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HOW MINDFULNESS AS A DISPOSITION IMPACTS EPISTEMIC DISPOSITIONS

Abstract: This paper explores how a mindfulness disposition (defined as inclination and inner capacity of paying sustained, non-reactive attention to present-moment experience) influences cognitive information processing and epistemic performance. Drawing on a systematic review of psychological, neuroscientific, psychotherapeutic, and philosophical literature, it examines the cognitive effects of mindful awareness of experience. The reviewed studies report improvements in perceptual discrimination and comprehensiveness, interpretative accuracy, source evaluation, cognitive flexibility, and openness to alternative hypotheses. These processes are foundational and prerequisite for the development of key epistemic dispositions discussed in virtue epistemology and critical thinking theory – a topic that has rarely been addressed. The paper argues that while a mindfulness disposition enhances epistemic competence, its benefits become especially pronounced when combined with analytical and proactive skills. The analysis also considers parallels between secular mindfulness and experiential approaches in phenomenology, hermeneutics, and pragmatism, suggesting broader interpretative relevance.

Key words: epistemic dispositions, mindfulness, present-moment experience, cognitive flexibility, open-mindedness, perception, awareness.

Introduction

All people, at different stages of life, struggle to varying degrees with emotional regulation, interpersonal relationships, and cognitive overactivity. Mindfulness is increasingly recognized as a potential method for enhancing both reasoning capacities and emotional regulation. Numerous contemporary psychological studies on the effects of training non-reactive attention to the flow of present-moment experience suggest that it facilitates the deautomatization of emotional, behavioral, and cognitive pat-

terns that are not functional, thereby enabling more appropriate responses to situations.

While individual aspects such as attention, emotional regulation, meta-awareness, and deautomatization have been studied in the context of mindfulness, their epistemological implications have been less frequently explored—this is the aim of the present paper. A review of psychological and psychotherapeutic literature provides strong indications that mindfulness can support key intellectual dispositions, such as: reliable perception, cognitive flexibility, the disposition to consider situation and context, the ability to question one's own beliefs, to recognize one's own standpoints, the courage to explore seemingly complex or unpleasant ideas, and openness to others' points of view. The hypothesis from which this work begins is that the training of mindful awareness—defined here as non-reactive attention to the unfolding of present-moment experience—enhances a set of dispositions that are prerequisites for successful epistemic reasoning. If this is the case, then mindful awareness, when integrated with analytical and proactive thinking, may foster more successful epistemic reasoning. More precisely, this paper aims to explore how mindfulness training affects four interrelated domains of cognitive and emotional functioning: perceptual openness, meta-awareness, cognitive flexibility, and emotional regulation, and to consider these effects in the context of developing epistemic dispositions—an area in which such connections have rarely been examined.

The paper begins by defining mindfulness as a disposition and highlighting its conceptual parallels with phenomenological, hermeneutic, and pragmatic approaches to experience, as well as with the experiential focus in Gestalt and client-centered therapies. It then reviews psychological and neuroscientific findings on the impact of mindfulness on attention, meta-awareness, deautomatization, and emotional regulation, analyzing how these findings relate to epistemic dispositions essential for epistemic success in the frameworks of virtue epistemology and critical thinking theory. Finally, the paper addresses the limitations of the mindful state and proposes its integration with analytical and proactive skills.

1. Defining Mindfulness Disposition

Mindfulness is a distinct form of awareness that we can engage in at certain times. This form of awareness is characterized by:

- (1) Directing attention to present-moment experiences. This is how one enters a mindful state. John Kabat-Zinn's operational definition says: "Mindfulness is the awareness that emerges through

paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment” (2003, p. 145).

- (2) This is not just any kind of attention – but a sustained, non-reactive attention as described by Evan Thompson, often referred to as non-judgmental attention according to Kabat-Zinn.

I will quote Thompson’s explanation, which states that “non-reactive” means that “ideally one simply observes or witnesses the coming and going of sensory and mental events without getting caught up in cognitive and emotional reactions to them” (2015, pp. 52–53).

In other words – everything that enters the perceptual field is observed and then released. If something triggers an emotion, a mental comment, or act, it is noticed and let go. In this way, a person can see, hear, feel things they are not in the habit of noticing or may not want to notice. This ability, which children are born with and use to learn about the world around them, can weaken over time. Fullness of awareness is characterized by the breadth of attention and the ability to willingly direct attention, deciding where to focus and for how long.

- (3) In this way, everything that can be part of the phenomenal field of present-moment experience is noticed: sensory information from the environment or signals from the body, as well as mental content (emotions, thoughts of past, now and future), whether they are bad, good, or neutral. However, all of these are released – the person does not get attached to any particular contents but surrenders to the flow of consciousness, allowing the unfolding of experience moment by moment.
- (4) Through mindful awareness, new content is perceived, new distinctions discerned, new connections among phenomena recognized, new categories created, and old ones can be recategorized (Langer, 1989, pp. 63–67).

The path from state mindfulness to trait mindfulness and disposition will not be my focus here.¹ Instead, I will begin by examining how an already developed mindfulness disposition can positively influence certain epistemic dispositions. By mindfulness disposition I will consider inclination and inner capacity of paying attention to present-moment experiences with a non-reactive attitude.

1 Readers may explore Kiken et al. (2015) and Sternberg (2000) for aforementioned context.

2. The Similarity of Paying Attention to the Stream of Experience Across Different Philosophical, Psychological Traditions and Mindfulness Meditation

Based on my earlier research on the use of the term ‘experience’ (Kuburic, 2022), I found that the founders of all three philosophical traditions—hermeneutics, phenomenology, and pragmatism—emphasized the importance of paying attention to the stream of experience. Gadamer and Dilthey believed that paying attention to the stream of experience enhances understanding and contributes to epistemic success. Husserl advocated the idea that a careful examination of the stream of experience (*Erlebnisstrom*) helps in the formation of meaning. In *Principles of Psychology*, James considers how human interests and selective attention interact with the stream of experience.

I believe that the distinctive viewpoints from which different philosophical traditions observe the stream of experience complement each other in clarifying the structure and functioning of experiencing. They explain the relationship between various cognitive and psychological processes and experience itself. Although their methodologies differ, as do their expectations regarding the increased attention to the process of experiencing, the insights drawn from their work about the structure and functioning of experiencing is mutually consistent and align with Gestalt psychotherapy, client-centered therapy, focus-oriented psychotherapy and Antonio Damasio’s neuroscientific standpoint.

Mindfulness can be added to these traditions that nurture a relationship with one’s own process of experiencing, though in different ways. Thompson and co-authors in *The Embodied Mind* derive the concept of experience from the mindfulness tradition (2016, p. 236), and in later works, also from phenomenology. My intention is to assert more about the way certain epistemic dispositions develop through the mindfulness approach, which I have chosen due to the extensive body of psychological and neuroscientific studies on its effects. However, due to the similar emphasis on paying attention to the stream of experience by the mentioned philosophical and psychotherapeutic approaches, the findings regarding the influence of mindfulness disposition on epistemic success may also be interpreted more broadly. Attaining a mindful state is something natural to us because it concerns, above all, managing non-reactive attention, which is a natural human capacity. This state is not something exclusively achieved through formal meditation, although it is probably most effectively developed through it (Kabat-Zinn, 1994, p. xvii). People vary in

their level of mindfulness regardless of culture, environment (rural or urban), or historical period, even though some contexts may be more favorable for its cultivation.

3. Advocates of mindfulness argue

Advocates of mindfulness argue that a changed attitude towards the process of experiencing in the present moment enhances emotional regulation, the ability to control attention, cognitive flexibility, creativity, memory, and the regulation of conation components. In this text, I will focus on cognitive functions enhanced by mindfulness training, explaining them in the context of epistemic abilities and dispositions.

A meta-analysis by Sedlmeier and co-authors analyzes 163 psychological studies conducted on non-clinical population from 1970 to 2011. By calculating the effect size (Cohen's *d*), they found strong evidence that meditation practice is associated with a range of cognitive and emotional benefits, often showing medium to large effect sizes. Effect size tells us whether the impact can be considered relevant in a practical sense. According to Cohen, a medium effect is visible to the naked eye of a careful observer (Cohen, 1992, p. 156). The effect size for mindfulness, perception, attention and cognition, are shown to be medium (0.28). Meditation has a greater impact on interpersonal relationships (0.44) and the regulation of negative emotions (0.34) (Sedlmeier et al, 2012, pp. 17–18), which is indirectly relevant for the development of epistemic abilities such as perceptual comprehensiveness and openness to alternative hypothesis.

The mindfulness variable included 3,074 participants from 26 studies; the perception variable included 953 participants from 15 studies; attention, 1,307 participants from 22 studies; and cognition, 470 participants from 7 studies. Although most original studies had small samples, the meta-analysis aggregates them into large sample sizes and thus great accuracy of the findings.

4. Epistemic Dispositions Impacted by Mindfulness Training

I will aim to connect the abilities measured by psychological tests – such as attention, meta-awareness, deautomatization, and emotional regulation – with terminology familiar to us when discussing epistemic dispositions. Turri (2015) notes that, within contemporary epistemology, there

is broad agreement that knowledge must proceed from reliable processes, abilities or dispositions (p. 529.) On this point, he interprets Ernest Sosa as arguing that knowledge must be produced by a competence – a disposition that would ensure (or make highly likely) the success of any relevant performance under appropriately normal conditions (2007, p. 29). Competence is a disposition to succeed, but not every disposition to succeed is a competence. (Sosa, 2017, pp. 193,195.) “Disposition can be a ‘competence’ only if its contained source is sufficiently reliable, at least in its distinctively appropriate conditions.” (Sosa, 2007, p. 106.)

4.1. Quality of Perception Improved by Training of Attentional Functions

The connection between epistemology and mindfulness is primarily evident in how we grasp information and acquire knowledge based on our experiences, whether those experiences are gained through our perception of physical reality, interaction with others, or exposure to artistic and intellectual works. In all these cases, we rely on the deliverances of our senses, memory, and inference, which create a moment-by-moment experience. Here, I refer to Sosa’s notion of deliverances: “Traditionally our knowledge is said to have ‘sources’ such as perceptions, memory, and inference. Epistemic sources issue ‘deliverances’ that we may or may not accept.”² (Sosa, 2007, p. 101) “Acceptance of a deliverance [...] constitutes knowledge only if the source is reliable, and operates in its appropriate conditions, so that the deliverance is safe, while the correctness of one’s acceptance is attributable to one’s epistemic competence.” (Sosa, 2007, p. 103)

In this subsection, I will focus on perception as an epistemic source of information, – specifically, on how mindfulness meditation enhances our ability to register and evaluate perceptual deliverances. According to Sosa, perception belongs to a type of epistemic competence that consists of “dispositions to host a specific range of deliverances under certain coordinated conditions” (2007, p. 106). Another type of epistemic competence related to perception is the “disposition to accept such deliverances at face value, absent any sign to the contrary”, in other words, “to implicitly trust the source” (p. 106).

Perception is enhanced through meditation because it exercises various attentional functions. Mindfulness meditation, along with other secu-

2 Sosa at this point only talks about delivering of a certain propositional content and “such deliverance is safe *outright* provided it would then so deliver its content only if true. A deliverance is safe *dependently* on some further fact if, and only if, though not safe outright, it would still so deliver its content, *in the presence of that further fact*, only if true.” (Sosa, 2007, p. 101)

larized forms of mindfulness training, can indeed be viewed as “attentional regulatory training regimes,” as pointed out by Lutz and colleagues (2008, p. 163). All functions of attention are practiced, but I will highlight three pointing to the path of improving perception: *sustaining*, *inhibiting*, and *allocating attention*. By training these functions in a non-reactive manner, perceptual abilities are improved, specifically in terms of perceptual discrimination, accuracy, comprehensiveness, and the ability to evaluate situations, contexts, and the reliability of sources.

If we simplify the mechanisms³, we can say that practicing sustained attention and ignoring non-target stimuli results in higher perceptual accuracy over time (Palmer, 1999, pp. 538–541). For example, meditators give a higher number of correct answers on the N-back task⁴ than control groups (Fabio & Towey, 2017, p. 83; Zeidan et al., 2010, p. 603).⁵

Second, better performance in allocating attention during moment-to-moment experiences leads to improved perceptual discrimination over time.⁶ For example, meditators show better attention allocation in At-

3 We will simplify the discussion by focusing on a key factor contributing to the development of perceptual accuracy, even though it operates in interaction with other cognitive functions. The cited studies provide insights into additional factors (e.g. working memory, Zeidan et al., 2010, p. 603). Likewise, we do not explore the interrelation between different attentional processes and their joint contribution to perceptual accuracy (e.g., *attention switching* returns wandering attention to the target object, and *attentional inhibition* suppresses less relevant stimuli that emerge; Fabio & Toway, 2017, p. 82).

4 In the N-back task, participants are shown a series of stimuli one at a time. For each stimulus, they must determine whether it matches the one presented N steps earlier in the sequence. The value of N can vary, requiring them to compare the current stimulus with one presented 1, 2, 3, or more trials before. Demo of test: https://www.psychtoolkit.org/experiment-library/touch_nback2.html (accessed January 25, 2025).

5 I consider it justified to refer to studies involving participants trained in focused attention meditation (FAM) techniques—such as the study by Fabio and Towey—when discussing the effects of different attentional functions on perception. This is because mindfulness meditation (MM) practice typically begins with focused attention (FA) training, which later evolves into open monitoring. The capacity to inhibit distractions and to develop attentional monitoring is necessary for transitioning into the ‘open monitoring’ practice. Without cultivating these capacities, one cannot engage in non-reactive awareness of the stream of experience. As to Lutz et al. (2008) note, MM encompasses both FA and OM practices, where FA involves sustaining attention on a chosen object, and OM entails non-reactive monitoring of the content of experience from moment to moment. Therefore, findings from FAM practitioners are relevant for understanding the foundational attentional mechanisms cultivated in MM as a whole.

6 As with sustained attention, we set aside the interrelation between different attentional processes that, in synergy, contribute to perceptual discrimination (e.g., sustained attention and the accurate working memory representation of the nontarget support the perceptual identification of the target during discrimination tasks; see MacLean et al., 2010, p. 837).

tentional Blink tasks⁷ and higher visual search abilities in Visual search tasks⁸ (Fabio & Towey, 2017, pp. 79, 80, 83; van Leeuwen et al., 2009, pp. 598). The referenced studies employing N-back, Attentional Blink, and Visual Search tasks primarily investigate visual perception, although other studies have found that meditation-based attention training also affects other types of perception.

Third, practicing attention shifting leads to improved perceptual comprehensiveness, as it involves the ability to move between different aspects of a scene, which can help in recognizing various contexts, connections and meanings. Fabio and Towey (2009, p. 81) found significantly higher self-assessments among long-term meditation practitioners on the *observation* subscale, which assesses the degree of careful attention to a range of stimuli, including exteroceptive, proprioceptive and interoceptive sensations. Using the Kentucky Inventory of Mindfulness Skills, a higher level of observation skills was identified, in the sense that participants reported seeing, hearing, and feeling more.⁹ One reason why the effect size of mindfulness on interpersonal relationships is so large is that mindful individuals notice more about others' states, as well as the state of the environment, the general context, and the situation. While this paper focuses on a subset of tasks and self-assessment scales, a variety of other tests are available to assess attentional and perceptual processes, and their results show similar findings.

Robert H. Ennis presents the consideration of the situation as one of the six basic elements in the process of judging arguments (1996, p. 7), and as a disposition essential to critical thinking. As such, it belongs to the group of dispositions that help individuals to represent both their own and others' positions honestly (1996, p. 9). Every belief or decision is part of a broader situation. According to Ennis, the situation shapes the

7 In the presence of a sequence of visual stimuli presented in rapid succession at the same spatial location, a subject can typically identify the first target without difficulty, but has difficulty in identifying the second, if it is presented between 200 and 500 ms after the first. Attentional Blink refers to this brief period of reduced processing capacity. See demo of test: https://www.psychtoolkit.org/experiment-library/experiment_ab.html (accessed January 25, 2025).

8 "The VS task requires participants to determine the presence of a target (e.g., a letter, a shape or an image) among a number of distracting stimuli." (Fabio & Toway, 2009, p. 76)

9 The KIMS was introduced by Baer et al. (2004). The Observe subscale includes items such as: "I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing"; "I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow"; "I notice when my moods begin to change"; "I pay attention to how my emotions affect my thoughts and behavior"; "When I'm walking, I deliberately notice the sensations of my body moving".

significance of the thinking activity, some rules that guide it, the meaning of what the thinker is judging or doing, and reveals important factors that should be taken into account. The situation may include the people involved, the physical environment, and the social environment. (Ennis, 1996, p. 7) Ennis's situational considerations imply reflective deliberation that differs from – and builds upon – the mindful grasping of the situation under discussion here. When Shaun Gallagher, drawing on John Dewey's notion of situation, explains the distinction between environment and situation, he emphasizes that reflective attempts to grasp the situation modify it by introducing a reflective element into it. (2020, p. 13). Evan Thompson notes a similar effect of reflection on experience, asserting that there is an unreflected experience prior to reflection (2007, p. 464). The mindful meta-awareness engaged during the mindfulness state of awareness does not allow for the introduction of reflective deliberation into the grasping of the situation. The central aim of the present paper is to explore how non-reactive attention to the unfolding of present moment experience affects emergent reflective activity – activity that implies full-capacity higher-order cognitive processing, which is crucial for logical-analytical evaluation of arguments. As the cited studies indicate, mindfulness fosters set of dispositions that are prerequisites for successful epistemic reasoning. In mindfulness training, complex reflective activities are temporarily deferred to enable clearer perception of the situation. I will go on to explain why successful epistemic reasoning requires the cultivation of experiential consciousness, meta-awareness monitoring in a mindful manner, and the deferral of both reflective deliberation and emotional reactions.

4.2. Questioning Beliefs and Reasons and Recognizing Standpoints Through Meta-Awareness

In the previous subsection, we saw that by enhancing attention and perception, mindfulness meditation helps a person have a more vivid and integrated experience (*experiential consciousness*)¹⁰ of the events in which they are involved. This subsection addresses how mindfulness meditation increases the quality of one's explicit awareness of the contents of experience (*meta-awareness*). We can live through experience without realizing it. Meta-awareness is “the process of directing attention toward the contents of consciousness, thereby gaining an appraisal of the contents of consciousness.” (Chin & Schooler, 2009, p. 33) Many authors define meta-awareness as a reflective access to ongoing mental states and processes

10 Following Schooler and Mauss (2010, p. 244), I use the term *experiential consciousness* to refer to “the contents of ongoing experience”, as distinct from meta-awareness.

(e.g. Zeidan et al, 2010, p. 603; Smallwood, 2007, p. 527), rather than in terms of attention, as it is framed in the cited definition. In this way, priority is given to understanding meta-awareness as a self-referential relation of consciousness to its own content in real time. But such a formulation calls for greater precision, especially in the context of mindfulness. Although the concepts of meta-awareness and reflection are related, they differ in important ways and should not be conflated. First, reflection may accompany ongoing experience, as in a form of meta-awareness, but it also often involves a disengagement from the flow of present-moment experience, unfolding retrospectively.¹¹ Even more important, they can interfere because reflection can extinguish or overshadow the flow of experience that mindful meta-awareness aims to register. Second, within the mindfulness tradition,¹² meta-awareness is described as a “non-elaborative, non-judgmental noticing” or witnessing of the contents of consciousness by awareness, without insight in the sense of deliberation. Mindful meta-awareness insights do not originate from discursive thinking (e.g. deliberation, interpretation, analysis), as reflective insights do, but rather from present awareness.

Compared to reflection, mindful meta-awareness involves less labeling, less categorization, less conceptual structuring, less evaluation, and less analysis. Instead, it relies on noticing the arising and passing of mental and physical states and processes, as well as on noticing of their order of appearance and relational patterns. This distinction is important, as not everything that appears in consciousness—whether perceptions, thoughts, emotions, or volitional impulses—calls for commentary. A kind of selection takes place here, one that is often weakened by constant verbalization and cognitive hyperactivity. As Zeidan et al. (2010, p. 598) note, based on Posner and Rothbart (1998), “improvements in meta-cognition are related to the ability to restrict bottom-up processing of exogenously/endogenously driven, task-irrelevant information.” Or, in other words, the ability “to ‘release’ cognitive appraisals of irrelevant information” (p. 598).

Cognitive hyperactivity can take many forms – such as rumination, hypermentalization, mental proliferation, excessive mental elaboration,

11 For further reading on two types of dissociations between experiential consciousness and meta-consciousness—temporal and translational dissociations—see Chin & Schooler (2009).

12 It should be noted that there are different types of meta-awareness (for details, see Chin & Schooler, 2009), and here we are referring specifically to mindful meta-awareness. Dunne, Thompson and Schooler in their 2019 joint paper, propose the notion of “sustained (not intermittent) and non-propositional (not involving an internally verbalized judgment) meta-awareness” as a construct that helps clarify the type of meta-awareness cultivated within mindful meditation (p. 308.).

and hyper-reflexivity. The first four represent maladaptive thinking patterns serving distinct psychological functions, while the latter constitutes maladaptive metacognition and introspection.¹³ Certain defence mechanisms, such as intellectualization and rationalization, also manifest as cognitive overactivity. All these forms of cognitive hyperactivity share the following features: they are compulsive and patterned; meta-cognition is active only in registering the emergence of thoughts but not their dissolution (resulting in continuous chaining); and meta-awareness does not register the intersections and temporal sequences of thoughts, emotions, desires, and bodily sensations. Studies on the effects of various psychotherapeutic approaches suggest that their common remedy lies in therapies that strengthen attention to the contents of consciousness in real time and integrate cognitive, emotional, conative and bodily states and processes – such as mindfulness-based approaches and other phenomenological therapies (e.g. Gestalt, embodied and existential approaches). Individuals (in our context, scientist and philosophers) who cultivate non-reactive, sustained attention to present-moment experience develop the ability to attend and monitor the unfolding of diverse cognitive, emotional, and conative contents. In doing so, they exhibit not only meta-cognition but a broader meta-awareness that includes meta-cognitive awareness, but also meta-emotional, meta-sensory, meta-conative, meta-behavioural and meta-bodily awareness. During the monitoring of the arising and passing of mental events, selection occurs by releasing irrelevant emotional, conative, and cognitive appraisals. This releasing does not necessarily involve reflective insight or deliberate rejection of content, but rather a non-conceptual letting go that occurs within mindful awareness. Grabovac et al. compare the mechanism through which CBT interventions reduce mental proliferation with that of mindfulness: “Metacognition involves focusing

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- 13 Rumination is a repetitive thinking pattern in which the same emotionally charged content is re-experienced. Each new thought intensifies the primary emotion and can easily escalate a minor concern into a catastrophic scenario. This is commonly observed in depression and anxiety.

Hypermentalization is a mode of thinking characterized by the excessive attribution of mental states to others, despite limited evidence. It functions as a strategy to reduce uncertainty in social relationships and ambiguous interpersonal situations.

Mental proliferation refers to the uncontrolled unfolding of associative thinking, in which a present experience rapidly triggers memories, future projections, labeling, and interpretative elaboration. This cascade of loosely connected thoughts gives a sense of insight and serves the purpose of processing experience.

Excessive mental elaboration refers to the tendency to construct multiple interpretative layers or engage in scenario-building, often extending far beyond situational demands. While this may create an illusion of sophisticated understanding, it frequently functions to avoid the discomfort of uncertainty or emotional vulnerability.

attention on a stream of mental events (mental proliferation) and volitionally interrupting that stream with a new series of mental events whose objects are the preceding thoughts that were part of the mental proliferation. [...]. In contrast, insight and its side effects [such as equanimity] are non-conceptual and non-cognitive in their origin and result in reductions in attachment/aversion or mental proliferation without requiring any cognitive intervention or processing.” (2011, pp. 161–162). CBT intervenes by replacing less skillful thoughts with more adaptive ones through meta-cognitive awareness. In contrast, mindful insights operate at a more fundamental level and lead to healing without cognitive reprocessing.

Grabovac and co-authors propose the BPM model (Buddhist Psychological Model) of the mechanism of change through mindfulness, in which three (I would add, mindful meta-awareness) insights are key – namely, that “all sensory impressions and mental events” have three characteristics: “1. Sense impressions and mental events are transient (they arise and pass away); 2. Habitual reactions (i.e., attachment and aversion) to the feelings of a sense impression or mental event,¹⁴ and a lack of awareness of this process, lead to suffering; 3. Sense impressions and mental events do not contain or constitute any lasting, separate entity that could be called a self.”¹⁵ (2011, p. 156). According to their view, the realizing of these three characteristics leads to a reduction of symptoms (e.g. mental proliferation, emotional agitation, strong desire/willing), and an improvement in well-being.

Mindful meta-awareness plays a role in the foundational stages of recognizing beliefs and becoming aware of one’s own standpoints. Robert Ennis refers to the disposition to be “reflectively aware of their own basic beliefs” (1996, p. 9). This disposition, along with the mentioned consideration of the situation, belongs to the group of dispositions that help individuals to represent both their own and others’ positions honestly (1996, p. 9). We are faced with a complex requirement, because it is only when we become aware of our beliefs – which are often implicit, unconscious, or automatic – that we can begin to question them. Mindful meta-awareness enables the noticing of automatic thoughts that reflect core beliefs, as well as intermediate beliefs (such as rules, assumptions, and accompany-

14 Attachment and aversion emerge in response to the feeling tone itself, not to the object (sensory or cognitive) (Grabovac et al., 2011, p. 155). “With the awareness of any object, there is a concomitant feeling tone, which falls into one of three categories: pleasant, unpleasant, or neutral. [...] Due to the rapid and transient nature of these feelings, constantly arising and passing away, they often go unnoticed and can serve as the key trigger to a chain reaction of thought (including emotions) and actions that can lead to suffering.” (p. 155)

15 Grabovac et al, drawing on Nyanaponika (2010), note that in Buddhist terminology these three insights are referred to as (1) impermanence, (2) suffering, and (3) not-self.

ing reasons) that link core beliefs and specific thoughts. The concomitant feeling tone (pleasant, unpleasant, or neutral), in the sense proposed by Grabovac et al. (2011, p. 155), along with desires and volitions, further suggests that the thoughts in question reflect core beliefs. Acknowledging beliefs is the next step, which requires reflective analysis (through questioning), in order for beliefs to become conscious and explicit. This step goes beyond what is taught in mindfulness training.

Standpoints shaped by our acquired experiences tend to underlie claims charged with a strong emotional tone and tend to recur, continuously reinforcing the same evaluative stance. We can become aware of them through mindful meta-awareness, although our conversational partners often detect them even more easily. This is why it is sometimes harder to identify our own standpoint than to notice someone else's. For standpoints grounded in lived experience (e.g., the standpoint of an oppressed person or a migrant), their recognition largely depends on the mindful disposition — a long-term investment in understanding one's own experiences. Standpoints that stem from our social position — and are not accompanied by strong emotions — are often revealed through deliberate questioning, by considering factors such as our social status, profession, and other structural determinants of our position. Recognizing one's own standpoint is crucial because only then can we begin to understand its limitations. The next step is to examine one's own point of view in relation to alternative perspectives — a practice that Richard Paul (1981, pp. 3, 4) identifies as the essence of *strong sense* critical thinking. In contrast, merely evaluating arguments that stem from one's own perspective reflects *weak sense* critical thinking. We will return to the "ability to reason in more than one point of view", as Paul puts it (p. 4), through the topic of openness to others' points of view in subsection 4.4.

A meta-analysis of 21 morphometric neuroimaging studies published by 2014, which included approximately 300 participants in total, concluded that several brain regions show consistent structural differences¹⁶ in individuals who meditate. Among them are regions that are key to meta-awareness and introspection, such as the rostral lateral prefrontal cortex (RLPFC/BA 10) (Fox et al., 2014, p. 64). However, as we presented, mindfulness meditation increases meta-awareness in terms of its quality. When we speak of meta-awareness in mindfulness practice, it is not expected to be active at all times, but rather to emerge at specific stages of practice. The mindfulness approach balances between non-reflective experiential consciousness and reflective awareness in the form of

16 They do not claim a causal relationship between meditation practice and structural brain changes, as they argue more research is needed to determine this.

mindful meta-awareness, with different degrees of engagement depending on the stage of practice. In the early stage, such as during focused attention or initial open monitoring, one is primarily sustaining attention and aware of a chosen object. Later, attention shifts to the flow of experience and includes awareness of all mental events as they arise and pass in the stream of consciousness (e.g., in open monitoring meditation; see Lutz et al, 2008). It is in this phase that insights associated with meta-awareness become more frequent.

4.3. Cognitive Flexibility Improved by Deautomatization

Cognitive flexibility refers to the ability to adapt one's cognitive processing strategies and behaviour to a given situation, and to cope with new and unexpected conditions within that situation. The data gathered from reviewing several empirical studies permits an examination of the effects of mindfulness training on cognitive flexibility through several theoretical constructs: deautomatization, thinking styles, meta-awareness, emotion regulation and tolerance of uncertainty. In this section, I will focus on the first two, since the remaining constructs are addressed in other chapters, and their relevance can be implicitly inferred.

Moore and Malinowski (2009) propose that the mechanism underlying the development of cognitive flexibility involves the intrinsic effect of the deautomatization of cognitive processes, which occurs through the re-investment of attention. Moore and Malinowski build on classic cognitive psychology findings (Shiffrin & Schneider, 1977; Spelke et al., 1976) to theorize that cognitive processes can be categorized as controlled or automatic, with automatic processes operating independently of attention and without taxing short-term memory capacity. Some processes may become automatic through practice or repetition, after which they are difficult to interrupt or prevent voluntarily. (p. 177). The rationale is that if automated processes act independently of attention, deautomatization is achieved by reinvesting attention in actions and behaviours, which is precisely what happens in mindfulness training. The effect is stronger because the attention that is reinvested is non-reactive – for example, because it enables greater tolerance of negatively appraised aspects of experience, which might otherwise provoke superficial or distorted judgments of the situation. Findings from the Stroop test performance¹⁷ in meditators suggest

17 The participant must inhibit the automatic tendency to read the word (e.g., 'blue') and instead name the color in which the word is printed (e.g., red). Demo of test: https://www.psychtoolkit.org/experiment-library/experiment_stroop.html (accessed January 27, 2025).

that cognitive processes which have become automatic can be brought back under cognitive control, and that responses which were previously automatic can be interrupted or inhibited (pp. 178, 182). Moore and Malinowski explain cognitive flexibility through both increased attentional capacity (as measured by the d2 test) and enhanced inhibition of automatic responses. Inhibiting automatic reactions creates the opportunity for a more objective perception of the situation and the emergence of new, more adaptive responses. Additionally, mindful meta-awareness aims to reach “reflexive” awareness of phenomenal field of each experience and to recognize the nature of one’s emotional and cognitive patterns (Lutz et al., 2008, p. 162). While attentional control and response inhibition support cognitive flexibility by allowing for suppression and perceptual clarity, they do not encompass the generative dimension — the ability to create new ideas and strategies.

Ellen Langer uses a fitting phrase to describe how attention activated in a mindful state *counteracts, with a mindful outlook*, the processes that lead to mindless behaviour. A mindful outlook on the present moment generates new distinctions, new connections, new categories, inferences, and decisions. Eugene Gendlin sees thinking as a process that can either bring forth something new from experience or remain confined within already-established boundaries. “Logical thinking stays within whatever ‘conceptual boxes’ it starts with.” (Gendlin, 1981, p. 57) Ellen Langer analyzes how automatic behaviour has much in common with categories and distinctions formed in the past – whether based on one’s own experience, on socially accepted knowledge, or on the mere following of instructions and procedures (1989). Such categories, distinctions, and procedures may not make much sense in the present moment. Langer’s experiments point to transformation from rigidity to flexibility in individuals who completed mindfulness training.

Divergent thinking refers to a type of cognitive process that generates multiple alternative solutions. Among the dispositions for critical thinking, Ennis lists *seeking alternatives* (to hypotheses, explanations, conclusions, plans, and sources) and emphasizes the importance of being *open to them* (Ennis, 1996, p. 9). According to Colzato et al. (2012), divergent thinking “allows many new ideas to be generated, in a context where more than one solution is correct” (p. 1). This type of thinking is often contrasted with convergent thinking, which is “considered as a process of generating one possible solution to a particular problem. It emphasizes speed and relies on high accuracy and logic” (p. 1). Researchers use the Alternative Uses Task (AUT) to assess divergent thinking, and their findings suggest that mindfulness enhances this capacity. As Colzato et al. write:

“Divergent thinking (as assessed by the AUT) would be likely to require or benefit from a control state that provides a minimum of top-down control and local competition, so that the individual can easily and quickly ‘jump’ from one thought to another in an only weakly guided fashion” (Hommel, 2012; Hommel et al., submitted; Colzato et al., 2012, p. 2). On the other hand, they note that convergent thinking (which they assessed using the Remote Associates Task – RAT) “would be likely to benefit from a strong top-down bias, which would heavily constrain and direct the search process, and from strong local competition (as only one solution can be correct)” (p. 2).

Fabio and Towey assessed cognitive flexibility through the framework of thinking styles, proposing that it involves whole-brain functioning rather than the dominance of a single hemisphere. They distinguish three thinking modes: “logical-analytical thinking, characterized by a preference for systematic approaches (originally left-brain dominance); an holistic manner of processing information in a synthesized and intuitive way (originally right-brained dominance); integrative mode of thinking that implies the use of a dynamic and interactive processing (originally whole-brained)” (2018, pp. 75) Using the *SOLAT test*, they found that meditators typically use an integrative style of thinking, meaning they flexibly combine both styles depending on different situation (p. 81). In contrast, the non-meditator group showed a left-dominant thinking profile, reflecting the typical distribution found in the general population — that is, a preference for structured tasks solved systematically. (p. 81) Among the brain regions that show consistent structural differences across various morphometric neuroimaging studies are regions key to intra- and inter-hemispheric communication — namely, the superior longitudinal fasciculus and the corpus callosum (Fox et al., 2014, p. 64).

4.4. Intellectual Courage and Open-Mindedness Improved by Emotional Regulation

Paul and Elder define intellectual courage as a metacognitive demand: “Having a consciousness of the need to face and fairly address ideas, beliefs, or viewpoints toward which we have strong negative emotions and to which we have not given a serious hearing. This courage is connected with the recognition that ideas we consider dangerous or absurd are sometimes rationally justified (in whole or in part) and that conclusions and beliefs inculcated in us are sometimes false or misleading.” (Paul & Elder, 2020, p. 24)

This subsection explores the emergence of this “courage to explore complex or unpleasant truths” from the perspective of mindfulness. Rath-

er than interpreting intellectual courage solely as a product of deliberate reasoning, it may also arise as an inherent outcome of the cultivation of a quality of mindful awareness that “views its object (sensory or cognitive) with neither attachment nor aversion”, known as equanimity (Grabovac et al, 2011, p. 159). Grabovac and colleagues describe this quality of awareness as a “balanced state of mind” in which an equal interest is taken in all objects, regardless of whether they have a pleasant, unpleasant, or neutral concomitant feeling tone. Sensory or cognitive objects continue to be experienced as pleasant, unpleasant, or neutral (p. 157), and meta-awareness registers those concomitant feeling tones. However, one must release them rather than allow a habitual reaction (attachment or aversion) to unfold. These reactions typically manifest as subsequent mental events such as thoughts, memories, or emotions that arise quickly after a trigger (p. 155).

Although this is seldom discussed within epistemological frameworks, recognizing one’s own emotional state in relation to a given topic (i.e., meta-emotional awareness) is crucial for understanding the thoughts that arise concerning the topic, identifying association triggers, acknowledging which beliefs enter the discourse, and noticing triggers that prompt maladaptive processing patterns. Our reasoning is influenced by emotions, needs, and desires. Equanimity contributes to improved emotional regulation, as non-reactive awareness reduces the need for cognitive effort in regulating emotions, creating a pause between experiencing and reacting. Heine and Dufner’s (2025) study suggests that we are often unaware of our emotional state because there is a gap between spontaneous facial activity—often preceding conscious emotional recognition—and later reflective awareness. In other words, in some situations, meta-emotional awareness does not occur due to a lack of meta-bodily awareness.

Among the most frequently mentioned epistemic dispositions across virtue epistemologists and critical thinking theorists is open-mindedness – this involves seriously considering points of view other than one’s own, reasoning from premises with which one disagrees without allowing the disagreement to interfere, and remaining open to changing one’s views when necessary (i.e., openness to revision) (Ennis, 1987, p. 12; 1996, p. 372) The term openness highlights the quality of one’s attitude toward new information and others’ ideas. We often receive information without truly being open to it. For example, as parents or teachers, we may find ourselves trying to keep up with social media trends in the worlds of our children or students—but are we genuinely open to understanding them? The term *openness* may suggest acceptance, but it refers more precisely to the degree of one’s involvement and willingness to engage with and understand new information. This also applies to the experience of one’s own

sense perceptions, emotions, and thoughts. The adoption of a positive or negative stance comes only after one has fully taken in the information.

Let us recall the findings from Sedlmeier and co-authors that the largest effect size is on interpersonal relationships. Mindfulness can positively impact the extent to which a person is able to listen and understand another person's perspective. Receptivity and responsiveness in interpersonal interactions foster high-quality intersubjective relationships and openness to others' views. An individual in a mindful state of awareness is non-reactive but receptive – not bound by habitual reactions — but responds with attention that follows whatever arises in the phenomenal field, thus displaying genuine responsiveness. This creates space for accurate, comprehensive, and subtle perception and understanding by introducing a pause between experiencing (perceiving) and reacting (e.g. thinking). Accurate perception of others – of their emotional states and needs – is foundational for compassionate responses (e.g. active listening). According to Varela, Thompson and Rosch, mindfulness helps cultivate such a relational stance toward others—one that encompasses not only empathy but also a sense of responsibility leading to concrete actions (such as considering others' perspectives). They note: "Another characteristic of the spontaneous compassion that does not arise out of the volitional action of habitual patterns is that it follows no rules. It is not derived from an axiomatic ethical system nor even from pragmatic moral injunctions. It is completely responsive to the needs of the particular situation." (Varela et al., 2016, p. 248) Paul and Elder find that intellectual empathy, as an intellectual virtue, is strongly correlated with the ability to accurately reconstruct others' viewpoints and reasoning (2020, p. 25). For them, narrow-mindedness is the opposite of intellectual empathy.

5. Limitations and Drawbacks of Mindfulness

In this paper, I explored the impact of mindfulness on information processing itself, covering both the advantages and disadvantages that a more mindful awareness introduces into cognitive dynamics. Mindfulness changes the dynamics of cognitive processes—sometimes by slowing them down, and other times by helping them become more direct and efficient. For example, in problem-solving situations a mindful person might refrain from immediately jumping to a conclusion, waiting to allow a fuller understanding of the problem. In conversation, instead of offering a quick reply, a mindful speaker might pause, sense their emotional state, and choose words more carefully. Mindfulness creates a delay between stimu-

lus and response, interrupting impulsivity and allowing more deliberate reflection. In expertise (Langer's example), over-awareness of a familiar routine (like typing or playing an instrument) can interfere with fluid performance. It is not appropriate to enter a mindful state in every situation.

One reason is that becoming consciously aware or mindful can impair an expert's performance. If we know a task so well that we can perform it expertly, the steps may no longer be consciously accessible, and increased awareness might make us doubt our competence. When a frequently repeated task is slightly modified in an unusual way, a novice may perform better than an expert, as Ellen Langer (1989) notes.

A second reason is that mindfulness training cannot help a person think convergently; it is positively correlated with the development of divergent thinking, creating more hypotheses, and fostering creativity. According to the aforementioned study by Fabio and Towey, meditators are able to adopt a dynamic and integrative style of thinking. However, when it comes to using the logical-analytic mode of thinking, they will do so using skills not trained through the mindful state or whole-body information but rather through classical training in logic and scientific methodologies. Through mindfulness training, persons learn to be flexible, meta-aware, and to use their own emotions and thoughts that arise as additional information for questioning their own assumptions and point of view.

Third, staying in mindful state for too long can reduce productivity and efficiency. While mindfulness can improve focus and attention, staying in that state for too long can slow down decision-making and efficiency in tasks that require quick reactions. Ellen Langer claims that people who have undergone her mindfulness training are better at knowing what they want and making more intelligent choices, demonstrating a form of efficiency rooted in value-based and adaptive decision-making. However, excessive focus on 'here and now' can hinder long-term planning or the ability for strategic thinking.

In my opinion, the question is not whether it is worthwhile to cultivate a mindfulness disposition, but rather when it is appropriate to use and what it should be complemented with. Based on the discussion above, I emphasize the need to combine integrate mindfulness skills with analytical reasoning and proactive decision-making. My point is that, alongside the usual skills of scientists and philosophers—analytical and logical reasoning—the extent to which a person is capable of mindfulness can significantly influence comprehensiveness, accuracy, and subtlety of perception, cognitive flexibility, as well as openness to new hypotheses and alternative perspectives. Zagzebski emphasizes the importance of combining intellectual virtues, and of considering the relation between intellectual goods

and other human goods. She cites Francis Bacon: “In fact, as is clear, the more active and faster a man is, the further astray he will go when he is running on the wrong road” (*Novum Organum*, trans. and ed. Urbach and Gibson, I.61), and offers the following putative case: A person who is intellectually courageous but lacks open-mindedness may be led further astray from the truth by his courage than he would have been without this virtue. [...] A person might be led into more false beliefs by the combination of her closed-mindedness and intellectual courage than she would have been if she had not had the courage.” (Zagzebski, 1996, pp. 95–96)

Conclusion

The aim of this paper was to examine whether the training of non-reactive attention to the flow of present-moment experience significantly enhances epistemic dispositions—and in what aspects. I sought to clarify how perception and meta-awareness are altered, and how cognitive flexibility and emotional regulation develop through open-monitoring meditation. Using the language of epistemic dispositions, I aimed to explain why implicit beliefs and biases become more accessible, why the grasping of context and situation becomes broader and more accurate, why recognizing one’s own standpoint becomes easier, why we become more open to others’ perspectives, and why we become more willing to consider ideas that we dislike or find absurd. Several mechanisms contribute to these changes.

I concluded that non-reactive awareness, when trained, is highly beneficial because it promotes dispositions that are foundational and prerequisite for logical-analytical information processing. Especially helpful in this regard are the training of attentional functions (maintaining, allocating, and inhibiting), the non-identification with mental contents (thoughts, emotions, or impulses) in the flow of consciousness, and the non-reactivity to them, as this improves perception. Also, expanding reflective interest through meta-awareness in a mindful manner to all kinds of mental states and processes (cognitive, emotional, conative, physical, and behavioural), and tracking them equally through meta-awareness, proves essential for comprehensive perception.

Based on the presented findings, I argue that mindfulness practice contributes not only to social and psychological adaptability but also to more epistemically refined thinking— by increasing the capacity to perceive without bias, to metacognitively monitor one’s reasoning processes, to prevent emotional reactivity from automatically influencing conclusions, and to reorganize one’s interpretations of reality in light of new

information. I suggest that enhancing reasoning capacity in this way is complementary to the traditional development of analytical capacities through the study of logic and methodology, and that together, they can make a scientist more epistemically competent.

These findings challenge our standard view of how epistemic competence is developed. It may seem unusual that a habit such as non-reactively attending to the unfolding stream of experience—or more simply, devoting greater attention to the present moment—can yield more successful epistemic reasoning. We typically imagine the scientist as predominantly cognitively active, whereas mindfulness training fosters a balance between non-reactive experiential consciousness and reflective awareness or deliberation. What becomes more important for scientists is the functioning of the whole person, through which they gain insight and self-regulatory access through meta-awareness.

A possible critique of this study is its use of exemplary presentation of studies¹⁸ on which its conclusions regarding the influence of mindfulness training on epistemic dispositions are based. The presented body of research would benefit from supplementation with comparable studies that can further substantiate the claims. Moreover, future theoretical work could compare philosophical traditions that emphasize the role of present experience (e.g., phenomenology, hermeneutics, and pragmatism) with the mindfulness approach, in order to draw more sophisticated conclusions about the epistemological implications of cultivating an open attitude toward present-moment experiencing. I chose to focus on the mindfulness approach—although it is not traditionally philosophical—because its well-developed concepts, already explored in psychological literature, can serve as mediating tools in articulating its epistemological implications.

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18 I used findings from original psychological studies (Fabio & Towey, 2017; Zeidan et al., 2010; van Leeuwen et al., 2009; Moor and Malinowski, 2009; Colzato et al., 2012), psychological meta-analysis (Sedlmaier et al., 2012), as well as neuroscientific meta-analysis of structural changes (Fox et al., 2014) about the effects of mindfulness training.

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