Phenomenology and temporality in psychopathology: Calibrating qualitative phenomenological methods according to the timescale of subjective reports

Aleš Oblak[1,*]

Dominik Milotić[2]

Borut Škodlar[1, 2]

Jurij Bon[1, 2]

1. University Psychiatric Clinic Ljubljana
2. Faculty of Medicine, University of Ljubljana

* Corresponding author: ales.oblak@psih-klinika.si

Abstract

Many methodologies for systematic study of lived experience have been proposed. Methods are typically calibrated in terms of the depth and complexity of data collection and whether they consider reports on pre-reflective experience admissible. Even though it has been shown that lived experience occurs at different timescales (elementary, integrative, narrative), contemporary methods tend to focus on momentary experience. We trace the focus on momentary experience to the current cultural milieu and attitudes in the history of psychology. We point out the need for studying temporally extended experiences in the field of psychopathology. We propose that lied experience at different timescales are nested within each other and that this principle can be used to organize data collected with qualitative phenomenological methods. We suggest that temporally extended experience occur at the narrative level of description (i.e., they consist of experiential reports and sense-making).

1. Introduction

In the past three decades, there has been a resurgence in the interest in the study of consciousness (Flanagan, 1995; Roy et al., 1999; Varela et al., 2016). This interest is reflected in the development of novel methodological frameworks for the systematic study of lived experience (Albertazzi, 2021; Berkovich-Ohana et al., 2020; Hurlburt, 2011; Petitmengin, 2006; Ramstead et al., 2022). In addition, epistemological discussions have focused on how to integrate subjective reports into the sciences of mind (psychology, neuroscience, cognitive science, psychopathology) (Thompson, 2010), and guidelines have been established for how best to conduct phenomenological studies, ranging from integration into experimental research designs (Gallagher and Brøsted Sørensen, 2006), to training participants in how to observe and report their experiences (Abdoun et al., 2019; Miyahara et al., 2020) to analysis of qualitative material (Petitmengin et al., 2019; Smith et al., 2022; Valenzuela-Moguillansky and Vasqeuz-Rosatti, 2019.), and validation of experiential categories (Oblak, 2021).

While there are many methods for collecting experiential data (Bagdasaryan and Le Van Quyen, 2013; Gaete Celis, 2022; Valenzuela-Moguillansky and Demšar, 2022), subjective reports are collected mainly with qualitative interviews. Several methodologies have been proposed, ranging from descriptive experience sampling (DES; Hurlburt, 2011), which is based on ecological sampling of momentary experiences, to micro-phenomenology (MPI; Petitmengin, 2006), an interview approach based on the paradigm of embodied cognition that seeks to describe lived experience in terms of both how it evolves over time and how it appears to consciousness at a given moment (for a partial overview, see Høffding et

al., 2022). While DES and MPI are the golden standards in contemporary qualitative phenomenology (Froese et al., 2011), other approaches such as interpretative phenomenological analysis (IPA; Smith et al., 2022), and a range of psychopathological interviews (Jansson and Nordgaard, 2016; Parnas et al., 2005; Sass et al., 2017; Stanghellini and Mancini, 2017) are also widely used.

1.1. Calibrating qualitative phenomenological methods

To allow for the systematic collection of experiential reports, we must decide what we consider valid data. Two broad approaches have been proposed. First, Berkovich-Ohana et al. (2020) suggest that we can distinguish between two types of data collection techniques along the dimension of depth and complexity of inquiry: *thick* and *thin phenomenology*. Thick phenomenology refers to a set of methods that collect detailed reports about single episodes of experience (e.g., MPI). The goal of thick phenomenology is to describe a novel phenomenon. Conversely, thin phenomenology refers to collecting data based on preexisting theories. This reduces the complexity of the data collection process but increases the risk of researcher bias (e.g., questionnaires and self-reports; Alderson-Day et al., 2018; Gamma and Metzinger, 2021) In between, we find methods that compromise between depth and breadth of inquiry, such as DES (Hurlburt, 2011), various semi-structured interviews (Montgomery and Asberg, 1979; Parnas et al., 2005; Sass et al., 2017), and in-depth interviews that draw on pre-existing phenomenological concepts (Stanghellini and Mancini, 2017).

Second, Froese, Gould, and Seth (2011) proposed that at the onset of a phenomenological study, we have to decide on our *conception of consciousness*; that is, how we treat pre-reflective experience. Pre-reflective experience refers to those aspects of consciousness that we are not thematically aware of at a given moment, but that are nonetheless part of the description of how it feels to be us. Some methodological frameworks (e.g., DES) claim that reports on pre-reflective experience are constructed anew during the interview (i.e., they are made up) and therefore should not constitute valid data. Other frameworks (e.g., MPI) claim that it is precisely the role of a phenomenological interview to direct a person's attention to pre-reflective consciousness and make them thematically aware of it. Such experiences are thus not considered to be constructed anew, but merely observed from a novel perspective.

While Froese, Gould, and Seth (2011) only analyze DES and MPI, many interview methods in descriptive psychopathology allow for pre-reflective aspects of experience (Ouwersloot et al., 2020), as disorders such as schizophrenia, can be productively understood as disturbances of the minimal self (Cermolacce et al., 2007). For example, we commonly distinguish between two ways of attending to the body: *Körper* or the body-as-object, and *Leib*, the body-as-subject (Colombetti and Ratcliffe, 2012; Fuchs and Schlimme, 2009). The body-as-object refers to the body we have, the body that can be described with the constructs of natural science (e.g., mean arterial blood pressure and fasting glucose level). On the other hand, the body-as-subject refers to our experience of the body as a skillful medium through which the world is disclosed to us. Whereas in everyday experience the body-as-object is in the background of our consciousness, this experience is foregrounded in illness (Carel, 2016, Fernandez, 2020; Thompson, 2023; Toombs, 1993). The body is no longer a skillful instrument with which we can transparently engage with the world. It becomes awkward and difficult-to-control; muscles can feel rigid and immovable; and physical processes, such as digestion, may feel slowed down. (Fuchs & Schlimme, 2009)

Moreover, psychiatric illness cannot be considered simply a momentary state. Rather, it is influenced by the broader context of a person's life (De Haan, 2020; Fuchs, 2017; Jaspers, 1997). A person must make sense of the illness. According to De Haan (2020), it is precisely this ability of sense-making that is the essential feature of psychiatric disorders. However, the process of sense-making depends on the person's entire existential situation (e.g., upbringing, culture, values) (Stanghellini & Mancini, 2017), which are difficult to capture on a moment-by-moment basis. For example, Medeiros et al. (2021) report an MPI-based study of how patients with anxiety from the Chillean population use a mindfulness intervention to

avoid negative emotions. The authors note that the effectiveness of the intervention may be related to the Chilean Catholic cultural milieu. However, MPI was unable to generate in-depth accounts of how the cultural setting entered participants' awareness.

Different conceptions of consciousness, and thick and thin phenomenology may seem like related dimensions where thick phenomenology admits data on pre-reflective experience, whereas thin phenomenology does not. However, in practice, we find all combination of the two dimensions. See Table 1 for a summary of the different types of experiential accounts.

	Thin phenomenology	Thick phenomenology
Reports on pre-reflective experience not admissible	Reports are fitted onto an existing theoretical framework. Focus on narrow domains. The goal is commonly quantification. Method example: Positive and Negative Symptoms Scale (Opler et al., 2017), semi-structured interviews such as MADRS (Montgomery and Asberg, 1979), and HAM-D (Hamilton, 1960).	Aimed towards the discovery of novel aspects of experience. Focus on many different domains of experience. Does not rely on pre-existing theoretical structures. The goal is to focus on those aspects of experience that are immediately present to consciousness and minimize the effect of retrospection. Method example: Descriptive Experience Sampling (Hurlburt, 2011)
Reports on pre-reflective experinece are admissible	Reports are fitted onto an existing theoretical framework that includes descriptions of pre-reflective experience. Focus on narrow domains. The goal is commonly quantification. Method example: Examination of Anomalous Self Experience (Parnas et al., 2005); Examination of Anomalous World Experience (Sass et al., 2017).	Aimed towards a detailed description of the structure of experience. The goal of the interview is for participants to become thematically aware of pre-reflective experience, while minimizing constructing novel experience. Method example: Interpretative Phenomenological Analysis (Smith et al., 2022), micro-phenomenological interview (Petitmengin, 2006).

Table 1. Overview of methodological frameworks in qualitative phenomenology according to conception of consciousness, and thick and thin phenomenology

1.2. Phenomenology and temporality

One dimension of experiential data, already hinted at in the early neurophenomenological (Varela, 1999), has been under-explored: the question of the timescale of subjective reports. Cognition has been shown to occur on different timescales at both the levels of neural dynamics and lived experience. At the neural level, this principle is most readily seen in *neurocognitive networks*. These are functionally, structurally, and dynamically stable patterns of neural connectivity within and between brain regions that support cognitive activity (Bressler, 2008; Varela et al., 2001). The broadest timescale relevant to describing neurocognitive networks is ontogenetic (how they evolved to the species level during evolution). At lower timescales, they reflect the influences of culture (Roepstorff et al., 2010). At a level between seconds and

hours, they reflect moods and various motivational states (Li et al., 2018). At the sub-second level, the dynamic activity of neurocognitive networks reflects cognitive subprocesses (Bressler, 2008).

Varela (1999) noted that cognition at the neural and phenomenological levels of description occurs at three timescales: 0.1, 1.0, and 10 seconds (Varela, 1999). Later, Gallagher (Gallagher, 2017) termed these timescales *elementary, integrative,* and *narrative*, respectively. Modern qualitative phenomenological methods such as DES (Hurlburt, 2011) and MPI (Petitmengin and Lachaux, 2013), focus on lived experience as it occurs in the moment, i.e. on timescales of seconds (in a recent review of the various methods used in qualitative phenomenology, the emphasis was primarily on the techniques that examine "singular experiences" or experiences that last "for a few seconds"; Høffding et al., 2022). In our reading, this assumption has two origins: in the current cultural milieu and in the history of psychology.

Let us first consider the cultural aspect. It is likely that this assumption is influenced by what Lifshitz and Veissière (2019) call the *hegemony of the present moment*. This is a culturally specific anxiety about temporality that can be described as the assumption that the only experience with epistemic value is the experience of the here and now. This might be related to the general distrust of subjective experience in American culture (Hall, 1990). In addition, American psychologists relied more heavily on private funding sources and thus had to focus on applied psychology thereby turning away from introspection (Brock, 2013). As Morrison et al. (2019) note, in early psychological research, performance measures on psychological tasks were often supplemented by subjective reports. They argue that with the advent of industrialized work in the United States, people were increasingly viewed as machines performing goal-directed functions. The psychological task thus became the dominant method of inquiry because of social and cultural developments associated with the modernization of Western societies in the late 19th and early 20th centuries.

The second reason for the methodological commitment of having to be in direct contact with the experience under investigation may stem from the literature on the unreliability of memory (Dennett, 1991). In psychology, the study of experience has had a complex history. The introspectionist school, represented by Wilhelm Wundt and Edward B. Titchner, attempted to use introspection to break down mental processes into their constituent, atomistic parts. The received history of psychology states that introspectionism failed because of its methodological problem, expressed in the imageless thought controversy. Roughly stated, Titchner's followers believed that thoughts were accompanied by sensory imagery, whereas Wundt maintained that thoughts could exist without modal illustration. The "textbook" history of psychology states that this controversy – different laboratories arriving at different accounts of experience under similar experimental conditions (Danziger, 1980) – presented such a major methodological problem that introspectionism as a paradigm in psychology came to an end Costall, 2006). As a solution, the behaviorists claimed that we cannot study aspects of the mind that are only accessible to us in the first person and should therefore focus on externally observable behavior. In short, the received view thus asserts that the problem with introspection is that the data it produces cannot be validated. However, Hurlburt (1993) provides a detailed analysis of the controversy. He concluded that reports from different laboratories provide congruent accounts of imageless thoughts. The difference lies in the researchers' attempt to provide a theoretical explanation for the qualitative material.

Moreover, the received view has recently been challenged by historians of psychology who have argued that introspection was never a dominant approach in psychology (e.g., much of American psychology at the time was based on psychophysics; Costall, 2006) nor has it disappeared completely from psychological research (Brock, 2013). Rather, introspection remained an important part of the psychological methodological repertoire as a data collection technique under the guise of self-report (Costall, 2006; Locke, 2009), think aloud protocols (Jørgensen, 1990), and experience sampling (Csikszentmihalyi et al., 1977). Finally, authors (Costall, 2006; Locke, 2009; Brock, 2013) argue that referring to Wundt as an introspectionist was itself an act of revisionist history, as behaviorists needed to construct a flawed background at which to level their improved scientific program.

In the phenomenological tradition, the unreliability of memory can be understood in additional ways. For example, in existential phenomenology, the experience of time extends beyond the here and now, as events far in the past can affect our present state, or events in the (perceived) future can affect our current behavior (Sartre, 2018). Think, for example, of a high school student, studying for her final exams motivated by an image of herself, in the future, as a medical doctor. Therefore, it is generally assumed that experiences that are existentially significant to us can still be remembered even if they have already occurred in the past. Notably, methods used in descriptive psychopathology are typically interested in longer time spans, for example, one week, as in semi-structured interviews (Montgomery and Asberg, 1979; Williams and Kobak, 2008) or in a general, as a baseline experience that may span years (Parnas et al., 2005; Sass et al., 2017) or even a person's entire life (Hagemaster, 1992; Jaspers, 1997; Stanghellini and Mancini, 2017).

The tension between examining experience at different timescales has recently been pointed out by Depraz (2021). She reports that in studying the experience of chronic illness, the research question itself requires the integration of MPI with what would normally be considered inadmissible accounts within micro-phenomenology: namely, patients' narratives about their illness. Depraz notes that "our lived experience can never be reduced to a single moment, to an abstract punctum, instead it responds to a script that is often implicit and that we do not recognize spontaneously (Depraz, 2021, 8)." The need to account for the narrative level of description when studying psychopathology is commonly remarked on by our participants. As one of our patients pointed out when attempting to describe ruminating (or what he refers to as an "episode"):

> If you break it down in microseconds, you can probably see a full range [...] one after the other, after the other in a line of thoughts. But they feel like they all come together because I have years and years of experience with that, where in my head an *episode is an episode*. [...] The grueling detail of it within my head is I have an understanding of an episode as a fully self-contained package of information.

Given the importance of situating individual moments of experience within a person's life, it is crucial to develop a framework within which lived experiences at different timescales can be examined. The aim of this paper is therefore to a) demonstrate that the timescale of lived experience is indeed an aspect of qualitative phenomenology that requires more attention; and b) propose a framework within which different timescales of lived experience can be conceptualized (primarily for the purpose of qualitative research in phenomenological psychopathology). We will follow similar methodological reflections (Heimann et al., 2022; Linger, 2010) by drawing both on theoretical sources as well as the qualitative material that we had collected over the years. The conclusion of this discussion is that to be able to validly discuss temporally extended experience, formal methods of interpretation must be incorporated into qualitative phenomenology. This is reflected in how we treat interview citations throughout the text.

2.   Exploring experience at different timescales

DES is one of the techniques for collecting experiential data that attempts to account for the distorting effect of retrospection. It consists of *sampling*. Participants go about their daily activities and when they hear an auditory signal delivered via a device (a beeper or a phone), they write down what was at the forefront of their experience immediately preceding the prompt. These notes form the basis for a follow-up interview that takes place within 24 hours of the prompt (Hurlburt, 2011)

The so-called expositional interview consists of a single central question: "What did you experience at the moment of the beep?" (Hurlburt, 2011, p. 81). Hurlburt (2011, ch. 5) describes that while we talk about experiences *in general*, the reports are full of comments that show that even our participants are uncertain about them. He points out that when we successfully guide our participants to report their concrete and momentary experience, the style of the report changes dramatically: "[The participant] now uses relatively simple declarative sentences [...] She is no longer equivocating [...] [She] now speaks quite

concretely and specifically. I take this as evidence that she is now beginning to describe the actual experience that took place at the moment of the beep." (Hurlburt, 2011, p. 88)

While DES's commitment to collecting experiential reports only during direct contact with the experience under investigation is self-evident, this is not so readily apparent in MPI. MPI tacitly asserts (Petitmengin, 2006, p. 244) that it is capable of investigating episodes of experience that occurred at any time prior to the interview: "Whether the experience under investigation occurred only moments ago or a few years previously, retrospective access is necessary, as we have seen. The interviewer must therefore guide the interviewee towards the 're-enactment' of the past experience."

MPI attempts to provide a description of experience both in terms of a detailed description of a single moment of experience and in terms of the evolution of those moments over time. While focusing on the temporal development of the flow of experience, it retains the need to be in touch with the present moment. Methodologically, this so-called evocation state is achieved as follows:

> [T]o guide the interviewee towards a concrete evocation of a past situation or a situation that has just occurred, the interviewer helps him to rediscover the spatio-temporal context of the experience (when, where, with whom?), and then with precision the visual, auditive, tactile and kinesthetic, olfactory and possibly gustatory sensations associated with the experience, until the past situation is 're-lived' (Petitmengin, 2006, pp. 244–245)

The present moment is rarely clearly defined. Kahneman and Riis (2005) define the *moment* – seemingly arbitrarily – as lasting for three seconds. In terms of temporality, MPI is the clearest. The "micro" in micro-phenomenology refers to the target phenomenon being experiential microdynamics occurring on a timescale of seconds and subseconds. Petitmengin and Lachaux (2013) note that the moment as a meaningful unit of analysis in MPI spans a single *action-perception* cycle. An action-perception cycle refers to the processing of incoming sensory information and their translation into behavior (Fuster, 2004), and is believed to last between 260 and 390 milliseconds (Madi et al., 2011).

However, focusing exclusively on the microdynamics of experience can lead to ignoring relevant information. Kahneman and Riis (2005) distinguish between the experiencing self and the remembering self. The former exists on the timescale of three seconds, while the latter can look back over longer time spans. The authors argue that the remembering self can construct accounts of the past that are not only tangentially related to how the individual moments were experienced by the experiencing self, but can even be diametrically opposed. However, the author's analysis ignores the possibility that there could be a difference between i) *a retrospectively constructed account of experience that is composed of many different moments of experience* and ii) *experience that is itself enduring*.

This dynamic is most readily observed in the fields of descriptive psychopathology and the health sciences, where interest from the perspective of qualitative phenomenology often focuses precisely on the stable aspects of conscious experience. At the broadest timescale, we might be interested in describing and analyzing a person's entire life. An example of this type of method was described by Jaspers (1997) under the heading Biographical Study (Ger. *Biographik*). Jaspers (*ibid.,* 671) writes: "The time-aspect of the biographical details is not so much that of a regular sequence, a quantitative matter, but more of a qualitative shaping of the living elements into temporal form." We understand this observation as meaning that it matters less whether patients can realistically recall when and how certain events relevant to their psychopathology took place, but how they make sense of them and integrate them into their self-understanding.

Recently, there has been a growing body of literature exploring the possibilities of contemplation in qualitative phenomenological research. Such techniques could be fruitfully employed to support the study of a temporally extended experience. Contemplative techniques can be used to differentiate between the description of the same experiential episode at different time levels. For example, Wittmann and Schmidt (2014) find that experienced mindfulness meditators can alter the regulation of their attentional capacities and extend the subjective duration of time by focusing intensely on the present moment. This could be

helpful in research setting where subjects are expected to pay attention to details and different modes of their experience embedded in higher order timescale. However, it is likely that such an approach would require specially designed training programs to ensure comparable data across participants (Abdoun et al., 2019) in particular, as it has recently been noted that being skilled in observing one's own experience in one domain does not necessarily generalize to other domains (Miyahara et al., 2020).

3. Implications of focusing on different timescales: The case of the phenomenology of detail

Above, we discussed how different techniques in qualitative phenomenology take a different stance on temporality. In what follows, we will support our claims with examples in which the same aspect of experience is studied by methods interested a priori in different timescales. We will observe the same phenomenon – the sense that a person's perceptual world is detailed – at three different timescales: moment-by-moment, handful of seconds, and as a baseline experience.

Hurlburt (2011, ch. 6) describes the experience of Tourette's syndrome, a disorder in which people exhibit tics, which are sudden, uncontrollable, and repetitive twitches, movements, or sounds (Novotny et al., 2018). Through DES, Hurlburt learned that his participant, unlike most patients, is more often immersed in the sensory content without being aware of its functional use or objective structure of the stimuli:

> He's watching the flow/shape of the mustard stream - seeing the thick liquid hit the plate, watching the shape of the honey-mustard dollop as it spreads onto the plate. [...] [He] is particularly interested in, drawn into, absorbed in the sensory aspects of the honey mustard - focused on the shape of the flow. (Hurlburt, 2011, p. 96)

The second example comes from our own work. In Oblak, Boyadzhieva, and Bon (2021), we studied the sense of perceptual realness. The experiences studied generally lasted only a few seconds. One of the aspects of lived experience that was most strongly associated with feelings of realness was the experience that the perceptual world seems to contain an inexhaustible wealth of information. Importantly, people need not be thematically aware of the individual details. The world simply appears as information-rich before the specific details are perceived. Consider the following report on meditating on a stream of water:

> At the very beginning of the experience, I was just looking in an open way at the stream, but then, when I started noting things, I was more actively looking for something related to what I already noticed [...] [B]ut then there wasn't anything new from that perspective. [...] [T]here was a sense of disappointment. [...] [I]n the background of this activity, there was this [want]. [...] I was still looking at the stream, not focusing on anything specifically, but the shape [...] was enlarging at that point.

So, one of the crucial aspects of the experience of detail is its openness into the future. Within it is the awareness that certain actions, or sometimes just passively dwelling on the experience, will reveal new details. In other words, it is a two-part experience: the experience of the present (the sensory understanding of the flow of water) and the anticipation of the future (the potential to explore the scene in more detail).

The final example of the phenomenology of detail comes from Stanghellini and Mancini (2017), who use it as an example of *lifeworld analysis* in a person suffering from contagion obsession. They analyze how his lifeworld changes during a visit to a garden. "[He] feels that space is growing smaller, that things are getting too close" (Stanghellini & Mancini, 2017, p. 45). One of the consequences of this "excessive proximity" is that

> [t]hings that cannot appear as a whole, appear as they would appear in a microscope, polluted with insects and microbes [...] The essential outcome of the microscopic approach is a simultaneous loss of significance and the finding of the biological aspect in anything. [...] The corollary of the microscopic approach is that the process of decomposition is seen to be active everywhere. (Stanghellini & Mancini, 2017, p. 46)

Such an account allows us to account for his experience of the world *in general:* "[He] lives in a *counter-world* whose major feature is the breakdown of the meaningful *Gestalt* [...] Spatial order is characterized by a "contiguity" [...] Germs can rapidly invade such a space because there is no distance to cover." (Stanghellini & Mancini, 2017, p. 47).

Stanghellini and Mancini's (2017) example is quite different from the two approaches above. Instead of focusing only on the concrete experience under investigation, they draw on various ideas from phenomenology to explain how his baseline experience differs from that of a person who does not suffer from contagion obsession.

In their approach, we can go even further and examine a specific type of experience: what they call the original phenomenon (Ger. *Urphänomen*; Stanghellini & Mancini, 2017, p. 76). They use this term to refer to an experience that chronologically is not the earliest example of some phenomenon but is the most salient. For example, one of our patients with generalized anxiety disorder reports always feeling threatened by "ultimate humiliation" when using public transportation. Ultimate humiliation presents to him as an echo of an event that occurred only once in his life – accidental urination in the middle of class in elementary school. Such reports, however, are not bias-free. Rather, it includes recollections, reappraisals, reinterpretations, and reconstructions. In other words, it is an account of an interpreted experience. We will explore the epistemic status of such reports in Section 5.

4.   The nesting principle

In this section, we will propose a methodological guideline to help researchers study experience at different timescales. We propose to view the timescales of experience as nested within one another. By this we mean that aspects of lived experience that occur at different timescales are not parallel processes, but that lower order timescales are nested within higher order timescales (see Figure 1).
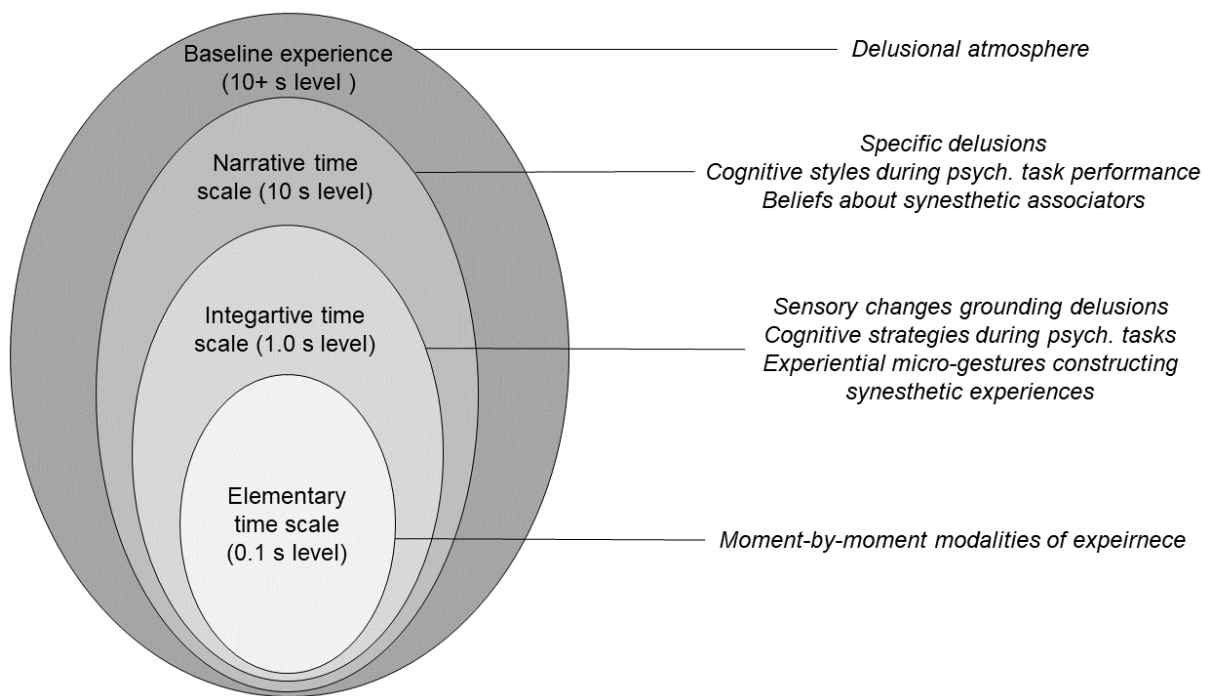

Figure 1. The nesting principle.

An empirical example that approximates Varela's distinction into timescales of 0.1, 1.0, and 10.0 seconds is the experience of performing a working memory task (Oblak et al., 2022b). In Oblak et al. (2022b), we presented a taxonomy of experiential categories that describe different aspects of dealing with a working memory task. The context of solving a working memory task can serve as a simplified model of the nesting principle because the task itself can be described at multiple timescales. A typical working memory task consists of trials. These are composed of at least three phases. First, there is a set of memory stimuli (i.e., the objects that must be memorized). Second, there is a delay period (i.e., the period of time during which the memory stimuli must remain in a person's memory). Third, there are the test stimuli (i.e., the stimuli that must be recognized, reconstructed, or otherwise compared with the memory stimuli). The lived experience of solving a working memory task can be described on (at least) three different timescales: i) an experience that spans the entire trial (a triplet of memory stimuli, delay, and test stimuli); ii) an experience that spans the entire phase of the trial (e.g., the totality of memory stimuli); and iii) an experience that occurs at a single moment within a trial (e.g., many moments within the presentation of memory stimuli). See Figure 2 for an illustration of this principle.
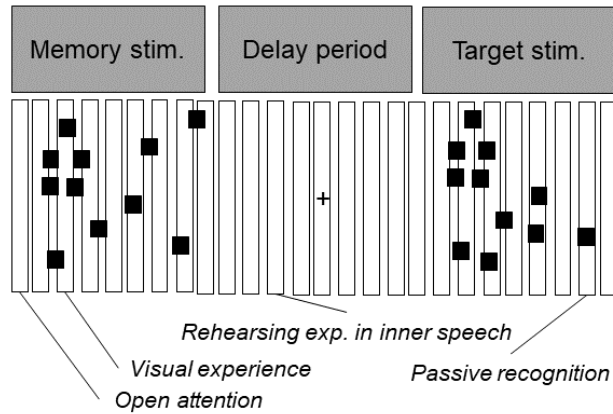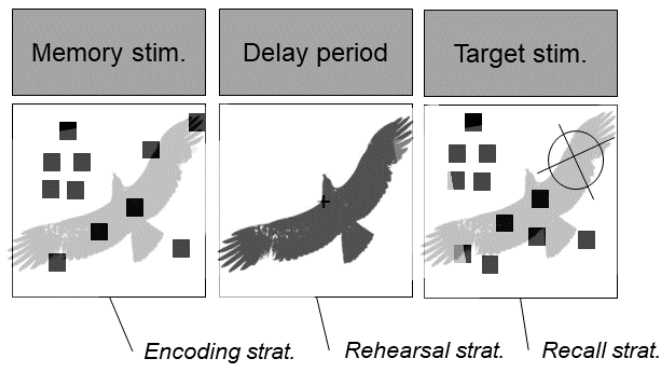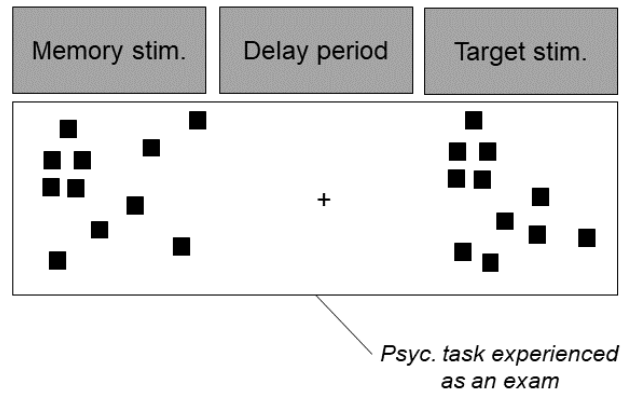
Figure 2. An example of a working memory task with associated subjective reports at different timescales.

For example, a working memory task can be solved using a number of different strategies, analyzing it in many different ways and trying to dissect it as much as possible. On the other hand, a working memory task can also be solved with a Zen-like attitude of acceptance. Participants simply let the stimuli be what they are and then rely on an intuitive sense of similarities or differences to determine the response to a particular trial.

Moreover, the experience associated with solving a working memory task can be described at the level of a single phase (i.e., presentation of target stimuli, delay period, or presentation of test stimuli). Here, we can describe the individual cognitive strategies that participants use to solve the working memory task. For example, they might try to find a simplified pattern that describes the stimuli well enough to later know what their identity was (e.g., projecting an image of a bird onto an array of scattered stimuli)

Finally, the experience of performing a working memory task can be described in terms of what is present to consciousness at the single moment level (what we termed *tactics*). For example, if a participant is trying to solve the task by copying the target stimuli in their mind, they may do so by replaying them as visual images or describing them in inner speech. They can also combine these different approaches to create a complex multimodal representation. At the lowest level, we often describe aspects of experience that can be called experiential modalities (e.g., seeing, touching, bodily sensation, etc.; see Heavey and Hurlburt, 2008)

The working memory research demonstrates how the nesting principle can be of practical use. Typically, when analyzing qualitative material, we code the data to create categories that are then grouped into themes (Charmaz, 2014). In the case of complex phenomena, we may group several themes together to form several orders of coding (Smith et al., 2022). Such approaches usually assume (at least tacitly) a hierarchical relationship between categories: The more concrete categories that are closer to raw accounts of experience are subsumed under more general categories. The relationship is thus one of abstraction. However, such a categorization may be too narrow, ignoring the fact that two categories at the same level of abstraction may not logically fit together. In our experience, this is often the case because they refer to a different modality (e.g., affect vs. cognition) or because they are articulated on a different timescale. See Figure 3 for how the nesting principle can be used to organize more coherent taxonomies of experience.
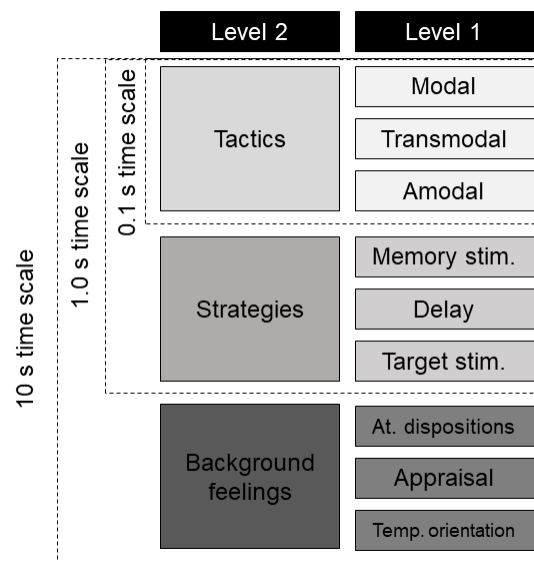

Figure 3. Simplified taxonomy of experience associated with performing a working memory task sensitive to different timescales.

A second example of lived experience being describable at different timescales comes from a patient (Giselle) who has been diagnosed with an acute psychotic disorder (Oblak et al., 2022a). Her experience could again be described on (at least) three different timescales. In general, during the acute phase of psychosis, she describes that everything around her felt strange:

> I felt the whole time like everything around me is not what it seems, so, erm, this was the underlying fear or thesis. […] I mean I felt like it is true, you know. [Pause] Everything felt so strange and, like [pause] it is this word in Japanese, it is called *fushigi* [Jap. *miracle*]. [...] Yeah, mystery. Or strange. Mysterious.

Experiences of the world suddenly seeming strange, unusual, and uncanny are commonly referred to as *delusional atmosphere* (Ratcliffe, 2008). On a lower timescale, we can see how Giselle experienced certain delusions. For example, she was preoccupied with the Hindu goddess Kali. Sometimes she experienced her as a felt presence, and sometimes she experienced herself as Kali:

> [I]t was really scary [...] [N]o filter, no boundaries to the logical world. You know, *maybe I can feel that someone is in here or some presence and it doesn't feel like a good one.* I told you that I had this sense before, like, after one long meditation in the night, when I couldn't sleep and I listened to this mantra, suddenly I felt *oh, my god, it feels like Kali's here!* Her presence.

Importantly, the felt presence that Giselle hallucinated took place in the general delusional atmosphere. They are not two different aspects of the experience, but the specific delusion is nested within the delusional atmosphere.

Finally, at the lowest timescale, Giselle's delusion was experienced as a change in the lived space and sense of touch:

> [I]t felt like I could feel the bit of space around me, like the density of the air or something. And it somehow got a bit more tighter. Like, [pause] my, you know you have kind of like a sensual [...] field around you. That is very sensitive. But it is actually how you can feel a presence if somebody is standing behind you. [...] That is what I felt. Like something was coming close to me. Almost touching me, but not really touching me.

In summary, we have shown that descriptions of lived experiences occur on different timescales, ranging from 0.1 seconds to seconds, hours, days, etc. Lower order experiences constitute or are subsumed by higher order categories. Thus, any higher-order experience can be viewed as consisting of multiple lower-order experiences and lower-order categories can be understood only in their broader psychological context (e.g., a mental image can be conceived as a visual representation only in the context of a working memory task). As Jaspers (1997, p. 109) points out: "Particular feelings directed on specific objects or partial aspects of the whole are distinguished from all-inclusive feelings, where the separate elements are fused into some temporary whole, which is then called the feeling-state."

5.   Levels of description

Momentary experiences can be described in detail and with unambiguous methods of analysis that can be easily replicated across studies and contexts. However, at higher timescales, we can see that participants not only report their experiences, but also how they make sense of them (De Haan, 2020). For example, when we examine the lived experience of solving a working memory task, participants often report that the experiment felt like a test in high school. The experience of being aware of an error seems to be a physical sensation at first (at the 0.1 and 1.0 s timescales): "The feeling was that it was wrong, yes. [...] Feels like a little itch. Like something is poking a little. A slight needle, very, very – not concrete – but a very tiny pain." When participants attempt to contextualize this experience, additional information becomes available:

> [I]t's like this abstract voice somewhere here. Like a feeling of authority, something that judges me, and I kind of associate school with it. But this is maybe something… It's kind of an imagination. [...] Like

something was pulling me before, like in a judge-y way. [...]]T]he relationship [with the task] is, is a bit lost. No! Given up.

Similarly, Giselle reports that her psychotic episode was preceded by a preoccupation with her identity. At the time, she thought it was a matter of esthetics and was bothered by how her last name sounded:

It's a little bit egoistic or something. I just don't like the sound of it. Erm, some kids at school made fun of it, even though it is not that much of a funny name. But you can make funny words out of it. [...] That is why I just hated my last name so much.

Only after the psychotic episode did she realize that her obsession with her identity was prodrome of psychosis:

[There] were definitely objects that were […] super threatening because they were linked with my identity. [...] [S]omebody could find out my name. Those were really dangerous. I would not touch them or turn them away. [...] [O]r a picture of my grandma that I threw away. It was a really nice picture. But I just put it in the garbage, because I was so afraid of it. I wanted to get rid of these objects that are connected to my identity.

Descriptions at higher order timescales can thus be seen as interpretations of experience. Sensitivity to this dynamic is evident in the earlier literature on descriptions that span longer time periods. In conducting the biographical study, Jaspers (1997) points out that we must pay particular attention to *inner elaboration*, or how individuals distort objective events in their consciousness. Similarly, Hagemaster (1992), in her guidelines for the life history method, points out the importance of examining the *learned significance* of accounts of particular stories from a person's life. In summary, reports of momentary and durable experience constitute different *levels of description.*

In cognitive science, the level of description refers to the various ways in which we can describe a mental phenomenon (e.g., through externally observable behavior, the cognitive processes that support it, the neurophysiology that implements it, etc.) (Bechtel, 1994). Different levels of description are associated with different methods and timescales. The concept of a level of description is closely related to Bateson's (2000) concept of the *black box*, which he viewed as the domain for which a particular discipline in the sciences of mind arbitrarily agrees that a phenomenon is considered explained if it is described at that level (in this way, a neuroscientific explanation simply means a description of a phenomenon at the level of neurophysiology).

When it comes to phenomenology and temporality, we talk about at least two levels of descriptions. At lower timescales, experience can be validly described at the phenomenological level of description. In MPI, for example, the phenomenological level of description consists of descriptions of bodily sensations, sensory experiences, attitudes, mental gestures, etc. (Petitmengin, 2006; Valenzuela-Moguillansky and Vasqeuz-Rosatti, 2019). Conversely, at higher timescales, we can consider accounts of experience as descriptions at the narrative level of experience. As Depraz (2021, p. 1) points out, "to speak of 'narrative' is to speak of fiction, imagination, the construction of a story or scenario, and the production of a chain of facts". This is particularly evident in Stanghellini and Mancini (2017), who propose analyzing experiential reports as if they were texts. Such a conception of subjective reports could make them amenable to being analyzed using the methods of discourse analysis.

As noted above, the most widely used qualitative phenomenological methods in cognitive science (Froese et al., 2011) consider temporally extended experiences inadmissible. This may be in part due to the so-called hegemony of the present moment or the checkered history of introspection in psychology. But it might also be related with the kind of phenomenology one refers to when attempting to integrate the study of lived experience and cognitive science.

Peoples (2021) argues that at the outset of any phenomenological study a decision must be made as to whether we follow Husserlian or Heideggerian phenomenology. Husserlian or *transcendental* phenomenology is based on the study of general and universal structures of experience (Husserl, 2012).

Heideggerian or *existential* phenomenology, on the other hand, rejects the idea of pure consciousness and holds that lived experience always takes place against the background of a person's life. (Heidegger, 2010)

Let us demonstrate this difference with the experience of walking through a garden and seeing a tree. For Husserl, what is central to the experience of the tree is its three-dimensional structure, formed by the tripartite structure of time-consciousness. As I walk around the tree, the past moment lingers in the present (*retention*), while I anticipate the future moment in which I become aware of more and more details of the tree (*protention*) (Zahavi, 2002). On the other hand, Heidegger analyzes the same experience in terms of the existential meaning it has for us. The garden I walk in may not be just any garden. It is the garden of my family, where I spent my childhood. The tree is not just any tree, but the one I learned to climb. (Heidegger, 2010)

Many attempts to integrate phenomenology into cognitive science rely on Husserlian phenomenology (Laughlin and Throop, 2006; Roy et al., 1999). Focusing on momentary experience is thus not accidental. If our goal is to integrate subjective accounts collected by qualitative phenomenology methods and third-person methods (Varela, 1996), it may be necessary to collect descriptions of experiences that occur on the same timescale as our neuroscience methods. EEG can be said to occur on the subsecond and second scale (Timmermann et al., 2019), whereas fMRI occurs on the order of a few seconds (Hurlburt et al., 2016), as does ECG (Depraz and Desmidt, 2019). The focus on the limitations of neuroscience research designs is explicitly present in the technique proposed by Miyahara et al. (2020) for training participants to observe and report experiences, focusing specifically on perceptual phenomenology. Thus, if we wish to integrate sense-making into qualitative phenomenology, as it is deployed within the sciences of mind, its scope might have to be broadened to include existential phenomenology.

The idea of integrating methods and techniques of textual interpretation (i.e., hermeneutics) and phenomenology is not new. It is most readily formalized in the methodological framework of IPA. IPA is based on collecting a series of interview data, which are understood to be *interpreted* at two levels: how a person makes sense of her experience, and how we, as researchers, understand how it feels to be her (Smith et al., 2022). Similarly, in psychopathology, we attempt to interpret a person's reports against the backdrop of our knowledge of the pathology in question, our empathic understanding and counter-transferal insight (Jaspers, 1997; Oyebode, 2015; Stanghellini and Mancini, 2017). However, if we are to understand participants' temporally extended experiences at the narrative level of description, we must understand how they interpret and integrate their own experiences into their self-narrative.

Sandberg and Tsoukas (2020) propose an existentialist typology of sense-making. They propose that sense-making is conducted within *primary* (the context in which experience takes place) and *secondary worlds* (the context in which experience is reflected upon). In psychopathology, the primary world is the context in which a given condition is made manifest (e.g., a public space for a person with social anxiety), whereas the secondary world would refer to a situation within which this experience is investigated (psychotherapy session, psychiatric interview, or indeed a phenomenological interview).

The primary world includes three types of sense-making: *immanent*, *involved-deliberate*, and *detached-deliberate*. In the secondary world, sense-making is *representational*. Imminent sense-making refers to the immediate experience of the world that is pre-reflectively laden with sense-making. The experience of the world is thus unified. There is no subject-object split. An example of immanent sense-making is the experience of anhedonia in depression. For an anhedonic patient, the world appears as stale and uninteresting. Everything assumes a background quality, and there are no salient aspects of the world that would grab their attention (Pizzagalli, 2014).

Involved-deliberate sense-making refers to situations in which our routine immersion into our daily projects is interrupted by an unexpected event. This event pulls us towards reflecting on the situation so that our original activity could be restored. For example, one of our participant had been diagnosed with generalized anxiety disorder when she was young. She reports that even though she has been in stable

remission for almost a decade, she is always paying attention to the feelings in her chest. She is often not sure if they constitute anxiety or excitement and prefers not to feel anything at all: "I always check whether there is a feeling of anxiety somewhere inside of me. It is more of focusing on what is now happening in my chest: *aha, there's a mini compressing feeling somewhere inside*. [...] So, it was something that I didn't notice as present, until I actually attended to it."

Deliberate-detached sense-making occurs when the disturbance of everyday immersion in the world persists. Thus, it cannot be resolved *ad hoc,* and requires the person to step away from their life projects and reflect on how best to resolve the situation. An example of this dynamic is a transient psychotic episode. A patient experiences intense, polymorphic psychotic symptoms, which tend to be varied and intense, and require psychiatric help to be resolved.

Finally, representational sense-making refers to a completely detached observation and appraisal of some experience. It "de-worlds" (Sandberg and Tsoukas, 2020, p. 15) a given aspect of experience. An example of representational sense-making is a phenomenological interview, where we are trying to reconceptualize an account of experience from a cognitive understanding towards a more embodied description of experience.

While qualitative phenomenological interviews are by default representational sense-making, it is important to consider how our participants experience different kinds of sense-making, which ultimately constitute their self-narrative.

6.   Conclusion

In this paper, we discussed the temporal scale of experiential reports collected in qualitative phenomenological studies, especially in the field of psychopathology. We discussed existing principles for calibrating experiential data collection techniques (conception of consciousness, thick vs. thin phenomenology). We pointed to modern efforts to study experience as it is in the moment. We showed, first, that different methodological frameworks in qualitative phenomenology operate on different timescales and therefore provide different accounts of phenomena of inquiry. Second, we have shown that it is possible to study lived experience at different timescales even when using the same methods. We have summarized these observations in what we call the nesting principle, a proposed framework for organizing accounts of lived experience that occur at different timescales. We addressed some possible misconceptions about our claim that lived experience occurs at different time levels that are nested within each other. Finally, we suggested that lived experience at the moment-to-moment level of time and lived experience that is temporally extended, when examined using the methods of qualitative phenomenology, are necessarily articulated at different levels of description: phenomenological and narrative. We propose that a sensitivity for different kinds of sense-making may prove useful for articulating lived experience that span longer timescales.

Declarations of interest: none**.**

References

Abdoun, O., Zorn, J., Poletti, S., Fucci, E., & Lutz, A., (2019). Training novice practitioners to reliably report their meditation experience using shared phenomenological dimensions. *Consciousness and Cognition,* **68**(1), pp. 57–72. https://doi.org/10.1016/j.concog.2019.01.004

Albertazzi, L., (2021). Experimental phenomenology: What it is and what it is not. *Synthese* **198**(S9), pp. 2191–2212. https://doi.org/10.1007/s11229-019-02209-6

Alderson-Day, B., Mitrenga, K., Wilkinson, S., McCarthy-Jones, S., & Fernyhough, C., (2018). The varieties of inner speech questionnaire – Revised (VISQ-R): Replicating and refining links

between inner speech and psychopathology. *Consciousness and Cognition,* **65**(1), pp. 48–58. https://doi.org/10.1016/j.concog.2018.07.001

Bagdasaryan, J., Le Van Quyen, M., (2013). Experiencing your brain: neurofeedback as a new bridge between neuroscience and phenomenology. *Front. Hum. Neurosci,* **7**. https://doi.org/10.3389/fnhum.2013.00680

Bateson, G., (2000). *Steps to an ecology of mind*, Chicago: University of Chicago Press.

Bechtel, W., (1994). Levels of description and explanation in cognitive science. *Mind Mach* **4**(1), pp. 1–25. https://doi.org/10.1007/BF00974201

Berkovich-Ohana, A., Dor-Ziderman, Y., Trautwein, F.-M., Schweitzer, Y., Nave, O., Fulder, S., Ataria, Y., (2020). The Hitchhiker's Guide to Neurophenomenology – The Case of Studying Self Boundaries With Meditators. *Front. Psychol*. **11**, 1680. https://doi.org/10.3389/fpsyg.2020.01680

Bressler, S., (2008.) Neurocognitive networks. *Scholarpedia,* **3**, 1567. https://doi.org/10.4249/scholarpedia.1567

Brock, A. C. (2013). The history of introspection revisited, in Clegg, J. W. (ed), *Self-observation in the social sciences*. New Jersey: Transaction Publishers.

Carel, H., (2016). *Phenomenology of Illness*. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199669653.001.0001

Cermolacce, M., Naudin, J., & Parnas, J., (2007). The "minimal self" in psychopathology: Re-examining the self-disorders in the schizophrenia spectrum. *Consciousness and Cognition*, **16**, 703–714. https://doi.org/10.1016/j.concog.2007.05.013

Charmaz, K., (2014). *Constructing grounded theory, 2nd edition*. London: Sage

Colombetti, G., Ratcliffe, M., (2012). Bodily Feeling in Depersonalization: A Phenomenological Account. *Emotion Review* **4**(2), pp. 145–150. https://doi.org/10.1177/1754073911430131

Costall, A., (2006). 'Introspectionism' and the mythical origins of scientific psychology. *Consciousness and Cognition*, **15**, pp. 634–654. https://doi.org/10.1016/j.concog.2006.09.008

Csikszentmihalyi, M., Larson, R., Prescott, S., (1977). The ecology of adolescent activity and experience. *J Youth Adolescence* **6**(3), pp. 281–294. https://doi.org/10.1007/BF02138940

Danziger, K., (1980). The history of introspection reconsidered. *J. Hist. Behav. Sci*. **16**(3), pp. 241–262. https://doi.org/10.1002/1520-6696(198007)16:3<241::AID-JHBS2300160306>3.0.CO;2-O

De Haan, S., (2020). *Enactive Psychiatry*. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781108685214

Dennett, D.C., (1991). *Consciousness explained*, Boston: Little, Brown.

Depraz, N., (2021). Micro-phenomenological explicitation interviews and biographical narrative interviews: a combined perspective in light of the experiential analysis of chronic diseases. *Phenomenology and the Cognitive Sciences*, **21**(1), pp. 97–106.

Depraz, N., & Desmidt, T., (2019). Cardiophenomenology: a refinement of neurophenomenology. *Phenomenology and the Cognitive Sciences,* **18**(3), pp. 493–507. https://doi.org/10.1007/s11097-018-9590-y

Fernandez, A.V., (2020). Embodiment and Objectification in Illness and Health Care: Taking Phenomenology from Theory to Practice. *J. Creat. Behav*, **29**(21-22), pp. 4403–4412. https://doi.org/10.1111/jocn.15431

Flanagan, O.J., (1995). *Consciousness reconsidered,* Cambridge: MIT Press.

Froese, T., Gould, C., & Seth, A.K., (2011). Validating and Calibrating First- and Second-person Methods in the Science of Consciousness. *Journal of Consciousness Studies, 18*(2), pp. 38–64

Froese, T., Cassandra, G., & Barret, A. 2011. Re-viewing from Within. *Constructivist Foundations,* **6**(2), pp. 264–269.

Fuchs, T., (2017). *Ecology of the Brain: The phenomenology and biology of the embodied mind*. Oxford: Oxford University Press. https://doi.org/10.1093/med/9780199646883.001.0001

Fuchs, T., & Schlimme, J.E., (2009). Embodiment and psychopathology: a phenomenological perspective: *Current Opinion in Psychiatry*, **22**(6), pp. 570–575. https://doi.org/10.1097/YCO.0b013e3283318e5c

Fuster, J.M., (2004). Upper processing stages of the perception–action cycle. *Trends in Cognitive Sciences,* **8**(4), pp. 143–145. https://doi.org/10.1016/j.tics.2004.02.004

Gaete Celis, M.I., (2022). Creative-expressive artwork as a phenomenological exploration of experience. *GMS Journal of Arts Therapie*s, **4**(1), pp. 1-15. https://doi.org/10.3205/JAT000020

Gallagher, S., (2017). *Enactivist Interventions*. Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780198794325.001.0001

Gallagher, S., & Brøsted Sørensen, J., (2006). Experimenting with phenomenology. *Consciousness and Cognition*, **15**(1), pp. 119–134. https://doi.org/10.1016/j.concog.2005.03.002

Gamma, A., & Metzinger, T., (2021). The Minimal Phenomenal Experience questionnaire (MPE-92M): Towards a phenomenological profile of "pure awareness" experiences in meditators. *PLoS ONE,* **16**(7), e0253694. https://doi.org/10.1371/journal.pone.0253694

Grice, H.P. (2002) Some remarks about the senses, in Noe, A. & Thompson, E. (eds.) Vision and Mind, Cambridge, MA: MIT Press.

Hagemaster, J.N., (1992). Life history: a qualitative method of research. *J Adv Nurs*, **17**(9), 1122–1128. https://doi.org/10.1111/j.1365-2648.1992.tb02047.x

Hall, E.T., (1990). *The hidden dimension*. New York: Anchor Books.

Hamilton, M., (1960). A rating scale for depression. *Journal of Neurology, Neurosurgery & Psychiatry*, **23**(1), pp. 56–62. https://doi.org/10.1136/jnnp.23.1.56

Heavey, C.L., & Hurlburt, R.T., (2008). The phenomena of inner experience. *Consciousness and Cognition,* **17**, pp. 798–810. https://doi.org/10.1016/j.concog.2007.12.006

Heidegger, M., (2010). *Being and time*. Albany: State University of New York Press.

Heimann, K., Boelsbjerg, H.B., Allen, C., van Beek, M., Suhr, C., Lübbert, A., & Petitmengin, C., (2022). The lived experience of remembering a 'good' interview: Micro-phenomenology applied to itself. *Phenomenology and the Cognitive Sciences,* **22**(1)*, pp.* 217–245. https://doi.org/10.1007/s11097-022-09844-4

Høffding, S., Heimann, K., & Martiny, K., (2022). Editorial: Working with others' experience. *Phenomenology and the Cognitive Sciences*, **22**(1), pp. 1–24.

Hurlburt, R.T., (2011). I*nvestigating pristine inner experience: moments of truth*. New York: Cambridge University Press.

Hurlburt, R.T., (1993). *Sampling inner experience in disturbed affect, Emotions, personality, and psychotherapy*. New York: Plenum Press.

Hurlburt, R.T., Alderson-Day, B., Kühn, S., & Fernyhough, C., (2016). Exploring the Ecological Validity of Thinking on Demand: Neural Correlates of Elicited vs. Spontaneously Occurring Inner Speech. *PLoS ONE,* **11**, e0147932. https://doi.org/10.1371/journal.pone.0147932

Husserl, E., (2012). I*deas: general introduction to pure phenomenology*. New York: Routledge.

Jansson, L., & Nordgaard, J., (2016). *The Psychiatric Interview for Differential Diagnosis*. New York: Springer https://doi.org/10.1007/978-3-319-33249-9

Jaspers, K., (1997). *General psychopathology*, Baltimore: Johns Hopkins University Press.

Jørgensen, A.H., (1990). Thinking-aloud in user interface design: a method promoting cognitive ergonomics. *Ergonomics*, **33**(4), pp. 501–507. https://doi.org/10.1080/00140139008927157

Kahneman, D., & Riis, J., 2005. Living, and thinking about it: two perspectives on life, in: Huppert, F.A., Baylis, N., Keverne, B. (eds.), *The Science of Well-Being*. Oxford: Oxford University Press

Laughlin, C.D., & Throop, C.J., (2006). Cultural Neurophenomenology: Integrating Experience, Culture and Reality Through Fisher Information. *Culture & Psychology,* **12**(3), pp. 305–337. https://doi.org/10.1177/1354067X06067143

Li, B. J., Friston, K., Mody, M., Wang, H.-N., Lu, H.B., & Hu, D.W., (2018). A brain network model for depression: From symptom understanding to disease intervention. *CNS Neurosci Ther,* **24**(11), pp. 1004–1019. https://doi.org/10.1111/cns.12998

Lifshitz M., & Veissière. S., (2019). *Cultural Neurophenomenology of Hypnosis and Meditation.* Available at: https://www.youtube.com/watch?v=g9di_ZFFepQ&t=2s (Accessed 19th June 2023).

Linger, D.T., (2010). What Is It Like to Be Someone Else? *Ethos*, **38**(2), pp. 205–229. https://doi.org/10.1111/j.1548-1352.2010.01136.x

Locke, E.A., (2009). It's Time We Brought Introspection Out of the Closet. *Perspect Psychol Sci,* **4**(1), pp. 24–25. https://doi.org/10.1111/j.1745-6924.2009.01090.x

Madi, T., Baars, B.J., & Franklin, S., (2011). The Timing of the Cognitive Cycle. *PLoS ONE,* **6**, e14803. https://doi.org/10.1371/journal.pone.0014803

Medeiros, S., Crempien, C., Vásquez-Rosati, A., Duarte, J., Andreu, C., Langer, Á.I., Ibaceta, M., Silva, J.R., & Cosmelli Sánchez, D., (2021). Assessing Subjective Processes and Vulnerability in Mindfulness-based Interventions: A Mixed methods Exploratory Study. *Constructivist Foundations,* **16**(2), pp. 203–220.

Miyahara, K., Niikawa, T., Hamada, H.T., & Nishida, S., (2020). Developing a short-term phenomenological training program: A report of methodological lessons. *New Ideas in Psychology*, **58**(1), 100780. https://doi.org/10.1016/j.newideapsych.2020.100780

Montgomery, S.A., & Asberg, M., (1979). A new depression scale designed to be sensitive to change. *Br J Psychiatry*, **134**(4), pp. 382–389. https://doi.org/10.1192/bjp.134.4.382

Morrison, H., McBriar, S., Powell, H., Proudfoot, J., Stanley, S., Fitzgerald, D., & Callard, F., (2019). What is a Psychological Task? The Operational Pliability of "Task" in Psychological Laboratory Experimentation. *Engaging STS*, **5**(1), pp. 61–85. https://doi.org/10.17351/ests2019.274

Novotny, M., Valis, M., & Klimova, B., (2018). Tourette Syndrome: A Mini-Review. *Front. Neurol.*, **9**, p. 139. https://doi.org/10.3389/fneur.2018.00139

Oblak, A., (2021). Participatory Sense-making as Consensual Validation of Phenomenal Data. *Interdisciplinary Description of Complex Systems,* **19**(4), pp. 470–492. https://doi.org/10.7906/indecs.19.4.2

Oblak, A., Boyadzhieva, A., & Bon, J., (2021). Phenomenological Properties of Perceptual Presence: A Constructivist Grounded Theory Approach. *Constructivist Foundations,* **16**(3), pp. 295–308.

Oblak, A., Boyadzhieva, A., Caporusso, J., Škodlar, B., & Bon, J., (2022a). How Things Take Up Space: A Grounded Theory of Presence and Lived Space. *The Qualitative Report,* **27**(11). pp. 2556-2582, https://doi.org/10.46743/2160-3715/2022.5762

Oblak, A., Slana Ozimič, A., Repovš, G., & Kordeš, U., (2022b). What Individuals Experience During Visuo-Spatial Working Memory Task Performance: An Exploratory Phenomenological Study. *Front. Psychol.*, **13**, 811712. https://doi.org/10.3389/fpsyg.2022.811712

Opler, M.G.A., Yavorsky, C., & Daniel, D.G., (2017). Positive and Negative Syndrome Scale (PANSS) Training: Challenges, Solutions, and Future Directions. *Innov Clin Neurosci,* **14**(11-12), pp. 77–81.

Ouwersloot, G., Derksen, J., & Glas, G., (2020). Reintroducing Consciousness in Psychopathology: Review of the Literature and Conceptual Framework. *Front. Psychol.*, **11**, 586284. https://doi.org/10.3389/fpsyg.2020.586284

Oyebode, F., (2015). S*ims' symptoms in the mind: textbook of descriptive psychopathology, Fifth edition. ed*. New York: Saunders/Elsevier.

Parnas, J., Møller, P., Kircher, T., Thalbitzer, J., Jansson, L., Handest, P., & Zahavi, D., (2005). EASE: Examination of Anomalous Self-Experience. *Psychopathology,* **38**(5), 236–258. https://doi.org/10.1159/000088441

Peoples, K., (2021). H*ow to write a phenomenological dissertation: a step-by-step guide*. Los Angeles: SAGE Publications.

Petitmengin, C., (2006). Describing one's subjective experience in the second person: An interview method for the science of consciousness. *Phenomenology and the Cognitive Sciences,* **5**(3-4), pp. 229–269. https://doi.org/10.1007/s11097-006-9022-2

Petitmengin, & C., Lachaux, J. P., (2013). Microcognitive science: bridging experiential and neuronal microdynamics. *Front. Hum. Neurosci.*, **7**. https://doi.org/10.3389/fnhum.2013.00617

Petitmengin, C., Remillieux, A., & Valenzuela-Moguillansky, C., (2019). Discovering the structures of lived experience: Towards a micro-phenomenological analysis method. *Phenomenology and the Cognitive Sciences,* **18**, pp. 691–730. https://doi.org/10.1007/s11097-018-9597-4

Pizzagalli, D.A., (2014). Depression, Stress, and Anhedonia: Toward a Synthesis and Integrated Model. *Annu. Rev. Clin. Psychol.*, **10**(1), pp. 393–423. https://doi.org/10.1146/annurev-clinpsy-050212-185606

Ramstead, M.J.D., Seth, A.K., Hesp, C., Sandved-Smith, L., Mago, J., Lifshitz, M., Pagnoni, G., Smith, R., Dumas, G., Lutz, A., Friston, K., & Constant, A., (2022). From Generative Models to Generative Passages: A Computational Approach to (Neuro) Phenomenology. *Rev.Phil.Psych.*, **13**(4), pp. 829–857. https://doi.org/10.1007/s13164-021-00604-y

Ratcliffe, M., (2008). *Feelings of being: phenomenology, psychiatry and the sense of reality, International perspectives in philosophy and psychiatry*. Oxford: Oxford University Press.

Roepstorff, A., Niewöhner, J., & Beck, S., (2010). Enculturing brains through patterned practices. *Neural Networks*, **23**(8-9), pp. 1051–1059. https://doi.org/10.1016/j.neunet.2010.08.002

Roy, J., Petiot, J., Pachoud, B., Varela, F.J., 1999. Beyond the gap: An introduction to naturalizing phenomenology, in: Petitot, J., Varela, F. J., Pachoud, B. & Roy, J. (eds), *Naturalizing Phenomenology: Issues in Contemporary Phenomenolog and Cognitive Science.* Stanford: Stanford University Press.

Sandberg, J., Tsoukas, H., (2020). Sensemaking Reconsidered: Towards a broader understanding through phenomenology. *Organization Theory,* **1**(1), 263178771987993. https://doi.org/10.1177/2631787719879937

Sass, L., Pienkos, E., Skodlar, B., Stanghellini, G., Fuchs, T., Parnas, J., & Jones, N., (2017). EAWE: Examination of Anomalous World Experience. *Psychopathology,* **50**(1), pp. 10–54. https://doi.org/10.1159/000454928

Schwartzman, D.J., Oblak, A., Rothen, N., Bor, D., & Seth, A.K., (2023). Extensive Phenomenological Overlap Between Training-Induced and Naturally-Occurring Synaesthetic Experiences. *Collabra: Psychology,* **9**(1), 73832. https://doi.org/10.1525/collabra.73832

Smith, J.A., Flowers, P., & Larkin, M., (2022). *Interpretative phenomenological analysis: theory, method and research, 2nd edition*. London: SAGE.

Stanghellini, G., & Mancini, M., (2017). *The Therapeutic Interview in Mental Health: A Values-Based and Person-Centered Approach*, Cambridge: Cambridge University Press. https://doi.org/10.1017/9781316181973

Thompson, E., (2010). *Mind in life: biology, phenomenology, and the sciences of mind*, Cambridge: Harvard University Press.

Thompson, J.R. (Ed.), (2023). *The Routledge handbook of philosophy and implicit cognition, Routledge handbooks in philosophy.* London: Routledge, Taylor & Francis Group.

Timmermann, C., Roseman, L., Schartner, M., Milliere, R., Williams, L.T.J., Erritzoe, D., Muthukumaraswamy, S., Ashton, M., Bendrioua, A., Kaur, O., Turton, S., Nour, M.M., Day, C.M., Leech, R., Nutt, D.J., & Carhart-Harris, R.L., (2019). Neural correlates of the DMT experience assessed with multivariate EEG. *Sci Rep*, **9**(1), 16324. https://doi.org/10.1038/s41598-019-51974-4

Toombs, S.K., (1993). *The meaning of illness: a phenomenological account of the different perspectives of physician and patient.* Dordrecht: Kluwer Acad.

Wittmann, M., & Schmidt, S., 2014. Mindfulness Meditation and the Experience of Time, in: Schmidt, S., Walach, H. (eds.), *Meditation – Neuroscientific Approaches and Philosophical Implications, Studies in Neuroscience, Consciousness and Spirituality*. New York: Springer International Publishing.

Valenzuela-Moguillansky, & C., Demšar, E., (2022). Toward a science of experience: Outlining some challenges and future directions. *Adaptive Behavior,* 105971232210847. https://doi.org/10.1177/10597123221084739

Valenzuela-Moguillansky, C., & Vasqeuz-Rosatti, A., (2019). An Analysis Procedure for the Micro-Phenomenological Interview. *Constructivist Foundations,* **14**, pp. 123–145.

Varela, F., Lachaux, J.-P., Rodriguez, E., & Martinerie, J., (2001). The brainweb: Phase synchronization and large-scale integration. *Nat Rev Neurosci,* **2**(4), pp. 229–239. https://doi.org/10.1038/35067550

Varela, F.J., (1996). A Methodological Remedy for the Hard Problem. Journal of Consciousness Studies, **3**(4), pp. 330–349.

Varela, F.J., 1999. The Specious Present: A Neurophenomenology of Time Consciousness in: Petitot, J., Varela, F. J., Pachoud, B. & Roy, J. (eds), *Naturalizing Phenomenology: Issues in Contemporary Phenomenolog and Cognitive Science.* Stanford: Stanford University Press.

Varela, F.J., Thompson, E., & Rosch, E., (2016). T*he embodied mind: cognitive science and human experience, revised edition.* Cambridge: The MIT Press.

Williams, J.B.W., & Kobak, K.A., (2008). Development and reliability of a structured interview guide for the Montgomery-Åsberg Depression Rating Scale (SIGMA). *Br J Psychiatry,* **192**(1), 52–58. https://doi.org/10.1192/bjp.bp.106.032532

Zahavi, D., (2002). *Husserl's phenomenology*. Redwood City: Stanford University Press.