

# Assessing Subjective Processes and Vulnerability in Mindfulness-based Interventions: A Mixed methods Exploratory Study

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**> Context** • Research in the contemplative field has focused on trainable capacities that foster self-regulation and integration. From a psychological perspective, mindfulness and personality research has largely grown with a categorical approach that explores the relationship between personality traits and mindfulness skills in clinical contexts.

**> Problem** • There is still a gap in our understanding of the subjective processes that occur through contemplative learning. Moreover, a dimensional personality approach that acknowledges personality functioning and individual vulnerability has not formed part of the discussion in the field.

**> Method** • We used a mixed methods framework to explore change and learning mechanisms among six participants in an eight-week mindfulness-based intervention. Pre- and post-intervention measurements were registered, including a micro-phenomenological interview (MPI) to explore first-person experience in dealing with difficulty, self-reported personality functioning, symptoms, and mindfulness skills, and heart rate variability, to relate self-reporting and phenomenological accounts.

**> Results** • Multiple levels of observation seem to be sensitive to capturing change and processes occurring in mindfulness-based interventions. The MPI analysis points to greater awareness and embodied care as central mechanisms. Personality functioning correlates with autonomic activity during critical phases of the MPI. Conceptual and experiential understanding of new forms of relating to experience are exemplified through a case study.

**> Implications** • This exploratory study contributes to scientific and clinical understanding of healing mechanisms of mindfulness practice. Taking vulnerability into account can help refine therapeutic strategies and clinical sensitivity. The results support more skillful ways of guiding and inquiring in mindfulness practices. Future research should explore subtler levels of experiential and physiological regulatory processes using larger samples, particularly with participants who experience difficulties during practice.

**> Constructivist content** • This work contributes to the development of Francisco Varela's neurophenomenology project and his scientific interest in contemplative practices as tools for the study of consciousness.

**> Key words** • Contemplative science, heart rate variability, micro-phenomenological interview, mindfulness, mixed methods, personality functioning.

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## Introduction

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« 1 » There has been exponential growth in studies on the impact of meditation and mind-body practices on health and well-being. In particular, mindfulness-based interventions (MBI) have been implemented in clinical and non-clinical settings and have been studied in interdisciplinary frameworks. In this target article, we present a conceptual and methodological approach to exploring change mechanisms of mindfulness and discuss the results of an exploratory study with a mixed methods design. By integrating first- and third-person perspectives, we aim to contribute to the contemplative field in line with Francisco Varela's enactive and embodied approach to cognition and his interest in contemplative practices as tools for the study of consciousness and therapeutic processes. As Jon Kabat-Zinn comments,

“Francisco Varela would have had a field day with the vast opportunities presented to us in this unique era of the confluence of cognitive science, phenomenology, and dharma that he contributed hugely to bringing about.” (Kabat-Zinn 2016: xv)<sup>1</sup>

« 2 » Mindfulness can be defined as “awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (Kabat-Zinn 2003: 145). From a psychological point of view, mindfulness can be understood as a trait or predisposition to be mindful in daily life (Baer et al. 2006). Mindfulness is also conceived of as a state occurring in mindfulness meditation and its regular practice may increase trait mindfulness (Kiken et al. 2015). Mindfulness-based interventions are standardized group programs, most often 8 weeks in duration, which include formal and informal practices to cultivate attention and attitudinal aspects for application in daily life. Mindfulness-Based Stress Reduction (MBSR) (Kabat-Zinn 2013) and mindfulness-based cognitive therapy (Segal et al. 2002), for example, are widely applied and appear to be effective in promoting

1 | “Dharma” is a Sanskrit word meaning laws that govern life and the nature of suffering.

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health and preventing and treating mental and somatic disorders. In the following sections, we present concepts and research approaches to understanding change occurring in mindfulness learning.

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## Contemplative Studies

### Quantitative research

« 3 » Research in the contemplative field has grown in recent decades, with evident benefits of MBI in a variety of disorders, including anxiety, chronic pain, depression, and addiction (Bohlmeijer et al. 2010; Piet & Hougaard 2011; Goyal et al. 2014; Goldberg et al. 2018). Improvements have also been observed among non-clinical populations in well-being, quality of life (physical, psychological and relational health), and cognitive and affective outcomes (Khoury et al. 2015; Creswell 2017). Regarding mechanisms of action, studies have largely been quantitative through self-reporting questionnaires that show decreased rumination, experiential avoidance and cognitive and emotional reactivity, and increased self-compassion and dispositional mindfulness (Alsubaie et al. 2017; Kuyken et al. 2010; McCluskey et al. 2020). Self-regulation, which is the capacity to control one's behavior, emotions and thoughts in pursuit of long-term goals, seems to be a central outcome of mindfulness meditation (Ostafin, Robinson & Meier 2015). From a psychodynamic perspective, self-regulation includes regulation of impulses, tolerance of affects, and regulation of self-esteem (OPD Task Force 2008). Regarding the regulation of emotions, there appears to be circularity between top-down strategies – labelling, metacognition, cognitive defusion, dereification (considering one's thoughts as mere thoughts rather than being absorbed in their content) – and bottom-up strategies – recognizing and allowing present-moment bodily experience (Guendelman, Medeiros & Hampes 2017; Andreu et al. 2017).

### Qualitative and mixed methodology

« 4 » There is still a gap in our understanding of subjective processes in contemplative learning and interventions. There is increasing qualitative research in this field, but it remains underrepresented. Studies

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have been conducted with healthy, subclinical populations and adolescents (Christopher et al. 2006; Shonin, Van Gordon & Griffiths 2014; Langer et al. 2020), as well as clinical populations, particularly individuals with depression (Allen et al. 2009; Burnett-Zeigler et al. 2019). While some studies have assessed implementation and have examined facilitators and barriers to engaging in MBI (Rycroft-Malone et al. 2019; Banerjee, Cavanagh & Strauss 2017), others have focused on subjective effects on participants. For example, Mackenzie et al. (2007) described subjective aspects among individuals with cancer who participated in an MBSR program, including:

- openness to change
- self-control
- shared experience
- personal growth
- spirituality.

« 5 » Given the complexity of these types of experiences, contemporary studies in different fields have drawn on mixed methods and interdisciplinary approaches in an attempt to better capture them. A good example of this is the Mind and Spirit Project, which used a mixed methods, multiphase approach, drawing on the expertise of anthropologists, psychologists, historians and philosophers to explore how different understandings of “mind” shape the way people tend to interpret “spiritual” or “supernatural” experiences (Weisman & Luhrmann 2020). This project shows that different disciplines have different skills and methods and when used together can improve research. These different methods offer counterpoints that generate alternative explanations, leading researchers to constantly re-evaluate their assumptions and look for new interpretations.

« 6 » As Tuyen Huynh, Holly Hatton-Bowers & Michelle Smith (2018) pointed out, mixed methods are well suited for mindfulness research due to the complexity of the construct of mindfulness itself and, specifically, due to the field moving forward in understanding for whom, how, when, and why mindfulness may be beneficial. Although mixed methods research focused on mindfulness is still relatively new, the study of Diana Kelm et al. (2018) is a good example of how these methods can complement each other. The authors studied the ef-

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fect of mindfulness-meditation training on healthcare providers in carrying out acute care tasks. Quantitative data showed improvements in team and task-management performance, while the results of qualitative study of mindfulness-meditation training indicate how participants use new skills in their work and personal lives.

### Phenomenology and contemplative research

« 7 » Parallels have been drawn between phenomenology and contemplative practices since the beginnings of the neurophenomenology research project (Varela, Thompson & Rosch 1991; Varela 1996; Petitot et al. 1999). Mindfulness meditation and other contemplative practices have been used as a method for investigating experience, showing remarkable points of convergence with phenomenological *praxis* (Depraz, Varela & Vermersch 2003; Hanna, Wilkinson & Givens 2017). On the one hand, meditative practices can be used in qualitative and phenomenological studies in cognitive sciences, including the investigation of selected experiential phenomena (Markič & Kordeš 2016; Depraz 2019; Kordeš & Demšar 2021). Regarding the meditation-based examination of experience, Urban Kordeš et al. consider it to be

“[...] the most suitable first step towards developing a contemplative, non-naturalized, and existentially meaningful study of consciousness.” (Kordeš et al. 2019: 84)

« 8 » On the other hand, Antoine Lutz et al. (2015) suggested a phenomenological matrix as a framework to map different styles and levels of training in mindfulness. The description of subjective experience is usually difficult because an important part is not accessible to awareness. Claire Petitmengin, Martijn van Beek et al. (2019) argued that meditative experience is in itself a research object, highlighting the micro-phenomenological interview (MPI) as a method to describe and understand its processes. This technique emerged from the explicitation interview developed by Pierre Vermersch (2009) to systematically and rigorously study the procedural aspects of learning. The MPI has been adapted to cognitive science to describe experiences associated

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with cognition and embodied processes, including perception of emotion (Depraz, Gyemant & Desmidt 2017; Vásquez-Rosati et al. 2017). The MPI has recently been used to explore subjective reports of meditative states and differential affective, bodily, and sensory fingerprints of contemplative practices (Przyrembel & Singer 2018; Kok & Singer 2016). Moreover, through the use of the MPI, Petimengin, van Beek et al. (2019) suggested that the process of regaining contact with experience, regardless of its content, may account for the therapeutic effects of meditation.

### Mindfulness and personality research

« 9 » The research to date exploring the relationship between mindfulness and personality has mainly consisted of cross-sectional studies using self-report measures to study correlations between personality traits (the Big Five) and dispositional mindfulness (e.g., the Five-Factor Mindfulness Questionnaire). For example, in a cross-sectional study, Paul van den Hurk et al. (2011) found a positive association between mindfulness and openness to experience and extraversion among experienced meditators. Although the literature has tended to report inverse correlations between mindfulness and neuroticism and negative affects, as well as positive associations with responsibility, a meta-analysis by Tamara Giluk (2009) revealed a high degree of variability and inconsistency in the associations described in this field.

### Personality functioning

« 10 » Current models, including the proposal of the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) regarding personality disorders and the Operationalized Psychodynamic Diagnostic System (OPD Task Force 2008; Zimmermann et al. 2012) promote a dimensional view of personality functioning as complementary to traits, giving importance to the adaptive capacities of individuals, as well as vulnerability to stress, and resilience. Personality functioning develops in the early years of a person's life and reflects ongoing levels of relational integration and plasticity. According to Allan Schore (2012), regulatory capacities arise early in the dynam-

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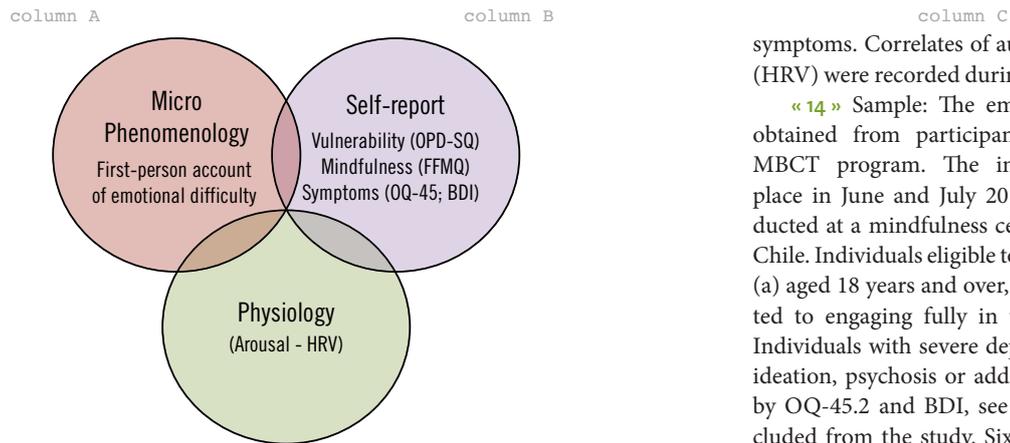
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ics of inter-affective regulation, imprinting implicit personal and relational patterns. Regulatory systems are underdeveloped in relation to early trauma, which manifests itself as threat sensitivity and self and social-affective dysfunctions. Personality functioning is understood as the organization of psychological dispositions, functions, or self-capacities to respond to internal and external demands and stress-related regulation (OPD Task Force 2008). For the purposes of psychotherapy research, these functions are measurable through self-report questionnaires (Ehrenthal et al. 2012). Although measurable personality functions tend to be stable, they can change over time and context, as we explore in this study.

### Autonomic arousal

« 11 » The autonomic nervous system plays a key role in orchestrating mind-body interactions and represents a valuable source of observation in studying self-regulation. It has been suggested that heart rate variability (HRV) is an emergent property of interdependent regulatory systems that operate on different time scales to help us adapt to environmental and psychological challenges (Shaffer & Ginsberg 2017). Increased HRV is regarded as a physiological marker of overall health, well-being, behavioral and social adaptation, sense of coherence, and cognitive flexibility (Kamath, Watanabe & Upton 2013; Quintana, Alvares & Heathers 2016; Kirby et al. 2017). Reduced HRV may reflect a failure to inhibit a maladaptive cardiac autonomic response to stress and perceived threats and is associated with mental (anxiety, addiction, autism) and somatic conditions (Kemp et al. 2010; Kemp & Quintana 2013; Quintana, Alvares & Heathers 2016). Recently, HRV has been introduced in contemplative studies to understand the effects of meditative practices on the modulation of the autonomic nervous system (Christodoulou, Salami & Black 2020). Promising results with clinical and non-clinical populations have been described (Pascoe, Thompson & Ski 2017; Nijjar et al. 2014; Bhatnagar et al. 2013). In this regard, Kirby et al. (2017) suggested including HRV measurements in the contemplative field (particularly in compassion practice) as a primary outcome in assessment and training. Interestingly, in compassion-based practices, increased HRV and

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17 **Figure 1** • Methodological framework studying change through mindfulness practice,  
 18 incorporating vulnerability. ECG-HRV: Heart Rate Variability, OPD-SQ: Structure Questionnaire,  
 19 BDI: Beck Depression Inventory, OQ45: Outcome Questionnaire, FFMQ: Five-Facet Mindfulness  
 20 Questionnaire)..

23 other neurophysiological measurements  
 24 depend on personality aspects like levels of  
 25 self-criticism and indicators of insecure at-  
 26 tachment (Kirby et al. 2017).

27 « 12 » In this study, we assume that every  
 28 person who begins a contemplative practice,  
 29 whether through an MBI or a contemplative  
 30 tradition, has personal vulnerabilities as a  
 31 result of genetic and environmental factors  
 32 during early life and development. Aiming  
 33 to contribute to broadening our understand-  
 34 ing and treatment of traumatic memories  
 35 through enactive, incarnate and phenom-  
 36 enological frameworks, we focus on devel-

204 opmental trauma and its impact on habitual  
 38 forms of relating to difficult experience. Ac-  
 39 cording to Philip Bromberg (2011), develop-  
 40 mental trauma (also termed relational trauma)  
 41 shapes early relational patterns through  
 42 procedural memories that organize the core  
 43 self and its relative degree of vulnerability to  
 44 destabilization. While not directly studying  
 45 people with Post-Traumatic Stress Disorder  
 46 as a clinical diagnosis, we are acknowledg-  
 47 ing the impact of early life adversity in terms  
 48 of vulnerability to stress and psychopathol-  
 49 ogy. This exploratory study assesses these  
 50 individual landscapes and their interaction  
 51 with the mindfulness learning processes and  
 52 outcomes. To fill the gap in understanding  
 53 subjective processes of mindfulness learning  
 54 and its application to daily life, we explore  
 55 change from a phenomenological approach

based on the complexity continuum of possible forms of first-person data described by Aviva Berkovich-Ohana et al. (2020). We consider self-report questionnaires as *thin* phenomenology due to their limitations and reductive nature, while we consider the MPI as *thick* phenomenology due to its highly refined and detailed description of subjective experience. Specifically, we use the MPI to examine the impact of an MBI on forms of relating to difficult experiences. From a third-person perspective, we used physiological measurements of arousal. Three types of data were collected (Figure 1):

- Micro-phenomenological interview
- Self-reporting
- Physiology of arousal

## Method

« 13 » We used a mixed methods approach to explore complexities of change while considering individual functioning and interaction with mindfulness learning processes. Data was collected before and after the 8-week mindfulness-based cognitive therapy program (Teasdale et al. 2000). First-person accounts relating to emotional difficulty (see below) were assessed using the MPI. Self-administered questionnaires were used to describe changes in dispositional mindfulness, personality functioning and

symptoms. Correlates of autonomic arousal (HRV) were recorded during the interviews.

« 14 » Sample: The empirical data was obtained from participants attending an MBCT program. The intervention took place in June and July 2017 and was conducted at a mindfulness center in Santiago, Chile. Individuals eligible to participate were (a) aged 18 years and over, and (b) committed to engaging fully in the intervention. Individuals with severe depression, suicidal ideation, psychosis or addiction (measured by OQ-45.2 and BDI, see below) were excluded from the study. Six participants (all women) gave their informed consent to participate in the study. The average age of the participants was 30 (between 27 and 34). Four had a clinical history of depressive disorders and two of anxiety disorders. As shown in Table 1, all the participants had histories of vulnerability and mental suffering. Almost all the participants were receiving other treatment at the time of the intervention. Their motivations to participate varied, reflecting a heterogenous group in terms of expectations. The study was approved by the Ethics Committee of the Pontificia Universidad Católica de Chile.

« 15 » Intervention: MBCT is a clinical intervention designed to prevent relapse among subjects vulnerable to recurrent depression. It focuses on recognizing cognitive and emotional patterns that lead to suffering through the development of mindfulness skills (Teasdale et al. 2000). Participants met weekly for 2.5 hours to learn meditative practices and share their experiences. They committed themselves to a daily practice of 40–60 minutes supported by MP3 recordings and readings. Towards the end of the program, a 7-hour-long silent retreat was carried out. The program was facilitated by two experienced mindfulness facilitators: a psychiatrist trained at the Center for Mindfulness at the University of Massachusetts, and a clinical psychologist trained at the Centre for Mindfulness Studies in Toronto.

« 16 » Procedure: During the group orientation session (one week prior to the intervention), clinical records were completed with the personal data and medical backgrounds of the participants. Also, brief personal interviews were conducted to screen for contraindications. During that week, participants completed online question-

N=6	Sex	Age	Symptoms	Reasons for entering the program	Other treatments
P1	F	32	history of depressive symptoms	mood regulation, awareness of emotions and thoughts, self-knowledge to cope with anxiety and depression	none
P2	F	25	depressive and anxiety symptoms, chronic physical illness (hepatitis)	coping with anxiety, self-knowledge, enjoying instead of controlling	psychotherapy, pharmacotherapy (anxiolytics and immuno-modulators)
P3	F	24	anxiety and sleep disorder	self-care practices to cope with thoughts and emotions, self-knowledge, getting to know a new field in psychology	recently completed psychotherapy process
P4	F	33	affective disorder	learning to regulate emotions, to improve quality of life, and reduce anxiety and stress	pharmacotherapy (antidepressant, psychotherapy)
P5	F	31	depressive symptoms	recognizing and coping with difficult emotions and stress to reduce anxiety	psychotherapy
P6	F	27	anxiety symptoms (panic disorder)	coping with anxiety and panic disorder, living a "normal life," to be able to be alone	pharmacotherapy (antidepressant, anxiolytics) psychotherapy

**Table 1 •** Sociodemographic data and clinical history of the six participants.

naires and attended the Laboratory of Observation and Analysis of Human Behavior, at the School of Psychology of the Pontificia Universidad de Chile for the recording procedure of the physiological measurements and the MPI. Once the program had been completed, the participants were reassessed in all the aforementioned domains.

### Micro-phenomenological interview

«17» The micro-phenomenological interview is a technique used to collect highly reliable and precise descriptions of the microdynamics of singular experiences from an embodied perspective. By means of content-empty questions that guide the interviewee to evoke and describe a retrospective experience, the interviewee is able to consider a more incarnated form of the experience and be more aware of it (Petitmengin & Bitbol 2009). The MPI obtains detailed descriptions of a singular experience that is limited in time and space, focusing on the procedural dimension and from an embodied perspective (Vermersch 2009; Petitmengin 2006). During the MPI specifically designed for this study, participants were invited to recall a difficult emotional situation that had happened to them during the previous week. This approach was designed to evaluate the interviewees' ways of relating to difficulties and any changes after the intervention. Each participant was interviewed before and after the 8-week intervention. The opening question (for both

interviews) was "If you agree to do so, I propose you recall a difficult emotional situation you experienced last week. When you have something in mind, let me know." The interviewer guided the interviewee to the state of evocation of this particular moment through the connection of sensory aspects, with the purpose that participants acquire "an increasingly fine reflective awareness of one's experience in real time" (Petitmengin & Bitbol 2009: 384). Some objective indicators of the state of evocation are eyes directed towards the horizon, slower speech, words cut off with silences, co-verbal gestures such as arm movements, and shifts in body posture (Petitmengin & Bitbol 2009). Once the interviewee was in the evocation state, she was guided in the description of the experience through various tools, such as questions without content, echo and fragmentation. Interviews were audio- and video-recorded and later faithfully transcribed.

«18» There are several steps in the analysis of the interview, the first being the preparation of the data. To this end, we selected transcribed parts of the interviews that dealt with the main theme and not with asides (Vermersch 2011). A process called "iterative interrogation" was used to capture the temporal units of the development of the experience that compose the diachronic structure of the experience. This process was done first by obtaining the individual structures for each interview. Then, from these structures, the generic diachronic and

synchronic (experiential space) structures of experience were built. The diachronic structure refers to the temporal development of the experience under study and the synchronic structure to the characterization of the experience or an aspect of it at a given moment (Petitmengin, Remillieux & Valenzuela-Moguillansky 2019; Valenzuela-Moguillansky & Vásquez-Rosati 2019). We assessed the reliability of the reports and the validity of the results using the same analysis procedure by means of performative consistency (Petitmengin & Bitbol 2009). In particular, we used confirmation by iteration, inter-subjective validation and neurophenomenological validation: the first consists of detecting a hypothetical structure, which is confirmed and refined with the subsequent analysis of the interviews; the second consists of comparing the results provided by the independent research teams; the last consists of comparing the first- and third-person methods to confirm the results (Petitmengin, Remillieux & Valenzuela-Moguillansky 2018).

### Self-reports

#### OPD-SQ Structure Questionnaire (Ehrenthal et al. 2012)

«19» The level of personality functioning is evaluated based on Axis IV of the Operationalized Psychodynamic Diagnosis System OPD-2 (OPD Task Force 2008),

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1 which assesses eight functions or regulatory  
2 capacities:

3 1 | Perception of self: differentiated image  
4 of self, self-reflective capacity, stable  
5 identity;

6 2 | Perception of the Object: adequate im-  
7 age of others, self-object differentiation;

8 3 | Self-regulation (impulses and effects);

9 4 | Regulation of the relationship with the  
10 object: being able to protect relation-  
11 ships and balance interests and needs of  
12 oneself and others;

13 5 | Internal emotional communication:  
14 emergence and experiencing of effects,  
15 internal dialogues, and fantasies as me-  
16 diators of internal states;

17 6 | External emotional communication:  
18 emotional exchange with others, com-  
19 munication of affects, empathy;

20 7 | Attachment to internal objects: internal-  
21 ization and use of introjections to regu-  
22 late internal states;

23 8 | Attachment to external objects: relating  
24 to others emotionally, accepting help,  
25 tolerating separation.

26 « 20 » The questionnaire consists of 95  
27 items with a 5-point Likert-scale format.  
28 Higher scores indicate psychological vul-  
29 nerability, i.e., lower regulatory capacity. A  
30 score was obtained for each function and  
31 a total score was calculated for overall per-  
32 sonality functioning. The questionnaire had  
33 adequate psychometric properties (Ehren-  
34 thal et al. 2012). A version adapted to the  
35 Chilean context was used (De la Parra et al.  
36 2018).

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### Beck Depression Inventory (BDI-I) (Beck et al. 1961)

38 « 21 » The BDI-I evaluates depressive  
39 symptomatology during the previous week.  
40 It consists of 21 items presented in groups of  
41 statements, which the participants can select  
42 to represent their inner states. Higher scores  
43 indicate greater depressive symptomatology.  
44 It has been widely used in mental health re-  
45 search in Chile, presenting adequate inter-  
46 nal consistency ( $\alpha = .92$ ) (Valdés et al.  
47 2014).

### Five-Facet Mindfulness Questionnaire (FFMQ) (Baer et al. 2006)

51 « 22 » The FFMQ describes mindfulness  
52 as a multidimensional construct composed  
53 of five facets: observation, description, act-

column A

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ing with awareness, non-judging, and no  
reactivity toward experiences. It consists of  
39 items in a Likert-scale format. The FFMQ  
has adequate psychometric properties and is  
widely used to evaluate mindfulness. Vali-  
dation studies with students show that the  
Chilean adaptation has adequate psycho-  
metric properties (Schmidt & Vinet 2015).

### Outcome Questionnaire (OQ-45.2) (Lambert et al. 1996)

« 23 » The OQ assesses progress in psy-  
chotherapy through successive measure-  
ments that cover three general and inter-  
personal functioning areas of the patient  
at the present time in their life: symptoms,  
interpersonal relationships, and social role.  
It has proven to be reliable and valid in its  
sensitivity to psychopathology and change  
and was validated by Alejandra von Bergen  
and Guillermo de la Parra (2002).

« 24 » Self-reported measurements  
were analyzed with SPSS 20.0.<sup>2</sup> Descriptive  
statistics (means and standard deviations)  
were calculated for scales and subscales of  
each self-reported measurement. The Wil-  
coxon non-parametric test was used to com-  
pare pre- and post-intervention scores of  
self-reported measurements.

### Physiological measure

« 25 » We used three electrocardio-  
gram sensors (MindWare Mobile Imped-  
ance Cardiograph, frequency sampling 500  
Hz) to explore heart rate variability as an  
autonomic indicator. The heart rates of the  
participants were measured at rest and dur-  
ing the MPI, pre- and post-MBCT interven-  
tion. To analyze the HRV data, the inter-  
beat (RR) intervals from the QRS complex  
(the ECG waveform corresponding to the  
electric activity of the heart) were identi-  
fied, segmented through `qrsdetect` function  
from the BIOSIG toolbox and processed in  
R (version 4.2.3) (Rodríguez-Liñares et al.  
2008) to obtain temporal indices. The seg-  
ments provided ultra-short-term HRV indi-  
ces (Castaldo et al. 2019; Pecchia et al. 2018;  
Baek et al. 2015) from which the following  
were chosen for analysis:

a the ratio between the standard devia-  
tion of the RR intervals (SDNN) and the  
square root of the successive differences

2 | IBM SPSS statistics for Windows, 2011.

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of the RR intervals (RMSSD), where 1  
SDNN is an indicator of overall auto- 2  
nomic nervous system activity, while 3  
RMSSD shows the functioning of the 4  
parasympathetic nervous system (vagal 5  
activity);<sup>3</sup> 6

b the percentage of absolute difference 7  
between RR intervals (pNN50), an in- 8  
dicator of parasympathetic nervous sys- 9  
tem activity that also correlates with the 10  
RMSSD. 11

HRV data was temporally identified from 12  
specific segments of the interview: 13

- Resting state (3 minutes); 14
- State of evocation: moment when the 15  
difficult emotional situation is recalled 16  
(3 minutes); and 17
- Emotional confrontation: segment in 18  
which the participant describes coping 19  
with a difficult emotional situation (2 20  
minutes). 21

## Results

« 26 » All participants completed the 26  
program and attended all weekly sessions 27  
and the day-long retreat. No adverse effects 28  
were observed during the intervention. 29

### Micro-phenomenological interview analysis

« 27 » The analysis of the six MPI indi- 33  
cated the diachronic and synchronic generic 34  
structures before and after the intervention. 35  
The diachronic generic structure shows the 36  
temporal development of the difficult emo- 37  
tional experience, which is demarcated tem- 38  
porally by the moment of emotional conflict. 39  
The synchronic structure shows how differ- 40  
ent aspects of the experience (emotions, 41  
thoughts, self-treatment and strategies) are 42  
transformed throughout it. The description 43  
of the generic structures before and after the 44  
intervention are shown in [Figure 2](#). 45

### Pre-intervention

« 28 » The generic diachronic struc- 48  
ture shows that 2 of the 6 interviewees in- 49  
dicated being in a negative emotional state 50  
(anger or anguish) before facing the difficult 51

3 | We used the SDNN/RMSSD index as a 53  
surrogate for the low and high frequency index 54  
(Wang & Huang 2012). 55

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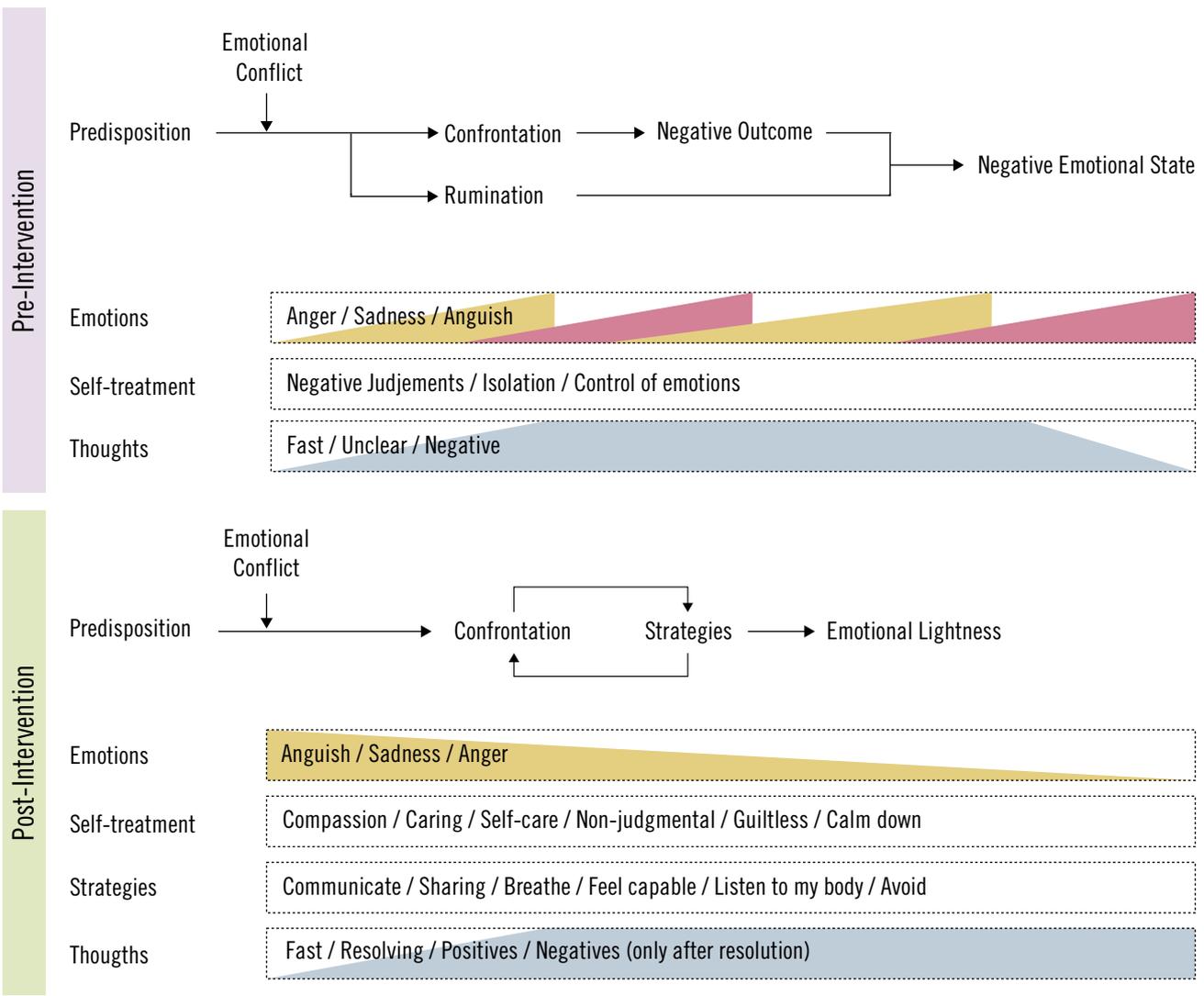
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1 emotional situation (predisposition phase).  
 2 When participants faced the stressor, they  
 3 reported either the will to resolve the con-  
 4 flict or entering a state of rumination. In at-  
 5 tempting to confront the situation, partici-  
 6 pants found strategies like trying to *control*  
 7 *emotions* were not effective in helping them  
 8 to calm down: “Towards him it is more like  
 9 anger, and with me it is impotence at not be-  
 10 ing able to control the sadness, to control the  
 11 anguish” (P2); “I try not to show it so much

in my body, but to control it a little, so in the  
 end it is a kind of... like a... is to control, to  
 stop my body from expressing itself...” (P6).  
 In most cases (5/6), the result was nega-  
 tive, generating a negative emotional state:  
 “I stop crying and the anger remains” (P1);  
 “Like judging myself, I don’t know, feeling  
 silly or weak” (P2).

« 29 » The synchronic generic structure  
 shows that emotions like grief, anger, and  
 anguish were present during the confronta-

tion with the difficult situation, and most  
 participants had difficulty in differentiat-  
 ing these emotions. These emotions were  
 accompanied by bodily sensations such as  
 tension, stomach pain, a lump in the throat,  
 disgust, and pressure on the chest. The in-  
 tensity of these emotions did not dimin-  
 ish over the course of the experience and  
 remained after the emotional conflict. Ru-  
 mination was described as feeling flooded  
 by thoughts. When the participants entered



51 **Figure 2** • Micro-phenomenological analysis of the difficult emotional situation before (pre- intervention) and after (post-intervention) an  
 52 8-week mindfulness-based intervention. The generic diachronic structure starts with a positive/negative attitude toward the emotional event,  
 53 followed by emotional conflict and its later development varying between the two conditions. The generic synchronic structure shows the  
 54 multiple axes that emerged from the analysis (emotions, self-care strategies, and thought). The colors represent different emotions, mixed (pre-  
 55 intervention) or distinguished (post-intervention) from each other.

column A

column B

column C

column A		column B	
		Mean (Pre)	Mean (Post)
Depressive symptoms (BDI)		7.5 (2–14)	4 (0–11)
Outcome Questionnaire (OQ-45)	Subjective distress (SD)	60.33 (25–75)	35.5 (12–66)
OQ-45 Subscales	Interpersonal Relationships (IR)	36 (19–47)	21.17 (5–35)
	Social Role (SR)	14.33 (3–22)	8 (2–17)
		10 (3–14)	6.33 (3–14)
Personality Functions (OPD-SD)	Self-Perception	2.44 (1.75–2.83)	1.73 (1.17–2.58)
	Object Perception	2.23 (1.52–3.59)	1.74 (1.11–2.19)
	Self-Regulation	2.21 (1.45–2.93)	1.72 (0.92–2.68)
	Regulation of Relationships	2.29 (1.67–3.00)	2.16 (1.58–3.17)
	Internal Communication	1.60 (1.22–2.08)	1.42 (0.75–2.92)
	External Communication	1.72 (1.03–2.67)	1.57 (1.31–2.36)
	Attachment to Internal Objects	2.33 (1.13–3.63)	1.96 (1.00–2.63)
	Attachment to External Objects	2.52 (1.38–3.63)	2.21 (1.63–2.88)
FFMQ	Observation	20.50 (16–26)	22.83 (17–31)
	Description	27.83 (24–31)	29.50 (25–32)
	Awareness	22 (14–25)	25 (22–32)
	Non-judgment	32.83 (24–38)	36.33 (33–39)
	Non-reactivity	19.67 (12–26)	24.33 (20–28)

**Table 2** • Self-reported measurements, pre- and post-intervention means and ranges.

	Pre-Intervention Mean (standard error)	Post-Intervention Mean (standard error)
SDNN/RMSSD		
Resting state	1.52 (0.16)	1.55 (0.11)
Evocation	1.88 (0.16)	1.87 (0.20)
Emotional Confrontation	1.77 (0.13)	1.57 (0.21)
pNN50		
Resting state	17.09 (6.83)	7.91 (3.85)
Evocation	10.98 (3.42)	10.07 (2.53)
Emotional Confrontation	11.77 (3.53)	11.45 (4.17)

**Table 3** • Mean values and ranges of HRV temporal indices comparing pre- and post-intervention scores for each segment of the data.

a state of rumination, they perceived the situation negatively or wished to escape the context, leaving it unresolved. In this state, the flow of negative thoughts increased, being described as fast and unclear. Participants judged themselves negatively, isolated themselves, and tended to control their emotions: “But then when the thought

comes, the feelings of guilt, I mistreat myself, I put too much pressure on myself, I am very critical of myself, very hard” (P5); “then a whole guilt mechanism begins” (P4). Only one participant described taking care of herself and thinking positively as having helped her get out of a difficult emotional situation.

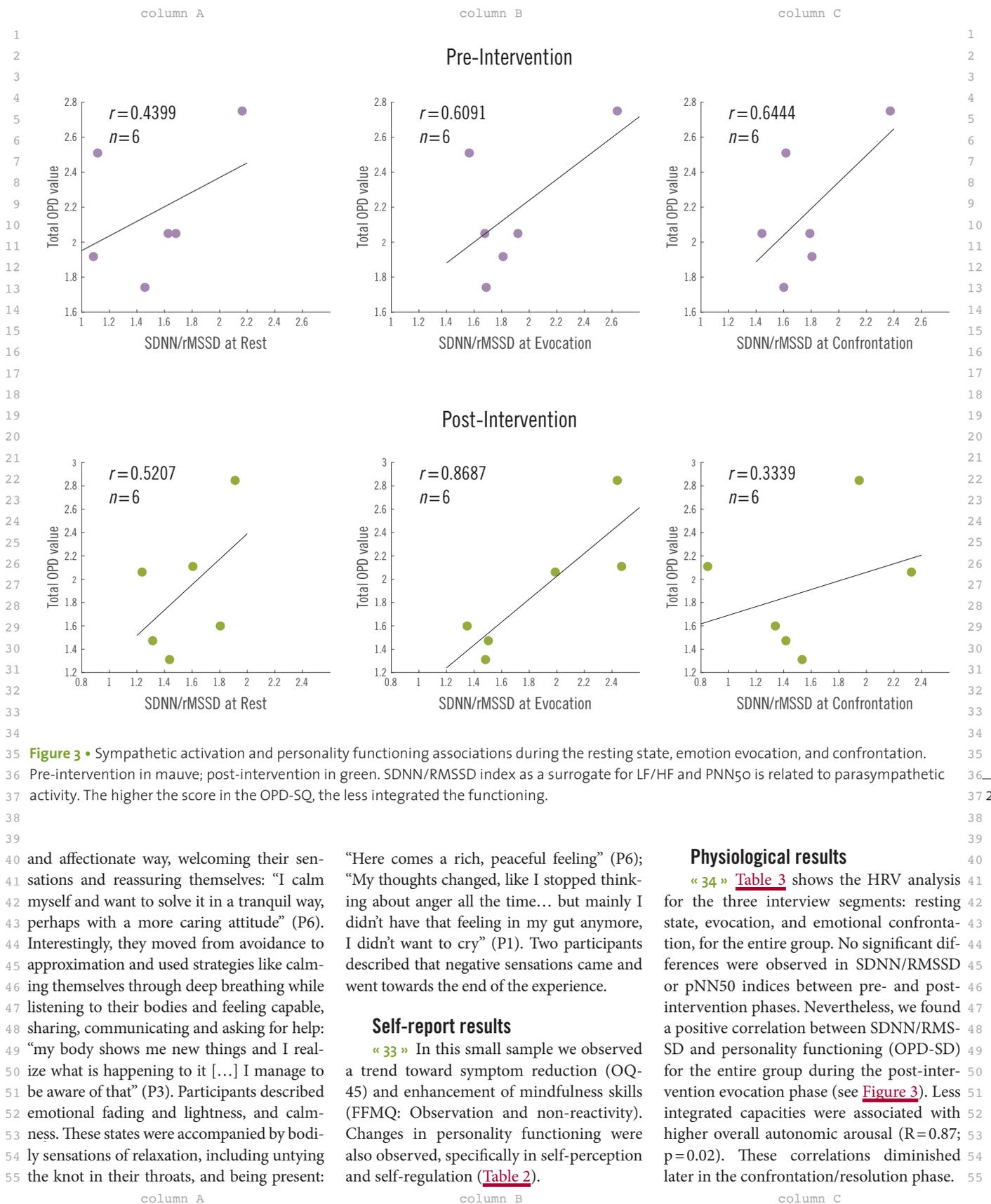
## Post-intervention

« 30 » The diachronic generic structure, as in the previous condition, shows that two participants reported an emotional state prior to the emotional conflict, but unlike the previous case, this state was characterized by emotional expectation. All the participants dealt with the situation in one way or another using different strategies, which resulted in feelings of emotional lightness: “Being able to say it already relieves me [...] in this situation,” I feel able to be more compassionate to myself” (P2); “It’s like realizing that I can say something, that I can put limits on it, that feeling of putting limits on it. That’s the feeling of relief, like feeling that I can tell him something” (P3); “I tried to embrace that feeling” (P4).

« 31 » The synchronic generic structure shows that emotions of anguish, grief, and anger were present during the confrontation with the difficult emotional situation, as in the pre-intervention condition. However, the participants were able to differentiate between these emotions. The intensity of emotions diminished over time, while other feelings accompanied the difficult emotional experience, including powerlessness, frustration, and disappointment. After the intervention, participants were better able to describe the bodily sensations that accompanied their emotional response, which in turn allowed them to better recognize their emotions. For example, participants were able to distinguish between anguish and grief. Anguish was accompanied by a sensation of tightness in the chest and accelerated breathing, while grief was accompanied by feelings of despondency, a tightness of the throat (speechlessness), and stomach pain: “anguish is like something that squeezes me, squeezes me and doesn’t go away with crying, the sadness goes away with crying, once I let it out” (P5). One participant reported feeling nervous, which was described as containing energy, tension, and a feeling in the gut.

« 32 » [Figure 2](#) shows new regulatory abilities arising from changes in the participants’ ways of relating to emotional stress. In general, the participants’ thoughts appeared to be resolution-directed and positive. Initially, the participants’ thoughts were rapid, but later on they slowed down and weakened. The participants treated themselves non-judgmentally and in a compassionate

column A column B column C



**Figure 3** • Sympathetic activation and personality functioning associations during the resting state, emotion evocation, and confrontation. Pre-intervention in mauve; post-intervention in green. SDNN/RMSSD index as a surrogate for LF/HF and PNN50 is related to parasympathetic activity. The higher the score in the OPD-SQ, the less integrated the functioning.

and affectionate way, welcoming their sensations and reassuring themselves: “I calm myself and want to solve it in a tranquil way, perhaps with a more caring attitude” (P6). Interestingly, they moved from avoidance to approximation and used strategies like calming themselves through deep breathing while listening to their bodies and feeling capable, sharing, communicating and asking for help: “my body shows me new things and I realize what is happening to it [...] I manage to be aware of that” (P3). Participants described emotional fading and lightness, and calmness. These states were accompanied by bodily sensations of relaxation, including untying the knot in their throats, and being present:

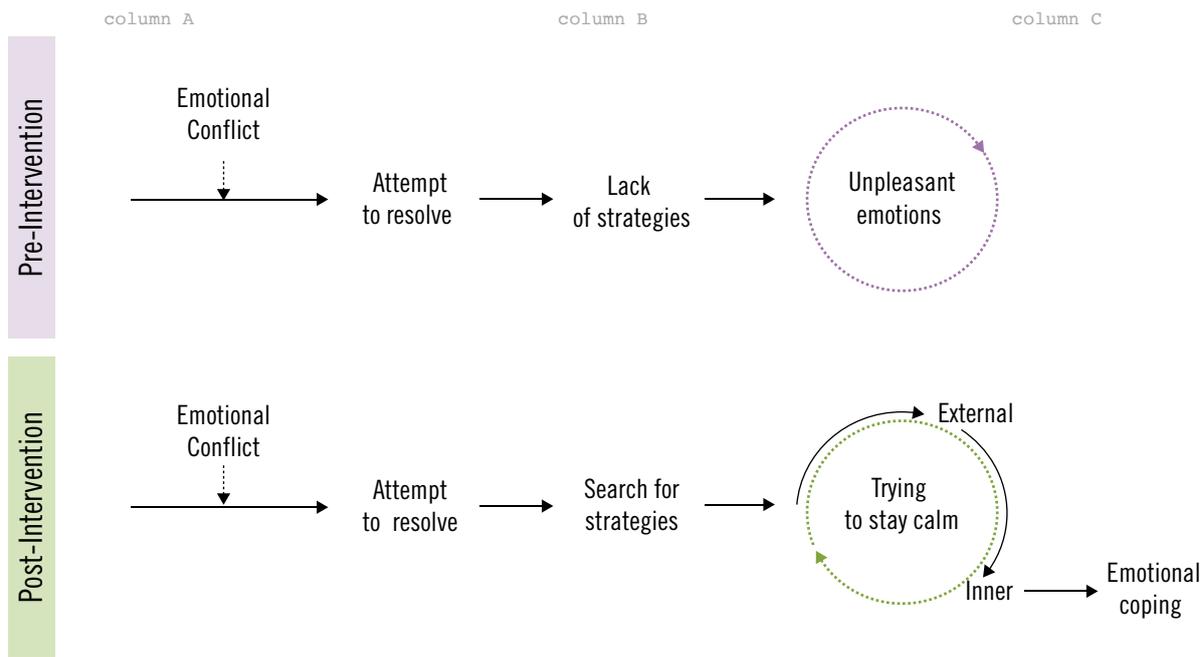
“Here comes a rich, peaceful feeling” (P6); “My thoughts changed, like I stopped thinking about anger all the time... but mainly I didn’t have that feeling in my gut anymore, I didn’t want to cry” (P1). Two participants described that negative sensations came and went towards the end of the experience.

### Self-report results

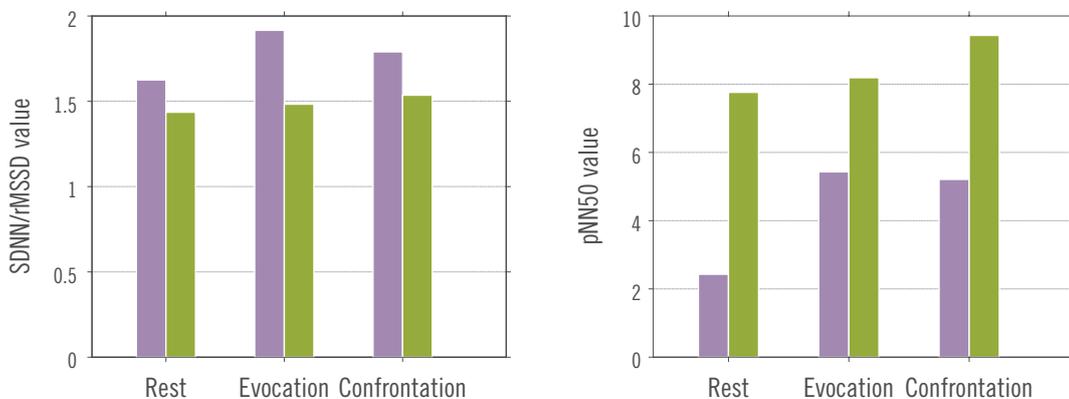
« 33 » In this small sample we observed a trend toward symptom reduction (OQ-45) and enhancement of mindfulness skills (FFMQ: Observation and non-reactivity). Changes in personality functioning were also observed, specifically in self-perception and self-regulation (Table 2).

### Physiological results

« 34 » Table 3 shows the HRV analysis for the three interview segments: resting state, evocation, and emotional confrontation, for the entire group. No significant differences were observed in SDNN/RMSSD or pNN50 indices between pre- and post-intervention phases. Nevertheless, we found a positive correlation between SDNN/RMSSD and personality functioning (OPD-SD) for the entire group during the post-intervention evocation phase (see Figure 3). Less integrated capacities were associated with higher overall autonomic arousal ( $R=0.87$ ;  $p=0.02$ ). These correlations diminished later in the confrontation/resolution phase.



**Figure 4** • Individual structure of the difficult experience. Before the intervention, the participant tried to resolve the emotional conflict, but in the absence of strategies to do so, she did not succeed and was overwhelmed by unpleasant emotions. After the intervention, the participant tried to resolve the conflict by looking for concrete strategies to stay calm, first by seeking outside help, but when she did not get what she needed after the intervention, she turned to her own resources (attended to breathing and bodily sensations, calming thoughts, and being more present and treating herself kindly) to cope emotionally.



**Figure 5** • Autonomic activity indices in the case study (participant 6) during the three segments of the Mpl (Rest, Evocation, and Emotional Resolution). Pre-intervention in mauve; post-intervention in green.

### Case analysis

« 35 » To exemplify how the three levels of observation can be integrated to understand change in forms of relating to experience, we selected a prototypical example (participant 6). The analysis shows concordance between *first-person* reports,

self-assessment of personality functioning and physiological measurements. After the mindfulness intervention, the MPI analysis shows the acquisition of emotion regulation strategies to cope with stress (see [Figure 4](#) for individual analysis). The participant's self-reported scores indicate a 36% improve-

ment in overall personality functioning considering all subfunctions ([Table 4](#)). These positive changes in personality functioning are aligned with the MPI analysis with autonomic arousal modifications ([Figure 5](#)). After training, the participant's overall arousal activity (SDNN/RMSSD index) was lower

column A

1 during the three segments of the MPI, which  
2 can be interpreted as a positive modulation  
3 of post-intervention vagal activity. Interest-  
4 ingly, the evocation segment showed greater  
5 differences between the two conditions.  
6 A higher pNN50 index (activation of the  
7 parasympathetic system) was observed in  
8 all segments of the MPI: in the resting state,  
9 this difference reached 5 points, while in the  
10 evocation and emotional resolution states,  
11 it reached 2.7 and 4, respectively. Similar  
12 to participant 6, other participants showed  
13 a coherent pattern of response at the three  
14 levels of observation.

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## 17 Discussion

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19 « 36 » This study contributes to theoret-  
20 ical models that aim to integrate mind and  
21 body to explore outcomes and mechanisms  
22 of mindfulness practice in MBI. A psycho-  
23 logical, phenomenological and physiologi-  
24 cal framework was used to explore change  
25 occurring among participants. Research  
26 into contemplative practices can benefit  
27 from mixed methods approaches to under-  
28 stand the complexity and different dimen-  
29 sions of clinical and therapeutic processes.  
30 To our knowledge, this is the first study to  
31 use the MPI before and after an MBI, and to  
32 specifically investigate changes in how indi-  
33 viduals relate to difficult experiences. Over-  
34 all, our results point to trainable attitudes  
35 and skills that enhance regulatory strategies  
36 among the participants. In what follows, we  
37 describe exploratory associations between  
38 different levels of observation in order to  
39 foster further inquiry in a scientific and  
40 clinical dialogue. These associations should  
41 be further tested using larger samples to es-  
42 tablish statistical significance.

43 « 37 » Personality psychology and phe-  
44 nomenology are two different domains  
45 (both epistemologically and methodologi-  
46 cally) and their integration can be challeng-  
47 ing. Self-report questionnaires are limited  
48 in their accuracy to assess subjective ex-  
49 perience as they may translate social de-  
50 sirable or unrelated opinions. Although  
51 measurable personality functions tend to  
52 be stable, they can change over time and  
53 context. Indeed, individuals can show great  
54 variability in their cognitive, affective, and  
55 behavioral inclinations in different contexts

column A

column B

OPD function	Pre MBCT	Post MBCT
Self-Perception	2.42	1.17
Perception of Objects	1.94	1.11
Self-Regulation	2.47	1.80
Regulation of relationships	2.67	1.58
Internal Communication	1.22	0.78
External Communication	1.67	1.39
Internal Attachment	1.13	1.00
External Attachment	2.88	1.63
Total OPD	2.05	1.31

Table 4 • OPD-SQ scores in case study (participant 6).

column B

column C

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(Herz, Baror & Bar 2020). To understand  
the relationship between stable states and  
conscious experience, the authors offer a  
holistic framework whereby all the diverse  
dimensions of functioning are clustered  
together, acknowledging that the mind is a  
dynamic construct that can change accord-  
ing to circumstances. In our study, we offer  
a dialogue between self-reporting and the  
MPI, aiming to integrate both domains and  
deepen the understanding of new regula-  
tory capacities. Our preliminary data may  
serve to describe *what changes* and to a lesser  
degree, *how* this happens. While self-re-  
port questionnaires (thin first-person phe-  
nomenology) show a trend toward fostering  
mindfulness skills, as well as enhancing per-  
sonality functioning (self-perception and  
self-regulation as main functions), the MPI  
(thick first-person phenomenology) gives a  
voice to self-assessed change. For example,  
change in self-perception (OPD-SQ), which  
refers to the capacity for self-reflection, dif-  
ferentiation of affects, and stability of iden-  
tity, correlates with MPI analysis revealing  
greater awareness of cognitive, emotional  
and physical phenomena. In the case of  
self-regulation (OPD-SQ), which includes  
regulation of impulses, tolerance of affects,  
and regulation of self-esteem as subfunc-  
tions, the MPI describes subjective trans-  
formation in self-experiencing, particularly  
through learning soothing strategies to  
calm oneself and integrate bodily experi-  
ence. MPI analysis provides a *view from  
within* to understand change in ways of re-  
lating to stressors.

19 « 38 » Although participants in the  
20 study were not suffering from acute depres-  
21 sion, most of them had a clinical history of  
22 this disorder and of vulnerability. Taking  
23 into consideration Thomas Fuchs's (2013:  
24 222) idea of depression as "a 'detunement'  
25 [...] of the resonant body that normally me-  
26 diates our [...] participation in the shared  
27 affective space," our data suggests that great-  
28 er mindfulness fosters self-attunement, and  
29 thus the possibility of healthier participation  
30 in a difficult shared affective space. The in-  
31 tensive cultivation of mindfulness practices  
32 during the MBI, designed to reduce depres-  
33 sive relapse among vulnerable people, seems  
34 to stimulate new procedural learning and  
35 forms of coping. Our framework includes  
36 personality functioning as a measure of vul-  
37 nerability. By addressing personality func-  
38 tioning and using the MPI, it is possible to  
39 explore changes in implicit memories and  
40 how they interact and may change with  
41 mind-body approaches such as MBI. Our  
42 results point to the role of bodily awareness  
43 and care as crucial mechanisms contribut-  
44 ing to change.

45 « 39 » In this study, we have considered  
46 self-reporting and the MPI as first-person  
47 data and HRV as third-person data. From  
48 a physiological perspective, HRV is a useful  
49 indicator of flexibility in emotion regula-  
50 tion. Sympathetic deactivation and activa-  
51 tion of the parasympathetic autonomic sys-  
52 tem transforms the regulation of fight-flight  
53 reactions into calmness and security (Porges  
54 2011). Our results based on first-person  
55 data show parallels between psychologi-

column C

column A

1 cal vulnerability and autonomous activity,  
 2 indicating that those subjects with lower  
 3 personality functioning are more likely to  
 4 detect threats and thus express higher auto-  
 5 nomic arousal. Interestingly, the association  
 6 between lower personality functioning and  
 7 higher sympathetic activity (Figure 3) dur-  
 8 ing the post-intervention evocation phase  
 9 (MPI) suggests that mindfulness practices  
 10 generate more direct and somewhat more  
 11 threatening connections with embodied  
 12 feelings (increased sympathetic activity  
 13 when participants report their experience).  
 14 This study shows that the mutual valida-  
 15 tion of first- and third-person data gives  
 16 robustness to the results presented and al-  
 17 lows a global understanding of the effects  
 18 of MBI on people that present some vulner-  
 19 ability at some moment in their lives. This  
 20 study invites continued investigation and  
 21 experimentation to acquire physiological  
 22 data during the evocation and description  
 23 of experiences during the MPI. One way  
 24 to improve this is by incorporating other  
 25 measures, such as measuring skin conduc-  
 26 tance or pupil diameter (arousal indicators),  
 27 which could serve as a guide when choosing  
 28 the interview segments for the joint analysis  
 29 of first- and third-person data.

30 « 40 » We analysed a selected case to  
 31 exemplify how the three levels of observa-  
 32 tion can be integrated towards a conceptual  
 33 and experiential understanding of change  
 34 in forms of relating to experience. In this  
 35 regard, the selected participant represents  
 36 a prototypical example that provides an in-  
 212 37 depth understanding of the processes ex-  
 38 perience in MBI through mixed methods  
 39 design (Creswell & Plano Clark 2018). In-  
 40 tersecting a case study and mixed methods  
 41 approach allows a methodological dialogue  
 42 for a richer description and interpretation  
 43 of the complex phenomena studied. The  
 44 participants' self-reported scores indicate  
 45 a 36% improvement in overall personal-  
 46 ity functioning considering all subfunctions  
 47 (Table 4). After the intervention, the MPI  
 48 describes how the patient is able to direct at-  
 49 tention away from thoughts, redirecting it to  
 50 the sensation of the breath. These observa-  
 51 tions are in line with third-person neurolog-  
 52 ical findings on mindfulness showing shifts  
 53 from an auto-referential to an experiential  
 54 focus of experience that at a neurological  
 55 level includes deactivation of the default

column A

column B

mode network and modulation of the insula  
 as a primary hub for introspection (Farb  
 et al. 2007; Gibson 2019). Positive changes  
 in personality functioning are congruent  
 with MPI data and with autonomic arousal  
 modifications registered during the MPI  
 (Figure 5). Our framework suggests plastic-  
 ity at pre-reflexive states, pointing to more  
 effective *coupling* between the individual  
 and her environment. This adaptive capacity  
 has been studied through other autonomic  
 markers like pupil diameter (Vásquez-Rosa-  
 ti et al. 2017), where people trained in con-  
 templative practices restore normal pupil  
 diameter more rapidly after negative emo-  
 tional stimuli.

« 41 » Understanding individual  
 strengths and vulnerabilities helps clarify the  
 experiences and processes that occur when  
 participants engage in mindfulness training.  
 From a personality functioning perspective,  
 we can recognize regulatory functions that  
 have been developed and are more or less in-  
 tegrated, allowing people to generate adap-  
 tive and non-adaptive responses to external  
 and internal demands. People whose devel-  
 opment has been hindered by early stress are  
 more vulnerable due to regulatory difficul-  
 ties (OPD Task Force 2008). When organi-  
 zation of mental disposition is vulnerable,  
 direct contact with inner experience during  
 mindfulness practice can reactivate unpro-  
 cessed and threatening emotions, leading to  
 forms of dysregulation. Our aim with this  
 study is to contribute to a person-centered  
 approach that focuses on how meditation  
 outcomes can be affected by context and  
 individual differences (Farias et al. 2020;  
 Lindahl et al. 2019; Treleaven 2018). By  
 acknowledging vulnerability, we recognize  
 the different manifestations of early trauma  
 and procedural memories. This view can  
 broaden our understanding of the notion of  
 embodied memory and its possible healing  
 process through mind-body treatments.

« 42 » Further research should ex-  
 plore individual vulnerability, particularly  
 among participants who experience dys-  
 regulation (hyper/hypo arousal) during  
 formal practices. According to Jonathan  
 Gibson (2019), increasing interoceptive  
 awareness without compensatory measures  
 may be detrimental to individuals with  
 a history or trauma. A dialogue between  
 phenomenological and physiological data

column B

column C

may nourish a Trauma Sensitive Mindful-  
 ness approach (Treleaven 2018) to better  
 understand and avoid potential pitfalls of  
 MBI, and to optimize its benefits. At the  
 same time, when dealt with adequately,  
 such states can be a source of transforma-  
 tion and healing.

« 43 » This exploratory study uses a  
 mixed methodological framework to deep-  
 en dialogues between research and clinical  
 applications. The results suggest further as-  
 sessment is needed into the impact of early  
 life adversity on personality functioning and  
 its interaction with mindfulness training. A  
 vulnerability-sensitive mindfulness research  
 approach may help to refine interventions,  
 as well as providing indications to clini-  
 cal programs as to what works, for whom  
 and under what conditions. These results  
 can contribute to developing more skill-  
 ful ways for practitioners to refine guiding  
 and inquiring around mindfulness practices  
 and for participants to explore their own  
 experiences during the learning process.  
 Future studies should identify more paral-  
 lels between physiological correlates, vul-  
 nerability and subjective change to deepen  
 our understanding of individual processes  
 and to optimize therapy. Future studies in  
 the contemplative field can benefit from in-  
 terdisciplinary research allowing research-  
 ers to refine their descriptions and identify  
 points of commonality across cultural con-  
 text and scholarly perspectives, informing  
 the emerging general theory (Weisman &  
 Luhrmann 2020).

« 44 » Finally, culturally sensitive ap-  
 plications should be investigated further,  
 especially contextual factors and their influ-  
 ence on motivation, attitudes, and learning  
 processes. In the case of Chile, processes of  
 cultural change and transition are occur-  
 ring. Traditional cultural features, including  
 forms of peer support and a sense of social  
 self, are changing from a collectivist to a  
 more individualistic society. These changes  
 have had a negative impact on the quality  
 of bonds at the individual and community  
 levels (Krause 2019). It is argued that a so-  
 ciety going through these processes is more  
 vulnerable in relation to mental health  
 problems. Such socio-cultural contexts can  
 be considered constitutive parts of the par-  
 ticipants' experiences, especially in a clinical  
 setting.

column C

## Conclusion

column A

1 «45» A multilevel framework was  
2 used in this study to examine changes in  
3 mindfulness training. The results point to  
4 parallels between first-person descriptions  
5 and conceptual and physiological perspec-  
6 tives. Our work contributes to the devel-  
7 opment of Varela's neurophenomenology  
8 project and interest in contemplative prac-  
9 tices as tools for the study of consciousness  
10 and therapeutic processes. Within an enac-  
11 tive approach to contemplative practices,  
12 bodily and subjective experiences are fruit-  
13 ful objects of study that can provide insights  
14 into complex issues in mindfulness studies.  
15 Giving consideration to vulnerability may  
16 help refine therapeutic strategies and clini-  
17 cal sensitivity.

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30 analysis.

## Competing interests

35 The authors declare that they have no  
36 competing interests.

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column A

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has a PhD in Psychology from the Pontificia Universidad Católica de Chile, and Master in Neurosciences from Universidad de Chile. Her interest in research focuses on emotional states and body movement, mindfulness and embodied cognition from a first- and third- person approach. For this, she has used the micro-phenomenological interview as a tool to explore subjective experience. Alejandra is also a specialist in the Cognitive-Body Integration Method. This method integrates the body as a fundamental dimension of human behavior and experience, restoring the natural operation of the basic emotions. She is founder and researcher at the Laboratorio de Fenomenología Corporal.

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has a PhD in Psychotherapy from Pontificia Universidad Católica de Chile, and a Master in Constructivist Clinical Psychology from Universidad de Chile. She also has training in MBT from Anna Freud Center and a Diploma in OPD-2 from Pontificia Universidad Católica de Chile. Javiera is academic and researcher at Center of Studies in Clinical Psychology and Psychotherapy, Universidad Diego Portales and a Young Researcher at the Millennium Institute for Research in Depression and Personality. She has specialized in qualitative research in psychotherapy. Her research interests include subjective experience in mental health, psychotherapy process research, and attachment mentalization and mutual regulation.

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**DIEGO COSMELLI**

is a biochemist by training but went on to obtain a PhD in cognitive sciences from École Polytechnique, France, working on conscious experience from an integrated phenomenological and brain dynamics perspective. He then did his postdoctoral training at the Department of Philosophy of York University, Toronto, Canada, on philosophical aspects of cognitive science. He is currently full professor at the School of Psychology, Faculty of Social Sciences, Pontificia Universidad Católica de Chile, where he leads the Psychophysiology Lab. He is also an Associate Researcher at the Millennium Institute for Research in Depression and Personality (MIDAP). His research interests focus on attentional expertise, sensorimotor coordination and the relationship between contemplative practices and well-being.

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**This target article is part of a bigger picture that encompasses several open peer commentaries and the response to these commentaries. You can read these accompanying texts on the following pages (or, if you have only the target article, follow the embedded link that takes you to the journal's web page from which you can download these texts).**

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# Open Peer Commentaries

## on Sebastián Medeiros et al.'s "Assessing Subjective Processes and Vulnerability in Mindfulness-based Interventions"

### What Changes in the Face of Aversive Experience following Mindfulness Practice?

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**> Abstract** • I focus on the impact of mindfulness practice in the face of aversive experience and argue that it is more than merely changing one's cognitive strategy. Shifting perspective instead may be rooted in an emergent qualitatively different subjective awareness of self and phenomena – leading to a different way of relating to any kind of experience.

« 1 » With their exploratory study, Sebastián Medeiros et al. bring together various significant aspects in the field of contemplative research on mindfulness in the clinical context. The appropriate use of a mixed methods approach of quantitative and qualitative data, and a longitudinal design, as well as the authors' effective use of different data sources for first- and third-person perspectives are worth noting besides the effective adoption of self-report measures and a micro-phenomenological interview technique for the first-person experience. An additional strength is the inclusion of the third-person perspective through a psychological marker of the autonomic nervous system, i.e., heart rate variability data – a marker that is widely debated<sup>1</sup> but nevertheless considered suitable for the interpretation of psychophysiological-regulatory dynamics.

1 | E.g., on <https://www.researchgate.net/project/Examining-Porges-Polyvagal-suppositions>

### Self-regulation and facets of mindfulness

« 2 » The central aspect of the study and common denominator of the different methodological approaches is self-regulation. As mindfulness research has increasingly turned away from efficacy studies towards evidence of mechanisms and factors of action, different nuances of self-regulation deserve inquiry (Hölzel et al. 2011). Mindfulness implies, above all, a life attitude accompanied by a control of attention that includes a focus on present experience and the inhibition of distractors in the sense of focusing on what was not intended (Tang, Hölzel & Posner 2015). Further, "dereification" as a way to relativize is an additional key component of mindfulness practice, which describes distancing from the assumption of mental content (Lutz et al. 2015). Moreover, a crucial process during mindfulness practice is that inner experiences are viewed from an observer's perspective. In this sense, it is not a matter of dealing with the contents of mental experiences, but of observing and monitoring these contents in their respective dynamics and fluctuations without intervening – not even forming any associations attached to them. This ability is called meta-awareness, or meta-cognition, and is linked to interoceptive awareness (Hanley, Mehling & Garland 2017). All these different facets of mindfulness are embedded in the cultivation of an attitude of warm-heartedness and acceptance (Lindsay & Creswell 2017). These nuances of mindfulness are associated with positive psychological outcomes such as reduced ruminative tendencies, experiential avoidance, and cognitive and emotional reactivity (Parsons et al. 2019).

« 3 » In the clinical context, as is the case of the target article, self-regulatory skills or impairments become evident in vir-

tually all forms of mental disorders (Fernandez, Jazaieri & Gross 2016). The adequate or functional handling of difficult situations, internal or external stressors and of negative and aversive feelings and cognitions seems to be impaired in all disorders. In depression, negative-emotional stimuli are triggers for a cognitive-emotional downward spiral. This includes the inability to detach from negative stimuli and to attend to positive stimuli. This fixation on negatively valenced information is associated with dysfunctional emotion-regulation strategies and may be instrumental in maintaining impaired mood (Joormann & D'Avanzato 2010).

### Personality functioning

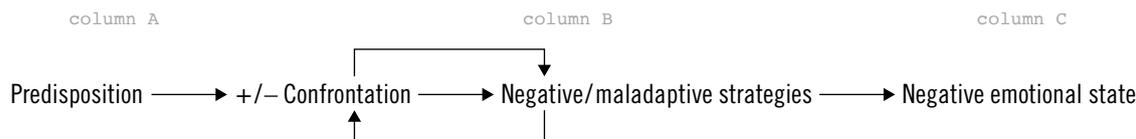
« 4 » The extent to which a person is able to self-regulate depends to a considerable extent on her personality functioning, i.e., how basic psychological functions of the self are developed, organized, and applied. In the context of this study, the authors innovate by drawing from a psychodynamic conceptualization of a dimensional operationalization of personality functioning (§10). These capacities are adaptive and malleable, depending on early formative relational experiences. Individuals can avail themselves of these resources to promote resilience in the face of adversities or to foster balance, in the sense of a dynamic equilibrium, while developing capacities for action, degrees of freedom and contexts of meaning (Cicchetti 2016; Darling Rasmussen et al. 2019).

« 5 » Against the background of a psychodynamic perspective and the clinical sample under analysis, vulnerabilities gain salience due to threat sensitivity stemming from repeated negative, difficult relationship experiences: Medeiros et al. (§10 and, especially, §12) introduce the topic of trauma, which is here used as a very elastic

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**Figure 1** • The generic diachronic structure of the *pre-intervention* process begins with a positive/negative predisposition, followed by the evocation of an emotional conflict and its later development depends on the degree of confrontation (which is based on the intensity of evocation). Negative or maladaptive strategies may be applied – such as rumination – which may reinforce the degree of (+/-) confrontation and in turn lead to a negative emotional state.

term meant to describe any kind of difficult experience (Kilpatrick, Badour & Resnick 2017). However, to characterize participants with a history of trauma does not accurately outline what is at stake in the individual developmental trajectories of the participants included in this study. Therefore, it remains open what exactly the included participants experienced or what might have led to possible psychological impairments in self- and personality organization.

« 6 » Since particularly stressed individuals who are low in personality functioning probably tend to avoid or even repress negative experiences and to circumvent various defense mechanisms (Granieri et al. 2017), one might wonder how valid the method of the micro-phenomenological approach Medeiros et al. have chosen is for evoking a difficult emotional situation. For instance, did Medeiros et al. check whether participants in this study were less willing to evoke or less efficient in evoking a difficult situation? « 11 » The same is possible in the case of the self-rating of personality functioning: vulnerable patients might have been more biased towards recalling questioned aspects while answering the questionnaire.

### What does the mindfulness practice change?

« 7 » When assessing the changes achieved as a result of mindfulness practices, an ongoing problem ensues: if the basic functioning principles of mental regulatory units change as a result of the practice – as detailed by Antoine Lutz et al. (2015) – how can one assess whether the strategy for dealing with difficult emotional situations has itself changed (§30), as opposed to the participants’ understanding of the difficult situations themselves? The simplest example in this context is the question about inner calmness and focus: If a non-meditator is

asked about the calmness and focus (degree of distraction or distractibility) in her mind, this person will usually answer that she has everything under control and is not distracted. A beginner in mindfulness meditation will quickly answer that, after initial practice, she can quickly notice how much the mind tends to drift, to lose the chosen object, even to forget it. Evidently, the person is not in control of the mind in the sense of directed, intentional attention control. The depth and density of the experiential practice thus play a crucial role (see Davidson & Kaszniak 2015). However, as readers, we learn little about the degree of practice or former meditation experience of the participants (see Parsons et al. 2017): How long did they practice between sessions? To what extent did they adhere to the requested practices? « 12 » It is not clear what the experienced level of effort was to engage in practice, although different regulatory mechanisms may result. However, this is particularly important for assessing revealed adaptive strategy gains in the face of negative experiences.

« 8 » In the model of change referred to by Medeiros et al. (Results section, in particular §§30–32), which is based on first-person experience of mindfulness practice, which are the causes and contributing factors that are critically responsible for the change in how negative experiences are handled? What are the critical factors for the increased capacity to be and live mindfully and what are the effects of this? « 13 »

« 9 » Recognized changes subsequent to mindfulness practice could also be due to the following, rather than altered cognitive strategies: The selection of different negative experiences before and after the intervention could vary to an extent that the differently revealed strategies may not be a function of changed self-regulatory abilities but due to the level to which the participant

could engage in emotional confrontation in relation to how strongly the state of evocation worked.

« 10 » In Figure 2, Medeiros et al. compare the results of the generic diachronic and synchronic structure of first-person experience during the pre- and post-intervention interviews. Interestingly, the pre-intervention diachronic model lists rumination in parallel with confrontation. There is some literature that speaks instead of maladaptive vs. adaptive strategies, the former of which may include rumination (Aldao, Sheppes & Gross 2015). Alternatively, I suggest a schema in which maladaptive strategies such as rumination lead to prospects of confronting oneself with aversive experience (Figure 1).

« 11 » In the face of a psychodynamic approach, where one can speak of the functionality of symptoms or dysfunctional mechanisms, rumination can be understood as a variant of a maladaptive strategy, which possibly developed in the life course as a helpful survival, albeit maladaptive strategy.

« 12 » In §31, the authors of the target article state that after the intervention, the subjects developed a better discrimination ability related to the different emotions. This is an important regulatory antecedent because without affect-perception and -differentiation the application of an emotion regulation strategy will not be purposefully possible (see also operationalized psychodynamic diagnostic system, OPD Task Force 2008). It is further explained that the participants now – instead of avoiding, rather approached the difficult experience and self-soothed, e.g., by deep breathing, etc. (§32). Only two subjects described how they could observe the natural coming and disappearing of negative sensation by merely being able to patiently hold on to them (§32). This obviously raises another question: Does the mindfulness practice lead to the participants

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1 being able to expose themselves more to the  
2 negative experience and if so, is this because  
3 they can now calm themselves down better  
4 or because they can then hold the negative  
5 experience and observe it without interven-  
6 ing? «4 Here, it is worth noting that mind-  
7 fulness, by definition, does not belong to  
8 relaxation techniques. Mindfulness practice  
9 is not about actively relaxing or calming  
10 down by using a particular strategy, for ex-  
11 ample. Relaxation in body and mind might  
12 be a result of applying mindfulness practice  
13 in depth, in the mid and long term. How-  
14 ever, key elements of mindfulness are more  
15 a shift in attitude and perspective in relation  
16 to negative experiences via meta-awareness,  
17 relativity, and de-identification (see Lutz et  
18 al. 2015). In other words, a crucial underly-  
19 ing mechanism is distress or affect tolerance  
20 itself (Nila et al. 2016; O'Bryan et al. 2018),  
21 but by what means? One possibility is that  
22 it is about first-person experience based on  
23 connectedness with the meta-level itself: on  
24 the one hand, the perception of the tran-  
25 sience or change of mental contents on an  
26 emotional, cognitive and bodily-sensory  
27 level and, on the other hand, the stepping  
28 out of one's own ego-identity and thus the  
29 expansion of one's perspective in terms of  
30 flexibilization and relativization could both  
31 be crucial in the change process of a regular,  
32 in-depth mindfulness practice. Future re-  
33 search will have to shed more light on these  
34 issues.

35 «13» In general, in the context of  
36 health and well-being research, great value  
37 is placed on psychological flexibility in the  
38 use of various regulatory strategies (Aldao,  
39 Sheppes & Gross 2015; Kobylińska & Kusev  
40 2019). Since Medeiros et al. have picked up  
41 a very important aspect in their study, i.e.,  
42 with which psychological initial conditions  
43 related to the structure and functional level  
44 of the self someone takes up a mindfulness  
45 practice, it remains to be seen how, in the  
46 case of limitations of personality function-  
47 ing, this flexibility can possibly be enhanced  
48 by mindfulness.

## Conclusion

51 «14» The study has brought together  
52 important aspects from a methodological  
53 and transdisciplinary point aligned with  
54 Francisco Varela's enactive approach via a  
55 multi-level framework.

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«15» Since Medeiros et al. have added  
the psychodynamic perspective, further  
research is needed to establish to what ex-  
tent the effects of unconscious up to con-  
scious motivational regulatory systems on  
health and well-being might be transformed  
through contemplative practice. At the start-  
ing point, the horizon of experience itself is  
changed through mindfulness.

«16» It is likely that an intensive, regu-  
lar adoption of mindfulness does not merely  
lead to a change in (coping) strategy. Some  
indications suggest that the very mode of  
mental functioning itself changes, which  
can be referred to as an emergent phenom-  
enon of a qualitatively different mode of  
mind-body functioning and experience.  
The change is produced by relating in a to-  
tally different way to experience because the  
first-person account has altered. It is related  
to questions of identity: "Who am I, and  
how do I refer to an ever-changing nature  
of inner mind-body experiences? Might  
mindfulness imply less solid I-centered per-  
ceptions, cognitions and emotions?" How  
personality functioning needs to be specifi-  
cally addressed in terms of self/other per-  
ception, regulation, communication, and at-  
tachment stays therefore open to the analysis  
of moderating or even mediating processes  
in contemplative practice and research. Me-  
deiros et al. have set, in a particular way, a  
very strong basis for further investigations.

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## Taking Care of Emotions – from Within, from Without

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> **Abstract** • Understanding subjective processes in mindfulness-based interventions and during contemplative learning is the goal pursued by Medeiros et al. in the present target article. Implicitly, they touch on the field of emotion regulation. We comment on the perspectives related to emotion regulation from micro-phenomenology and emotion science.

« 1 » Subjective processes and vulnerability in mindfulness-based interventions (MBIs) are the topic in the target article presented by Sebastián Medeiros et al. Emotions and how they are “handled” play an important role here, since throughout these interventions subjects learn to experience their (difficult) emotions through the lens of contemplative practices. In general, how we take care of and regulate our emotions implies both an orchestration of subjectively instantiated self-modulation *acts* and physiological processes. Here Medeiros et al. offer a novel mixed methods view on how to investigate emotions and emotion regulation (ER) from *within and without*.

« 2 » Epistemologically, emotion science has taken care of emotions, focusing almost purely on the behavioral and physiological point of view. For the acquisition of first-person data, subjects usually fill out ready-made questionnaires and self-report ratings with closed-answer formats selected by the researcher (e.g., the PANAS; Watson, Clark & Tellegen 1988). Beyond the limitations of only relying on third-person perspective measurements, the contemporary theory of constructed emotions conceives of ER as the engagement (bi-directional interactions) of

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internal models (e.g., predictions from valence processing regions) with sensory and motor facets of experienced emotions in the context of an embedded and situated subject (Barrett 2016). Current empirical embodied approaches lend themselves to using computational models as a way of (mathematically) formalizing and estimating complex dynamic top-down (e.g., predictions) and bottom-up (e.g., sensory) interactions not only within the brain but within the whole body (Allen & Friston 2018). From the perspective of constructed emotions, emotion generation and ER are two sides of the same holistic and complex process (Gross & Barrett 2011). Nevertheless, how these processes are phenomenologically, computationally and neuro-physiologically instantiated is still unknown.

« 3 » Lately, ER has been considered a core mechanism of MBIs (Guendelman, Medeiros & Rampes 2017). Variant types of MBIs have differential experiential and physiological fingerprints (Singer & Engert 2019), not all of them associated with pleasant affective states (Lindahl et al. 2017). For example, compassion-based techniques can be experienced as emotional challenge (Boellinghaus, Jones & Hutton 2014; Gilbert 2009; Przyrembel et al. 2019; see also §12). Medeiros et al. report no such thing as adverse effects during the MBCT (§26). Still, the authors have explicitly acknowledged vulnerabilities in their approach. In §42, they sketch potential “dysregulation [...] during formal practices” and corresponding strategies, such as the trauma-sensitive approach suggested by David Treleaven (2018). Such techniques can alter painful affective situations evoked by MBIs: when adequately supported by the therapists, psychological transformations can take place. Guendelman, Medeiros and Hagen Rampes (2017) have presented an embodied model of ER that highlights differential ways of engaging with and regulating emotions, showing how bottom-up (e.g., interoceptive) and top-down (e.g., cognitive) processes can be “trained” with MBIs. This account conceives of experiential explorations of emotions and feelings as “the way through” to (and the mechanism of) *mindfully* relating with emotions.

« 4 » Interestingly and in line with this account, the target article shows a change in emotional experience resulting from an

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1 eight-week MBCT. Medeiros et al. conducted  
2 micro-phenomenological interviews (MPI;  
3 Petitmengin 2006; Petitmengin, Remillieux  
4 & Valenzuela-Moguillansky 2018), one be-  
5 fore and one after the MBI. Why is the use of  
6 MPI a promising avenue in the field of emo-  
7 tion research? Other than questionnaires,  
8 qualitative in-depth approaches such as  
9 MPI serve as a “psychological microscope”:<sup>1</sup>  
10 They allow for an assessment of otherwise  
11 inaccessible experiential dimensions, and  
12 more fine-grained features of emotion, with  
13 all their nuances and in all their depth. The  
14 micro-phenomenological approach ena-  
15 bles us not only to better understand *what*  
16 kind of affective experiences occur, but also  
17 *how* they unfold. Based on this understand-  
18 ing, it is furthermore possible to tackle the  
19 question of how experiential states can be  
20 regulated. Some studies used this interview  
21 technique for clinical-educational purposes,  
22 e.g., in neurological patients who learned to  
23 anticipate and attenuate epileptic seizures  
24 (Petitmengin, Baulac & Navarro 2006; Pe-  
25 titmengin, Navarro & Le Van Quyen 2007).  
26 « 5 » Most likely, along the lines of these  
27 two studies, taking part in in-depth inquiry  
28 as an interviewee enhances awareness of  
29 one’s own experiences as well as the skill  
30 to mindfully describe them in detail. Thus,  
31 as a potential beneficial “side effect” for in-  
32 terviewees, MPI may facilitate mindfulness  
33 and even ER. To what extent can the MPI  
34 be considered an (additional) intervention,  
35 rather than a mere tool for data acquisition?  
36 In what way may this confound the mea-  
37 surement and object of study? **Q1**

38 « 6 » In the present target study, parts of  
39 the first-person descriptions revealed top-  
40 down processes (“After the intervention,  
41 participants were better able to describe the  
42 bodily sensations that accompanied their  
43 emotional response, which in turn allowed  
44 them to better recognize their emotions,”  
45 §31), but also bottom-up processes (“my  
46 body shows me new things and I realize  
47 what is happening to it [...] I manage to be  
48 aware of that” §32) regarding the experience  
49 of affective states. These experiential changes  
50 and processes were manifested as strategies,  
51

52 1 | See <https://www.microphenomenology.com>  
53 for an overview of various fields in which the  
54 micro-phenomenological interview has been and  
55 is currently studied.

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or rather as a change in the way of taking  
care of emotions. Even though these find-  
ings from MPI are insightful, they do not  
seem to draw on the full potential of MPI  
presented by Petitmengin (2006). Instead of  
the abstract explanations humans typically  
offer when talking about their emotions,  
the interviewee in a proper MPI describes a  
singular experience in greater detail. The in-  
terviewer guides her carefully to the state of  
evocation of this particular moment, without  
sliding into general remarks (see also §17 in  
the target article). The passages shared by the  
authors, however, do not seem to go beyond  
these abstract descriptions, which also ap-  
plies to the diachronic (§28) and synchronic  
(§29) structure of experience.

« 7 » The MPI is an essential part in  
this mixed methods study, and it poten-  
tially offers insights in experiential domains  
outside the limits of “ordinary” interviews.  
Therefore, providing a few more verbatim  
passages of the transcripts presenting the  
fine-grained, nuanced first-person data col-  
lected by this specific technique would be  
indispensable. **Q2**

« 8 » In addition to the micro-phenom-  
enological method, the authors implement-  
ed a neuro-physiological approach, regis-  
tering heart rate variability simultaneously  
throughout the MPI. As shown in their case  
study (Figure 5 in the target article), physi-  
ological correlates (lowering of sympathetic  
and increasing of parasympathetic indices)  
accompanied the different facets of the MPI  
described *from within* – thus, providing ini-  
tial evidence for congruent bodily changes  
*from without*. Nevertheless, as the authors  
state themselves (§37), this idiographic ap-  
proach needs further complementation with  
a nomothetic one, thus further confirming,  
replicating and generalizing these findings.  
On this point, the authors offer an explor-  
atory “didactic” case study (§35), showing  
that a subject who improved her ER strate-  
gies according to her descriptions in the MPI  
also improved her self-regulation capacity as  
measured via an established questionnaire.  
Nevertheless, in phenomenological studies,  
attempting to relate first-person (as MPI)  
to third-person measurements have mainly  
focused on neurophysiological measure-  
ments (under the so-called *neurophenom-  
enology* frame), and little on behavioral and  
common self-report questionnaires. From a

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psycho-metric perspective, how would the  
authors systematize and formalize the meth-  
odological problem of associating MPI data  
with corresponding questionnaire scores?  
How could they envision the problem of  
“validity” of MPI, i.e., the correspondence,  
correlation and congruency between MPI  
and other self-reported measurements? **Q3**  
« 9 » In line with embodied theories (see  
our §2 and §39 in the target article), differ-  
ential subjective processes of emotions and ER  
could be further specified by phenomeno-  
logical means (i.e., by MPI). Involving both  
lived experience and physiology, Thomas  
& Desmidt et al. (2014) have introduced a  
model of emotional emergence (see Depraz  
& Desmidt 2019 for a theoretical frame-  
work to investigate emotional dynamics of  
lived experience). Recent papers suggested  
MPI for studying trauma (Depraz 2018) and  
time perception in depression (Cavaletti &  
Heimann 2020). Empirical studies have em-  
ployed MPI in uncovering the emergence  
of surprise during playfulness (Heimann &  
Roepstorff 2018) and affective states elic-  
ited by different kinds of mental training  
(Przyrembel & Singer 2018; Przyrembel et al.  
2019). Specific to the field of ER, MPI could  
further explore facets of emotions such as va-  
lence, arousal, attention shift, and cognitive  
appraisal, among other possible “phenom-  
enological invariants.” Complementing this  
first-person approach, brain imaging and  
other physiological measures together with  
computational models could further spec-  
ify bottom-up and top-down interactions  
within hierarchical neuronal (and bodily)  
structures (Owens et al. 2018). Overall, in-  
tegrating phenomenological, physiological  
and computational approaches to define  
more fine-grained features of emotion and  
ER would make it possible to further specify  
neuronal and visceral *circuits-behavior-phenom-  
enological* connections.

« 10 » Future studies could implement  
the MPI in the exploration of subjective pro-  
cesses and vulnerabilities tackling different  
experiential emotion-related domains, in-  
vestigating, e.g., drive, motives, reward, pain,  
in the context of contemplative training or  
psychopathologies. Even more, as outlined  
by Medeiros et al. (§39), using MPI together  
(simultaneously) with neurophysiological  
measurements could identify phenomeno-  
logical markers, i.e., subjective fingerprints

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1 of ER processes. These could further con-  
 2 strain neurophysiological measurements,  
 3 thus guiding the search for neurophysiologi-  
 4 cal fingerprints, as well. Such markers could,  
 5 for example, serve as predictors of success  
 6 or adverse outcomes in the context of MBIs.  
 7 This may be of particular interest when ap-  
 8 plying MBIs to vulnerable populations, as is  
 9 the case in this target article. All in all, a *com-*  
 10 *putational neuro-physio-phenomenological*  
 11 approach could be a valuable research tool  
 12 for guiding emotion and ER investigation,  
 13 along with subjective processes and vulner-  
 14 abilities in the context of contemplative sci-  
 15 ences and clinical psychology.

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### 19 Competing interests

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 47 role. Trained in conducting micro-phenomenological  
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 50 person) and objective (third-person) approaches.
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# The Hell of Being Who One Ordinarily Is: Is it Possible to Construct Stable Phenomenological Traits of Mood Disorders?

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**> Abstract** • Assuming that the only epistemically relevant experiential report is the one made in the present moment, it may be unclear how individuals ground their responses to stable-trait assessments. Recently, novel approaches (such as the phenomenological control) suggest that it is possible to construct stable phenomenological traits. Questions are raised as to whether there are first-person reports suggesting the nature of stable phenomenological traits in the context of mood disorders.

## Introduction

« 1 » The target article by Sebastián Medeiros and colleagues aims at establishing a neurophenomenological understanding of mindfulness-based interventions for coping with mood disorders. The authors examine the experiential dynamics of searching for emotion-regulation strategies before and after the participants engaged with a mindfulness-based intervention. The study employs a neurophenomenological research design, meaning that it attempts to constrain first- and third-person data. First-person data consist of reports gathered with micro-phenomenological interviews (§17). Third-person data consist of measurements of heart-rate variability (§25) and stable-trait questionnaires (§§19–24). One case study is presented in detail. In this commentary, I discuss whether it is sensible to rely on closed-form questionnaires for measuring stable-traits in the context of first-person research, and whether it is possible to construct stable traits based on systematically gathered first-person data.

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## An empirical phenomenological critique of questionnaires

« 2 » First-person research has largely focused on experience as it is present *in the moment*. *Micro-phenomenology*, used in the target article, relies on a methodological move wherein the experience under investigation is made present in the here and now (the so-called *evocation state*; §17, Petitgenin 2006). There seems to be a pervasive conceptualization of human consciousness as bound within a single moment of experience with the past immediately collapsing into oblivion. Michael Lifshitz and Samuel Veissière refer to this view of temporality as the *hegemony of the present moment*.<sup>1</sup> This is the position that the only epistemically relevant experiences are the ones that we are experiencing in the present.

« 3 » Let us accept the assumption that epistemically relevant experiential reports must be made during immediate contact with experience. Taken seriously, this position leads to the following dilemma: *how do we ground our responses on assessments of stable traits?* Medeiros and colleagues rely on standardized questionnaires of stable traits. As pointed out in §37, when investigating experience, the proposition that we may directly address stable properties of an individual's conscious life with run-of-the-mill questionnaires is questionable (Haun et al. 2017). This is because many such instruments may be *degenerate*. Degeneracy is a term used to describe psychological tasks (i.e., tasks in the everyday sense of the word, but deployed within a socio-cultural context of a piece of research to isolate and make measurable specific cognitive functions; Morrison et al. 2019) that can be solved using many different strategies (Seghier & Price 2018). In consequence, it is no longer possible to claim from task-performance alone what it is that the task measures.

« 4 » Analogously, standardized questionnaires may be degenerate in the sense that it is unclear what aspect of her experi-

1 | Cf. presentation “Cultural neurophenomenology of hypnosis and meditation,” by Michael Lifshitz and Samuel Veissière at the FPR-McGill social and cultural neuroscience workshop at McGill University in Montreal, Canada, June 2019. [https://www.youtube.com/watch?v=g9di\\_ZFFepQ](https://www.youtube.com/watch?v=g9di_ZFFepQ)

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ence an individual grounds her responses in. By way of example, let us examine the experiences one might ground her responses to Beck's Depression Inventory in (Beck 1972). The first item asks the individual to choose one of the following: *I do not feel sad; I feel sad; I am sad all the time and I can't snap out of it; I am so sad and unhappy that I can't stand it*. We can easily imagine at least three hypothetical ways one might ground a response to that item.

« 5 » First, an individual might be experiencing sadness in the moment of responding. Second, she could ground the response in a biographical account she holds about herself, according to which she is a sad person. In the moment of solving the questionnaire, her affect might be neutral or even positive. However, her autobiographical conviction might inform her response to a greater extent than her lived experience. Third, she might arrive to the testing location perfectly happy. She then reads the questionnaire and the question itself elicits the feelings of sadness.

« 6 » That is not to say that there are no assessments based on careful phenomenological consideration. There are, for example, the *examination of anomalous self-experience* (Parnas et al. 2012) and *examination of anomalous world experience* (Sass et al. 2017). However, these are both guidelines for semi-structured interviews, rather than closed-form questionnaires. When it comes to phenomenology, this distinction is crucial. In a study of grapheme-color synesthesia, the *same* participants, during the *same* interview, reported on their synesthetic experience both as automatic when responding to a closed-form question, and willed when responding to an open-ended question (Schwartzman et al. 2020). It may be that different styles of inquiry prompt individuals towards attending to different aspects of their experience (Kordeš & Demšar 2018). So, does the gathered first-person data suggest that standardized questionnaires' being degenerate is a sensible concern? **Q1**

## The possibility of stable phenomenological traits

« 7 » “Hell” wrote Aldous Huxley (1955: 230) “is the incapacity to be other than the creature one finds oneself ordinarily behaving as.” Many who have suffered

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1 from depression might find this quote fa-  
 2 miliar from their own experience of this ill-  
 3 ness: affordances shutting down, the world  
 4 appearing distant and inaccessible, the body  
 5 feeling impossibly heavy, as if the air itself  
 6 is bearing down on it (Fuchs 2005), future  
 7 receding into infinity (Owen et al. 2013).  
 8 The question for us now becomes whether  
 9 there is such an experience as *how it ordi-*  
 10 *narily feels to be someone*. That is, is it pos-  
 11 sible to provide a description of experience  
 12 that is (a) extended in time; and (b) based  
 13 on rigorous phenomenological research? I  
 14 examine one potential phenomenological  
 15 stable trait: *phenomenological control* (PC).  
 16 « 8 » PC is the observation that we have  
 17 the ability to exert a considerable voluntary  
 18 control over our own experience, sometimes  
 19 even without conscious intention (Dienes,  
 20 Palfi & Lush 2020). PC is a construct that, in  
 21 a normative population, is conceived of as a  
 22 participant trait; that is, its measures remain  
 23 stable in time (Lush et al. 2018). The idea  
 24 that we can control our experience in the  
 25 absence of conscious intention has been ap-  
 26 plied to the *rubber-hand illusion* (RHI; Lush  
 27 2020). RHI is the phenomenon whereby a  
 28 rubber hand is placed in front of a partici-  
 29 pant. One of her physical hands is occluded,  
 30 and the other placed parallel to the rubber  
 31 hand. The experimenter then proceeds to  
 32 stroke the rubber hand with a brush. RHI  
 33 is the felt experience of brushstrokes in the  
 34 rubber hand. Pete Lush (*ibid.*) has shown  
 35 that RHI may be elicited by the context of a  
 36 psychological experiment. The idea is as fol-  
 226 lows: participants intuit what the goal of the  
 38 study is and then unintentionally manipu-  
 39 late their own phenomenology to experi-  
 40 ence the brushstrokes on the rubber hand.  
 41 Other phenomena, such as mirror-touch  
 42 synesthesia, have been tied to PC (Lush et  
 43 al. 2020).  
 44 « 9 » One way of interpreting PC is  
 45 experiential: individuals with high PC can  
 46 reach a larger number of possible experi-  
 47 ences, encouraged by the immediate situa-  
 48 tion, than individuals who score low on it.  
 49 This is supported by the observation that  
 50 psychedelic experiences can be understood  
 51 as acute states of heightened (auto)suggest-  
 52 ibility (Lifshitz, Sheiner & Kirmayer 2018).  
 53 If this interpretation holds, it would mean  
 54 that PC can be understood as a phenom-  
 55 enological stable trait. It would measure a

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kind of openness of one's consciousness to-  
 wards novel experience.

« 10 » Is it possible that mood dis-  
 orders amount to chronic alterations in  
 (auto)suggestibility, wherein individuals  
 become aware of their experiences without  
 expecting to uncover affordances in them?  
 Do they construct the sense of immobiliz-  
 ing bodily weight through self-suggestion  
 without conscious intention? Can mood  
 disorders be understood as habitually at-  
 tending to one's experience as devoid of  
 possibilities? Integrating PC into studies of  
 mood disorders might help us address such  
 questions. Additionally, constructing novel  
 stable phenomenological traits would fur-  
 ther make it possible to design more robust  
 neurophenomenological studies of the kind  
 pioneered by Medeiros and colleagues in  
 the target article. Considering the concept  
 of PC, I wonder: Do your first-person data  
 point to a phenomenological stable trait  
 relevant for the investigation of mood dis-  
 orders? **Q2**

### Conclusion

« 11 » In this commentary, I aimed at  
 beginning a discussion on stable phenom-  
 enological traits. Such constructs may be  
 necessary because, based on the assump-  
 tions that many approaches within con-  
 temporary first-person research hold about  
 temporality, standardized questionnaires  
 are inadequate. I propose that PC may be a  
 measure of a phenomenological stable trait.  
 My main questions directed at Medeiros  
 and colleagues are (a) whether, based on the  
 insights of the target article, my concerns  
 regarding the degeneracy of standardized  
 questionnaires are valid; and (b) are there  
 any first-person reports in their data sug-  
 gesting what such stable traits, relevant for  
 mood disorders, might be.

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45 (e.g., visual hallucinations), idiosyncratic  
46 perception (e.g., synesthesia), and anomalous  
47 experiences of intersubjective space.

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## Guiding Principles for Methodological Integrity and Epistemological Consistency in Mixed Methods Studies

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> **Abstract** • Medeiros et al. implement  
a mixed methods approach to explore  
the mechanisms underlying individual  
transformation during mindfulness-  
based interventions. We provide criti-  
ques, questions and suggestions to  
increase the validity of the present study  
and fruitfulness of future mixed meth-  
ods endeavors. We frame our commen-  
tary in existing guidelines for the design  
and implementation of mixed methods.

### Introduction

« 1 » The “mixed methods” method-  
ology is an approach that has been devel-  
oped and refined in the social sciences for  
decades, but has only recently permeated  
medical and psychology research. In these  
fields, guiding principles have been for-  
mulated for the design of mixed methods  
studies (Wisdom & Creswell 2013). Even  
though specific techniques may differ con-  
siderably between medical and social sci-  
ences, any mixed methods study should be  
based on core principles ensuring that (a)  
each method is applied in accordance with  
its properties and constraints; (b) the role of  
each method is well specified with respect  
to the purpose of the mixed methods study;  
and (c) the results are integrated within an  
appropriate unifying theory or model. In

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this commentary, we examine how the tar- 1  
get article complies with these principles, 2  
and suggest possible improvements as well 3  
as alternative strategies that we and others 4  
have attempted to implement. 5

### Principle 1 of mixed methods: Complying with the features of each method

« 2 » A major challenge in mixed meth- 10  
ods studies is that individual methods can 11  
have widely different and sometimes seem- 12  
ingly incompatible features for data collec- 13  
tion and interpretation. 14

« 3 » A paradigmatic example of such 15  
difficulty is the appropriate sample size, 16  
especially in so-called convergent designs 17  
where multiple data types are collected in 18  
parallel from the same participants and at 19  
the same time. Quantitative data are com- 20  
monly subjected to inferential statistics, an 21  
analytic approach sensitive to risks of false 22  
positive and false negative results. Address- 23  
ing the issue of statistical power inevitably 24  
necessitates appropriate sample sizes. While 25  
the exact number depends on the experi- 26  
mental design and the effect of interest, even 27  
the most favorable conditions will require at 28  
least 20 or so participants. The work of Se- 29  
bastián Medeiros et al. is based on only six 30  
participants, a sample that might be suitable 31  
for the qualitative component of the study 32  
but not for quantitative analysis. Although 33  
the study might have been qualified by the 34  
authors as exploratory for this reason, we 35  
can only speculate so, as the exploratory 36  
nature of the study has not been clarified. 37 227

Despite the cautionary qualification, infer- 38  
ential statistics have been conducted, and 39  
without the required precautions such as 40  
stating hypotheses before analyses and cor- 41  
recting for multiple comparisons. There- 42  
fore, would a descriptive presentation of the 43  
data not be more appropriate to the small 44  
sample and better serve the objective of in- 45  
tegrating qualitative and quantitative data? 46

Q1 Inspiring examples of joint displays can 47  
be found in the literature of mixed methods 48  
research (Guetterman, Fetters & Creswell 49  
2015). 50

« 4 » To overcome the gap between 51  
first- and third-person methodologies, 52  
qualitative techniques can be extended in 53  
creative ways. For example, Christopher 54  
Timmermann et al. (2019) have conducted 55

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1 micro-phenomenological interviews (MPI)  
 2 on lab-based psychedelic experiences of  
 3 participants whose electroencephalograph-  
 4 ic activity was recorded during the experi-  
 5 ence, accompanied by concurrent online  
 6 self-ratings of the intensity of experience  
 7 by the participants at one-minute intervals  
 8 throughout the 20-minute course of the  
 9 experience. The synchronic analysis of the  
 10 resulting qualitative data revealed three dis-  
 11 tinct experiential domains common across  
 12 participants (visual, bodily, and emotional/  
 13 metacognitive). The diachronic unfold-  
 14 ing of these dimensions was scored by the  
 15 interviewer over the 20 minutes of the ex-  
 16 perience in order to obtain three indepen-  
 17 dent time courses (this scoring was tem-  
 18 porally guided by the previously acquired  
 19 self-ratings of the intensity of experience).  
 20 This innovative quantitative transforma-  
 21 tion of MPI data allowed for the within-  
 22 subject correlation with brain measures. In  
 23 our own work,<sup>1</sup> we assigned participants to  
 24 phenomenological clusters based on their  
 25 relationship to themes emerging from an  
 26 interpretative phenomenological analysis  
 27 of interviews about pain experience. Clus-  
 28 ter assignment allowed us to triangulate the  
 29 qualitative results with quantitative data,  
 30 including self-ratings in a lab-based pain  
 31 experiment. Given the small sample sizes  
 32 involved (fewer than 12 participants per  
 33 cluster), we favored predictive statistics and  
 34 false discovery rate procedures over infer-  
 35 ential statistics.

36 « 5 » The authors implemented MPI in  
 228 37 a longitudinal design that included within-  
 38 subject, repeated quantitative measures. We  
 39 welcome this innovative approach to MPI  
 40 for its potential to facilitate integration of  
 41 first- and third-person perspectives. We  
 42 note, however, some methodological chal-  
 43 lenges raised by this study, in particular  
 44 related to the compatibility of MPI with  
 45 repeated-measures paradigms and its valid-  
 46 ity:

- 47 ■ How are the interviewees affected by  
 48 their previous exposure to the interview  
 49

50  
 51 1| The article “Meditators’ phenomenological  
 52 fingerprints of pain regulation strategies: A mixed  
 53 method study” reporting the results described  
 54 here is currently in revision, and can be accessed  
 55 as a preprint from <https://psyarxiv.com/hgsj3/>

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and the interviewer, and how does that  
 impact self-reports?

- In the context of the present study, how  
 does MBCT and psychotherapy (pres-  
 ent in half of the sample) influence the  
 second interview?
- Can these confounding factors and oth-  
 ers be identified and mitigated through  
 the interview process itself?
- Regarding the analysis, can the pro-  
 cedure used to extract structural *in-*  
*variants* from a specific sample of  
 participants be applied to highlight  
 within-subject *variations*?

All these are methodological open ques-  
 tions that should be tackled to critically as-  
 sess the contribution of phenomenological  
 interviews in longitudinal designs.

« 6 » The need to overcome the gap  
 between methodologies should not jeop-  
 ardize the added and specific value of each  
 of the methods involved. The original work  
 used MPI to delineate the general struc-  
 ture of facing a difficult experience, before  
 and after a mindfulness-based intervention  
 (MBI). The features that emerge are sur-  
 prisingly well aligned to existing models  
 of self-regulation and psychological con-  
 structs: anxiety, depression, and associated  
 cognitive and metacognitive styles. Other  
 phenomenological approaches (such as  
 interpretative phenomenological analy-  
 sis, introduced by Jonathan Smith 1996, a  
 distinctive approach in health psychology  
 highly compatible with small samples and  
 longitudinal analysis) can be used just as ef-  
 ficiently to explore self-perceived changes  
 in general emotionally challenging expe-  
 riences. For example, phenomenological  
 analysis can be performed to explore rel-  
 evant aspects of mindfulness-based inter-  
 ventions for people with epilepsy (Bauer  
 et al. 2019) or metastatic cancer (Poletti et  
 al. 2019). The authors justify their use of  
 MPI “as a method to describe and under-  
 stand [the] processes [of meditative expe-  
 rience]” (§8) but go on applying MPI to  
 difficult experiences. Which characteristics  
 of MPI specifically bring additional value  
 in exploring difficult experiences through  
 contemplative learning? (12). We do not sug-  
 gest that the method was inappropriate, but  
 rather that a more in-depth analysis of the  
 raw data might have provided some new  
 insights. Subjective accounts in MPI can re-

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veal novel microdynamics and inner mental  
 gestures, which in the context of this study  
 could refine our understanding of clinical  
 outcomes of mindfulness-based interven-  
 tions. Reporting more quotations and inter-  
 preting them in detail brings greater insight  
 into the complexity of participants’ lived  
 experience. Most of the complexity the  
 authors allude to (§5, §13, §36) resides in  
 participants’ subjective integration of medi-  
 tation practice. A larger framework such as  
 4E cognitive sciences (Newen, de Bruin &  
 Gallagher 2018) that includes the dynamic  
 interactions between the brain, body, and  
 both the physical and social environments  
 could enrich the approach to complexity as  
 such.

### Principle 2 of mixed methods: Aligning methods with the purpose of the study

« 7 » The mixed methods approach can  
 be used to meet a wide range of purposes  
 (Wisdom & Creswell 2013). Medeiros et al.  
 have adopted the perspective of “mutual  
 validation of first- and third-person data”  
 (§39) using a convergent design. Accord-  
 ingly, heart rate variability (HRV) indices  
 are given the same validity as subjective re-  
 ports in measuring how an individual deals  
 with emotional and possibly traumatic  
 events. The authors rely heavily on accounts  
 of HRV derived from Stephen Porges’s  
 (2001) polyvagal theory, which has gained  
 popularity in the field of clinical psychol-  
 ogy. However, the unconfounded relation  
 of HRV with cardiac vagal tone, the role of  
 the former in socio-emotional responses  
 and the underlying evolutionary character-  
 ization have all been questioned for many  
 years (Grossman & Taylor 2007). Recently,  
 two large meta-analyses have failed to find  
 any meaningful relationship between HRV  
 indices and various operationalizations  
 of emotional regulation (Zahn et al. 2016;  
 Holzman & Bridgett 2017). Together, these  
 critiques and empirical findings undermine  
 the ability of HRV measures to support the  
 experiential structure emerging from quali-  
 tative data as intended by the authors.

« 8 » The mutual validation position  
 assumes that multiple methods purported  
 to target the same phenomenon should  
 concur. The authors have discussed their  
 results accordingly, highlighting points of

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1 agreement but leaving aside possible dis-  
2 crepancies. However, in principle, the inte-  
3 gration of quantitative measures and quali-  
4 tative data has a broader heuristic value, for  
5 it can reveal which aspects of the (neuro)  
6 physiology correlate with which features of  
7 subjective experience. Surprising patterns  
8 might emerge, as we have discovered in  
9 our own research. In one experiment of the  
10 Brain & Mindfulness project<sup>2</sup> investigating  
11 the physiological correlates of stress regula-  
12 tion in meditation practitioners, we found  
13 that skin conductance, a robust measure  
14 of physiological arousal, was decorrelated  
15 from subjective self-reports of anxiety dur-  
16 ing experimentally induced stress in long-  
17 term practitioners.<sup>3</sup>

18 « 9 » An alternative and potentially  
19 fruitful way to combine phenomenological  
20 interviews with HRV data is hinted at by  
21 the authors themselves when they state that  
22 “different methods offer counterpoints that  
23 generate alternative explanations, leading  
24 researchers to constantly re-evaluate their  
25 assumptions and look for new interpreta-  
26 tions” (§5). Phenomenological data, in par-  
27 ticular, can help interpret quantitative mea-  
28 sures with “extra content.” In our pain study,  
29 already mentioned above, phenomenologi-  
30 cal clusters allowed us to elucidate the inter-  
31 pretation participants made of rating scales.  
32 More broadly, subjective accounts can help  
33 to refine established empirical theories by  
34 corroborating or challenging their exter-  
35 nal phenomenological consistency (Varela  
36 & Shear 1999; Petitmengin & Bitbol 2009;  
37 Bitbol & Petitmengin 2017; Gallagher & Za-  
38 havi 2021).

### Principle 3 of mixed methods: One theory to integrate them all

42 « 10 » Empirical methods are proce-  
43 dures embedded in epistemological para-  
44 digms; the results they deliver are interpret-  
45 ed using specific theories and conceptual  
46 models. One challenge of mixed method  
47 studies is to find a meeting ground where  
48 multiple bodies of results can be meaning-  
49 fully integrated. Selected methods should  
50 display some mutual epistemological con-

52 2 | Brain & Mindfulness project manual, <https://osf.io/dbwch/>

54 3 | We are currently preparing a research article  
55 on these results.

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sistency, and their compatibility should be  
carefully scrutinized.

« 11 » Medeiros et al.’s study has the am-  
bition of bringing together a conceptual, ex-  
periential and physiological understanding  
of new forms of relating to difficult experi-  
ences. Unfortunately, an integrative per-  
spective remains lacking, as a great num-  
ber of theoretical frameworks, concepts  
and constructs are evoked and juxtaposed  
without being confronted with one another,  
including:

- contemplative and psychodynamic ap-  
proaches to self-regulation (§3);
- personality functioning and inter-affec-  
tive regulation (§10);
- embodied memory (trauma and vul-  
nerability, §12);
- detunement of affective space (§38);
- neural correlates of auto-referential ver-  
sus experiential focus (§40).

For instance, psychodynamics is a suit-  
able paradigm for describing personal-  
ity traits, but how is it applied to interpret  
self-regulative processes as described in  
mindfulness research? An operative psy-  
chodynamic account of mindfulness would  
deserve a theoretical and methodologi-  
cal development in itself. More generally:  
which theoretical constructs are corrobo-  
rated or challenged by this work and by  
which exploratory results? Q3

### Conclusion

« 12 » Mixed methods are suitable to  
both enrich neurophenomenological para-  
digms and improve our understanding  
of outcomes and mechanisms of clinical  
practice. The design, methods and theoret-  
ical framework should all be carefully cho-  
sen, not only with respect to the scientific  
purpose of the study, but also with mutual  
compatibility in mind. As mixed meth-  
ods are becoming increasingly frequent in  
health and psychology research, it becomes  
urgent to follow established guiding prin-  
ciples, explore how they apply to specific re-  
search topics, and question or expand them  
as needed.

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 40 test predictive coding models of perceptual change  
 41 in meditation, in collaboration with Antoine Lutz's  
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 51 approaches from neuroimaging, experimental  
 52 psychology and neurophenomenology, his research  
 53 aims to create bridges between Western science  
 54 and contemplative traditions on topics such as  
 55 social cognition, emotion regulation and perceptual

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 phenomenology and interpretative phenomenological  
 analysis. His collaboration with Antoine Lutz's  
 team explores how contemplative states affect  
 metaphysical worldviews, beliefs, ethics, and pain.  
 Other collaborations relate to MBIs with people affected  
 by psychological or medical chronic conditions,  
 burnout prevention and quality of life improvement  
 in health professionals, elders and young students.

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## Mindfulness, Heart Rate Variability and Self-Regulation

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> **Abstract** • I focus on two aspects: (a) The complexity of understanding heart rate variability, which is not acknowledged in Porges's polyvagal theory; and (b) The goals of self-regulation that vary according to cultural context.

« 1 » Sebastián Medeiros et al.'s target article is a beautiful example of the integration of the micro-phenomenological interview technique into clinical research and is a joy to read. The benefit of multi-level mixed methods for studying the benefits and mechanisms of a clinical intervention

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are wonderfully and clearly demonstrated  
 in this article. I have just two comments I  
 would like to make regarding heart rate  
 variability and self-regulation. These com-  
 ments do not question any of the interest-  
 ing findings but are meant to add context  
 to the data.

« 2 » Although I am not an expert in in-  
 terpreting *heart rate variability* (HRV) data  
 in their relationship to parasympathetic  
 nerve activity, I would like to point out that  
 the assumptions of the polyvagal theory by  
 Stephen Porges the authors are referencing  
 as a key resource in the discussion (§39) are  
 highly controversial. It is my understanding  
 that vagus nerve activity, afferent and effer-  
 ent, is of key importance in the psychophys-  
 iology of emotions and emotion regulation.  
 However, the interpretation of measures of  
 HRV and its underlying sympathetic-para-  
 sympathetic processes may not be helped by  
 the polyvagal theory. Strong scientific argu-  
 ments have been published questioning – if  
 not outright refuting – this popular theory  
 (Grossman & Taylor 2007). The polyvagal  
 theory states, that

a HRV is a direct measure of cardiac va-  
 gal tone;  
 b Changes in HRV are exclusively caused  
 by activity in one of two separate popu-  
 lations of vagus motor nuclei in the  
 brainstem; and  
 c Both nuclei appear at different evolu-  
 tionary stages, representing a phyloge-  
 netic hierarchy, with vagus nerve activi-  
 ty in non-mammals being specific to  
 one nucleus but generally superseded  
 in mammals by the other, uniquely  
 mammalian nucleus associated with  
 the expression of emotional and social  
 behavior.

« 3 » Paul Grossman and Edwin Taylor  
 do not question the utility of using HRV for  
 research on stress vulnerability if important  
 complexities are considered (e.g., respi-  
 ratory parameters, beta-adrenergic tone,  
 concurrent physical activity) but strongly  
 contradict its premises.<sup>1</sup> Therefore, the  
 polyvagal theory may oversimplify the neu-  
 ral underpinnings of human behavior and

1 | Further details from more recent studies  
 can be found in the blog at [https://www.research-](https://www.researchgate.net/project/Examining-Porges-Polyvagal-suppositions)  
[gate.net/project/Examining-Porges-Polyvagal-](https://www.researchgate.net/project/Examining-Porges-Polyvagal-suppositions)  
 suppositions

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1 emotions and may not be the best reference  
2 for behavioral research measuring HRV. It  
3 is possible that the three testing conditions,  
4 namely resting, evocation, and coping, ful-  
5 fill the conditions for HRV variations being  
6 an appropriate indicator of parasympathetic  
7 nervous activity (§25). However, this as-  
8 sumption is a limitation of the findings if we  
9 have no data for respiratory parameters of  
10 frequency and volume. An example of how  
11 this limitation may be addressed in further  
12 studies is the study by Jens Blechert et al.  
13 (2007) on post-traumatic stress disorder  
14 (PTSD).

15 « 4 » To my knowledge, using the mi-  
16 cro-phenomenological interview method in  
17 a pre-post design in a clinical study of psy-  
18 chiatric patients is highly innovative. The  
19 study described in the target article does  
20 not explore the process of mindful inquiry  
21 with Mindfulness-based Cognitive Therapy  
22 (MBCT) itself but the pre-post differences  
23 in coping styles with emotional difficult  
24 situations. This is quite an inspiring sug-  
25 gession for the design of further research  
26 studies. The rich findings confirm the no-  
27 tion that one of the benefits of mindfulness  
28 interventions is

- 29 ■ the improvement in *self-regulation* (Ga-  
30 wande et al. 2019) and
- 31 ■ that this is mediated in part by trainees  
32 learning a curious, non-judgmental,  
33 non-evaluative stance when attending  
34 to one's own bodily sensations and their  
35 associations with emotions (Khoury,  
36 Lutz & Schuman-Olivier 2018).

37 « 5 » From the target article, I under-  
38 stand that a main goal for participants en-  
39 tering training in MBCT is to try to stay  
40 calm in emotionally challenging situations  
41 (§28). Indeed, the study results confirm  
42 that participants described this ability to  
43 stay calm as one of the key benefits from  
44 the MBCT training (§32, §37) and that this  
45 intervention has helped them to mobilize  
46 bodily awareness-related inner resources to  
47 accomplish that (Figure 4), which in turn  
48 appears to be reflected in lower autono-  
49 mic nervous system disbalance (§34, §39).  
50 Self-control of emotions and self-control  
51 of emotion expression appear to be a key  
52 objective for the participants (§28). This is  
53 a common motivation for entering contem-  
54 plative practice in the Western world (Pep-  
55 ping et al. 2016), which likely changes with

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the development of a deeper appreciation of  
mindfulness (Grossman 2015).

« 6 » Similarly, neuroscience research  
has become particularly interested in study-  
ing mindfulness and/or meditation precise-  
ly because of its benefits for emotion regula-  
tion as reported from studies in a Western  
cultural context (Guendelman, Medeiros &  
Rampes 2017). However, the intention and  
motivation for meditation and mindful-  
ness and its conceptualization vary across  
cultural contexts (Karl et al. 2020; Schmidt  
2011). I welcome more discussion about the  
cultural background of these goals: Does  
it not seem to reflect a rather Western cul-  
tural ideal of self-regulation as the means to  
individual self-control, to control internal  
arousal, keep a calm mind, and self-improve  
one's behavioral capacities and ego-identity  
towards becoming a person in better self-  
control of one's emotions (Trommsdorff  
2009)? Q1 A recent study revealed that self-  
regulation, particularly in its association to  
the awareness of emotion-related bodily  
sensations, is quite differently understood  
in Asian cultures (Freedman et al. 2020). I  
am not aware of any studies on self-regu-  
lation in Latinx or first-nation populations.

« 7 » In my understanding, there is no  
question about the behavioral health bene-  
fits of self-regulation (Gawande et al. 2019).  
Still, difficulties that arise, e.g., when us-  
ing self-report measures of self-regulation  
in a non-Western cultural context, point  
towards important variations in the goals,  
ethics and values associated with self-regu-  
lation.

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1 anxiety and depression (e.g., Koenigsberg  
2 2010), then it may be difficult for them to re-  
3 port on what it is like for them when they are  
4 in a very different emotional or mood state  
5 from the one they are in when taking the  
6 questionnaire. Thus, if questionnaires pose  
7 questions about one's experience generally,  
8 rather than right now at this particular time,  
9 then there may have to be an element of con-  
10 fabulation in the struggle to remember what  
11 it is like when one feels very different to how  
12 one feels now. However, the MPI does not ask  
13 abstract questions. They are questions with-  
14 out content, but that does not mean they are  
15 abstract. They are asking about a particular  
16 experience. This will surely be much easier  
17 for an emotionally labile person to do with-  
18 out resorting to confabulation, because the  
19 experience they are bringing to mind is pres-  
20 ent to them now. Furthermore, it seems like-  
21 ly that they would be less inclined towards  
22 confabulating an answer to fit with personal  
23 or social desirability, because the questions  
24 are only about a particular experience. They  
25 are not asking them to judge themselves gen-  
26 erally and thereby risk undermining some  
27 self-perception or self-narrative that might  
28 be critical to their sense of mental security.  
29 Answering honestly about one particular  
30 experience does not risk shaking (or poten-  
31 tially disintegrating) that narrative.

32 « 2 » The above considerations suggest at  
33 least one reason why the MPI might turn out  
34 to be more "accurate" than self-report mea-  
35 sures (at least in the sense that it may be less  
36 subject to being coloured by confabulation  
37 or unintended self-deception). However,  
38 even if it were not, would it matter? It seems  
39 to me that for the purposes of the study re-  
40 ported in the article, perhaps it would not.  
41 What matters is that the participant is put  
42 into a state in which they are relating to dif-  
43 ficult experiences. Should it matter if (a)  
44 the difficult experience is based on direct  
45 experiences, or (b) their experience of their  
46 experience is shaped through self-defence  
47 mechanisms or constructed narratives? 12 It  
48 might matter if we take the MPI to be train-  
49 ing the skills of engaging with direct experi-  
50 ence (rather than, e.g., habitually engaging  
51 with ruminations). Yet it is not clear to me  
52 that it is supposed to be playing that function  
53 in the target article. Rather, the MPI is just  
54 playing the role of a measure (although see  
55 §9 below).

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### What does the insight into dynamics reveal?

« 3 » The MPI gives us insight into both  
how participants relate to difficult experi-  
ences before and after the intervention, and  
how this might be different at the different  
phases of rest, evocation, and confrontation.  
However, it also gives us insight into the dia-  
chronic nature of the experience within these  
phases, and this is – I believe – worth empha-  
sizing. Here, I outline why I take this to be  
so important. Acknowledgement of the im-  
portance of temporal dynamics is a key issue  
for enactivists (Varela 1999). Emotions and  
emotional experiences are not static (Varela  
& Depraz 2005; Colombetti 2014). They are  
dynamic, both in the sense of responding to  
one's situation (dynamically) but also in that  
they transform from one to another as the  
thoughts and feelings change. In the cases at  
issue in the target article, where people are  
prone to rumination, as is common in anxi-  
ety and depressive disorders (e.g., Watkins &  
Roberts 2020), there will be many thoughts  
and associated feelings being stimulated and  
triggered. Using the MPI to explore experi-  
ences, rather than taking a single time slice  
of the experience and labelling parts of it  
with emotion labels such as "angry" or "frus-  
trated," seems to me therefore to be a clearly  
positive move towards a more ecologically  
valid approach to emotion research than is  
currently the standard. And, it might even  
play a mechanistic role by enabling those  
with low emotional granularity to come to  
understand their experiential space and their  
movement through it (see §9 below).

« 4 » In this article, the authors do not  
focus on healthy emotional functioning  
and its corresponding dynamics. However,  
I take to be implicit in their approach that  
this understanding of the dynamics of the  
experiential space should also lead us (and  
the participants) to the insight that healthy  
emotional functioning is not about stability,  
where stability is cashed out in some static  
sense. The HRV, after all, is considered more  
adaptive if it is *not* stable (e.g., Ernst 2017;  
Shaffer & Ginsberg 2017) – a higher heart-  
rate variability is (generally) considered bet-  
ter – it corresponds with the nervous system  
responding appropriately to situations but  
then returning to an unstressed baseline.  
Contrariwise, ruminative states – a tendency  
towards which is correlated with, and po-

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tentially a mechanism for, anxiety and de- 1  
pression (e.g., Alsubaie et al. 2017; Watkins 2  
& Roberts 2020) – tend to be rather stable 3  
and difficult to shift, which is exactly their 4  
problem. In light of this, it seems reason- 5  
able to conclude that healthier emotional 6  
functioning will present as the ability to go 7  
into negative emotional states that have been 8  
triggered and then to come back out of them 9  
rather than getting stuck in their (sometimes 10  
very sticky) attractors. Healthy emotional 11  
functioning on this dynamic view might be 12  
best understood not to be about consistency 13  
but rather to be about flexibility – flexibly 14  
moving between states as appropriate and 15  
helpful. 16

### Is the MPI a mere measure or potentially also a mechanism?

« 5 » As discussed above, I take the MPI 20  
in this study to be an extra measure (with 21  
special features) to be added to the psycholo- 22  
gists' toolkit. However, the description of 23  
the MPI that takes mindfulness as its object 24  
(Petitmengin et al. 2019) discussed in (§8) 25  
indicates that it may also be a mechanism for 26  
regaining contact with experience. In light of 27  
this, is the MPI in this study also playing a 28  
mechanistic role besides its use in measur- 29  
ing? That is, could the activity of engaging 30  
in the MPI with a practitioner in the pre- 31  
intervention phase be providing the condi- 32  
tions for the disruption of habitual thought 33  
patterns and ways of engaging? 13 This dis- 34  
ruption might function to open up the space 35  
for new habits of self-relatedness to emerge 36  
(that are developed through the mindfulness 37 233  
training). Even if it is not intended to in this 38  
setting, if it is the case that in other settings 39  
it is one of the mechanisms by which habits 40  
of mind are changed, then it is plausible that 41  
here it could also be one of the mechanisms 42  
by which the intended effects are happening. 43  
If this is right, then this might prompt us to 44  
integrate the MPI into mindfulness-based 45  
cognitive therapy and mindfulness-based 46  
stress-reduction programmes more gener- 47  
ally in the future. 48

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## Mindfulness is Phenomenology, Phenomenology is Mindfulness

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> **Abstract** • Mindfulness is phenomenology and good phenomenology is a kind of methodological mindfulness. Mindfulness is not a Buddhist concept, but a human universal psychological resource. The target article does a good job of putting that into practice in using phenomenology to study experiences of mindfulness practitioners.

« 6 » A well-known sentence of the medieval mystical writer Meister Eckhart (1260–1328) reads: “If you do not resemble the truth I want to talk about, you won’t understand me” (Walshe 2008: Sermon 32).<sup>1</sup>

1 | In the original: “Wenn ihr dieser Wahrheit, von der wir nun sprechen wollen, nicht gleicht, so könnt ihr mich nicht verstehen.”

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Although “truth” is a complex concept, the sentence might be translated within a modern, hermeneutic framework into “Unless you have some first-hand experience of what you want to research and understand, you won’t be able to make sense of your topic.” I find it very important, if not a landmark in research of mindfulness, that in their target article, Sebastián Medeiros et al. use a phenomenological approach to understanding mindfulness and its effects.

« 7 » It has long been my hunch, although I am not aware that there is a formal study pursuing this line of reasoning, that Edmund Husserl’s phenomenological method of “epoché,” the phenomenological reduction, or the abstaining of consciousness from conceptualization (Husserl 2009: Kap 2. §18; Varela 1996; Zahavi 2003), is a Western form of “mindfulness”: a non-judgmental awareness of all that is present in consciousness. It is therefore timely and overdue that researchers such as Medeiros and colleagues use a mixed methods approach where micro-phenomenology is embedded as a qualitative component within a larger approach. They are to be congratulated and I can only express the hope that this will be the starting point of an even richer tradition.

« 8 » Their in-depth approach shows that it is not only big numbers and their obstinate crunching that lead to important insights, although for pragmatic reasons convincing quantitative results are mostly the starting point for new research programs (Grossman et al. 2004; Zenner et al. 2014). However, it is meticulous attention to detail that can unravel important contexts and preconditions of change.

« 9 » Sometimes change is not even measurable, but nevertheless profound. We did a study on mindfulness in fibromyalgia patients, a while ago (Schmidt et al. 2011). The changes that we could detect with quantitative methodology were small, and objective physiological markers, like heart rate variability and autonomic dysregulation were unspectacular, to say the least (Grossman et al. 2017). Yet qualitative data and individual outcome measurement such as the “Measure your own medical outcome profile – MYMOP” (Paterson & Britten 2000) showed important changes. So, perhaps it is time to break the dominance of

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1 the positivistically rooted quantitative search paradigm, at least when it comes to understanding change and processes?

4 « 10 » Most mindfulness-based interventions, and MBCT is one of them, use a secularized concept of mindfulness. Some bemoan this, because they consider mindfulness to be a Buddhist-inspired concept (Grossman & van Dam 2011). Did the authors of this study convey the gist of mindfulness more in a secularized or in a spiritualized version? Q1

13 « 11 » Against any denominational or religious ownership of the concept of mindfulness I would hold: Mindfulness is neither Buddhist, nor religious in any way. Mindfulness is human. Mindfulness is an element of psychology.

19 « 12 » When I translated a medieval Carthusian writer, Hugh of Balma, I was amazed to find the following little fictitious dialogue in what is a medieval academic disputation: "If someone asks: 'What should I think, if I am not allowed to think of God and the angels?' I say: 'Don't think! Just breathe' [quod solum aspirabit, non cogitabit]" (de Balma 2017: Part V §46, my translation). That was written around 1265, very likely without any knowledge of Buddhist theory and practice.

31 « 13 » Mindfulness practice is likely universal. Wherever practitioners discovered that focusing on the breath calms down not only autonomic arousal, or rather couples autonomic arousal with mental processes (§34 and §39), but also cognitive mental processes, a practice of mindfulness ensued. The Buddhist tradition made most prominent use of this fact, as far as we know, but it is by no means the only one. As my little example above shows: It is present also within the Western Christian tradition. A case can be made that mindfulness was much more primordial and a kind of "meditation" might have been at the root of human mental evolution (Rossano 2011).

47 « 14 » In the Western philosophical tradition, Husserl's phenomenology, started off by Franz Brentano's attempt to root psychology in thorough introspection (Binder 2019; Walach 2021), is perhaps the most closely related attempt at jumping the Cartesian cut between subjective experience and purported objective reality. To be more precise: it is the insight that there is only ex-

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perience in the first place and that it is in experience that objects and the world arise.

« 15 » How do we become aware of this? By paying attention to our experience, moment by moment, without conceptual-philosophical judgment. Some call this mindfulness. Some call it phenomenology. It is the merit of this study to have built the bridge, both in concept and in practice.

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## 1 Authors' Response 2 The Art and Science 3 of Befriending Inner 4 Experience

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23 **> Abstract** • We offer a response to four  
24 themes that result from the commen-  
25 tators' inquiries and critiques: (a) the  
26 psychodynamic perspective in contem-  
27 plative research; (b) the limitations of  
28 self-reported measurements and their  
29 relationship with first-person data from  
30 micro-phenomenological interviews; (c)  
31 the role and nuances of these interviews  
32 in mindfulness-based interventions; and  
33 (d) cultural aspects in mindfulness and  
34 self-regulation.

### 35 Introduction

36 « 1 » We appreciate all the contributions  
37 and thoughtful insights brought up by the  
38 commentators, which allow us to discuss  
39 and broaden the context of our target article.  
40 We welcome their methodological sugges-  
41 tions and theoretical reflections that enrich  
42 our research interests and contribute to the

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development of the contemplative research  
field. The aim of our target article was to ex-  
plore different levels of observation to study  
mindfulness-mediated change regarding the  
way patients relate to difficulties. It was an  
exploratory study in terms of gathering in-  
formation and analyzing data from different  
perspectives that may help understand the  
interaction between psychological vulner-  
ability and the contemplative learning path.  
Our research interests are based on our own  
experience as contemplative practitioners,  
mindfulness teachers, micro-phenomeno-  
logical interviewers and clinicians.

« 2 » We offer a response to themes  
that recur in the commentaries and other  
critiques that inspire further possibilities of  
research: (a) the psychodynamic perspective  
in contemplative research; (b) the limita-  
tions of self-report measures and their rela-  
tionship with first-person data from micro-  
phenomenological interviews (MPI); (c) the  
role and nuances of MPI in mindfulness-  
based interventions (MBI); and (d) cultural  
aspects in mindfulness and self-regulation.

### The psychodynamic perspective in contemplative research

« 3 » The psychodynamic frame that we  
used understands personality functioning  
as the organization of a set of psychological  
capacities to respond to demands of the in-  
ternal and external world. These capacities,  
which are developed in early life in the con-  
text of early relationships with significant  
others, are precisely self-regulatory capaci-  
ties or processes that allow one to regulate  
stress and difficulty. This frame incorporates  
studies on attachment dysfunction and psy-  
cho-biological development, acknowledging  
that relational or developmental trauma  
has an enduring impact on brain structures  
that account for impairments of self and  
emotional processing, dissociation, and  
forms of psychopathology (Schoore 2010;  
Lyons-Ruth et al. 2013). In responding to  
**Oussama Abdoun, Enrico Fucci and Stefano Po-  
letti's Q3**, it is this theoretical construct (for-  
mulated on the basis of the operationalized  
psychodynamic diagnosis OPD-2 for re-  
search purposes) that guides our study, and  
it seems to us, at least in an exploratory way,  
a useful construct for the study of personal-  
ity in dialogue with mindfulness research.  
Some phenomenological observations from

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our results, such as the improvement in  
participants' capacity to differentiate their  
emotions when evoking difficult situations  
and to better describe bodily sensations that  
accompanied their emotional response, are  
consistent with self-reported descriptions  
of personality functions, in this case, specifi-  
cally the abilities of affective differentiation  
and internal emotional communication at  
the level of the bodily self, central to emo-  
tion regulation.

« 4 » Mindfulness research is nour-  
ished when taking into account individual  
differences and developmental trajectories  
underlying clinical outcomes and in ex-  
ploring mechanisms' change. **Corina Aguilar-  
Raab (\$5)** calls for a better understanding  
of psychological impairments in self- and  
personality organization that may impact  
the learning of mindfulness practice. **Simón  
Guendelman and Marisa Przyrembel (\$10)**  
highlight the interest of searching for neu-  
rophysiological fingerprints that can serve  
as predictors of success or adversity in more  
vulnerable populations. The proposed psy-  
chodynamic view, in dialogue with vulnera-  
bility-sensitive mindfulness research (target  
article **\$43**) may serve not only to refine in-  
terventions guiding practitioners to access  
contemplative practices that address their  
unique needs, but also for research itself.  
From a clinical perspective, we are sensi-  
tive to what occurs during meditative prac-  
tice when facing inner difficulties and how  
our embodied history of socio-affective  
development (self-regulatory capacities)  
might be challenged and called to action.  
A methodological frame based on develop-  
mental theory and meditative insights may  
refine understandings of the way inner re-  
sources are demanded and may or may not  
be available. Acknowledging at a more fine  
and granular level the nuances of individual  
vulnerability may help with the interpreta-  
tion of the collected data and to propose  
new hypotheses.

« 5 » We chose mindfulness-based cog-  
nitive therapy (MBCT) as an intervention,  
as it is designed to prevent depressive recur-  
rence and relapses. Even though it derives  
in part from a cognitive-therapy tradition,  
we find a contemporary psychodynamic ap-  
proach useful to understand its underpin-  
nings, especially in relation to rumination.  
In the context of mood disorders, depressive

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1 relapse and recurrence are associated with  
2 dysfunctional modes of thinking and feel-  
3 ings that arise when facing difficult experi-  
4 ences (Segal et al. 2002). **Aguilar-Raab (§11)**  
5 points out that “rumination can be under-  
6 stood as a variant of a maladaptive strategy,  
7 which possibly developed in the life course  
8 as a helpful survival, albeit maladaptive  
9 strategy.” Mark Epstein (1995), from a Bud-  
10 dhist and psychoanalytic perspective, sug-  
11 gests that when the child’s experience is not  
12 seen or validated, the wounded child will set  
13 her self-locus in a mental domain that large-  
14 ly avoids affective experience. Rumination  
15 would serve the child to avoid contact with  
16 raw and unbearable somatic feelings. Expe-  
17 riential avoidance may persist during adult  
18 life and contribute as a psychopathological  
19 mechanism.

20 « 6 » Certain qualities of the mind,  
21 such as openness, curiosity and kindness  
22 towards felt difficulty, at a somatic level,  
23 may be central in the healing process and  
24 changes in procedural forms of relating to  
25 emotional threat. Epstein draws a parallel  
26 between meditation and the possibility of  
27 re-experiencing *good-enough* parenting,  
28 creating a “[...] holding environment in  
29 which unknown and unexamined aspects  
30 of the past can be experienced for the first  
31 time in the here and now” (Epstein 2013:  
32 158). Articulating theory with empiri-  
33 cal data, our MPI analysis seems to show  
34 changes in *taking care* of emotions through  
35 cultivating body awareness and a caring  
36 inner environment, i.e., embodied care. In  
37 response to **Aleš Oblak’s Q2**, seen as a new  
38 procedural memory, embodied care could  
39 be proposed as a phenomenological stable  
40 trait acquired through mindfulness prac-  
41 tice, being relevant for the investigation of  
42 mood disorders. Based on our experience  
43 and also from our observations of par-  
44 ticipants during MBI and psychotherapy,  
45 a kind attitude toward interoceptive pain  
46 underlying narratives allows possibilities  
47 of self-experiencing and could be a clue  
48 for mental health. Longitudinal studies are  
49 needed to clarify this hypothesis and its  
50 possible dialogue with third-person meth-  
51 odologies, including heart rate variability.  
52 As mentioned by **Wolf Mehling (§2)**, **Aguilar-**  
53 **Raab (§1)** and **Abdoun, Fucci & Poletti (§7)**,  
54 we are aware of the ongoing discussion on  
55 polyvagal theory validity in heart rate vari-

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ability interpretation and the risks of over-  
simplification. Nevertheless, at a clinical  
level and for didactic purposes, it appears  
suitable for the interpretation of psycho-  
physiological dynamics.

« 7 » These theoretical views and em-  
pirical phenomenological observations are  
aligned with the *embodied emotion regula-*  
*tion* framework consisting of a multilevel  
approach for understanding psycho-biolog-  
ical changes due to mindfulness meditation  
(Guendelman, Medeiros & Hampes 2017).  
In this framework, emotion regulation re-  
sults from reciprocal interactions and cir-  
cularity between cognitive and interoceptive  
strategies. In the case of negative experi-  
ences and dysfunctional cognitions (e.g.,  
rumination), along with meta-awareness  
and dereification, also a shift from a *self-*  
*narrative* perspective to a *self-experiential*  
bodily and present-centered gesture seems  
a critical factor for mechanisms of change  
(**Aguilar-Raab Q3**). Our data is in line with  
research on interoceptive awareness and its  
role in health and wellbeing (Quadt, Critch-  
ley & Garfinkel 2018; Mehling et al. 2011).  
Some of us have had the experience that  
when attempting to “let go” of intense and  
threatening thoughts and bringing attention  
back to the body, we meet deep emotional  
pain including fear, sadness, unworthiness  
and anger.<sup>1</sup> According to Claire Petitmen-  
gin et al. (2019: 56), “the therapeutic effect  
of meditation would not be explained by the  
attainment of a particular experiential con-  
tent, but by the process of regaining contact  
with lived experience, regardless of its con-  
tent.” Mindfulness practice leads the partici-  
pants to expose themselves to and “hold” in-  
ner difficulty, without interfering, and with a  
caring attitude that seems to correlate with a  
calm and open body and mind, and a tender  
heart (**Aguilar-Raab Q4**).

« 8 » From a psychodynamic view,  
it seems that the possibility of *being with*  
the difficult experience has to do with the  
availability of inner psychological space. In this

1 | From MBCT guidelines: “[...] the idea is  
to focus on awareness of body sensations that ac-  
company any intense thought or emotion. This  
makes it more likely that, should a thought or feel-  
ing seem overwhelming, the person would be able  
to bring awareness to what is most difficult as it is  
felt in the body” (Segal et al. 2013: 287).

column B

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space, mental experience can be differen- 1  
tially perceived, perspective can be taken, 2  
and regulating functions based on positive 3  
attitudes towards the self remain available 4  
in order to calm and soothe oneself (OPD 5  
Task Force 2008). All these capacities can 6  
be cultivated in meditation practice. From 7  
a Buddhist perspective, beyond all forms 8  
of suffering we all share *basic sanity*, under- 9  
stood as the “expression of the precision and 10  
the clarity of the awakened state of mind” 11  
(Trungpa & Gimian 2003: 13). According 12  
to these authors, there is no ambition to 13  
change thoughts, but rather to allow them 14  
to occur spontaneously in such a space of 15  
awareness. The body is always present in the 16  
experience. 17

### 18 The limitations of self-report 19 measures and their relationship 20 with qualitative MPI data 21

« 9 » We have used different method- 22  
ologies to assess first-person experience, 23  
including (a) self-report dispositions and 24  
personality functioning and (b) micro-phe- 25  
nomenology. Possible dialogues can emerge 26  
from different levels of depth of first-person 27  
experience assessment. According to Vicki 28  
Plano Clark and Nataliya Ivankova’s (2016) 29  
typologies of mixed methods designs, we 30  
had a convergent design consisting of inde- 31  
pendent quantitative and qualitative strands 32  
that were conducted in parallel and then 33  
interpreted. We welcome **Abdoun, Fucci & Po-** 34  
**letti’s** suggestions and alternative strategies 35  
for the presentation and integration of data 36  
(**Q1**). In our study, for example, a descriptive 37 237  
presentation of the data could be appropri- 38  
ate, as it is a small sample and inferential sta- 39  
tistics is not the main objective. 40

« 10 » Through self-questionnaires we 41  
are measuring personality functioning re- 42  
ferring to the dynamic interplay of repeti- 43  
tively activated psychological processes that 44  
normally serve adaptive functions (Westen, 45  
Gabbard & Blagov 2006). Participants an- 46  
swer questions such as “I often don’t know 47  
very well how I am feeling” (self-perception) 48  
or “Sometimes my emotions are so strong 49  
that they scare me” (self-regulation) (OPD- 50  
SQ). Even though it refers to one’s own 51  
experience, the data from the self-report 52  
questionnaires require a *judgment* or cog- 53  
nitive elaboration to answer about one’s own 54  
functioning. 55

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1 « 11 » Regarding the use of self-report  
 2 standardized questionnaires, we agree with  
 3 **Oblak** that it is questionable to address stable  
 4 properties of an individual's conscious life.  
 5 Along with the examples given by **Oblak**,  
 6 other limitations in the use of self-report  
 7 are the high level of abstraction of concepts,  
 8 and the bias or influence of current mood  
 9 states of individuals on the self-descriptions  
 10 about their personality functioning (Ganel-  
 11 len 2007; Colombetti 2013). Another bias  
 12 includes the assumption of a similar under-  
 13 standing of items among different popula-  
 14 tions (Stanghellini et al. 2012). Regarding  
 15 **Oblak's Q1**, we argue that our first-person  
 16 data (MPI), help us enter into dialogue with  
 17 self-report findings. In the case of our study,  
 18 the first-person data and questionnaire are  
 19 rather consistent in their descriptions.  
 20 For example, after the intervention, MPIs  
 21 showed that subjects were better at discrim-  
 22 inating different emotions. This finding was  
 23 also observed in the OPD-SQ question-  
 24 naires and dispositional mindfulness with  
 25 positive trending pre- and post-interven-  
 26 tion (**Table 2 and 4** in target article).  
 27 « 12 » Reflecting on **Guendelman &**  
 28 **Przyrembel's Q3** regarding the methodologi-  
 29 cal problem of associating and envisioning  
 30 the validity of MPI data with correspond-  
 31 ing self-reported scores, the question that  
 32 arises is whether we are looking for a corre-  
 33 lation between two measures. Is it possible  
 34 to correlate data that come from opposing  
 35 methodological frameworks (and with dif-  
 36 ferent temporal developments)? From the  
 238 perspective of our research interest, it is not  
 38 the validation of one methodology over the  
 39 other that we are looking for, nor a correla-  
 40 tion in itself, but a co-construction of the  
 41 data that allows the emergence of mean-  
 42 ing and a better understanding of the phe-  
 43 nomenon under study. Indeed, the items  
 44 of self-reported measures could be used as  
 45 a frame to explore a particular experience  
 46 (Stanghellini et al. 2012). The use of self-  
 47 report questionnaires and the MPIs in the  
 48 target article allow a broad overview of the  
 49 participants' experience given different nu-  
 50 ances that complement one another. The va-  
 51 lidity of the MPI should be based on its own  
 52 framework (Petitmengin & Bitbol 2009). In  
 53 this sense, the study of experience and its  
 54 integration into cognitive sciences in Fran-  
 55 cisco Varela's (1996) neurophenomenologi-

cal project is an invitation that goes beyond  
 correlating the objective and subjective  
 poles (so-called mild neurophenomenology),  
 towards a radical neurophenomenology,  
 which seeks to dissolve the gap between  
 both poles by identifying the parameters of  
 reciprocal elaboration or "mutual genera-  
 tive constraints" (Petitmengin 2017).

### The role and nuances of MPI in contemplative research

« 13 » One of the central questions that  
 arises in the use of the MPI in contemplative  
 research is what precisely we are measuring  
 during the interview. **Mog Stapleton** raises the  
 relevance of adding the practice of phenom-  
 enology in giving us a "deeper insight into  
 the processes that underlie ways of think-  
 ing and behaving that cause ourselves and  
 others suffering" (§1). In this study, we are  
 exploring changes in cognitive, emotional  
 and somatic patterns that may act as mech-  
 anisms toward wellbeing and resilience.  
 However, are the collected data "pristine"  
 direct experience? Or, as **Stapleton** suggests  
 in her **Q1**, could it be clouded with our own  
 self-perception, expectations and negative  
 beliefs? When interviewees described their  
 difficult experiences, they were, in a certain  
 sense, re-living such psychological and em-  
 bodied processes and describing their ways  
 of regulating them (or not). Nevertheless,  
 our experience is that when participants  
 describe their experience, they are inevita-  
 bly bringing with them the history of their  
 structural couplings (ontogeny). Therefore,  
 it is the task of the interviewer to be able to  
 distinguish that satellite information from  
 the procedural information and find the in-  
 variants of the described experiences. What  
 appears in the MPI (evocation) is what is  
 being lived, no matter whether it is based  
 on a direct experience of difficulty or this  
 experience is shaped through self-defence  
 mechanisms or constructed narratives (**Sta-  
 pleton Q2**). In the MPI, whatever emerges  
 (and mainly how it emerges) is experienced  
 and is valued as such. According to Petit-  
 mengin, whenever the subject uses an ab-  
 stract term, the interviewer restates the in-  
 terrogative form by inviting her to describe  
 the concrete action that underlies this term  
 (Petitmengin 2017). In response to **Guendel-  
 man & Przyrembel's Q2**, more verbatim pas-  
 sages of the transcripts as examples of nu-

anced first-person data are provided (see 1  
 Appendix). 2

« 14 » We agree with **Guendelman &**  
**Przyrembel** that "taking part in in-depth 3  
 inquiry as an interviewee enhances aware- 4  
 ness of one's own experiences as well as the 5  
 skill to mindfully describe them in detail" 6  
 (§5). Their **Q1** inquires into to "what extent 7  
 can the MPI be considered an (additional) 8  
 intervention [and in] what way may this 9  
 confound the measurement and object of 10  
 study?" **Stapleton (§8)** suggests that the MPI 11  
 could also be playing a mechanistic role be- 12  
 sides its use in measuring. Broadly speak- 13  
 ing, psychotherapy is sensitive to the quality 14  
 of the relational space as a transformative 15  
 factor. It is possible that a retrospective ex- 16  
 amination of past experiences framed and 17  
 guided by an empathetically tuned phe- 18  
 nomenological interviewer can have a posi- 19  
 tive additional value. Moreover, the MPI 20  
 can be a space for reflection and exploration 21  
 of the therapeutic process. 22 23

« 15 » To complicate things even more, 24  
 in our study we assessed an intervention 25  
 that fosters self-awareness as one of its main 26  
 objectives. MBIs include an inquiry pro- 27  
 cess<sup>2</sup> in every session that helps participants 28  
 to see more clearly the workings of their 29  
 minds and to familiarize themselves with 30  
 patterns leading to suffering. Attributing a 31  
 mechanistic role to a short interview, and in 32  
 particular to a lasting impact when applied 33  
 in the pre-intervention phase seems difficult 34  
 (**Stapleton's Q3**). We argue that it is necessary 35  
 to differentiate an intervention as such from 36  
 37

2| The inquiry process occurring every week 38  
 (2.5 hours each session) during the MBI can be 39  
 understood as a form of phenomenological and 40  
 clinical investigation. Inquiry consists in an em- 41  
 bodied and compassionate exploration of the 42  
 participants' experience after a period of 40 to 43  
 60 minutes of group meditation practice. Partici- 44  
 pants are invited to share what they noticed dur- 45  
 ing the recent practice as questions such as, "how 46  
 is it in the mind, now" and "what can you notice 47  
 in the body, now" allow them to progressively 48  
 cultivate self-awareness, interoception and ac- 49  
 ceptance. MBIs are not just gatherings to meditate 50  
 in a group, or individual app-supported practice, 51  
 but include inter-subjective encounters with other 52  
 participants and teachers, where connection and 53  
 caring is experienced and may be mirrored and 54  
 assimilated. 55

column A

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1 the possible beneficial effect obtained by the  
2 interview. Qualitative interviews after the  
3 MPI process, and why not, MPIs of MPIs,  
4 could give some clues on how shared mo-  
5 ments of presence and inquiry could serve  
6 to foster connection with inner experience.  
7 An interesting study would be MPIs of mo-  
8 ments of *inquiry* in class and their poten-  
9 tial to promote insights and metacognitive  
10 capacities and eventually mobilize bodily  
11 awareness-related inner resources.

12 « 16 » Regarding the MPI and our re-  
13 search interest in acknowledging vulner-  
14 ability, **Aguilar-Raab** points to a question re-  
15 levant in both clinical and research contexts,  
16 which considers how certain people may  
17 have difficult access to inner experience.  
18 As she suggests in §6, not only self-rating  
19 questionnaires regarding self-description  
20 but also performance in evoking difficult  
21 emotions in MPIs may be interfered with by  
22 low personality functioning. As self-report-  
23 ed personality functioning and MPIs were  
24 conducted in parallel in our study, we did  
25 not evaluate participants' previous psycho-  
26 logical capacities to evoke and contact in-  
27 ner difficulty during the MPI (**Aguilar-Raab**  
28 **Q1**). A mixed methods approach with a se-  
29 quential explanatory design that first gath-  
30 ers quantitative data of vulnerability (early  
31 life adversity, personality functioning, for  
32 example) could inform the MPI exploration  
33 of more subtle dynamics regarding self-  
34 regulation.

35 « 17 » In response to **Aguilar-Raab's Q2**, in  
36 our sample, participants adhered to 100%  
37 of the requested practices in face-to-face  
38 classes and during the day-long retreat, but  
39 data regarding home practice was not regis-  
40 tered, limiting our scope of analysis. We did  
41 not assess meditation practice directly but  
42 rather its supposed accumulated effect in  
43 the form of healthier ways to face adversity.  
44 In response to **Abdoun, Fucci & Poletti's Q2**, a  
45 relevant characteristic of MPIs that brings  
46 additional value in exploring difficult expe-  
47 riences is the observation of the interview-  
48 er's own experience, as it helps to collect  
49 different nuances and guides the evocation  
50 and description of the interviewee's process.  
51 MPI interviewers are trained in observing  
52 and describing their own experience. An  
53 embodied-cognition perspective helps us  
54 understand and guide mind-body processes  
55 that the person is reporting.

column A

« 18 » To our knowledge, there are no  
other published studies of experience us-  
ing MPIs in a longitudinal contemplative  
study. We appreciate **Abdoun, Fucci & Poletti's**  
inquiries and signaling of methodologi-  
cal obstacles related to the compatibility of  
MPIs with repeated-measures paradigms,  
including the impact of previous exposure  
to the interview and the influence of con-  
comitant treatments such as psychotherapy  
(we would add psychopharmacology and  
other interventions or lifestyle changes).  
Their principles regarding mixed methods  
designs and presentation of data serve as a  
guide and inspiration for future research.

### Cultural aspects in mindfulness and self-regulation

« 19 » **Mehling's** interest in the cultural  
background and its relation with inten-  
tions and motivation for self-regulation and  
mindfulness meditation is relevant to us,  
considering our geographic and geopolitical  
contexts. Our embedded experience makes  
us feel that we are in a transition from a  
recent collective functioning society to a  
more individualistic one. The dual orienta-  
tion of the dimensional capacities of per-  
sonality (regulatory capacities) proposed  
by the OPD-2 system, a construct that has  
guided our study on personality function-  
ing, is relevant for understanding the influ-  
ence of contextual factors. These capaci-  
ties include cognitive, affective regulation,  
emotional communication and attachment  
abilities. In each of them, capacities are ori-  
ented both to the relation with self and to  
the relation with others. For example, in the  
case of affective regulation skills, on the one  
hand, there are *self-regulation* abilities (im-  
pulse control, tolerance of difficult affects,  
regulation of self-esteem), which are consis-  
tent with the Western cultural idea of effort,  
control, and keeping one's mind calm, but,  
on the other hand, there is the *regulation of*  
*the relationship with others*, which includes  
interpersonal regulation capacities regard-  
ing the balance of mutual needs and inter-  
ests, among other abilities.

« 20 » However, and taking the invita-  
tion to reflect on the cultural background,  
it may be of interest to say that from a self-  
construal perspective, some studies (Kol-  
stad & Horpestad 2009; Olhaberry et al.  
2011) have found that Chileans show high

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scores in both independent and interdepen- 1  
dent self-construal scales (Singelis 1994), 2  
which supports the idea of the coexistence 3  
of both autonomy and relatedness (Trom- 4  
msdorff 2009). In other words, the cultural 5  
context of the group studied refers to a so- 6  
ciety with elements that are at some levels 7  
individualistic and at others collectivist. 8  
Nevertheless, in these times, social distanc- 9  
ing and teleworking mean uncertainty in 10  
the evolution of these tendencies. 11

« 21 » Now, let us remember the moti- 12  
vations with which the participants entered 13  
the program: to manage anxiety and/or de- 14  
pressive symptoms; withdrawal of antide- 15  
pressants; to recognize emotions and cope 16  
with them; to learn self-care techniques. 17  
They seem to reflect the Western ideal of 18  
self-regulation as **Mehling (Q1)** proposes, but 19  
another question arises when discussing 20  
this point: would the participants' motiva- 21  
tions transform along with the mindfulness 22  
practice and the attitudes they start to dis- 23  
cover and experience with it? 24

### Conclusion

« 22 » **Harald Walach's Q1** touches our 27  
essence as contemplative researchers, clini- 28  
cians and practitioners. Is it possible to hold 29  
a non-dualistic view between a secular and 30  
a spiritual version of mindfulness? Maybe, 31  
the intention behind the willingness to 32  
practice presence with life holds the answer. 33

« 23 » The Persian poet Jalāl ad-Dīn 34  
Rumi (1207–1273) wrote: 35

36  
37 239 “Don't turn away. Keep your gaze on the ban- 37  
38 daged place. That's where the light enters you.” 38  
39 (Santorelli 1999: 21) 39

40  
41 « 24 » This quote originates from Sufi 41  
42 traditions of wisdom and healing. It is fre- 42  
43 quently used in mindfulness literature and 43  
44 interventions as a metaphor to cultivate 44  
45 intimacy with our pain. Sometimes the 45  
46 wound can be profound and our capacities 46  
47 to be with it may not be enough. We ad- 47  
48 vocate for contemplative research that ac- 48  
49 knowledges vulnerability and may contrib- 49  
50 ute to a clinical practice that meets others' 50  
51 suffering right there, where they are. 51

column C

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## Appendix: Pre- and post-intervention verbatim accounts from two different participants

P = Participant; I = Interviewer. Interviews were conducted in Spanish and translated by the authors.

### Pre-intervention

I: There, how do you recognize that discomfort?

P1: It's like in the belly, I feel like something in my stomach, I feel that it is a tense moment, I want it to pass quickly, it makes me angry and I start to think many things.

I: So, you feel this discomfort in the belly, and also tension appears, because you feel tense. How do you recognize that tension there?

P1: I think that my physical state should change anyway [...] from the beginning I feel that it squeezes me a little and I stop talking, so it is no longer a fluid conversation for me; I kind of stop and instead of speaking I stay in silence, it is like I speak alone.

I: And when you say it is a physical change...

P1: No, it's like ... I believe that one ...; the thought begins to talk and talk, but I feel that physically, one..., because when one is fluid, the thought and the body are normal. It is like when one is in that situation, I try to ensure that the body is not noticed that much, so it is like you control yourself. At the end I feel like... I do not know the word, but it is like controlling, like stopping the body a little so that it does not express itself much. In the meanwhile, I think about how to react.

I: [...] how is that feeling in the belly?

P1: It's like it squeezes you, it squeezes the belly, that is, it is not the only thing that affects me, but from there I start to feel this controlling that I am telling you, how to stop it so as to start thinking and seeing how I'm going to react at the end.

I: And that is accompanied by this tension, this tight belly.

P1: Yes.

I: And also anger appears.

P1: Yes.

I: What is that anger like? Or how do you recognize it, how do you recognize that it is a ...?

column A

column B

P1: Because instinctively it makes me want to say something to my husband. I need to be calm but I start to say why is he like that if I am not like that, like arguing internally with him.

### Post-intervention

P5: [...] I am able to calm down quickly.

I: What change makes you realize that you have calmed down?

P5: Well, that I stop crying, that I feel physically calm and the lump in the throat also passes; It is like when expressing it, the feeling is out. It's not like anguish, you know what I mean? It's not like getting stuck in there, it's like ...

I: How do you differentiate grief and anguish in this case?

P5: As I feel it. I differentiate them in myself and I feel..., the anguish is like something that squeezes me, squeezes me, and that does not go out with crying. Grief is released once I cry.

I: And then, how is that feeling of release? How do you recognize it?

P5: Oh, the lump in my throat is key for me.

I: If the lump goes ...

P5: [...] I differentiate the anguish from other emotions. I feel that the anguish is something more permanent. Instead, with other emotions, I feel them, I tolerate them, and they pass. So, in that sense I differentiate it from grief. I feel that grief is more momentary.

I: That the anguish ...

I: That the anguish. So, this does not make me feel anguish, It makes me sad.

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