the initial derivation of categories in the grouping process of the micro-phenomenological interview method. By analyzing the extensional properties (multifarious descriptions of getting in contact with one's own body, for instance) intuitions are already operative in the way we find suitable intensional properties to *classify* the synchronic and diachronic units of the process. In contrast to fleeting experiences, intuitions enable first-person access to structural content, such as in the mathematics that is required to understand the necessary relations in question.

« 9 » All this leads to interesting research pathways and intriguing questions for further micro-phenomenological studies: is there a faculty of intuition that is related to human thinking and categorical content? And if so, how are the different types of content (structural and non-structural) related to each other in the process of analysis? As we have seen, it is important to make headway with regard to those questions in order to provide a thorough justification of micro-phenomenological findings.

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Epoché, Verbal Descriptions and Corpus Size in the Conduct and Analysis of Explicitation Interviews

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> Abstract • Valenzuela-Moguillansky & Vásquez-Rosati have framed out a detailed and meaningful procedure to analyze micro-phenomenological interviews. Here, we comment on two aspects: the place of verbal descriptions during data collection and analysis, and whether the authors' analytical procedure can be scaled to large sets of interviews.

« 1 » Camila Valenzuela-Moguillansky & Alejandra Vásquez-Rosati have done an excellent job of providing a detailed and meaningful analytical procedure for micro-phenomenological interviews. We find their attempt helpful in providing precise terms – such as descriptemes, grouping, aggregation and other abstraction operations – and clear concepts for the successive steps of the analysis. It is helpful especially because during our own analyses, we have often struggled to clearly grasp the impact apparently small decisions can have on later interpretations. Their target article undoubtedly strengthens the rigorous study of lived experience, and future research will gain in transparency, falsifiability and overall credibility by resting on a well-defined epistemology built on thoroughly justified practices.

« 2 » In this commentary, we reflect on two issues related to micro-phenomenological interviews and their analysis. The first issue relates to the place of language in the successive semiotic transformations taking place between the interviewee's original lived experience and the final outputs of the analysis. The second issue is the possibility

of applying the proposed procedure to very large sets of interviews.

Epoché and the verbal description of lived experience

« 3 » Occupying a central place in the micro-phenomenological approach, and relating to the description with words of lived experience, epoché – or suspension of judgment – is one of the conditions for turning one's attention towards oneself and then contacting one's lived experience. It comes from the Greek ποχη, which means "paying attention to a particular phenomenon." This process has been made accessible to empirical science to study subjective experience (Vermersch 1994, 2012; Petitmengin 2006). Epoché unfolds according to three main phases (Depraz, Varela & Vermersch 2000): (1) suspension of attention, (2) re-direction, and (3) letting go. After this process, allowing contact with the evocation of past experience, comes the moment of the verbal description by the subject of what happens to her, within the limits of language. This step raises significant issues challenging the community of practitioners of micro-phenomenological interviews, during both data collection and analysis.

« 4 » During the verbal description, lived experience is "expressed" with words. What does this operation of expression, etymologically "to put outside," consist in? Is it a simple translation of lived experience into linguistic productions, or a more interpretative process? This interrogation is also present during data analysis, when the goal is to construct and to name descriptive experiential categories. In our research (Ollagnier-Beldame & Coupé 2019), we rely on the model of semiosis (in French *modèle de la sémiose*), developed by Pierre Vermersch (2012). This model is a semiotic process of transformation, made of successive resumptions of the research material, for a gradual construction of meaning. It includes several steps through (1) the initial transformations, (2) the organization of data, and (3) the data analysis. Importantly, the model emphasizes the idea that each step is interpretative, and not only those that are part of the analysis.

« 5 » Using language to describe experience raises many questions, related to fundamental properties of language. Depending on different factors – the context, whether a noun is generic or particular, whether it is used with a definite or an indefinite article etc. – words and especially nouns can refer to collections of things or events rather than to specific instances. For example, the phrase "a dog likes bones" does not point to a specific dog, but rather intensionally to a prototypical dog with its defining attributes, or extensionally to all dogs. Since actions, feelings or thoughts in a singular experience are all specific instances, interviewers conducting explicitation interviews will be very sensitive to fine details of the verbal descriptions, in order to detect whether the interviewees are focused on the singular, or start to refer to recurring aspects of different experiences, in which case they will need to be brought back to the specific experience under investigation. Beyond that, however, words, as signifiers, never fully convey all the properties of a specific thing or event. They refer rather to an "envelope" of the latter, which is actually what is needed for successful communication. This derives from the inferential nature of our communication system, which differs from a communication code where the message carries all the information to be conveyed (Sperber 1994). Because of this discrepancy between a signifier and its signified, words are never semantically dense enough to fully express a given lived experience. The practitioner of explicitation interviews will argue that she uses sets of words to increase the overall semantic density of the description. Capturing the whole richness and the subtleties of experience is however more a direction than the assessable achievement of a goal, even with lengthy descriptions. More precisely, language may be said to be partial in two ways. First, since a prototype or a category can create delimitations in an otherwise continuous phenomenon, as do, for example, color terms in the continuous visible spectrum. Second, since these delimitations are partly arbitrary or at least susceptible to variation, as made evident by how cultural diversity is reflected across languages.[1]

« 6 » In their target article, Valenzuela-Moguillansky and Vásquez-Rosati point out the previous problem when they write that "it is important to consider that naming a category is a delicate process since it crystallizes and delimits it, giving it an identity that might not always correspond to the meaning the utterances conveyed" (§63). This difficulty seems to be further compounded by the construction of meta-categories. Although they cannot solve this issue, some strategies can be devised to minimize it. For example, in §51, the authors propose to assign, when necessary, a verbatim statement to several categories, thus offering more flexibility with respect to the meaning of words.

« 7 » In addition to these difficulties, when describing lived experience with language we sometimes also encounter situations in which words fail to express something – rather than "just" not being perfectly appropriate. There are two cases: unspeakable and ineffable. In the case of the unspeakable, "what we absolutely cannot talk about" (Jankélévitch 1983), something, e.g., death, is said to be out of reach of language or in a way "below words." In the case of the ineffable, something is rather "beyond words," in the sense that it is too extraordinary to be described with mere words, e.g., deep love. In the former case, something may not be thinkable and, therefore, cannot be said. In the latter case, something may be thinkable and experienced, but would require an "infinite" speech according to Jankélévitch, i.e., a sheer endless amount of words, to be properly conveyed.

« 8 » The limitations of language discussed in §5 and §7 can be seen as "qualitative," when words do not authentically describe the experience, or "quantitative," when they do not fully describe the whole experience. Micro-phenomenological interviewers constantly come up against these limitations, both during data collection, when interviewers must not hinder the interviewee's epoché, and later during the analysis of these data, when they must access the reference experience.

1| This echoes the mistrust Chinese philosopher Zhuangzi had regarding language. For him, the Dao, or "reality," is conceived as a totality, but cannot be expressed as such. Indeed, any discourse introduces human and social "cuts" ("*bian*" in Chinese, a character which can either be written with a radical for language or a radical for a blade) into this totality, and thus ultimately betrays the "true" nature of Dao (Cheng 1997: 116).

Scaling the analytical procedure to large sets of interviews

« 9 » In their article, for the sake of clarity, Valenzuela-Moguillansky and Vásquez-Rosati apply their procedure to a small set of five interviews. However, they mention that they have actually analyzed a much larger corpus of 55 interviews with the same approach. Readers who use similar methodologies will have in mind the amount of work and time needed to achieve this large-scale investigation. This is due to two factors: first, the iterative nature of several stages of the procedure, involving progressive refinement; and second, the need to regularly come back to the primary descriptemes to assess one's "incipient" categories, whether specific or generic. Furthermore, the target article conveys the impression that a trial-and-error approach always eventually elucidates uncertainties. However, during our analyses (Ollagnier-Beldame & Coupé 2019), we are often left with unresolved issues. Especially when trying to recover the diachronic structure of a lived experience, we often find ourselves unable to satisfyingly order the verbatim statements.

« 10 » Beyond time, one can question the feasibility of applying the whole analytical procedure to several dozens of interviews. Is the shift from five interviews to fifty or more only quantitative? On the one hand, the specific analyses are the same for all interviews. Analyzing fifty interviews thus takes "only" ten times longer than the analysis of five. On the other hand, when it comes to the generic analyses, we argue that the complexity of the task does not increase linearly with the number of interviews. Indeed, as the size of the corpus increases, each additional interview – i.e., its descriptemes and specific units – must to some extent be compared to all other previous interviews, resulting in a quadratic complexity. It seems nearly impossible to pay equal consideration to all sets of specific categories and descriptemes while shaping generic descriptions. This may apply at the operational level, when juggling with computer files, papers etc., but may do even more so at the cognitive level. It is our intuition that at some point the analyst(s) will necessarily give priority to some descriptions over other, and therefore create an asymmetry in the whole process, further compounded by their familiarity and experience with descriptive categories. This will in turn grant more significance to some specific outputs than others. While this may not lead to drastic analytical issues, it, however, contradicts the principle that more (interviews) is necessarily better.

« 11 » If too few interviews are not enough to grasp the diversity of possible human experiences and too many become intractable, what is the appropriate size of a corpus of micro-phenomenological interviews? (Q1) Analyzing interviews progressively as they are being conducted is a meaningful approach, although one can never be sure whether the next interview will reveal something radically new or only confirm what has been discovered already. While one may hypothesize a reasonable target, the decision, however, probably depends on the situation under investigation and possibly the profiles of the interviewees.

Conclusion

« 12 » Conducting micro-phenomenological interviews and tackling their qualitative analysis are a strong commitment to an innovative epistemological approach. In this light, the value of Valenzuela-Moguillansky and Vásquez-Rosati's contribution should be stressed once again. With respect to the challenges of their methodology, one can raise the question of what could be done to ease the whole analytical procedure. On the one hand, one may cautiously consider certain shortcuts at different stages. On the other hand, alternative analytical techniques can be used, such as the application of text mining tools (Przyrembel & Singer 2018). Also, dedicated software could be developed and tailored to the specific needs of the method, including graphical tools to get a broad view of several semantic networks or sets of dynamic lines, with easy access to the connected descriptemes. Such an approach could partially lift the operational and cognitive limits we mentioned in our commentary.

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Authors' Response
Enacting the Micro-Phenomenological Method

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> Abstract • We discuss the epistemological background of micro-phenomenology, we clarify some aspects of the proposed procedure, and we expand our reflections on some of the challenges facing micro-phenomenology.

« 1 » First of all, we would like to extend our thanks for all the comments received. **María Isabel Gaete**, **Urban Kordeš**, **Terje Sparby** and **Christian Tewes** invited us to share our thoughts on the framework within which micro-phenomenology is situated. The comments of **Jin Hyun Kim**, **Kordeš, Sparby** and **Tewes** allowed us to clarify some aspects of the proposed procedure, and those of **Christophe Coupé & Magali Ollagnier-Beldame** to expand our reflections on some of the challenges facing micro-phenomenology.

Clarifying the epistemological background

« 2 » Several of the points made in the comments request, in a more or less explicit manner, a definition of the frame of reference in which micro-phenomenology is situated and, consequently, of the criteria underlying the validation of its results. Responding to this request is not trivial, since micro-phenomenology originates from one of the research programs that developed from the enactive approach to cognition, neurophenomenology, which was born at the crossroads of two explanatory frameworks: that of the natural sciences and that of the human sciences. If we hastily adhere to either of these two frameworks, we are likely to lose sight of the innovative character of micro-phenomenology, i.e., its understanding of cognition as a doing, and its rethinking of the dualist position of modern Western science and philosophy with regard to cognition.

« 3 » In this section we briefly review the line of thought leading to micro-phenomenology in order to clarify its epistemological and ontological assumptions.

« 4 » The enactive approach to cognition (Varela, Thompson & Rosch 1991) has one of its roots in biology of cognition, the development of a systemic view of living beings. On this view, a commitment is made to address the problem of cognition, from its self-referential nature: we can only understand cognition through our ability to know, that is, through our experience as "observers." Consequently, it is then intended to examine cognition by considering the emergence of the observer, investigating its biological origin.

« 5 » Like second-order cybernetics, biology of cognition points to the autonomy and self-referential character of living beings, whose organization is distinguished by its *autopoiesis*, which makes them capable of specifying their own operational domain (Maturana & Varela 1973). In this way, living beings are structurally determined systems, which means that it is the structure of the organism that determines the type of change triggered by the perturbations of the environment. The recurrent interaction between an organism and its environment structurally couples them, where the history of mutual perturbations results in effective actions of the organism in its environment that allow the living being to continue its existence. Thus, cognition is understood as an active and embodied process that occurs in the relationship between the organism and its environment (Maturana 1983; Varela 1992). In this way, the assumption of an "objective world," pre-existing and independent of the subject, is replaced by an objectivity "in brackets" or "constituted objectivity" (Maturana 1978, 1988) where the structure of the organism (its body) and the history of interactions with the environment play a central role in the constitution of its world. This epistemological stance implies an ontological turn resulting in what Maturana calls "constitutive ontologies":

> "[…] everything that the observer distinguishes is constituted in its distinction […] each domain of explanations, as a domain of reality, is a domain in which entities arise through the operational coherences of the observer that constitutes it, and as such it is an ontological domain. Finally, in the domain of constitutive ontologies there are as many different legitimate domains of reality as domains of explanations an observer can bring forth through the operational coherences of his or her praxis of living, and everything that an observer says pertains to one. Due to this, every statement that an observer makes is valid in some domain of reality, and none is intrinsically false." (Maturana 1988: 33)

« 6 » Therefore, what validates the explanations of an observer are the operative coherences that constitute such explanations and not a correspondence with an objective reality. We propose this to be the epistemological framework for micro-phenomenology against which we should address questions such as whether we should consider micro-phenomenology a qualitative methodology. With this proposal we follow **Gaete**'s (§1) suggestion that before starting any methodological comparison it is necessary to determine the epistemological framework of the micro-phenomenological interview.

« 7 » We have difficulties with **Kordeš**'s (§3) view of micro-phenomenology as being qualitative data analysis. The latter does not clarify central aspects of its methodology, nor of the epistemological and ontological framework in which it is situated, since the field of qualitative methodologies is very heterogeneous and full of divergent epistemological claims, as **Gaete** points out in §2.

« 8 » Starting with the epistemological framework outlined above, we can identify two central issues in micro-phenomenology as an emerging discipline (and no longer only as a methodology) that could guide any methodological comparison.

a Since micro-phenomenology recognizes that it is through experience that we know and that we bring forth a world, the development of a practice of the study of lived experience is of great relevance.

b In order to enable (a) it is necessary to suspend the assumption of the objective

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world as we experience it in our everyday life.

« 9 » As pointed out by Kordeš (§2), contrary to most qualitative methodologies, micro-phenomenology has put great emphasis on techniques for data collection. This is precisely because of the significance of guiding the interviewee in the suspension of their assumptions about the world as they experience it in our everyday life. According to Gaete (§4), this could be considered a "double bracketing" since it is not only the analyst who should try to suspend her assumptions and beliefs – as it is in the case of most qualitative methods inspired by phenomenology – but also, in particular, the interviewee who has to suspend her assumptions and beliefs about her own experience. We could consider even a "triple bracketing," since the interviewer (who is not always the analyst) should also try to suspend her beliefs about the interviewee's experience.

« 10 » The way in which we understand such bracketing aligns with the second option in Gaete's §6, "a manner of looking at the lens," i.e., our experience, to see how a particular object appears to us. Similarly, the analysis procedure proposed in our article results from an attempt to look at how, in our experience, we identified the categories and the structure of a given experience. As illustrated by Figure 1 in Gaete's commentary, this attempt involves applying the analysis procedure to the process of analysis. Coherent with the epistemological framework presented above, such an endeavor is required because that which validates the results of a micro-phenomenological investigation are the operative coherences that constitute the results rather than correspondence with an objective reality (Petitmengin & Bitbol 2009; Bitbol and &2013). Therefore, in order to validate the results of our analysis, we cannot appeal to a correspondence with some "true structure" but should rather appeal to the coherence of the operations that led to proposing that structure (see our article **§9** and Petitmengin, Remillieux & Valenzuela-Moguillansky 2018). In order to evaluate this coherence, it is necessary to share with a community of researchers the conditions that led us to distinguish our results – hence the relevance of the proposed procedure.

Clarifying the analysis procedure

The linearity of the processes of analysis and the concertina metaphor

« 11 » We appreciate Sparby's comment on the linearity of the analysis process (§3) and the concertina metaphor (§2), as it will allow us to clarify our view on the dynamics of the proposed process.

« 12 » The task of making the procedure of the analysis process explicit poses a challenge: What is the optimal order in which the different steps and elements that make up this procedure should be narrated in order to understand it? Like the narration of an experience, the order of the description of a procedure is not the same as the order of the procedure itself. Our key decision was to describe the micro-phenomenological analysis procedure based on a concrete example. This option imposes a specific order on some of the procedure's stages and steps. However, in our article we wanted to specify that throughout the analysis there are other possibilities. For example, in §48, we point out that diachronic and synchronic analyses can be performed independently of each other.

« 13 » Addressing Sparby's Q1, Figure 1 of this response is an attempt to graphically represent the dynamics of the analysis process, which far from being linear, is recursive in several of its phases. A first recursion appears already in the investigative process in which the micro-phenomenological analysis is framed: the analyses of the interviews allow us to specify the research question, which in turn allows us to specify the experiential protocol, from which we can carry out new interviews, which are subject to new analysis, and so on, until the research question and the experiential protocol are stabilized.

« 14 » As Sparby (§4) points out, another recursion can occur between synchronic and diachronic analysis: synchronic analysis can reveal diachronic aspects of experience, which causes the diachronic structure to change, which in turn can generate the need for new synchronic analysis, and vice versa. Generic analysis will also generate questions in the specific structures and probably modify them, as we pointed out in §82 of our article.

« 15 » In the final section of our article, "The refinement of the structures" (§98), we again emphasized this circular dynamic: We postulated the need to permanently contrast the emerging structures with the description of the experience and with the understanding that we have gained from it through the analysis that we have carried out up to that moment. This contrasting is necessarily done by repeating certain steps of the analysis, which may even include revising the audio recordings of the interviews again, as was the case in the example described in §§100f.

« 16 » Although we emphasized the circular dynamic only at the end of the article, this does not mean that the contrasting is something that is done only at the end of the analysis. This is also why it does not appear as a step in the analysis. We mentioned it at the end because it is only after exposing all the stages, steps and elements of the analysis procedure that the reader will be able to better understand what we mean by the refinement of the structures.

« 17 » This contrasting movement of coming closer and moving away, or of going *in* and *out* as Gaete (§1) describes the relationship of a painter with her art work, is one of the aspects of the proposed procedure that we wanted to illustrate with the metaphor of the concertina.

« 18 » We agree with Sparby (§2) that a closed (or open) concertina does not produce any sound. The same happens with the analysis procedure, if this is understood simply as a chronological succession of fixed steps. Only when the concertina is being closed and opened does it produce sound. The same happens with the proposed procedure: it is by contrasting and dialoguing its different stages and steps that the structures appear. So, to correct Gaete's (§1) reading of our metaphor: it is not when the concertina is closed that there is a dialogue between the different phases of the analysis, or when the concertina is open that a new structure emerges. Rather, it is in the movement of opening and closing the concertina that the different phases of the analysis are in dialogue among themselves and with the data, which in turn allows the structure of the experience to appear.

« 19 » Another element that led us to choose the concertina as a metaphor was

our intention to emphasize the participation of the criteria used in the decision-making involved in the different stages of the analysis. The folded structure of the concertina's bellows allows the movement of opening and closing the concertina, which in turn makes sound possible. Each fold of this structure (i.e., each stage of the analysis) has a surface that is seen and another that is not seen. In our metaphor, the surface we see corresponds to the result of a particular stage of analysis and the surface we do not see corresponds to the dilemmas the analyst is facing at that stage and to the criteria used to solve them (or not!). As pointed out, for example, in §90 of our article, it is the recording of these criteria that allows the researcher to go back and forth from one stage of analysis to another in a recursive movement without making categories and structures appear to be "arbitrary."

« 20 » In response to Kordeš's Q1, the virtue of proposing a step-by-step analysis procedure is that it allows us to trace the path leading to the results. This makes it possible for the researcher to return again and again to the different steps of analysis, addressing the questions that arise along the way and recursively nurturing diachronic, synchronic, generic and specific analyses. In addition, it allows the results to be shared and discussed with other groups of researchers, establishing a common language at the base of the analysis process. This in no way excludes the possibility of carrying out this process in a curious and intuitive way: In order to allow the unfolding of curiosity and intuition, what we propose in our article is a procedure that allows us to observe, in an attentive way, the implicit, pre-reflective criteria that operate in the analyst's categorization process rather than fixed categorization criteria. As pointed out by Juliana Alvarenga (2016) in her comparison of artistic and alchemic processes, the repetition and the inclusion of error are devices that can be used to freely choose the research path that stimulates other types of knowledge, such as intuitive insights, which deepens our understanding of the phenomena under study.

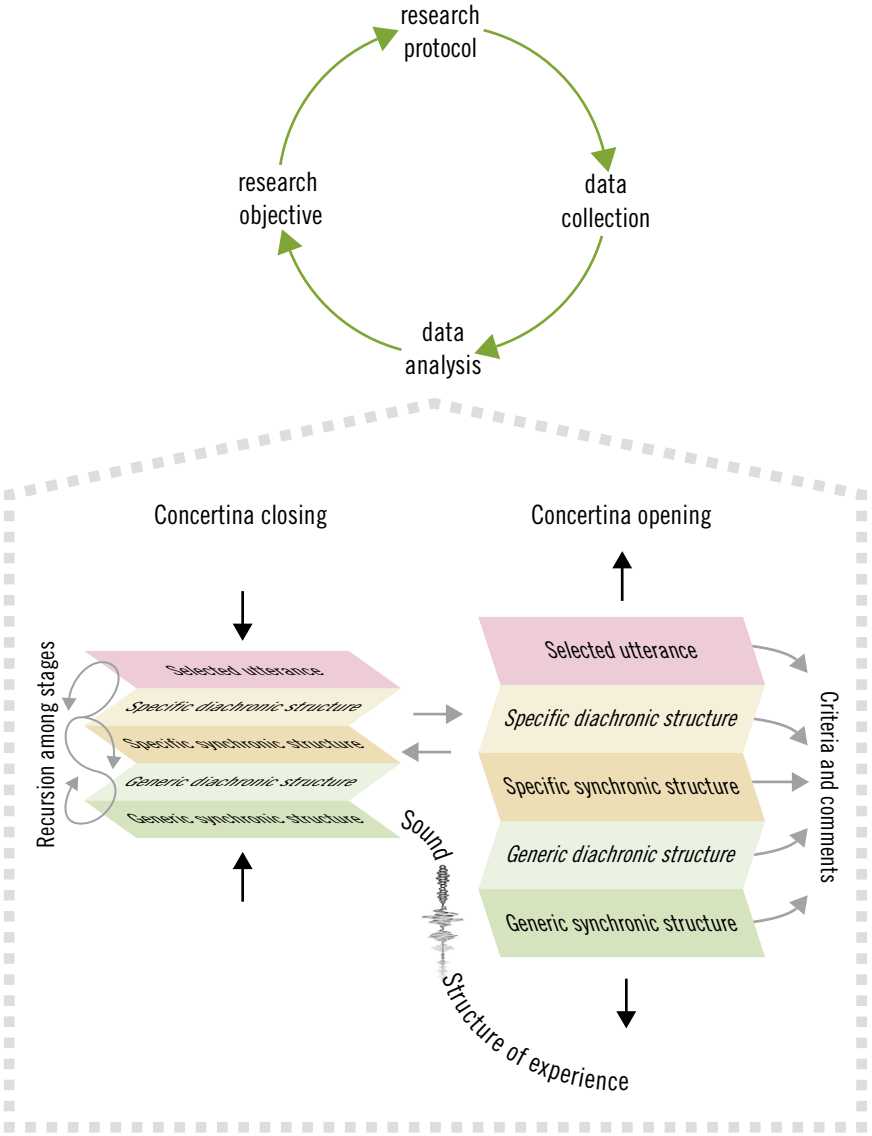

Figure 1 • Graphic representation of the dynamics of the analysis process. Each stage consists of three steps as described in our article. The name of each surface of the concertina is the final product of each stage of the analysis. Along with the result of each stage are recorded the criteria and comments represented by the non-visible side of the concertina, as shown on the open concertina. In addition, there is feedback between the stages of the analysis, as shown on the closed concertina. It is in the opening and closing of the concertina that the concertina emits its sound and where the structure of the experience emerges.

The categorization process

« 21 » With regard to the alleged categorization problem raised by Kim's Q1, we would like to offer some clarifications. According to our proposal, the mechanism that allows the appearance of categories is *iterative interrogation*. It consists of iteratively questioning (a) the grouped utterances, and (b) the incipient units that are in the process of stabilization. Therefore, answering Kim's question, the operation of abstraction that operates in the appearance of a category is *grouping*.

« 22 » Then, the synchronic and diachronic units are organized and often tuned through the operations of abstraction, i.e.,

classification/instantiation, generalization/specialization, and aggregation/fragmentation.

« 23 » In this way, the incipient character of a category is defined "contextually" or "relationally" by the state of progress of the analysis and the stability of the structure in question. Thus, diachronic or synchronic units can be redefined or refined during their organization and during the definition of the diachronic and synchronic structure through the operations of abstraction.

« 24 » This takes us to Kim's Q2. We would like to emphasize that in our proposal, semantic networks are *not* the basis of the categorization system. As pointed out by John Sowa (1987), semantic networks are a way of *representing* knowledge through interconnected patterns that graph the relations (abstraction operations) among categories. In other words, semantic networks are not a mechanism to generate a category but a way to organize categories once they have been identified.

« 25 » In our reading, Kim (§8) proposes intermediate steps in the process of generating categories that result in "types" or "classes," i.e., stages that would be prior to the definition of a category. However, the "general to specific" hierarchy that traditionally relates the categories proposed by Kim (type, class, subcategory and category) does not necessarily account for the *emergence process* of these categories. For example, according to prototype theory (Rosch et al. 1976), humans first identify categories that are cognitively more "natural." This "natural" (or "basic") character is supposed to be given by variables that have to do with the relation between the observer and that which is being categorized, such as usage (sensorimotor affordances), familiarity, context, ease of perception and memory. As explained by George Lakoff (1987), the level at which we learn object categories and name objects is neither the most general ("category" in Kim's example) nor the most specific level ("character" in Kim's example) but is commonly positioned in the center of a "general to specific" hierarchy.

« 26 » With this reflection we can address Tewes's Q2. There is indeed an implicit criterion to select and combine the extensional properties in the first grouping operations. These properties have to do with the variables mentioned above, such as usage, familiarity, and context, i.e., with the cognitive and sociocultural background of the researcher in her relation to what she is analyzing. The context in which the research takes place and, particularly, the objective of the research, are also part of these criteria. Considering the epistemological framework specified in the first section of this response, the impact of the analyst's individual and cultural background on the distinction of the diachronic and synchronic units is not a mere bias, as warned by Tewes (§7), but a constitutive dimension of the "observer" as such. What we can do so that the synchronic and diachronic units are not arbitrary is to specify the conditions for the observation of these units, allowing their validation. We agree with Tewes (§7) that to get controlled access to the pre-reflective level in which those intentional properties operate remains a challenge and we hope that the proposed procedure is a step in that direction.

The "independence claim"

« 27 » Addressing Tewes's Q1, the "independent" character of the diachronic and synchronic units is defined by the distinctions made by the analyst through the iterative interrogation process, in which the analyst tries to establish the common features of a group of utterances. In other words, she abstracts an attribute, a characteristic or an element that, throughout the interrogations, remains independent of the utterances themselves.

« 28 » To illustrate what we mean by "independent," let us assume the analyst has collected descriptions from a task in which participants have been asked to mentally spell the word "chrysanthemum." The analyst's objective is to find categories that allow the characterizing of the visualization of the word "chrysanthemum" from utterances such as:

- "I visualize the letters, in print. Black letters on a white background."
- "The letters are red, they appear syllable by syllable."
- "I see the letters in front of me, white letters."
- "First the whole word appears and then I go letter by letter, and as I spell it, the letter gets highlighted, but not in a specific color."

« 29 » Depending on her (often implicit) grouping criteria, she will have formed different incipient units. For the sake of the example, let us refer to a synchronic unit we have identified that refers to a characteristic of the letters as "seen" by the participants: "color."

« 30 » "Color" is a notion that we abstract from the descriptions and that also allows us to refer to some experiences in which the letters appear without any specific color. This abstract notion of color is independent of whether the individual instances are blue, green, etc. It is in this sense that we understand the notion of "independence." At the same time, the category "color" arises from these instances, without which we would not have reached this abstract category. But the abstract category no longer requires the instance to specify its meaning, hence we can also define it by intension.

« 31 » In line with the epistemological framework described in the first section of this response, we do not claim that the categories or the distinguished structures exist in a reality independent of the observer and of the process that distinguishes them. Connecting to Maturana (1978), through the operation of distinction an entity is specified by operationally separating it from a background. This results in "a thing with the properties that the operation of distinction specifies, and which exists in the space that these properties establish" (Maturana 1978: 34).

Challenges for micro-phenomenology

The issue of language

« 32 » We agree with Coupé & Ollagnier-Beldame (§5) about the challenges micro-phenomenology faces regarding the issue of language. We share the commentators' concerns regarding the use of words in the analysis process and would like to add further issues regarding the use of words when conducting the interviews.

« 33 » Anyone who has done research using the micro-phenomenological interview will probably be aware that the richness of the description of an experience does not depend solely on whether the interview was conducted properly. Often, we have subjects displaying difficulties when putting their

experience into words. It is hard to know whether it is because

a of their difficulties coming into contact with a given experience,
b of their general difficulties putting the experience into words, or
c there may be aspects of the experience or even experiences that are unspeakable or ineffable, as pointed out by **Coupé & Ollagnier-Beldame** (§7).

« 34 » Considering that the level of evocation is one of the criteria for assessing the quality of our data, difficulties such as the ones described above pose quite a few practical challenges:

- Should we discard from the analysis descriptions that do not fulfill the expected level of evocation and richness?
- What if the "difficulty" in evoking or describing a given experience is reflecting a specific personality trait?
- How to study the structure of experience of those persons?
- Would it be appropriate to consider, within the same group, descriptions that fulfill the expected level of evocation and richness along with those that do not, in order to identify the generic structure of a given type of experience?

« 35 » While we cannot offer general answers to these questions yet, we can at least suggest ways of addressing them.

- Refine the indicators of the evocation and expand them to account for the diversity in the ability – and maybe in the modes – of coming into contact with one's experience.
- Reflect on ways of distinguishing between the three types of difficulties pointed out in §33, for example, by using specific questionnaires that assess the ability to describe felt experience, including an alexithymia questionnaire, and interoceptive awareness.

« 36 » Regarding the unspeakable and ineffable aspect of experience, we consider it necessary to integrate other tools and languages (including various expressive, non-verbal and artistic languages) that can enable a different type of access to the preconceptual dimension of lived experience, as pointed out in our article (§§108f). The importance of such tools and languages for gaining a better understanding of human experience informs us about central aspects of the structure of experience. For example, the use of somatic techniques for the treatment of trauma reveals that certain experiences have a bodily inscribed "meaning," which we cannot access through traditional narrative psychotherapy (Payne, Levine & Crane-Godreau 2015).

The number of interviews and the generic analysis

« 37 » We agree with **Coupé & Ollagnier-Beldame** (§10) that an increase in the number of interviews non-linearly increases the complexity of the analysis, and that analyzing more interviews is not necessarily better. Addressing their Q1, to determine the appropriate size of a corpus of micro-phenomenological interviews, we must reflect, as a community of researchers using this approach, on the particularities of this approach and of the analysis process in order to identify *ad hoc* criteria, as **Coupé & Ollagnier-Beldame** were doing. Among the variables we consider relevant for evaluating the appropriate number of interviews are

a the objective of the research (whether it has to do with the diversity of possible experiences or a structure that unifies a type of experience);
b the type of phenomenon (whether it is scarce or not);
c the stability of the structure found (saturation principle).

Conclusion

« 38 » Placing the process of micro-phenomenological analysis within the epistemological framework of the enactive approach to cognition allows us to broaden our gaze and consider micro-phenomenology not only as an interview method but also as a developing discipline. As pointed out in §8 of this response, in our view the focus of this emerging discipline is on

- developing a practice of the study of lived experience, and
- suspending the assumption of the objective world as we experience it in our everyday life.

This focus makes it possible to:

- Situate our endeavor within an ontological framework, which in turn allow us to specify validation mechanisms and procedures for it.
- Assume the limitations a specific tool may have – such as the issues related to the use of words following a propositional logic, pointed out by **Coupé & Ollagnier-Beldame** and referred to in §§34f of our response – and look for different tools, languages and means that can help us to overcome these limitations.
- Within the epistemological framework of the enactive approach to cognition, address other open questions. For example, micro-phenomenology, like any approach studying experience, has to face the challenge that experience is always described in retrospect. That is to say that in order to connect with a particular experience and to describe it, we need to rely on memory. One of the criticisms made towards first-person approaches is that we cannot access our past experiences accurately and reliably because it is very likely that we have created "false" memories. However, the notion of memory subject to this criticism assumes a representational approach, i.e., the recalling of events as they "objectively happened." Would this also apply to the enactive understanding of memory? How can this understanding of memory shed light on the evocation process of getting in contact with and describing a past experience? Addressing these questions will contribute to the refinement of the indicators of the evocation process.

« 39 » Continuous application of the analysis procedure for the micro-phenomenological interview will reveal aspects that need to be further developed and improved. To stress again what we said in our article (§110): the procedure is open to being completed, deepened and improved to contribute to the establishment of standards in micro-phenomenological research, consolidating the intersubjective validation procedures that allow us to evaluate the quality of its results.

« 40 » In this response we have tried to clarify the dynamic character of the proposed analysis procedure and the relevance of tracing the path leading to the results. The concertina only makes music if it is played. Similarly, the procedure only allows the appearance of meaningful structures if performed with a curious and attentive attitude,

incorporating the recursive and embodied features of our categorization patterns. So, let us play the concertina and see where it takes us!

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