Meditation and Introspection: Insight through Transformation

ABSTRACT: This paper sketches how transformation of the mind through Buddhist meditation practice can support introspective investigations of experience in science. Rebuffing conventional associations between transformation and distortion, it carves out a space for *epistemically-beneficial* transformations. §1 first introduces meditation's place within Buddhist thought, outlining traditional claims that the practice cultivates attentional gestures important for interrogating the mind. It then outlines proposed uses of these practices within science, before introducing worries over their utility. Such worries propose that meditative gestures transform and thereby *distort* the mind, making resultant introspective judgements unrepresentative of untrained or inattentive experience. The remainder of the paper combats these worries using material from two distinct fields. §2 introduces literature from the cognitive psychology of attention to sketch a first-pass account of how meditative transformations might be of benefit. It argues that converging models of attention here can precisify the phenomenological changes available through meditative training, such that their epistemic merits can be better evaluated. I identify one kind of meditation practice as training a form of top-down attentional control. And using cognitive psychological models of this capacity, I argue that it can (i) *accentuate* and (ii) *isolate* particular features of experience, to our epistemic advantage. §3 outlines some more challenging, distortive dangers surrounding the introspective use of top-down attentional control, showing how it can be *misappropriated* to yield genuinely unrepresentative accounts of experience. Responding to these, §4 brings the attention literature into dialogue with the pedagogical literature on meditation practice to show *how to use* this attentional faculty appropriately in introspective investigations, addressing such dangers. This allows me to conclude in §5 with some comments on prudent approaches to introspective inquiry within science.

Introduction

The past two decades have seen a resurgent interest in introspective approaches to understanding the mind (e.g. Chalmers, 2004; Gallagher and Zahavi, 2008; Kriegel, 2015; Thompson, 2007; Shear and Varela, 1999). By "introspective" approaches (or methods), I mean those approaches employing subjective reports as principal methodological tools (Overgaard, Gallagher and Ramsøy, 2008, pp. 100-102), prioritising the *first-person access* through which subjects come to make judgements about the mind "from the inside" (Spener, 2015, p. 300).[1] Cutting the cloth broadly, such judgements might concern occurrent/conscious aspects of the mind—those there is "something it is like" to undergo, such as emotions—or they might concern non-occurrent/unconscious aspects, including dispositions and attitudes like background beliefs. Only the former concern me here.

Though there is a long and influential tradition stressing the fallibility of introspective methods, it's now widely recognized that this does not render them useless (e.g. Bayne, 2015; Bayne

[1] I use the terms "introspective" and "subjective" interchangeably to describe such methods throughout. One also finds reference to "phenomenological" or "first-person" methods in the literature. I take all such terms to be univocal here, avoiding theoretical assumptions about the mind-world relationship (c.f. Zahavi, 2007).

and Spener, 2010; Kriegel, 2015, p. 23).[2] One finds increasing agreement that subjective reports serve an essential "target-setting" role in consciousness science, being a principal source of (and a means of characterising) the targets that constrain and guide the explanatory endeavours of philosophers and scientists (Chalmers, 1999; Jack and Roepstorff, 2003, 2004; Kriegel, 2015, pp. 18-21; Thompson, 2007, chpt. 1 & 2, 2015). On a theoretical note, good descriptions afford experiences with broad, definitive properties that should be taken seriously by theoreticians, whose accounts should aim *ceteris paribus* to do justice to these properties (see McDowell, 1994; Roberts, 2018; Ward, 2012; Wheeler, 2005, p. 133, pp. 225-236).[3] On a narrower empirical note, so-called "neurophenomenologists" use subjective reports to help reveal important biological (especially neurological) underpinnings of experience. By prompting detailed accounts of the internal structure of experiences, and then searching for analogous structure in third-person data (i.e. data often dismissed as mere "noise"), researchers can highlight bodily processes previously unrecognised as important to the experience in question (see e.g. Dor-Ziderman et al., 2013; Lutz et al., 2002; Reinerman-Jones et al., 2013).[4]

As receptivity to introspective data has been building, many have stressed the importance of sound methods for producing it. At the turn of the twentieth-century, Chalmers identified the development of rigorous and systematic methods for bringing experience to report as the 'greatest challenge' facing consciousness science (1999; see also Frith, 2002). Many have since taken up this challenge, re-invigorating the enterprise of the early Introspective Psychologists.[5] In this climate there has been an increasing turn to Buddhist attention-regulation practices, i.e., meditations (e.g. Colombetti, 2014; Depraz, Varela and Vermersch, 2003; Kordeš and Markič, 2016; Thompson, 2007, 2009, 2015; Varela, Thompson and Rosch 1991/2017), which are my concern here.

Meditation has long been employed by Buddhist contemplatives to gain intimacy with experience. Amongst contemporary researchers too, it's now held to train several attentional gestures important for introspective methods. Meditation is said to develop capacities to put aside distractions and assumptions during introspection, along with an ability to sustain attention upon present experience without slipping into evaluative or judgemental narratives or thoughts about past and future (see Colombetti, 2014, chpt. 6; Thompson, 2009). In general, meditation is thought to support a "bare attention", or "passive observational stance", unobtrusive enough to avoid disturbing target experiences or colouring their description with theoretical preconceptions (Thompson, Lutz and Cosmelli, 2005, pp. 69-75).

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[2] For recent examples of caution over the use of first-person methods see Dennett (1993), Rupert (2015), Schwitzgebel (2008, 2011) and Spener (2011).

[3] This is not the place to interrogate what "doing justice" would look like. For thoughts on this, see Roberts (2018) and McDowell (1994). Neither should this claim be read to assert that good introspective accounts are indefeasible – only that they should be constraining factors upon our explanations.

[4] For reasons that structural analogy is thought important here as a methodological and explanatory constraint, see Roberts (2018), Ward (2012), Thompson and Cosmelli (2011).

[5] See Boring (1945) and Spener (2018) for good accounts of these earlier attempts at systematising introspective methods.

Despite this enthusiasm, there remains continued disquiet over such proposals. There is a recalcitrant worry that the attentional gestures trained in meditation don't simply help to reveal the mind; they actually transform it. They are accused of yielding different kinds of experience rather than illuminating existing ones and thereby of re-shaping and potentially "distorting" experience in the attempt to characterise it (see Dreyfus, 1993; Colombetti, 2014, p. 150; Fox et al., 2012, pp. 6-8; Thompson, Lutz and Cosmelli, 2005, p. 72; McAuliffe, 2018, p. 239).[6] In brief, it remains controversial how practices seemingly supporting the transformation of experience can yield generalizable data (see Froese, Gould and Barrett, 2011, pp. 264-265).

Many attempts to rescue the "meditative turn" from these worries have contented to highlight (promised or actual) empirical progress through similar methods as counter-evidence (e.g. Colombetti, 2014, chpt. 6; Thompson, 2015, pp. 56-57) or have proceeded on a phenomenological basis that makes introspective claims about the nature of "bare attention" itself, seeking to downplay problematic experiential changes here (e.g. Kordeš and Demšar, 2018; Petitmengin and Bitbol, 2009, pp. 372-381; Bitbol and Petitmengin, 2013; Depraz, Varela and Vermersch, 2003; Thompson, Lutz and Cosmelli, 2005, pp. 72-73). Yet, there has been relatively little attempt to combat a central assumption underlying concerns over meditative methods – the assumption that experiential transformations within introspective investigations are necessarily harmful to the process of understanding the mind and should in principle be avoided.[7] We can call this the "distortion assumption", in that it equates mental transformation (in this circumstance) with the production of a false or misleading (i.e. "distorted") picture of our natural mental processes.

I suggest that the distortion assumption is false. Mental transformations need not be harmful to the process of understanding the mind. And I wish to argue this conclusion in the first part of the paper by unpacking a central yet neglected aspect of Buddhist contemplative theory. In classical meditation literature, much of the practice's epistemic value is held to arrive not merely in spite experiential transformation, but *in virtue* of it. The insights of "insight-meditation" are said to demand a background in attentional practices self-consciously aimed at developing capacities to transform the mind (Gethin, 1998, pp. 174-177; Williams and Tribe, 2003, pp. 81-84; Wallace, 1999, pp. 175-180). In this way some transformations are held not only unproblematic but *beneficial.* I will unpack this proposal in the paper's first half, seeking to free discussions about meditation from the insidious effects of the distortion assumption. This way, one can then construct a more judicious response to concerns over meditation's scientific utility, which I shall detail in the remainder of the paper.

To achieve my first aim, I shall employ some conceptual resources increasingly recognised as powerful ways to illuminate the meditative enterprise: those of the cognitive psychology of attention. It's surprising, given meditation's growing study as an "attention regulation practice" (see Lutz et al.,

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[6] Those *au fait* with the history of introspective methods will sense familiar territory here. Such concerns resemble older worries about 'observational distortion', long troubling the methods of the psychological and phenomenological traditions (see Petitmengin and Bitbol, 2009). I revisit this similarity in §3.

[7] I do not mean to suggest that this assumption is unquestioned or unchallenged in the existing literature (examples of which will be evidenced later), merely that there have been no extended attempts to dismantle it.

2015), that little use has been made of contemporary attention science to address concerns over the generalizability of meditative insights. Looking to cognitive psychology allows one to pin-point some well-defined attentional capacities trained and improved in meditation. And contemporary models of these capacities can yield an increasingly precise understanding of their phenomenological effects. Knowing these effects more comprehensively, one can better gauge whether training subjects to become more skilled in these capacities might be of use or of detriment. In this first section, I shall thus employ the attention sciences to reveal two different kinds of *epistemically beneficial transformation* that meditation makes possible through attentional training.

In this way, the attention sciences can make important aspects of Buddhist theory more intelligible and undermine the distortion assumption without relying solely upon phenomenological claims. Equally though, they also help bring into focus some more appropriate and cutting worries about meditative methods, which I shall turn to in the second half of the paper. The attention literature highlights additional and more problematic kinds of transformation possible through meditation-trained attentional skill. And their possibility means one must be very careful about *how such skill is used* in introspective investigation, for there are many ways it can be misappropriated to yield genuinely unrepresentative accounts of human experience.

In the final section of the paper, I shall turn to a second neglected field to advise how these pitfalls can be best avoided: the pedagogical literature on meditation. In such literature, one finds a rich vein of instructional commentary delineating how to use attentional skills appropriately in epistemically-oriented "insight meditation" practices. This has been significantly under-appreciated in analytic treatments of this topic. Interrogating practice instructions in Buddhist texts—looking at how the contemplative quest actually proceeds—allows for the prescription of, for instance: the kinds of introspective target for which specific attentional capacities are appropriate; the manner in which these capacities should be utilised; and, when they should be transcended. Through continual dialogue with the attention literature, I shall show that the actual pragmatics of meditation instruction show how to minimise these more pressing dangers in contemporary scientific environments. In tandem, the two fields can help us approach more detailed methodological protocols for the effective employment of meditative training in introspective methods. Moreover, they will help to showcase and crystallise a number of different ways that experiential transformations can be incorporated into introspective methods – the varying senses in which transformation and insight can happily sit together.

To begin, I must do some groundwork, delineating the basic character of meditation and the reasons it has been considered valuable to cognitive science.

1 Meditation: Proposals and Objections

1.1 Buddhist Roots

Unpacking meditation requires saying a little about the broader Buddhist context from which these practices emerge. Speaking of "Buddhism", in this broad sense, obscures many significant differences across the various Buddhist traditions. Nonetheless, it is sufficient for current purposes, which require me to convey only some "foundations" of the Buddhist traditions – a term Gethin (1998) coins for those fundamental ideas and practices present in early Buddhism that are largely shared or assumed by its varied, later manifestations (p. 3).

It is first critical to emphasise Buddhism's essentially soteriological orientation – its fundamental concern with suffering and liberation from suffering. Suffering is believed to be rooted in craving and its cessation in the abandonment of craving, which is to be achieved by following the Eightfold Path.[8] Meditation practices should be understood in this context – they are a collection of attention regulation techniques prescribed on the Eightfold Path, aimed at removing craving (see Lutz et al., 2008, 2015). Meditation redirects attention to particular objects, in particular ways, to achieve this.

Though the exact meaning of 'craving' (Pali: *taṇhā*) is complex (see Peacock, 2008), it can be glossed here as desire that has become *obsessional*, such that the object of one's desire (which could be a material object, person, experience, or usually an abstract idea) has taken on an aura of necessity.[9] Craving can take two principle forms. One can crave to attain things or to escape things. In either case, the attitude requires no mere preference, but the felt framing of some object as imperative to one's continued identity or existence (see Lusthaus, 2003, p. 61; Teasdale and Chaskalson, 2011, pp. 94-100). Traditionally, this is considered to manifest in such things as lust, anger, worry and doubt which are collected (with others) under the heading of the 'Hindrances' in early Pali discourses (Thiradhammo, 2014, pp. 17-21).

A central proposal concerning craving's removal is wonderfully simple: one should become *familiar* with the operation of the Hindrances and the way they produce harm (AN 3:101-102 in Bodhi, 2005, pp. 192-193; Thiradhammo, 2014, pp. 17-19). Doing so, one can curtail harmful ways of being, and prioritise beneficial ones. Regrettably, such familiarity is difficult to attain. The mind of the beginner is held unpliable – so stormy and chaotic as to obscure the mechanics of craving and suffering in a tangle of activity and distraction (Thiradhammo, 2014, p. 31; Gethin, 1998, pp. 174-177). Put simply, unprepared investigation usually results in a swift transition from a receptive attitude to a *reactive* one. The student will get quickly dragged into long chains of evaluative response and distraction—thinking "I shouldn't be feeling that", "this means I'm not making progress" or "I'll never be a good meditator"—thereby disrupting calm observation. Or they will simply get overwhelmed by the magnitude of mental activity. This is where meditation practices come to the

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[8] Some traditions identify *ignorance* as the central condition for suffering and that which is to be overcome (see Lusthaus, 2003, p. 243). Largely though, these hold ignorance central *because it underpins craving*; one craves because one doesn't know enough – a relationship I interrogate shortly.

[9] Parenthesised italics henceforth give original Pali terminology, Pali being the language in which Buddhist ideas were first committed to the page and the language of the early Theravāda tradition.

fore; particular kinds of meditation train specific attentional gestures held important for investigating experience.

Two principal kinds of meditation are outlined in *Fig. i*. below.[10]

Focused-Attention	**Open-Monitoring**
1. Hold attention upon a designated object	1. Be open and attentive to all contents arising in the stream of experience, moment by moment
2. Notice distractions that drag one away from the object	2. Notice reactivity to mental contents, or past and future narratives, that make one lose touch with experience
3. Release distraction	3. Release reactivity
4. Return attention to the object	

Fig. i. Meditation schematics.

Focused-Attention practices are simpler. The student chooses a single object on which to meditate and tries to sustain undivided attention upon it, cycling through the above four steps repeatedly.[11] The object here might be an external object (such as a pebble, mandala, or coloured disc) or internal object (such as the breath, a body part, feeling, or mental image). Internal objects can therefore be ostensibly physical or mental, with the term "object" designating something which one sets oneself opposed and attentive to, not something necessarily "out there" in the world (see Thompson, 2007, p. 23). Given that my interests are with introspection here, I concern myself henceforth only the training of attention to mental objects (i.e. experiences).

Focused-Attention is prescribed primarily for its ability to train a number of gestures held important to the investigation of experience – those comprising the steps of practice. By bringing the mind back repeatedly to a single aspect of experience, Focused-Attention practices are traditionally said to cultivate the ability to direct attention to a specific point and hold it there (steps 4 and 1, respectively) (see Gethin, 1998, p. 176; Davis and Thompson, 2013, p. 592). Relatedly, it's held to help practitioners notice and dissolve distractions more quickly and more easily (steps 2 and 3) (Lippelt, Hommel and Colzato, 2014). Open-Monitoring practice, meanwhile, focuses chiefly upon supercharging the latter two capacities, with distractions conceived here as *reactivity*, or anything that drags one away from calm observation, manifesting a desire for things to be otherwise. It also trains

[10] These outlines are adapted from Lutz et al. (2008). See Gethin (1998, chpt. 7) for a broader account of both practices. The categorical terms used here are not native to Buddhist traditions; they are neologisms introduced in contemporary scholarly and scientific literature to better categorise diverse practices from across the Buddhist world (Thompson, 2015, pp. 51-52).

[11] Certain factors complicate this account of Focused-Attention practice. For example, traditionally it's common to *shift* object once a certain degree of concentration is reached (see Gethin, 1998, pp. 181-184; Dunne, 2011, p. 80; Shankman, 2008, pp. 57-59). Nonetheless, this simple outline is sufficient for here.

sensitivity to a broader range of mental activity in step 1, where attentional focus de-emphasised. Collectively, the attentional gestures honed in these two practices are believed important for the investigation of experience (itself traditionally occurring in "insight" or *vipassanā* practices) and contemporary cognitive science has begun to pick up on this.

1.2 Scientific Uses: The Meditative Turn in Cognitive Science

A growing number of researchers in cognitive science are seeing meditation as a means to support a general introspective proficiency that can be of scientific benefit. Many mark meditators' abilities to hold attention upon prescribed targets (experiences) as facilitating more accurate and detailed subjective reports (Thompson, 2009, p. 189; Colombetti, 2014, chpt. 6). Much is also made of related capacities to release and suspend habitual concerns, judgements and assumptions (Ibid. ; Thompson, 2015, pp. 52-53). These might include theoretical or normative judgements about experience, or simply other ongoing mental activity (passing thoughts, sensations, feelings) irrelevant to one's experimental interests, which Wallace (1999) speaks of as general mental "excitation" (pp. 176-177).

Without such capacities, it's thought that subjects will be in danger of: expressing prior beliefs or expectations about the way their experiences unfold (Colombetti 2014, p. 157; Schooler and Schreiber, 2004, p. 33); slipping into explanatory rather than descriptive narratives (Bitbol and Petitmengin, 2013, pp. 271-273; Hurlburt, 2009; Petitmengin, 2006, p. 235); mistaking judgements for components of target experiences themselves (Colombetti, 2014, p. 157); or simply losing touch with the present stream of experience (Wallace, 1999; Thompson, 2009, pp. 188-189).

Taken together, the attentional gestures trained in meditation are held to underpin a "bare attention" or "receptive openness", held important for the description of experience. Thompson, Lutz and Cosmelli (2005) note that 'bare attention means noticing, witnessing, or being present to what is happening in one's experience, without explanation or judgement' (p. 70), and others have held this up as a holy-grail of introspective methods. Colombetti (2014) considers it as central to describing the phenomenological micro-dynamics of emotions, and important for identifying the unique biological markers of emotion types (p. 151). Such descriptions require putting aside preconceptions and normative evaluations (e.g. strategies for dealing with an emotion, or judgements about its appropriateness) such that one can focus on the lived-character of emotion itself (chpt. 6). More generally, bare-attention is held central to the phenomenological epoché, where habitual concerns and assumptions are set aside to interrogate one's openness to the world in experience (Thompson, Lutz and Cosmelli, 2005, p. 71).

Integral to the meditative turn, however, is the assumption that meditators are not merely good at describing their own experiences, but that they can facilitate better conclusions about experience *in general* (Varela, Thompson and Rosch, 1991/2017; Thompson, 2007, 2015). Our cognitive science isn't especially concerned with truths about the individual experiences of meditators, but truths about particular inter-subjectively shared *types* of experience – the defining properties of "anger", "shame" or "pain", say – that are distinctive of the human mind. It's proposed

that we can achieve this by submitting the judgements of trained subjects (i.e. meditators) to a generalisation process (see Thompson, Lutz and Cosmelli, 2005, sec. 6; Gallagher and Zahavi, 2008, chpt. 2). First, we assess what's common to judgements about tokens of the same type within the individual. This yields *intra-subjective* truths about these types. Then we compare and corroborate such judgements across many individuals to yield *inter-subjective* truths. These latter kinds might express the first-personal character of the various emotions (precisely *what it is like* to experience joy, say, in contrast to excitement) or the defining properties of the various perceptual modalities (e.g. what it is like to see rather than imagine) – general truths known as 'invariant' or 'essential structures' of experience in the phenomenological tradition (Ibid., p. 28). In this sense then, the important claim of the meditative turn is not that meditation has individual introspective benefits (affording better judgements about one's own mental states), but that it has *scientific and philosophical benefits,* supporting more rigorous phenomenological accounts of the types of experience that our (scientific and philosophical) theories of mind are concerned with, which can then be used to guide and constrain research.

1.3 Objections

The above proposals are not without their critics. Many resist such "revelatory" views of meditation, offering more problematic assessments of the capacities that meditation trains. By far the most prominent criticism here relates that, while such capacities might sensitize meditators to *their own* experiences—that is, their attentive and stable experiences—they will also make such experiences importantly different to those of non-meditators, or experiences immediately prior to the deployment of attention (see Colombetti, 2014, p. 150, pp. 155-158; Dreyfus, 1993; Froese, Gould and Barrett, 2011, pp. 264-265; McAuliffe, 2018, p. 239; Thompson, 2015, pp. 56-57; Thompson, Lutz and Cosmelli, 2005, pp. 72-73; Shear and Varela, 1999, p. 13). From such a perspective, it would be a mistake to generalise from meditators' judgements to broader truths about the human mind, throwing into doubt meditation's value for the broader scientific objectives noted above.

As Colombetti (2014) notes, objections of this kind tend to slide between two formulations. One can object that the transformative character of the attentional capacities trained in meditation undermines the practice's ability to yield insights into (i) the natural, inattentive and *untrained* experiences of non-meditators, or (ii) the mind as it was *prior* to deliberate attentional gestures being deployed, often called "pre-reflective" or "lived experience" (pp. 155-157). In this paper, I take the above formulations together, under the broader issue of whether meditation is able to illuminate *lived experience*.

This line of criticism is certainly not new. It coarsely re-capitulates a central concern apparent in much older discussions over the appropriate experimental methods for psychology, occurring during the hey-day of Introspective Psychology and its competitors. Though these were broad-ranging and nuanced (something I'll later unpack in more detail), a central topic of concern here related how methods of investigation employing purposeful, *directed* attention could transform and thereby distort

the experiences of interest to science (see Bitbol and Petitmengin, 2013; Spener, 2018). In light of such concerns, many attempts to employ introspective methods in psychology sought to devise maximally inattentive and what we might call "preservational" (as opposed to "transformational") methods, which could probe experience without inducing changes to its content (see Spener, 2018, pp. 156-166).

Given the continuing influence of these concerns, and enduring associations between transformation and distortion, many have begun to hold up open and undirected forms of meditation as most valuable to science (e.g. Bitbol and Petitmengin, 2013; Depraz, Varela and Vermersch, 2003, chpt. 1.2; Petitmengin and Bitbol, 2009; Thompson, 2015). For instance, Petitmengin and Bitbol (2009) identify abilities to *direct* and *sustain* attention, trained in Focused-Attention practice, as most overtly transformative and problematic in character. They focus instead upon promoting maximally passive, higher-level Open-Monitoring meditations, which they suggest train an effortless, receptive and broad-scoped form of attention that sensitizes one to experience without the problems associated with directed attention (p. 378).

In spite of this, skills in directing and sustaining attention are considered essential components of introspective proficiency in the contemplative traditions. Focused-Attention practices are usually treated as precursors to Open-Monitoring types and are framed as important foundations for more advanced insight-practices (Gethin, 1998, chpt. 7; Thompson, 2015, p. 52). Accordingly, others have started to sketch plausible benefits to introspective methods available through these more overtly transformative skills in directed attention, emphasised in Focused-Attention practices (e.g. Davis and Thompson, 2015). Given their important status in the Buddhist tradition, and their relative neglect in recent literature, Focused-Attention practices warrant keener attention. And in the remainder of this paper, I shall sketch how the capacities they train can play a significant and beneficial role in first-person scientific methods.

As indicated earlier, concerns about the value of directed attention (and by extension meditation) rest largely upon the *distortion assumption* – the implicit belief that transformation of the mind necessarily produces a false or misleading, i.e. "distorted", version of the mind's natural or pre-transformed state. I am not the first to recognise this as lying at the heart of many objections to the scientific use of trained introspectors. In their introduction to neurophenomenology, Thomson, Lutz and Cosmelli (2005) counter an analogous objection by explicitly critiquing the distortion assumption. Rather than seeking to downplay the transformative effects of the investigatory methods they propose, they suggest that some kinds of transformation can actually be of epistemic benefit. The authors marshal Husserlian phenomenological claims to the effect that skilled methods of investigation can help to bring out features of pre-reflective experience more distinctly (pp. 72-73). Similarly, Colombetti (2014, chpt. 6) endorses Gallagher and Zahavi's (2008) proposal that a skilled method of self-observation is able to 'disclos[e], disentangl[e], explicat[e] and articulat[e] […] components and structures which were contained implicitly in the lived experience' (p. 63).

Phenomenological considerations certainly have a place to play in these debates (see Roberts, 2018). However, arguments seeking to *justify* introspective methods—to establish their epistemic

credentials—solely by appeal to introspection itself (trained or otherwise) are likely to arouse suspicion (see Bayne, 2015, p. 5). Furthermore, such arguments have not gone far to alter popular beliefs on this issue. Colombetti (2014) identifies naïve associations between transformation and distortion as recalcitrant sources of armchair criticism levelled against her recent programme for the use of introspective methods in emotion science (pp. 155-158).

Perhaps most importantly though, claims of the above kind are so broad as to leave it unclear precisely *how* transformation might be of benefit. What, for instance does it mean to suggest that some phenomenological transformations can "disclose", "explicate" or "articulate" its implicit features? Many such terms do little more than state the desired conclusion, employing epistemically-loaded vocabulary to describe the transformations involved. They don't tell a story about the *kinds* of transformation that can be seen to secure these epistemic functions.

Given the above shortcomings, I will attempt a slightly different track here. I suggest that a useful way to make progress involves turning to the attention sciences. Attention science allows us to re-conceptualise the contentious gestures developed in Focused-Attention meditation (the directing and sustaining of attention) in terms of a specific and well-defined attentional capacity. It also offers detailed subpersonal models of this capacity, accounts that should constrain how we think about the kinds of transformation it involves. I suggest that looking more carefully into this reveals specific, *epistemically-beneficial kinds*, fitting the mould of those referenced by the above phenomenological thinkers.

My approach here is common in contemporary philosophy of mind. Increasingly, researchers seek to clarify the character of mental phenomena by appeal to scientific models. Examining how broad phenomenon can actually be *implemented* at the physiological level has refined how we think about their finer phenomenological details. For instance, the discovery of a relatively narrow bottleneck in visual processing has been taken to favour less "rich" conceptions of visual phenomenology (Noë, Pessoa and Thompson, 2000). Gallagher and Francesconi (2012, p. 6), meanwhile, note that the unearthing of common neural structures active in the pre-frontal cortex during both performed and perceived action has favoured early Husserlian conceptions of social cognition as involving the "mirroring" of other's kinaesthetic sensations in one's own body, rather than mere intellectual inference (see also Gallagher, 2005). My attempt to pursue an analogous approach in the case of meditative transformations builds upon preliminary work by Davis and Thompson (2013, 2015), who seek to bring the attention and meditation literatures into dialogue to pursue a genuinely 'cross-cultural' cognitive science, better able to reveal the transformative capacities of the human mind, along with their epistemic merits. Davis and Thompson's own interest is with epistemic improvement in general though, rather than a narrower concern with introspection as is mine here.

Again, I stress that my initial turn to the attention literature does not reflect a belief that phenomenological considerations have no place here. On the on hand, this argumentative strategy is simply pragmatic, recognising the explanatory persuasiveness of empirical considerations in contemporary philosophy of mind. More importantly though, it is best understood in terms of a larger

project of “mutual constraints”, wherein we recognise that *both* first and third-person data should inform our views about the mind and can be used in reciprocally-influencing fashion, over time, to generate increasingly precise understandings of experience (see Gallagher, 1997; Gallagher and Zahavi, 2008, pp. 32-33; Varela, 1996), which is what I shall move towards in section 4. When it comes to issues of transformation and distortion, insufficient work has thus far probed the third-personal side of this bargain, so this is where I begin.

2 Meditation and the Cognitive Psychology of Attention

2.1 Attentional Skill in Focused-Attention

To distinguish the relevant attentional capacity trained in Focused-Attention meditations, it’s helpful to go into further detail about the experience of undertaking the practice. As outlined in *Fig. i.*, distinctive of Focused-Attention is the repeated return of attention to a single (mental or physical) object. This is typically done by mentally rehearsing a suitable *label* in step 4.[12] This can be the object’s name, or a strongly associated term. If the object is a candle flame, the student might sub-vocalise “flame” or “seeing”. If the object is the experience of the breath, they can silently remark “breathing”. This act of labelling facilitates a return to the object, and with constant iteration it is said to yield a sense of becoming increasingly held or “tethered” to that object (Gethin, 1998, pp. 176-181). With enough training, it’s proposed that meditators can even “fix” their mind upon an object in a “one-pointed concentration” (Ibid., p. 181), where no re-orientation is needed at all. In this case, they will remain solely in step 1 of the practice. At this point, we can introduce some considerations from the attention sciences to precisify the attentional capacity trained through the above labelling technique.

Within cognitive psychology, the employment of labels to redirect attention is referred to as an instance of *top-down (attentional) control*. Generally, the term “top-down” is used in the field when attention is internally guided by a subject’s prior knowledge, plans and goals (Katsuki and Costantinidis, 2014, p. 509), with the canonical guide being conceptually-formed *intentions* to attend to a specific location or object.[13] It’s also important to note that attention can be classed as “top-down” whether one attends to the objects of the world (i.e. with perceptual attention) or to the objects of experience (i.e. with introspective attention) so long as it fulfils the above condition (see Wu, 2014,

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[12] For a good account of the importance of label use, glossed as “applied and sustained thought” or "initial and sustained mental application” (*vitakka-vicāra*) in early Buddhist discourses, see Shankman (2008, pp. 38-40).

[13] This is admittedly a loose characterisation of top-down control. For instance, the “guidance” of attention can be understood in a number of different ways, and to occur across a number of varying timescales. I might in a sense “guide” my attention to my alarm clock by setting it to sound at 7am. For present purposes though, we should take top-down attentional control to occur in those cases where a subject’s attentional targets are determined in *direct/immediate consequence* of some independent psychological state of the subject.

p. 255).[14] Top-down attention comprises one of two broad kinds of attention distinguished in cognitive psychology. The second kind is "bottom-up" attention, where attention is guided by external factors, including specific and salient properties of attended objects themselves, as when a close flying pigeon inadvertently attracts and holds one's gaze (see Corbetta and Shulman, 2002).

Ordinarily, top-down attention is initiated voluntarily, with the recollection of specific intentions that express goals of the subject. On account of these properties, top-down attention is also sometimes called *voluntary*, *goal-driven* or *endogenous attention* and set in contrast to *involuntary, stimulus-driven* or *exogenous* characterisations of bottom-up attention (Pinto et al., 2013; but see Wu, 2014, pp. 29-38).[15] One should also note that top-down attention captures both cases where (i) a subject purposefully *shifts* attention (e.g. from the book they're reading to their emotional state), and (ii) a subject *sustains* attention in virtue of (or under the "control" of) some independent psychological state. For instance, deliberately holding attention upon a specific part of the visual field is also case of top-down (controlled) attention. Here, we have a case where top-down attentional control extends beyond a single attentional shift (see Pinto et al., 2013, p. 2).[16] Returning to Focused-Attention practice itself, we see that both such kinds are being mobilised – in the repeated *return* of attention to a specified object in step 4 and the *holding* of attention in step 1. For clarity's sake, it's helpful here to tie these two together under a broad skill; Focused-Attention practice is distinctive in training a kind of *top-down (attentional) control*. And we can conceive this skill rather broadly going forwards in terms of an ability to *control attention according to one's goals*.[17]

There is growing empirical work to suggest that top-down control is indeed improved through continued Focused-Attention practice (Jha, Krompinger and Baime, 2007; Lutz et al., 2008; Lutz et al., 2009; MacLean et al., 2010). Practiced meditators display faster responses to cue directions and a larger differentiation between the neural responses to different cues, indicating faster or more efficient top-down control in instances of re-orienting (Kerr et al., 2011) along with an ability to sustain attention upon specified objects for longer (Carter et al., 2005). Other, bottom-up attentional capacities are trained in the meditative enterprise (which I shall comment upon later), but it is this top-down capacity that I am interested in primarily here, given that its exercise is most susceptible to controversial and potentially distortive transformations of experience. With this skill identified, it's now possible to approach a better understanding of its phenomenological effects by looking to some dominant models of top-down control in the sciences. This will reveal specific experiential

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[14] I say more on the relationship between perceptual and introspective attention throughout §2-3.

[15] For a more detailed consideration of these two forms of attention, including the difficulties inherent in such simple distinctions, see Wu (2014, chpt. 1). Unlike Wu, I use the terms "top-down" and "controlled" as equivalent here.

[16] Given that top-down attention *usually* extends beyond a single attentional re-orientation, Pinto et al. (2013) note that it's common to equivocate between top-down attention and *sustained attention* (p. 2). This is unwise, given that not all top-down attention need be sustained, and not all sustained attention need be top-down (see Lutz et al., 2008, pp. 166-167). I introduce the possibility of a bottom-up, sustained attention in §4.1.

[17] In line with f11, this should be taken to cover cases where "control" occurs in relatively direct or immediate consequence of one's intentions.

transformations possible through such skill that can be of benefit to our first-person sciences of mind, bolstering the utility of Focused-Attention meditation in such an enterprise.

2.2 The Science of Top-Down Attentional Control

Following Davis and Thompson (2015), we can look to two prominent models of top-down attentional control in the attention literature to bring out its transformational benefits. These models converge upon a similar sub-personal account of the phenomenon and reflect a broad consensus in the field. Each unpacks top-down attentional control in the context of perceptual attention. But given the character of these models, we will later see that they are also relevant to introspective attention.

A first popular theory understands top-down attentional control in terms of the influence of "control-sets" (or "task-sets") (Duncan and Humphreys, 1989; Wolfe and Horowitz, 2004; Olivers et al., 2011). Call this the "control-set" model. Control-sets are conceived as templates that specify a particular collection of stimuli for further processing and *ex hypothesi* attentional selection (Grubert et al., 2017, p. 843). From this perspective, one exercises top-down attentional control whenever a control-set is activated and biases cognitive processing in favour of its specified stimuli, prioritising incoming data that match those one would expect from those stimuli over other kinds.

Davis and Thompson (2015) note that *working memory* is central to the activation and maintenance of control sets (p. 50; see also Fockert et al., 2001) – a form of short-term memory that transiently holds task-relevant information in an accessible state (Fougnie, 2008). This operates when one holds travel directions in mind for a car journey, or steps in a cooking recipe, while such tasks are performed. It's believed that control-sets can be activated by holding appropriate conceptual or linguistic representations within working memory (Davis and Thompson, 2015, pp. 50-51). This proposal is nicely motivated by Jones et al. (2010). They show that directing subjects to attend to specific body parts (the hands in this instance) using visual cue words (e.g., showing them the word "left hand" or "right hand") leads to increased neuronal activity in brain regions association with these body parts and an improved capacity to detect stimulation applied to these areas (see also Schubert et al., 2006, 2008, 2009). Such directions are thought to transfer relevant conceptual representations to working memory, wherein Davis and Thompson explain that they control attention by mobilising control-sets and 'directly amplifying early sensory responses to stimuli in this area of the body and inhibiting responses to other areas' (2015, p. 50).

This model of top-down attentional control is largely consistent with Desimone and Duncan's (1995) 'biased competition' model of attention. Desimone and Duncan posit that early sensory signals in the nervous system—whether these represent objects out in the world or inside our body—are always in competition with one another for further, limited processing resources. Such competition is said to be perpetually "biased" by both other psychological states of the subject and the character of sensory signals themselves. For example, competition can be biased by both the relatively high-level occupants of working memory (e.g. the words "left hand"), and the lower-level salience of sensory stimuli (e.g. the amplitude of pain signals in the left hand). From this perspective, both such factors

are always at play in determining which data will be subject to further processing and their objects thereby attended. Whether we describe attention as "top-down" or "bottom-up" from this perspective will thus depend upon the relative balance between competing high-level and low-level forces. Again though, this model conceives top-down attentional control in terms of the prioritisation of local and specific sensory data, through the influence of high-level psychological states, including working memory.

In the attention literature, this local prioritisation of sensory data is said to raise something called *phasic alertness* (Davis and Thompson, 2015, pp. 52-53; Sturm and Willmes, 2001). Phasic alertness denotes a subject's local or task-specific *sensitivity* to particular stimuli, or stimuli in specified sensory fields, and it is typically indexed by an increased ability to detect and report upon those stimuli. For instance, phasic alertness rises when one watches out for a tennis ball to be served or listens for the starting gun in a sprint-race. In each case, top-down influences raise phasic alertness in the sense that they devote greater cognitive resources to selected data than competing data, and thereby make the subject more sensitive to correspondent stimuli.

To appreciate the significance of these phasic alertness increases through top-down attentional control, it's important to note a growing consensus that top-down influences raise phasic alertness by causing local fluctuations in a foundational field of *tonic alertness* (Britton et al., 2014; Raz and Buhle, 2006). Tonic alertness denotes one's wider sensitivity to stimuli across the breadth of the sensory and interoceptive fields ("interoception" referring to awareness of the body's internal state, including activity in the muscles, joints and viscera). And research suggests that overall activity levels in the tonic alertness system correlate with a subject's "degree" or "level" of consciousness, with a deficit in the alertness system characterising sleepiness, fatigue and an inability to focus (Britton et al., 2014, pp. 65-66). This link between phasic and tonic alertness can help us understand the nature of top-down attentional control more clearly, for it suggests that top-down attentional control can be understood in terms of the localised heightening of conscious awareness.

As with many proposals in consciousness science, these links between alertness and consciousness are controversial. Longstanding debates over putative distinctions between *phenomenal consciousness* and *access consciousness* question, for instance: how far conscious awareness depends upon the allocation of processing resources to incoming data; which systems those data need access to; and the importance of abilities to report upon relevant stimuli (see Block, 2005; 2011; Cohen and Dennett, 2011; Taylor, 2013). It's not possible to enter these debates usefully here. For present purposes, I assume minimally that conscious awareness is something that occurs in degrees (on a spectrum of strength), and that the *degree* to which sensory data is prioritised and processed by the cognitive systems, and thereby made at least more *accessible* for report, will correlate with the level of consciousness of those data (see Dennett, 1993; Thompson, 2007, pp. 262-264). From this perspective, top-down attentional control should induce localised *increases* in the levels of conscious awareness, whatever the prior level of awareness happened to be (including no awareness at all). There are many ways to understand what is meant by an increased "level" of conscious awareness (see Bayne, Hohwy and Owen, 2016). A common and reasonable interpretation, however, suggests

that an increased level of consciousness, or being "more aware", involves simply *being aware of more* (Ibid., p. 407). From this perspective, increasing phasic alertness through top-down attentional control should make the subject aware of *more incoming data in selected regions* than prior to the exercise of this capacity.

With these theoretical points on the table, it's now possible to return to Focused-Attention practice and unpack what's happening here in greater precision, first at the sub-personal level and then at the personal level.

2.3 Focused-Attention in Focus

In Focused-Attention practice, through repetition of object-appropriate labels the student is (*ex hypothesi*) transferring (or strengthening) a representation of their meditation object to (or within) working memory. As the meditator repeats the term "breathing", they mobilise an attentional control-set that prioritises the processing of sensory data from bodily structures relevant to the breath, increasing phasic alertness in these regions. Given limited cognitive resources, acts of prioritisation mean that the meditator is also diverting cognitive resources away from competing data, or inhibiting these signals (Thompson and Davis 2015, p. 52). For instance, sustained visual focus upon a candle through appropriate labels ("seeing" or "light") will prioritise sensory data associated with these labels and inhibit sensory data from elsewhere, including that pertaining to visceral activity, pains or the breath. It is these dual sub-personal effects of label application that underpin top-down attentional control and thus the ability to return (step 4) and hold the mind (step 1) to the meditative object. And it is these effects that are being trained in Focused-Attention practice. Top-down influence comes in varying strengths or "weights" (see Balluch and Itti, 2010; Goldstone, 1998). So, the more prominently that meditators can make labels feature in working memory, the more quickly/efficiently they should induce phasic alertness changes in cases of re-orienting, and the firmer their minds will be fixed upon the object in step 1, where these phasic alertness changes are sustained.[18]

At this point, it's important to recall that Focused-Attention practices can take either physical or mental objects as targets. In this way they can improve top-down control in cases of either perceptual attention (including interoceptive attention) or introspective attention. Repeated practice upon *one's experience* of the breath will lead to more skilled top-down attention *to experience*. For the purposes of this paper, I'll use the term "focused introspective-attention" to denote this particular *introspective* top-down attentional faculty improved in Focused-Attention practice. Focused introspective-attention denotes internally guided (or "controlled") introspective attention, wherein attention is focused upon a specific mental target by the influence of some independent psychological

[18] The sense of becoming increasingly "fixed" to a meditation object might therefore be linked to improved re-orienting through an ability to effectively mobilise *strong* biases that themselves allow for more sustained holding of the object as they are retained in working memory. Alternatively, it might be explained in terms of a gradual strengthening of working memory representations through the continual repetition of labels each time the mind wanders.

state of the subject. Moreover, when I speak of a "skill" in focused introspective-attention, I refer to the capacity to guide/control introspective attention *according to one's goals*, wherein one's specific targets are in line with one's intentions. Given that my concern in this paper is with introspection, it is only this form of top-down attentional control (focused introspective-attention) that will concern me henceforth.

Of course, it's controversial what the difference between perceptual and introspective attention is, or whether there is any difference at all (see Wu, 2014, pp. 253-267). Is there, for instance, any difference between attending to the physical processes of breathing versus the mental sensations of the breath, besides the kinds of judgements that these cases inform? It doesn't seem so. Is the kind of attention one mobilises in cases of introspection then the same as the kind in perception? Or are its *objects* the same? Given that this is a controversial topic, I avoid any equivocation between these two kinds of attention here. Theoretical complications arise when addressing their relation. These would take us too far off-topic here, but I shall return to them in §3.3. For now, it's important to acknowledge only two things.

First, Focused-Attention practices do mobilise a *kind* of introspective attention (top-down, controlled introspective attention) – a kind natural to everyday life, as when we purposefully direct attention to bodily feelings, emotions, pains and hunger pangs, etc. This is what I'm calling focused introspective-attention. Second, focused introspective-attention is mobilised in Focused-Attention practice by employing labels bearing conceptual contents of the same kinds believed to bias the processing of sensory data in models of top-down *perceptual* attention. Given that these labels bear specific, empirically-grounded powers in explanatory models of perceptual attention, we should expect them to have largely equivalent powers (i.e. biasing effects upon the allocation of sensory processing resources) in the introspective case. There's no reason to think that a subject's having an introspective target will somehow strip these conceptual contents of their causal powers or change those powers in any significant manner. Indeed, experimental work on meditators, demonstrating an increased proficiency bringing about the noted subpersonal effects underlying top-down perceptual attention, has used practitioners self-consciously trained in attending to mental rather than physical targets (see Kerr et al., 2011) suggesting an equivalent subpersonal biasing effect. Employing labels like "breath" or "body" will therefore affect our cognitive systems in the shape outlined, regardless of whether our assumed target is perceptual (physical) or introspective (mental). In either case, conceptual contents will prioritise information about sensory stimuli in the relevant regions of the body and increase phasic alertness in these areas. Similarly, employing the label "seeing" to direct oneself to visual *experience* will exert the same biases as if using this label to direct oneself to the *objects seen*. And as I've intimated in §2.2, these rises in phasic alertness have important phenomenological effects, to which we can now turn.

2.4 Effects and Benefits of Focused Introspective-Attention

2.4.1 Phenomenological Effects

By the above models, we'd expect focused introspective-attention to first heighten levels of experiential *richness, sharpness* or *granularity* in attended regions (see Davis and Thompson 2015, p. 50; Farb et al., 2015, p. 15; Nielsen and Kaszniak, 2006; Teper, Segal and Inzlich, 2013). Deploying this faculty will heighten phasic alertness, causing localised increases in conscious awareness. And I've claimed that this entails the subject *becoming aware of more incoming data* or increasing the number of "grains" composing this region of experience. For this reason, focused introspective-attention shouldn't be conceived in terms of what Wu (2014) calls "direct models" of introspection (pp. 256-267). According to these models, introspective attention simply "embeds" existing aspects of experience without affecting them. It turns the inner eye without disturbing what it sees. If there is such a kind of introspective attention, focused introspective-attention doesn't fit the bill.

Importantly, the above models show that focused introspective-attention also involves inhibiting sensory signals from other stimuli (i.e. divert processing resources away from them) thereby decreasing the richness of these aspects of experience. Focused introspective-attention thus alters *overall ratios* of richness across experience. Such alterations are part of what it is to re-direct attention to experience, and they are preserved in sustained attention upon it. Of course, increases in richness mean that aspects of experience stabilised upon will now be different to before. However, it's important here that the Buddhist traditions consider this specific difference to bring advantages, rather than solely problems, in the quest to understand the mind's nature. In Tibetan Buddhism, the degree of mental richness is called *gsal cha*, often translated as "clarity" (or sometimes "vividness", see Thompson, 2015, Wallace, 1999). In the context of Focused-Attention practice, clarity is used to track the subjective richness of the particular aspect of experience focused upon. However, it can also be used in the context of more open (i.e. Open-Monitoring) practices to track the richness of the whole experiential field (Thompson, 2015, p. 76). And Gethin (1998) notes that the major traditions of Buddhism consider the manipulation of mental clarity as a central condition upon which Insight (*paññā*) is built – insight into both (i) the nature of one's own mind and (ii) general laws governing the nature of the human mind, the world and their relation (pp. 174-176; see also Thompson, 2015, p. 76; Wallace, 1999).

I suggest that it is mental clarity (as I shall designate this phenomenological condition henceforth) that lies at the heart of the revelation-versus-distortion debate. The key question is whether changes in clarity through focused introspective-attention must always be avoided when investigating experience, or whether they might be exploited for epistemic advantage, as is the contemplative posit. This latter possibility can be unpacked by first further probing what's involved in clarity changes.

2.4.2 Clarity Considered

The first observation to make here is that increases in clarity should *fill out* or *saturate* target aspects of experience with some mental contents of equivalent low-level kinds to those present within those aspect's pre-attended forms. When introspective attention is turned to the sensations of breathing (via the label "breathing"), this will prioritise incoming data pertaining to the bodily activity associated with the breath. And, given that such data-sets are constrained by the actual bodily activity taking place at the moment of attending, sub-personal selective processes will gather, and raise to awareness, *at least some data* of equivalent low-level kinds to those already being processed and contributing to pre-attentive experience. For instance, they will raise to awareness more data pertaining to the particular dynamics (i.e. the form and intensity of activity) of those body parts involved in the breath. In this way, they increase the quantity of "grains" bearing such contents within an experiential target, filling out or saturating the target.

When making this point, one must be sensitive to so-called "refrigerator light" concerns. Just as there is no light in the refrigerator before it is opened, one might worry that there is no occurrent experience in play before focused introspective-attention is mobilised; direction to previously unattended aspects of the mind might thus simply *create* the experience it purports to clarify and fill out (Block, 2007, p. 489; Jaynes, 1976, p. 23). However, we can here return to the scientific models introduced in §2.2 to mellow this concern.

As specified, both reviewed models of top-down attentional control (including focused introspective-attention) understand its effects in terms of rises in *phasic alertness*. And phasic alertness changes themselves are thought to be explicable in terms of localised increases in a more basic tonic alertness field. Importantly, there are growing suggestions that this foundational alertness system is the minimal system sufficient for our being consciously aware. An influential theory developed Parvizi and Damasio (2001) designates it the "core consciousness" system (see also Bosser, Jonker and Treur, 2008). Tononi and Edelman (1998) mark it as the "dynamic core" of consciousness (see also Edelman and Tononi, 2000; Edelman, Gally and Baars, 2011). And Davis and Thompson (2015) frame it as the "ground-floor" of consciousness" (p. 49). Moreover, it's believed that the tonic alertness system, centred anatomically around the thalamus and brainstem, is capable of acting *independently* of top-down selective processes dependent upon higher cortical regions of the brain. This makes top-down processes strictly unnecessary for experience. Rather, top-down forces are said to mould experience by habitually manipulating the workings of the more basic system.

Davis and Thompson (2015) outline this relationship as follows. The tonic alertness system is responsible for their being "something-it-is-like" for the subject. Top-down forces (when active) then manipulate this basic field to determine precisely *which* sensory data one is most responsive to and, thereby, precisely *what* it is like for the subject (p. 49; see also Searle, 2000) – they mould, punctuate and locally concentrate a basic and self-standing field of awareness. And the independence of this tonic system from top-down selective influences means that we are always attending and responding to far more stimuli than are specified by top-down mechanisms, meaning that there should be genuine

instances of ongoing ("bottom-up") experiences that predate such attentional shifts, themselves illuminable through introspective-focus.

The second phenomenological claim we can make about alterations in clarity levels through focused introspective-attention is motivated by the inhibitory effects underlying top-down control in our reviewed models. Improvements to focused introspective-attention will improve one's ability to inhibit stimuli outside of one's attentional-set. And this should have *isolatory* effects upon experience. Inhibition of extraneous data, decreasing phasic alertness in regions outside of one's focus, will isolate target aspects of experience from their surroundings. For instance, focus upon the experience of the breath will inhibit bodily signals underpinning the experiences of pain – it will at least partially suppress these background or peripheral aspects accompanying the experience of breathing, so as to isolate the sensations of breathing themselves. For this reason, Focused-Attention practices are traditionally considered temporary means of *suppressing* the Hindrances, prior to their later elimination (Gethin, 1998, p. 175; Shankman, 2008, p. 92; Thiradhammo, 2014, pp. 22).

With these observations about clarity-transformations laid down, it's now possible to crystallise their epistemic/introspective value.

2.4.3 Introspective Value

The value of the above phenomenological changes can be demonstrated with the help of two analogies. First, take the filling-out of experiences available through increased mental clarity.

Let us imagine an artist, Gina, who has been commissioned to create a pictorial mosaic. Gina has begun work, but she knows that her client is impatient and will come to view the mosaic before its completion. With this in mind, she has sparsely filled each section of her mosaic with a uniformly-distributed set of tiles, each matching the designated section-colour, to give her client a sense of the mosaic's form prior to its completion. Now, let's suppose that the impatient client, after his viewing, decides to observe Gina complete the work, gradually adding in more of the coloured tiles to each section. As this happens, the more vivid the mosaic will become, the more prominently its features will stand out to the client, and the easier it will be to discern what the mosaic depicts.

This is how we can think about the first benefit of focused introspective-attention. Experiences that are vague, dull and imprecise can become fuller, sharper, more complete, and their properties can accordingly become more salient. Through heightening levels of clarity one is, *as least in part*, increasing the concentration of componential features that afford an experience its higher-level properties. In this way, one widens the supervenience base of those properties so as to bring out these features of experience more fully. For instance, focused introspective-attention upon feelings of discomfort in one's head will increase the quantity of interoceptive data from the head making it to one's awareness, allowing one to better discern whether one's discomfort is merely a kind of pressure, or an experience of pain. By increasing the supervenience base of these higher-level properties, one might also get a better sense of the character of the lower-levels themselves, better impressing the phenomenological micro-dynamics *underlying* one's discomfort or pain. Replacing a patchy and

sparse awareness of these subtle sensations with a fuller and richer kind might allow one to determine, for instance, whether one's pains are composed of dull, aching sensations, or sharp stinging sensations. We can think of both these effects in terms of the *accentuation* of experiential properties through the filling out of experience.

Of course, not all properties of experience are accentuated. Some are changed in the process; the experience becomes sharper, richer, and its form becomes more definite than before, further implications of which shall be broached in §3. Yet, it is through the above accentuatory changes that we can achieve what Gallagher and Zahavi (2008) speak of as the "disclosure" or "articulation" of structures contained within lived-experience.

This accentuatory effect, where properties are made salient through *filling out*, should be distinguished from what we might call the "intensification" of experience. Intensification is closer to the "accenting" of musical performance, where a note is emphasised by increasing its dynamic. Rather, if one wanted to bring the musical analogy to the introspective case, the accentuatory effect is closer to moving from (i) a note played on a solo clarinet, to (ii) a note played on many clarinets at once. In accentuation, one is *widening* the supervenience base of higher-level properties; in accenting, one is changing the character of (i.e. intensifying) the individual components of the supervenience base themselves.[19]

The benefit of the second above noted phenomenological effect of focused introspective-attention—the *isolation* of particular aspects of experience—is well revealed with another analogy. Here, we can imagine an ethologist, Joanna, walking through a forest and looking for wildlife. At some point, Joanna catches sight of an animal moving through the trees and wants to take notes about the animal (its species and behaviour, say). It is prudent here for Joanna to *stop walking* and stand still. This way, she creates a background of stillness against which the animal's character and activity becomes more apparent. Contrarily, if everything is moving in her visual field, accurate discernment is significantly more challenging. This is how we can conceive the introspective benefits of phenomenological isolation.

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[19] I don't suggest here that intensification never occurs in acts of focused introspective-attention. In fact, empirical work suggests that top-down perceptual attention to specific properties (e.g. apparent size and spatial distance in visual attention) *can indeed* intensify one's experience of those properties (see Carrasco, Fuller and Ling 2008), so we should think that focused introspective-attention is open to the same effects. It also needs admitting that this distinction between clarity and intensity is a grey one. It may be that the filling out of experience *itself* increases the intensity of an experience, just as playing a quiet note on many clarinets, in a sense, increases the volume of the music. In the present narrative though, I assume that there are genuine instances in of increased saturation of experience as *distinct* from increased intensity of experience, through focused introspective-attention. Potential concurrent changes in the intensity of experience (in *particular* instances) won't prove impediments for introspective methods utilising focused introspective-attention, for reasons that will become apparent in §4. Moreover, it's worth noting that the argument I make here could run a similar way by identifying intensity, rather than clarity, as the epistemically beneficial transformation of focused introspective-attention. Just as a *louder* drum is more likely to reveal certain qualities of its sound (it's timbre, texture, etc.) than a quiet one, increased intensity of experience itself plausibly affords epistemic benefits during introspective investigations. On account of this, though I run the argument in terms of clarity here, one might substitute this for intensity, with appropriate narrative adjustments, to reach an equivalent conclusion.

In the introspective case, one aims not to make judgements about the world, but about one's own mental states, though ideas about epistemic benefit run much the same. With lots of experiential activity outside one's focus, this tends to call attention towards itself. Superfluous data exerts an insidious detracting effect upon introspective judgement, over-shadowing our targets and exerting a *cognitive drain* upon introspective capacities. When such activity is dissolved, introspective judgements can benefit accordingly (Gethin, 2004, pp. 207-8; Colombetti, 2014, p. 147). And it is this isolatory effect of introspective-focus that underpins the beneficial "disentanglement" of experience during rigorous self-observation, earlier proposed by Gallagher and Zahavi (2008).

Confusingly, some more contemporary Buddhist literature refers to this disentanglement of experience again in terms of increased "clarity" (see Frondsal, 2005). So conceived, clarity would denote the degree to which some aspect of experience emerges *without competition for attention*—without the typical morass of extra experiential phenomena that challenge it for our concern—rather than in a particularly vivid manner. To avoid confusion here, I'll avoid using "clarity" in this sense. However, it's worth emphasising that the models of top-down attentional control reviewed in §2.2 make sense of this dual usage. The prioritisation of some sensory data (underpinning vividness and accentuation) is going to *require* (given limited processing resources) the inhibition of others (underpinning isolation and disentanglement). Thus, the two senses of clarity are really like two faces of the same coin. To illustrate their scientific benefits more concretely though, it's useful to entertain some more example cases, in which we first see improvements to a subject's judgements about *their own* lived-experiences.

First, take the recent enthusiasm for "mindful eating" in clinical (Kristeller and Hallett, 1999; Kristeller and Wolever, 2011) and non-clinical contexts (e.g. Albers, 2012; Bays, 2012). This approach to eating promotes a healthier relationship with food through more dedicated attention to the feelings one has surrounding food. It aims to help people eat only what is really needed by their body and will most satisfy them. This goal is supported by giving participants forms of attentional training, including mindfulness-based eating awareness training (MB-EAT) (Kristeller and Wolever, 2011), where subjects practice deploying top-down attention to hunger and satiety cues and their emotions surrounding food. More general Focused-Attention practices are also used (Kristeller and Hallett, 1999).

There are good indications that these approaches are effective (Godfrey, Gallo and Afari, 2015; Katterman et al., 2014). And it's theorised that this is underpinned, at least in part, by improved introspective judgements about hunger and emotional experiences. In light of the above models, one way to unpack this benefit (and one endorsed amongst mindful eating theorists) is as follows: directing careful focused introspective-attention to one's hunger sensations fills out our experience with more interoceptive data of the kinds that were previously underpinning our hunger experience (Kristeller and Hallett 1999, p. 358). By accentuating the properties of occurrent hunger experiences this way, and simultaneously disentangling them from similar experiences (e.g. body-based emotional signals), focused introspective-attention is proposed to improve judgements about *levels* and *kinds* of hunger that have been in play, and helps subjects to distinguish between hunger-cues and emotional

cues that are often mistaken for genuine hunger signals and precipitate unnecessary eating (Hill, Craighead and Safer, 2011, p. 2; Kristeller and Wolever 2011, pp. 50-51).[20] To the extent one is *skilled* in focused introspective-attention then, the easier it should be for the subject to remain in touch with the ups and downs of their pre-reflective hunger experiences.[21]

For a second example, we can turn to a common practice taught to novice meditators – the "body scan". This is often given as a preliminary to other meditations and requires the subject to direct attention through different regions of bodily sensation – usually travelling upwards from the feelings in the feet, to sensations in the head. Here, one aim is to become more aware of subtle bodily sensations and feelings of discomfort, including feelings of tension in the face, shoulders or neck. As students move attention in this manner, they are encouraged to release particular tensions to prepare the ground for other practices. And at the conclusion of the practice students report a sense of increased overall bodily ease compared to pre-practice levels, something also reflected by physiological measures (Ditto, Eclache and Goldman, 2006).

One way to understand this example is to posit that focused introspective-attention helps the student discern subtle properties of the background state of bodily experience that they had brought with them to the meditation session. The student systematically disentangles and accentuates various factors that had been contributing to this background experience. In so doing, they are not merely prompted into reflective awareness *that* an experience of a certain kind was ongoing, they are also better able to discern those aspects of the body in which their pre-reflective state of discomfort (for instance) was grounded and ameliorate these with appropriate bodily adjustments.[22]

During the body-scan the student might also be instructed to look out for experiences of "feeling tone" – the expression used in classical Buddhist texts for the bodily sense of pleasure, displeasure or neutrality arising in response to passing mental contents (e.g. thoughts and imaginings) (see Thiradhammo, 2014, pp. 79-80). Focused introspective-attention to such experiences is then made the central aim of a practice known as "mindfulness of feeling tone". Here, one can again

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[20] The theoretical foundation of the mindful eating movement relies upon a correlation or correspondence between how hungry one *feels* and how hungry one actually *is* (i.e. the kinds of "objective" bodily activity that are induced when the body is in need of sustenance). This seems right to assume as the default relationship (see Spener, 2015, p. 311). This correspondence would also explain slippage in the literature between speaking of improvements to (i) judgements about physiological signals themselves and (ii) judgements about our *experience* of these signals (see e.g. Kristeller and Wolever, 2011). So long as the correlation holds, an improvement in either one should make for an improvement in the other. For a more developed attempt to investigate introspective proficiency by appeal to the successful exercise of skills, see Spener (2015) on "introspection-reliant abilities".

[21] Other effects of attention training might also play an explanatory role here. For example, emphasis upon *acceptance* in mindfulness-practice is also something much emphasised in MB-EAT (Godfrey, Callo and Afari, 2015). Further work can disentangle the relative importance of these different factors in the efficacy of such programs. Though, see Teper et al. (2013) for the suggestion that acceptance and introspective proficiency are mutually reinforcing.

[22] Certainly, there are also non-introspective factors supporting this increased sense of bodily wellbeing. The diversion of cognitive resources *away* from other aspects of experience that sustain feelings of unease (e.g. unhealthy narratives) will also help the body to relax. I say more on this phenomenon in §3-4.

theorise that focused introspective-attention through appropriate intentions (e.g. subvocalizing "feeling") devotes greater cognitive resources to those interoceptive stimuli underpinning experiences of feeling-tone. This way, it can help students register the particular hedonic tones that accompany their perceptions/imaginings of particular objects. By accentuating their properties, and disentangling them from the larger experiential whole, focused introspective-attention can help students to become more aware of their habitual reactive tendencies, and thence look out for how their mind picks up and runs with these basic feelings into more complex emotional reactions (see Thiradhammo, 2014, pp. 66-81).

In each of these three examples then, focused introspective-attention supports a better understanding of the subject's *own* lived-experiences. It induces phenomenological effects (accentuation and isolation) that allow for better discernment of properties possessed by the pre-transformed and pre-attentive experiential landscape. Subjects are able to make *retrospective judgements* about their inattentive experiences by extrapolating back from features of the attended state. One example has targeted experiences of habitual and normally unattended reactive tendencies. And as indicated earlier, intimacy with such customary reactivity is important from Buddhist perspectives; if a person is unaware of the involvement of these tendencies in the perpetuation of their suffering, they will be poorly placed to tackle that suffering.

In addition. the above insights about personal experience ground the second epistemic pay-off of a skill in focused introspective-attention, and the one of concern in the present paper. From some personal insights, it will be possible to generalise to the broader phenomenological truths of concern to our scientific and philosophical theorising. For example, Nyanaponika (2015) talks of top-down, label-use as a means to help students 'dispel the illusion that mental processes are compact [and] […] discern their specific nature or characteristics' (pp. 80-81; see also Thiradhammo, 2014, pp. 79-81). From this perspective, bringing experiences into relief through top-down attentional control helps deconstruct complex and compact phenomena, such that their defining features become more apparent – broad truths about experience in general. Taking bodily experiences of desire as our archetype, this can proceed by first bringing attention to many different cases of desire, to reveal both the number and characteristic features of different *intra-subjective* types, including the precise bodily sensations underpinning them. These results could then be corroborated across many individuals (e.g. through discussions with other meditators and teachers, the reading of Buddhist texts, or strict methods of "intersubjective validation" in continental phenomenology) to reveal the *general* subjective nature of desire, or of hedonic tone, for instance – the kinds of truth in which our science can deal. In this way, experiential transformation can play a role in illuminating the general nature of lived experience.

2.5 A Foundation to Build On

The above has sketched how experiential transformations of the kind practised in Focused-Attention might be able to illuminate lived-experience. I've identified specific transformations induced by a

trained skill in focused introspective-attention capable of supporting the quest for *general* truths—truths about the human mind, not merely one's own mind—of interest to scientists and philosophers. To do this, I've argued that converging models of attentional top-down control suggest that focused introspective-attention heightens phasic alertness in targeted regions of the mind, whilst quietening other stimuli contributing to experience. This implicated certain phenomenological changes—*accentuation* and *isolation* of experiential properties—that could be induced on demand to illuminate the mind.

In so mobilising the resources of attention science, I hope to have made a basic premise of Buddhist thought more intelligible—that we can approach truths about experience through its transformation—thereby undercutting the distortion assumption (the assumption that methods involving transformation will necessarily produce misleading or misrepresentative accounts). Nonetheless, the attention literature can do much more than simply make meditative methods plausible; it can actually make them more robust to further criticism and help flesh them out more carefully. After all, so far, we have only some suitable foundations upon which an account of meditation's utility can be built. And further use of the attention literature can extend these foundations to show how such transformations might be sensibly exploited within first-person methods. Specifically, the models of top-down attentional control reviewed here help to unveil some better-founded, distortion-oriented concerns about the use of meditation in science, which themselves need addressing if we are to approach a rigorous and practical methodology for the employment of contemplative practice in first-person methods.

In the next section, I'll show how the attention sciences help us rework the distortion assumption into more biting distortion-oriented concerns. For, though such models demonstrate the *availability* of epistemic benefit through a skill in focused introspective-attention, they also spark concern that this skill can be misappropriated – that it might be wielded unwisely in first-person methods to yield genuinely misrepresentative accounts of lived experience. As I'll outline, they implicate several *additional* phenomenological transformations available through focused introspective-attention (some of which have already begun to rear their heads), which have more problematic effects upon experience. This reveals numerous pitfalls available through the imprudent use of focused introspective-attention, which one will need to be sensitive to when devising methods of introspective investigation.

Many of these dangers have already been alluded to in the philosophical, phenomenological and psychological literatures, and I shall relate them to their historical forebears when possible. Nevertheless, as we shall see later, the attention literature doesn't simply reinforce these older concerns; it actually helps to identify the crux of the problems – to distinguish the *roots* of these dangers. And once this is done, we will see in §4 that these models leave theoretical space for the avoidance of such problems, leaving an important place for top-down attentional skills in the investigation of the mind.

3 Further Distortion Concerns

3.1 Objectifying the Subjective

A first, and more challenging, distortion-oriented worry concerning introspective methods employing focused introspective-attention was well-captured by the neo-Kantian thinker Paul Natorp. Natorp (1912) noted how purposeful attention to experience could transform the subjective, something *identified* with, into something set apart from oneself. '[O]ne apparently never grasps the subjective, as such' Natorp states, '[… o]n the contrary, in order to grasp it scientifically, one is forced to strip it of its subjective character' (p. 103, cited in Zahavi, 2003, p. 157; see also Petitmengin and Bitbol, 2009, p. 366, 377).

Take the feeling of tiredness following a night of poor sleep. Throughout the day, this sense of tiredness is largely "lived through", with the objects of one's attention being the contents of the world itself. The feeling of tiredness might influence the way that we orient ourselves towards the world, but it is not usually something we are directed towards. Yet, when the subject deliberately attends to the tiredness, the experience is transformed from something lived through *onto* the world (something subjective), into something to which they are now opposed. In so making the tiredness an "object" of attention, we therefore introduce some novel volitional or agentive component to experience (a substitute "subjective" component) that restructures the conscious landscape and allows the tiredness to become an "object".

Prima facie, this concern is especially pertinent in the present context. By the earlier models, acts of top-down attentional control over experience require working memory to be loaded with conceptual representations that can mobilise appropriate control-sets. Consequently, these will usually be dependent upon deliberate acts of sub-vocalized intending (labelling), introducing the above sense of positionality to experience. So conceived, the benefits of focused introspective-attention appear to require, at least in the normal case, the generation of new experiential and relational properties of the kind that Natorp describes. This kind of transformation is not a revelatory one; it does not itself *bring out* features of lived-experience in any obvious manner. Rather, it is the addition of something alien to lived experience which can be thought to either "distort" the overall landscape of the mind, or potentially overcloud those aspects of the mind we are interested in (given that addition is the very opposite of the *isolation* posited to have epistemic benefits).

Worries of this sort can be strengthened by highlighting contemporary portrayals of meditation as a means to gain increasing "detachment" from experience (see e.g. Sujîva, 2000, p. 179; Nyanaponika, 2015, p. 89). One seems to be replacing ordinary immersion in experience with something peculiarly distanced. Through constant repetition of labels, and the development of greater skill in focused introspective-attention, one might even worry that we are *worsening* regular objectification problems attached to deliberate attending. Proficiency in focused introspective-

attention therefore seems at best to involve, and at worst to exacerbate, the novel experiential and relational properties bestowed upon introspective targets in the regular case.

3.2 Stilling the Stream

Along with objectifying experience, Natorp (1912) noted how deliberate attention to the mind could petrifying or deaden it's natural, flowing character. He spoke of this as 'killing subjectivity in order to dissect it' (p. 102). One is forced, he says, 'to artificially still and interrupt the continuous stream of becoming, which surely is how inner life presents itself, to isolate the individual finding, to fixate it with the isolation in mind, to sterilize it, like the anatomist does with his specimen' (pp. 101-102). Here, Natorp echoes William James' suggestion that attempts to investigate experience were akin to 'seizing a spinning top to catch its motion' (1890/2007, p. 24).[23] Both articulations of this concern aptly capture the problems underlined by the above models of top-down attentional control, for its underlying *inhibitory* character means that many natural elements of experience are in danger of being lost to the introspector.

On the one hand, focused introspective-attention forestalls the natural tendency of the mind to switch between varied mental contents (sensations, volitions, thoughts, images, etc.). This suggests that it is of limited benefit if one wishes to illuminate spontaneous patterns of activity that manifest across the breadth of the mind. On the other hand, even narrow-scale dynamism can be undermined, given that some of these broader elements may in fact be helping to retain the shape, character or flow of those aspects we turn towards. Wundt (1897) and James (1890/2007, pp. 243-245) believed this made it impossible to learn about the natural flow of human thought through directed attention (see Petitmengin and Bitbol, 2009, p. 366), given that thought's character is often dependent upon being in the background and emerging in involuntary response to other mental contents. Similarly, Brentano (1874/1995, p. 30) suggested that deliberate attention to one's anger would "diminish" the anger itself. Our models of top-down attentional control underline this point, suggesting that turning attention to the intentional act of anger requires diverting resources from the perceptual or imagined object sustaining the anger in its original form. One can thus disarm the emotion of its object and slow the "spinning-top" of emotion.[24]

In light of the above then, one might fear that the benefits of focused introspective-attention will come at the expense of "deadening" experience, taking it further away from the experience of life "as lived" by untrained persons. And again, one might be concerned that this deadening effect is simply exacerbated by meditative training in such things.

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[23] Petitmengin and Bitbol (2009, pp. 366-367) give a good survey of other ways this concern has been elaborated.

[24] See Spener (2018) for an account of how this worry informed the experimental methods of thinkers in the early to mid-twentieth century, particularly those of Introspectionist and later Gestalt Psychologists.

3.3 Complex Experiences, Intentionality and Different Probes

The next distortive danger arises when investigating more complex experiences than most of those referenced above. Perhaps focused introspective-attention has some relatively straightforward advantages when it comes to simple bodily experiences like hunger and hedonic tone. But other experiences like emotions will have complex internal dynamics that present more difficult challenges for investigation. For one thing, unlike simple interoceptive experiences, emotions have an *intentional structure*, of which different aspects will be open to investigation.[25] It will be important to distinguish how these different aspects can be probed, and to avoid running them together when gathering introspective data.

This difficulty is underlined by the above scientific models, which emphasise that the phenomenological effects of focused introspective-attention will be heavily dependent upon the character of the labels/intentions used to direct attention, not to mention the fact that focused introspective-attention also *inhibits* that which is outside its focus. Insensitivity to these facts, and failure to discern appropriate probes, could result in conflation between reports about different aspects of experience, or the neglect of important parts of an experience being targeted and resultant theoretical overemphasis on merely some of its features. These dangers are well illustrated by the case of emotional experience.

Emotions are widely thought to possess an intentional structure (Kind, 2013, p. 117; Goldie, 2002). By this, we mean that they are *directed towards* or *aim at* something. As with other intentional states, that which they aim at (some person, object, state of affairs, e.g.) is their "intentional object", and their specific manner of directing or us towards that object is their "intentional act" (or "intentional mode").[26] In the case of fearing a particular person, the intentional object is the person feared, and the manner by which one is directed towards them—fearfully—is the intentional act, which will have its own characteristics that distinguish it from other emotions, such as being *lovingly* or *angrily* directed towards that person. This structure yields a complication for the probing of emotion that's revealed by considering an instruction often put to meditation students.

Take the request to "observe the Hindrances that drag one away from the present moment". The Hindrances, recall, are episodes of obsessional desire or craving—the felt necessity for particular things to be other than they are—that form a central introspective target of Buddhist contemplative programmes. And they can be probed in several different ways. For instance, observation might target the *affective dimension* of craving – the bodily feelings of lust, or aversion say – that is, the intentional act. Contrastingly, it might target *what* one craves or "feels towards" (Goldie, 2002, p. 241), as when asked to "confront one's fears", i.e. the *intentional object*. This might be a specific future event, with

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[25] See Dahlstrom (2014, pp. 149-153) for a good discussion of interoception and intentionality.

[26] Intentionality theorists also speak of intentional "contents" as distinct from "objects", which designate *that which one attributes* to the object (e.g. dangerousness in the case of fear). For more on this distinction, see Crane (2000, pp. 51-53). I avoid such talk, given that the act-object distinction is sufficient to motivate the concern related here.

particular features that explain one's fear, discernment of which might involve attention to more cognitive dimensions, like thoughts or mental images. Perhaps there are also kinds of probes able to target the entire emotional complex at once, including both act and object.

Engaging focused introspective-attention to emotions will need to be sensitive to the possibility of probing in these multiple ways. One must ascertain both how and whether each kind is initiated. What will be the appropriate labels for directing us to the intentional act? And how will these be distinguished from those that thematise the intentional object? More broadly, any systematic introspective employment of focused introspective-attention should proceed by first contemplating the complexity of one's targets and whether they are open to such differential probing.

Take another common target of introspection: perceptual experience. Can one attend to the intentional act here? To the act of seeing a cup, say? Some claim not, arguing that any attempt to do so leads one to "look through" the act (of seeing) to the presented object itself (the cup). This is the "transparency observation" about perception.[27] Advocates of transparency propose that introspective attention to perceptual experiences can only attend to the same object (or features) as perceptual attention – it will entail seeing through to the object itself (Grice, 2002, p. 45; Harman, 1997, p. 667; Wu, 2014, pp. 257-262).[28]

For some such thinkers, the introspection of perceptual experience will be conceived akin to the 'Transparency Model' entertained by Wu (2014, pp. 258-267) or Dretske's (1995) 'deferred perception' account. In such accounts, the introspection of perceptual experiences proceeds by simply applying psychological instead of empirical concepts in the course of ordinary perceiving. I introspect a perceptual experience of X by first perceptually selecting some object (X) and then biasing my judgements in favour of the relevant psychological concepts, i.e., speaking in terms of *how X looks* rather than *what X is*. Schwitzgebel (2012) marks introspection of perception so conceived as 'perception with a twist' (p. 35) – it is the pairing of perceptual attention with a novel introspective or psychological attitude.

For transparency theorists then, focused introspective-attention upon perceptual experience can bring introspective advantage only by bringing clarity to the intentional object of perception. It can tell us more about the experience only by accentuating and isolating what the experience is *about*, something that remains a proper part of the experience's phenomenal character (see Wu, 2014, p.

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[27] Note that transparency advocates needn't claim that introspective knowledge is exhausted by knowledge about the (intentional) objects of experience presented. The intentional act or mode of a perceptual state, i.e. the perceptual modality (vision, olfaction etc.) *through which* that object is presented, clearly transcends this kind of knowledge, despite being open to introspective judgement (Crane, 2000, pp. 59-60; Thompson 2007, p. 285). The transparency observation as construed here is a mere phenomenological claim that attention to experience can retain only the perceptual object as *thematic* (that which is attended to). It says nothing about the extension of the judgements we can make subsequent to this.

[28] Whether one wishes to describe the resultant introspective attention here as attention to the (external) object or the *intentional* object will depend upon whether one favours internalist or externalist accounts of perception's intentional object, as well as broader issues about the objects of illusion and hallucination. See Crane (2000, pp. 55-58) for more on this issue. This point is not significant here. All that is important is the claim that any attempt to attend to the *act* of perception itself will fail.

258). For instance, from this perspective, mobilising or heightening focused introspective-attention to tactile sensations of a table can only reveal what those sensations are about - whether that table is felt *as* something hard, or smooth, or rubbery, or greasy. Unlike in the case of emotion, focused introspective-attention would not be able to illuminate (in any direct manner, at least) features of the *act* of experiencing – the *act of feeling* the table, independent of *what* is felt.

However, the transparency observation is controversial. Thompson (2007) suggests that, while attention to perceptual experience *usually* looks through to the (intentional) object, there is a way by which we can ('with effort') attend to the act of perception (p. 284). He calls this the 'moderate transparency thesis'. For Thompson, it's possible to attend to an experience's 'subjective features'. An experience's subjective features are not qualities of the object (as are attended to in perception) but qualities of the way that said object is brought into view (pp. 285-287). And through such attention, he suggests that features of experience on the side of the intentional act, which usually remain implicit or latent, can be made explicit and available for phenomenological consideration (p. 287). I will return to this complex issue in §4. For now, it's sufficient to note that, if Thompson is correct, the use of focused introspective-attention in the investigation of perceptual experience will also need to be sensitive to the possibility that *different* aspects of perception's intentional structure might be interrogated with its aid. And this will require identifying appropriate labels for initiating the respective probes.

3.4 Increased Richness, Increased Detail

The fourth danger surrounding the use of focused introspective-attention is that it's capacity to increase the granularity of experience can deceive us into thinking lived experience contains much more than is really the case. For example, when we shift attention to a peripheral aspect of our visual experience, we find it rich in colour and detail. However, empirical work shows an inability to accurately report upon colours in the periphery (Ferree and Rand, 1919; Moreland, Jameson and Hurvich, 1972). We also know that subjects can fail to detect overt and incongruent phenomena, if primed to be selective of (focus upon) only certain features in a scene; Simons and Chabris' (1999) famous "invisible gorilla" experiment showed that subjects often failed to recognise a man in a gorilla suit walking through a ring of people passing a basketball, if asked to count the number of passes made. This supports a phenomenon of "inattentional blindness" to many features of the world (see Mack and Rock, 1998)

In §2, I suggested that "refrigerator light" objections (per which, *all details* of experience are new ones) are too extreme, if offered as default objections to acts of bringing the pre-reflective to attention. Nonetheless, we'd be naïve to think that genuine cases of attending to (conscious) pre-reflective experience will "fill out" that experience only with those data that were already present. Not only can focused introspective-attention add very overt things to experience, of the sort missed in inattentional blindness experiments, but the increased granularity that it affords will also capture subtler detail and nuances. For example, focused introspective-attention to gustatory experiences in

"mindful eating" programmes may support awareness of subtler flavours and details in one's food, enrichening the eating experience in manner that underpins the increased enjoyment of food reported in such programmes (Hong, Lishner and Han, 2014).

Relatedly, one should be careful of thinking that the prioritisation (and raising to awareness) of even equivalent sensory data through focused introspective-attention will be entirely homogenous. This process may well differentially prioritise stimuli from the original set. This means that the increased richness of experience can also reset the balance of features in experience, causing it to display a novel and perhaps more intricate structure. For example, attending to the taste of sweetness in one's coffee, might prioritise specific sweetness flavours in the coffee over others, rebalancing the original ratio and turning the experience into a *particular type* of sweetness, not the vague and diffuse taste one had previously. In these cases, focused introspective-attention is introducing non-trivial novelty to the experience, rather than unobtrusively "accentuating" it's existing features, through clarity increases.

3.5 Conceptual Tainting

A final danger worth mention here concerns possible *conceptual distortions* introduced to experience though focused introspective-attention. A growing body of research argues that experience is subject to widespread "cognitive penetration" (see Zeimbekis and Raftopoulos, 2015), as when a subject's irrational belief that person X is angry with them might cause them to experience person X's expression as more "angry-looking" (Brogaard and Chomanski, 2015, p. 472). In a similar way, we might worry that attempts to direct introspective attention by mobilising conceptual representations generate something capable of infecting the experience itself.[29] These concepts might introduce novel conceptual content to experience. Mobilising the concept *CANDLE* to direct attention to one's visual experience of a particular object (i.e. a candle) might itself introduce the representational content *CANDLE* to the experience, where it was previously absent. Or, for the less representationally-oriented, these concepts might yield new "gestalts", wherein non-conceptual content is restructured into new figure-background relations.[30] If so, the very method used to examine experience is pre-determining what one finds there.

These concerns also extend to theoretical concepts. It's suggested that even the philosophical schema one brings to introspection can taint what one discovers through it. Firth (1949) proposed this as one means to explain disputes over sense-datum theories in the early twentieth century, questioning whether 'underlying prejudices' at play might 'prevent many people […] from examining perceptual consciousness with complete objectivity' (p. 452). One way to interpret this is to say that philosophical conceptions about experience might lead subjects to initiate different kinds of probe,

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[29] See Brogaard and Chomanski (2015, pp. 470-472) for thoughts on the relation between these two kinds of case.

[30] See Siegel (2006) for more detail on the difference between these two accounts.

that accordingly transform experience differently. Those believing perception to be entirely transparent may have been targeting only it's objects, while those favouring less transparent conceptions may have been sensitive to and picking up upon *other* aspects of perceptual experience, explaining divergences between the two groups (pp. 462-463; see also Spener, 2018, pp. 153-156). This returns us to the concerns raised in §3.3, to which we can now add the possibility that even different *philosophical conceptions* of experience might induce different kinds of probing, yielding different results.

One finds similar issues discussed in epistemological debates internal to the field of Buddhist Studies. Thompson notes that it remains 'an open an interesting question' in the field whether meditative experience informs, *or is informed by*, Buddhist philosophical ideas (Thompson, Varela and Rosch, 1991/2017, p. xxiii). One can well argue that canonical Buddhist texts and meditation manuals might themselves shape the experiences of meditators. For instance, philosophical schema favouring the *discreteness* of experience might promote means of access that yield an experiential landscape mirroring such a schema, rather than revealing the mind as it is independent of such concepts (see also Thompson, 2015, pp. 56-57). Some even argue that attentional skills might be trained *precisely to alter* experience, such that it better accords with doctrinal truths. Sharf (1995) outlines how the historical assignment of genuine knowledge to purported cases of meditative insight 'often require[d] the complicity of spiritual exegetes […] called upon to attest to the orthodoxy of one's meditative accomplishment' (p. 270). He suggests that Buddhist meditation might better be considered a 'script for performance', or '*ritualization* of experience' (p. 269), serving to legitimate the doctrine in traditional scripture and preserve a certain unity amongst the tradition.

3.6 A Route to Handling Distortion

The revamped distortion-oriented concerns reviewed above present a more formidable challenge to the use of meditation in the study of the mind. They do not simply equate the transformation of experience with its distortion but highlight *specific kinds of change* fostered by a skill in focused introspective-attention (trained in Focused-Attention practice) that are counterproductive and can promote a misleading picture of lived experience. In sum, they suggest focused introspective-attention brings a swathe of dangers along with it benefits. Nonetheless, I suggest that none of these dangers is severe enough to warrant relinquishing such a skill. Rather, one can retain an epistemically-beneficial place for it (and thus for Focused-Attention practice) in the study of the mind, so long as one is sensitive to *how this skill is used* within our introspective endeavours. It must be used in a way that *exploits* the epistemically-beneficial transformations of focused introspective-attention whilst either minimising or accounting for those more misleading and deceptive transformations noted above.

As I've emphasised, contemplative theory retains an important role for top-down skills. In the final section, I'd thus like to bring the attention literature into dialogue with the pedagogical literature on meditation to advise how to use focused introspective-attention prudently. Here, I'll look to the instructions for "insight" practices, where top-down attentional skills are utilised for epistemic

benefit. Doing this, we will see that the actual specifics of meditation instruction are such as to side-step, minimise or address many of the dangers just outlined. They well reveal: the kinds of introspective target for which focused introspective-attention is appropriate; the manner in which it needs to be employed; and the point at which it needs transcending.

Moreover, I shall show that these pedagogical suggestions are fully consistent with the models of top-down attentional control reviewed above – such models leave theoretical room for (i.e. they can explanatorily capture) the less problematic ways of utilising focused introspective-attention indicated in the instructional literature. Delineating this can therefore help us flesh out a more careful approach to the use of focused introspective-attention, that can be replicated in contemporary scientific contexts. Along the way, we shall also acquire a more nuanced sense of the way that transformation of the mind can be handled within introspective methods, enabling us to distinguish several different ways in which transformation and insight can sit together.

4 Using Attentional Skill: Pedagogical and Scientific Considerations

My turn to the pedagogical literature on meditation centres upon the contemporary Insight Meditation Movement and closely-related "Burmese style" *Vipassanā* tradition, rooted in the teachings of Mahasi Sayadaw (1904-1982). The central elements of this twentieth-century Theravāda meditation "revival" draw directly from canonical Theravāda material, especially the 'Discourse on the Establishment of Mindfulness' (*Satipaṭṭhāna Sutta*), and the commentarial material of Buddhaghosa, centring on his 'Path of Purification' (*Visuddhimagga*) (Sharf, 2015, pp. 472-473; Cousins, 1994).

Theravāda is typically considered the most conservative of the Buddhist traditions and closest in doctrine and practice to Early Buddhism (Gethin, 1998, p. 1). Focusing on contemporary renderings of Theravāda thought thus allows me to strike a balance between (i) thematising relatively "foundational" aspects of Buddhist thought, consistent with my earlier aims, and (ii) avoiding the need for heavy-duty exegetical work needed to unpack the nuances of classical meditation manuals. Moreover, these contemporary manuals place special emphasis upon the "insight" stage of contemplative practice (hence their name), where attentional skills trained in Focused-Attention and Open-Monitoring are put to use for epistemic benefit. They also contain a wealth of nuanced student-centred, pedagogical advice that is de-emphasised in classical texts at the expense of the aesthetics of presentation and structure.

This thematic choice is therefore pragmatic, serving to ease exposition. As such, it must be acknowledged to arrive at the expense of strict representativeness to the very earliest Buddhist meditation instruction.[31] Nonetheless, there is no need to privilege older traditions when looking for

[31] There is significant debate over how representative these contemporary meditation revivals are of canonical instruction. For nuanced accounts of the Insight Movement's relation to older material, see Cousins (1994) and Sharf (2015).

"authentic" instruction. As with other later manifestations of Buddhism, the Insight Movement is rooted in the classical canon and is one of many forms of a *living* tradition that attempts to present those foundations in a manner appropriate to its environment. It can be considered here as just one pragmatic model for insight-oriented practice – one amongst many.

4.1 Refining Concentration

The first noteworthy feature of Insight Meditation manuals is their emphasis upon the possibility of *refining* the concentration that is induced by focused introspective-attention. Contrasting the relatively coarse-grained western commentary on this topic, the Buddhist traditions have historically emphasised a spectrum of increasingly pure kinds of concentration, not all of which suffer the above problems. In contemporary meditation manuals, one thus finds advice on how to "purify" concentrative experiences. This advice is sensitive to canonical distinctions between "right concentration" and "wrong concentration" and takes inspiration from descriptions of the *jhānas*—a series of increasingly refined concentrative states—catalogued in texts like Buddhaghosa's *Path of Purification*.

As teacher Sujîva (2000) notes, '"concentration" actually covers a wide range of experience' (p. 143). Concentration is said to denote the "holding" of an object. And Sujîva distinguishes a number of increasingly refined kinds of holding. He notes that the aim in Focused-Attention practice is to hold 'without clinging defilements' (p. 145) - '[n]ot with obsession, not with anger not with greed but with clear awareness' (p. 163). Thus, there are forms of concentration to be avoided in insight practice – primarily those *forceful* types manifesting feelings of necessity for some outcome and distinctive of craving (*taṇhā*). For example, impatiently slamming one's attention back upon one's meditation object, having been distracted for the hundredth time, is a case of unrefined, impure or "wrong" concentration.

It's common for meditators to note that concentration becomes increasingly easy with practice, requiring less pronounced forms of effort and intention, and this is accompanied by a lessening sense of positionality against one's object (Lutz et al., 2008; Wallace, 1999). The observation that feelings of positionality begin to dissipate, as intentions become less pronounced, is consistent with early Theravāda theories of mind. Such accounts hold the mental factor of craving, which is believed to accompany the majority of our intentions, not merely productive of suffering (*dukkha*), but also a critical component of the sense-of-self, to which this feeling of positionality or being *over-and-against experience* is intrinsic (Albahari, 2006, p. 27, pp. 61-63).[32]

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[32] It's important to recall that craving (*taṇhā*) is something held to manifest most often on a very subtle level in contemplative thought, rather than covering merely the kinds of overt longing we commonly associate with it. It is this commitment to the subtlety of craving that allows it to play an important role in Theravāda accounts of the sense-of-self. Moreover, one should distinguish the sense of positionality from the *perspectival quality* inherent to many experiences. While perceptual experience, for instance, has an inherent perspectival dimension, wherein objects are presented from a particular spatio-temporal location (or "point of view"), this is distinct from the positionality felt as we are set *against* perceptual experience itself (see Albahari, pp. 6-21).

These points suggest that the first distortion concern noted above—the seemingly fundamental sense of positionality that accompanies concentrative experiences induced by focused introspective-attention—may actually latch onto particularities in the way that concentration is initialised or sustained, rather than something intrinsic to it. Certain properties that we take as necessary may be common but inessential extras that can taint a narrower phenomenon. It is for this reason that Buddhist meditation is often highlighted as mobilising a "bare attention" (Colombetti, 2014, p. 156) wherein the attentional systems have been purged of elements not strictly proper to them. These things include particular volitional and affective tones that accompany many intentions used to shift or sustain focus, as when one anxiously attempts to hold the mind upon an object as a means to block out thoughts concerning some recent traumatic event.

Focused-Attention is thus a pragmatic approach for *refining* concentration so less distortive kinds can be mobilized. In fact, many traditions of Buddhist literature reference completely "non-dual" forms of concentration, where the sense of opposition to an object disappears entirely (see Dunne, 2011). Describing concentrative practice upon a *kasina* – a mental image of a "circle of light" – Sujîva (2000) notes that:

> There will come a time when there is unification—the mind and the circle of light are one. That moment, when one does not seem to be able to differentiate between the two, is what we call samadhi. It is a kind of absorption. As long as one is still consciously knowing and differentiating at that very moment, is it still access concentration (the degree of concentration traditionally held necessary for "insight" practices) […] There is no subject-object differentiation at the moment of samadhi (p. 149, parenthesis added)

In samadhi, the sense of positionality associated with craving is entirely absent – here there is no sense of a subject "doing" the concentrating. And this possibility is consistent with the above models of top-down attentional control, if they are unpacked with sufficient care. The establishment of concentration, through focused introspective-attention, is tied here to the holding of conceptual representations in working memory. But while the effortful and intentional rehearsal of appropriate labels assists in this process, there is nothing about such models that require their incessant employment. Appropriate representations can remain in working memory for significant amounts of time without rehearsal (Ericsson and Kintsch, 1995) allowing one to deploy focused introspective-attention without the constant need for linguistic commentary that induces feelings of positionality.

This possibility is also outlined in meditation manuals devoted to the establishment of the *jhānas*. Here, it's suggested that coarser kinds of concentration proceed through the factors of *vitakka* and *vicāra*, with the two usually being introduced together as the amalgam *vitakka-vicāra* roughly translated as "applied and sustained thought" or "initial and sustained mental application" (Shankman, 2008, p. 39). Here, concentration is maintained through effortful label use. But Shankman (2008) outlines that, as one moves through the *jhānas*, these are left behind:

> As concentration deepens, the mind becomes more still. The mind in the second *jhāna* is free from discursive thought […] vitakka-vicāra […] drops away in the deeper levels of samādhi. Concentration has been sufficiently strengthened so that it need not be tethered to an object by the factors of vitakka and vicāra, since it naturally remains steady […]. At this stage the awareness remains stable and unbroken. The Samṇamṇdikā Sutta states that wholesome intentions, a form of mental activity, cease without remainder with the subsiding of vitakka-vicāra upon entering the second *jhāna* (pp. 44-45).

This suggests that, though applied thought is usually important for the *development* of concentration, it is not essential to concentrated states themselves. The subject can eventually engage a more refined focus upon experience that proceeds without the feelings of positionality associated with intentional thought. Moreover, given that this form of concentration is said to remain naturally steady, despite the fact that representations in working-memory are thought to decay over time (Barrouillet et al., 2017; Lemaire and Portrat, 2018), these are likely forms of introspective concentration that do not fit under the "top-down" umbrella at all. They would be analogous to cases of involuntary perceptual "absorption" in some natural scene, as when the beauty of a sunset keeps one glued to it, or cases where a particularly interesting stimulus holds our attention independent of any intention or agenda of our own. These are *bottom-up* forms of sustained attention, where one's attentional targets are not strictly "controlled" by one's intentions in a direct sense. While it's not possible to go into detail about these states here, Lutz et al. (2008) offer a useful "dynamicist" account of such experiences:

> [high-level] meditation states might not be best understood as top-down influence in a classical neuroanatomical sense, but rather as dynamical global states that, in virtue of their dynamical equilibrium, can influence the processing of the brain from moment to moment […]. In this alternative "dynamicist" view of top-down control, spatio-temporal trajectories of neural activity emerge from complex non-linear neural interactions following rules of dynamical theory […] In this view, the brain goes through a succession of large-scale brain states, with each state becoming the source of top-down influences for the subsequent state (p. 167)

By Lutz et al.'s (2008) model, the maintenance of these maximally pure forms of concentration need not be explained by any *additional* psychological state, meaning that these states are not instances of top-down attentional control as understood in the present paper. Rather, the experience *sustains itself* when isolated from perturbing factors, in virtue of the self-organizing properties of these biological systems (see Thompson, 2007, chpt. 3).[33] In respect of this, it's plausible that Focused-Attention practice not only trains a more refined kind of focused introspective-attention, but that such top-down

[33] The importance of isolation from other influences here explains why we find it so hard to become immersed in something when we have a lot on our minds. Becoming properly absorbed in nature, for instance, usually requires that we've somehow managed to set aside our habitual list of obligations.

states themselves can lead to bottom-up forms of sustained and introspective attention, which might also be exploited within science.[34] The description of these two possibilities within the meditative literature, as well as their theoretical consistency with the contemporary attention science in question, therefore works against the first distortion concern noted in §3. Both motivate thinking that the alien positionality associated with focused introspective-attention can be lessened by appropriate training in these two faculties.

At this point, it's also worth noting something rarely commented on in responses to this objection – the sense of positionality is not, in fact, alien to all lived experience. Often, our experience is one of being overtly positioned *against the world*. We are not always immersed in the world and its objects, as objections of kind outlined in §3.1 intimate, but often felt to be detached from and standing against those objects. This phenomenological sense of opposition is thus a feature of some lived experiences, which can be captured by focused introspective-attention. If transparency theorists are correct in suggesting that the attention mobilised when introspecting perceptual experience in a top-down fashion is nothing other than top-down *perceptual attention,* then we are merely replicating the phenomenological dimensions characterising top-down perceptual attention, rather than "distorting" lived-experience. Even if the two forms of attention are different, both will sometimes involve a dimension of positionality (irrespective of what one is positioned against), mellowing the concerns about the unrepresentativeness of reports gathered through top-down introspective skills.

In spite of this qualifier though, certain features of experience will be overshadowed if this positional attitude is all one can bring to bear in investigations, for the reasons reviewed above. And this section can be concluded with some concrete recommendations for introspective methods motivated by prior considerations. First, the examination of subtle features of experience would be best to proceed with prior competence in more advanced concentrative states (whether refined top-down kinds or bottom-up kinds). Feelings of positionality are unlikely to undermine attempts to distinguish salient differences between coarse emotional states like anger or fear. However, they are much more likely to subvert phenomenological investigations of the micro-dynamics of implicit bias, fleeting associations, or the fast-changing temporal properties of perceptual phenomena. Without a capacity to rid the mind of things inessential to these targets, introspective reports of such properties may be tainted or hampered by features not strictly proper to them. More broadly, what distinguishes the two kinds of case above is the relative difference in prominence, intensity or salience between the experiential properties we are investigating, and those we are generating in order to target such things (feelings of positionality, volition, intention etc.). Subtle aspects of experience will require a subtlety of concentration so as not to be overshadowed by more overt features of consciousness.

At this point, we can also distinguish the first broad way that transformation can be handled appropriately within first-person methods. As in the above mobilisation of concentration, one can work to (1) mobilise beneficial transformations, whilst *eliminating* detrimental transformations (novel

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[34] Such advanced non-positional kinds of concentration are usually *not* considered requirements for insight practice though (Sujîva, 2000, p. 149; Gethin, 1998, chpt. 7; but see Bronkhorst, 1993).

and overt positionality, in this case) at the very earliest stage of investigation. This is the simplest and most intuitive way to approach transformation.

4.2 Appropriate Labels: Broad, Simple and Brief

Despite the above problems associated with the use of labels to direct attention, these will remain important within investigations of coarser aspects of the mind, and in building up to more refined top-down and bottom-up concentrative states. The Insight Meditation literature accordingly devotes much instruction to the appropriate kinds of label for initialising focused introspective-attention, where it is known as the practice of "mental noting". What one sees here is the predominance of labels that are (conceptually) broad, simple and brief.

Firstly, labels used to direct attention tend to express maximally broad contents. Those used include: "feeling" or "sitting" in mindfulness of the body; "seeing", "touching" or "hearing" in mindfulness of the "sense-bases" (sensory fields); and "breathing", "in", "out", "rising", "falling" to hold the mind upon the breath (Sujîva, 2000, pp. 28-41; see also Gethin, 2015, pp. 28-30). More specific labels are sometimes used *after* this initial stage of attentional application (e.g. one can register thoughts as "remembering", "planning"), though these tend to be used to help *register* what has emerged, rather than to *direct* the mind; their function is to ingrain conceptual insights, rather than make insights possible. One might think of this difference in terms of canonical distinctions between *sati* (mindfulness) and *sampajañña* (clear comprehension). Nyanaponika (1988, p. 46) notes that the former concerns the attentional *holding* of the object, while '[c]lear comprehension is the right knowledge (*Ñāṇa)* or wisdom (*Paññā*) based upon right attentiveness (*sati*).' (see also Dreyfus, 2011, pp. 49-50)

Relatedly, practitioners are cautioned to avoid specificity in their labelling when that endangers artificially preserving some aspect of experience. Sujîva (2000), discussing attention to the sensations of breathing, states that even 'the "rising" or "falling" [is] not constant and it may disappear while one is watching it' (p. 31). Warning against the unnatural preservation of these aspects of experience, he notes:

> The labelling can be said to point to a window to which we direct our mindfulness. It helps us hold our mind to the meditation object and thereby, develops the concentration which sees, through mindfulness and bare attention, the realities that occur there. Here, we cannot choose what we see; we only direct our mindfulness to the "window" and observe whatever arises (p. 30)

As Davis and Thompson (2015) note, such labelling is also used more informally through the day during Vipassanā meditation retreats; they suggest that the aim here is, again, not primarily to describe, but to *hold* the mind to the present (p. 51).

In either situation, mental noting will likewise avoid complex concepts likely to prompt further reflection by the student and will tend towards brevity, rarely extending beyond two words and normally just one. This helps avoid what's known as "conceptual proliferation" (*papañca*) in Early Buddhism – the snowballing of thoughts and evaluations about experience (Ñānananda, 1971/1997, pp. 4-5). More complex and extended notes are likely to evolve from *directive* aids to *descriptive* or *discursive* thought. They will take a direction of their own, pulling one away from experience or leading to affective reactions and thus "impure" forms of concentration.

With these points noted, one can establish some clearer guidelines for the use of labels within first-person scientific methods. First, focused introspective-attention should be initialised with the help of labels that are simple and brief. This will be critical in supporting what's referenced in the phenomenological literature as a 'receptive openness' to experience. Colombetti (2014) elaborates this as 'a *passive-observational stance* towards one's mental life', which is '[not] inquisitive, judgemental [or] actively discriminating' (p. 149, see also p. 156; Thompson, Lutz and Cosmelli, 2005, p. 70). Simple and brief labels will support this stance, forestalling discursive thought that can stir the mind into distraction and impure concentration.

Second, one should err in favour of broad and neutral labels, relative to one's introspective targets. This will help (at the subpersonal level) to mobilise attentional control-sets that exert maximally homogenous increases in alertness and (at the personal level) to minimise the possibility of conceptual distortions of experience or the introduction of novel content. Relatedly, the pedagogical literature suggests that one should been keenly aware of the move from directive labelling to descriptive labelling, which will be more specific and more likely to 'fulfil' the experience in a certain way, stabilising particular and more specific properties in a more artificial manner (see Depraz, Varela and Vermersch, 2003, p. 71; Petitmengin, 2007, p. 74). This distinction between directive and descriptive language use is rarely made in the broader introspective literature, but it can help to minimise dangers introduced by rushing into specific, complex and extended description too quickly.

Note though that these are all strategies for the *minimisation* rather than elimination of conceptually-induced novelties in experience. For instance, the enriching of an experience through top-down processes, bringing detail and precision, may lead to increased specificity or determinacy of that experience, *however broad* the label employed. A vague and diffuse sense of enjoyment might be transformed into a new and particular kind of enjoyment with attention (see Colombetti, 2009) or reveal subtler bodily stimuli than were apparent before.[35] Nonetheless, though we can only seek to *minimise* rather than eliminate such transformations, this causes no intractable problems for those first-person methods open to such issues. One reason for this is that problematic novelties can be dealt with during the *latter stages* of first-person methods, if we know of their likely occurrence. Though

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[35] Nanay (2009) and Stazicker (2011) have proposed determinacy increases as a necessary feature of visual attention. They employ the determinable/determinate distinction to make this point, where determinates of any determinable are conceived as *more precise way of being that determinable*, as scarlet is a determinate of red. From this perspective, top-down attention will always lead to increases in specificity of visual experience, which we might think will apply in the case of focused introspective-attention upon visual experience too. For a counter-argument, see Wu (2014, p. 125).

this point might not feature prominently in debates within the Buddhist traditions, it forms a central concern of other traditions of phenomenological inquiry, which introduce additional procedures after individual introspective reports have been made, and which are important partners to the use of meditation-trained skills in the study of the mind. This is a point not stressed often enough in response to distortion concerns, which we can unpack with a specific example, and which can help distinguish the second broad way that transformation can be handled.

Take attempts to establish what uniquely identifies the lived experience of desire – some general characteristic of the mind, common across many persons. Good introspective methods aimed at this will always involve the employment of *additional processes* after token descriptions have been solicited from individual subjects. These processes are employed precisely to correct for some of the problematic idiosyncrasies that will be formed in the individual introspective act. The phenomenological tradition stresses the importance of "eidetic reduction" and "intersubjective validation" here. In the eidetic reduction, the subject engages in a form of imaginative variation, to isolate what is essential to experiences of a certain type from what is inessential or ephemeral. Intersubjective validation then compares, contrasts and corroborates these results across many individuals. These then are two attempts to *filter out* some of the idiosyncrasies that might be introduced at the individual level of self-observation by acts of attention to experience, and which can permeate individual descriptions. The problem of distortion seems so large often on account of forgetting this important step in first-person methods.

This enables us to distinguish the second broad way that transformation can be handled. We can (2) mobilise *beneficial* transformations, whilst *minimising* detrimental transformations and then (in latter stages) *filtering out* the novelties infecting descriptions of token experiences. In this sense then, it doesn't matter so much whether descriptions about particular instances of experience are in fact misleading or erroneous with respect to particular features of experience. Cognitive science does not care in large part about the experiences of individuals, it is concerned with general truths—the "invariant" features of experience—that can be approached by correcting for more distortive transformations in the process of their revelation.

4.3 Piecemeal Progress

As noted in §3.3, introspective methods need to be sensitive to the fact that some experiences will be complex targets, with numerous moving components, and open to variable probing. An implication of this is that it will be important to gauge how to consistently target these different aspects with focused introspective-attention, so as to avoid theoretical overemphasis upon some, or the conflation between reports of different kinds. Turning to the Insight Meditation literature is again beneficial here, particularly in its approach to investigating the *emotions*.

Emotions are primary means by which the Hindrances manifest. Given that these are chief concerns of Buddhist practitioners, one would expect the Buddhist tradition to have much to say about the appropriate means to investigate emotions. And they do. A first thing of note in the Insight

literature is the recurrent suggestion that the intentional "act" of emotions is best investigated through the body. Contemporary teacher Thiradhammo (2014) well exemplifies this in the following practice instructions:

> Trying to be aware of [the Hindrances] at the very beginning of practice, it is easy to be pulled into them [i.e. into the story about their object] or caught in doubt about them: 'What am I actually looking at?' However, if you have a very good grounding in *awareness of the body*, you can always relate back to it, or cross-reference it: 'What is the condition of the body? Is it lacking in energy? Or has it got too much energy?' Through the body you are able to recognize: 'Oh, there is lethargy', or 'there is restlessness'. Thus you can generate greater awareness of the Hindrances through *awareness of their expression in the condition* of the body (pp. 24-25, emphasis and parentheses added).

This proposal can be unpacked by noting some features of contemporary emotion theory. There's a consensus amongst emotion theorists that bodily sensations play a pivotal role in the experience of affect and emotion (Damasio, 1999, 2003; Pollatos and Schandry, 2008; Prinz, 2004; Seth, 2013; Whiting, 2011). Different emotions are known to correlate with different kinds of bodily activity (Nummenmaa et al., 2014), and it's thought that emotions constitutively involve an awareness of some such activity (Colombetti, 2014; Prinz, 2004; Whiting, 2011). From this theoretical standpoint, the prioritisation of interoceptive data (i.e. data about bodily features, such as the muscles, skin and organs) through top-down attention to bodily experience (or the body itself) should help to illuminate certain characteristics of emotion – namely the intentional *act* of emotions, wherein we feel towards particular things.

Expressing this point, Davis and Thompson (2015) suggest that mindfulness-practice 'may result in increased awareness of one's emotional state by virtue of increased conscious experience of interoceptive changes involved in one's physiological reactions' (p. 55; see also Colombetti, 2011, p. 302; Farb, Segal and Anderson, 2013; Hölzel et al., 2011; Sze et al., 2010; Teper, Segal and Inzlicht, 2013). This increased awareness might concern the simple occurrence of some undefined form of emotional reactivity or it might concern the type of emotion taking place. The authors actually attribute this possibility to longer-term increases in bodily awareness available through mindfulness-meditation, which I shall review in §4.5. Yet, such increases can also be induced on demand using focused introspective-attention with body-centric labels (e.g. "body", "feeling" or "abdomen"), as in Thiradhammo's (2014) above account. This will both accentuate the bodily properties of the emotional act and isolate them from distractors, to our epistemic advantage.

Such a strategy exemplifies a more general benefit of labelling noted by Nyanaponika (2015). He speaks of labels as means of 'singling out the separate strands forming [the] intricate tissues [of experience]' (p. 76) such that they can be better investigated and catalogued. In the case of emotion, focused introspective-attention to bodily experience, through appropriate labels, works to accentuate and isolate the bodily expression of the intentional act from the emotion's more cognitive elements (or

that which the emotion is directed towards). This way, we can learn certain distinctive things about the different types of emotional experience, irrespective of their objects. For instance, we can reveal the precise bodily structures involved in any particular emotional type, as well as the spectrum of sub-varieties of those emotions that are possible. For instance, attention to the body during episodes of anger can reveal kinaesthetic sensations preparing the arms and hands for movement as distinctive features of this emotional type (see Nummenmaa et al., 2014).

This can be done whilst acknowledging that we don't learn *everything* about emotion through attention to the body and that this act has additional and more distortive effects upon our experience, which will need accounting for. For instance, Buddhist contemplatives are well aware that directing the mind to the intentional act of emotion will sap some of its intensity. Mirroring Brentano, Nyanaponika (1988) notes that direction to a bodily state of anger about a disturbing noise works to dissolve that anger by 'diverting attention' away from the noise that fuels the anger (p. 72). Indeed, this forms a central strategy for suppressing the Hindrances, an understanding of which is held important for the practitioner to develop (Thiradhammo, 2014, p. 27). Yet, these facts do not mean that one can learn nothing about the intentional act and the larger emotional structure here. In the case of emotion, attention to bodily experience does not immediately overturn the comportment of the body, and thus the emotion it expresses. If it did, the soteriological project would be an easy one!

Furthermore, some of the seeming "losses" involved in any individual probe are merely temporary and recoverable. Note how, often, reflective awareness of the simple fact that one is emotionally reacting *at all* is a condition for revealing the intentional objects of emotion. It can prompt a search for what one is reacting to, where one directs attention to "mental objects".[36] For example, while cycling to work, there may be many fleeting emotional states occurring in my background experience as I focus upon the road. Many of these will be outside of my reflective awareness, and at the end of the bike-ride I may be unable to report either their occurrence or their intentional objects. If, however, I can gain reflective awareness of an emotional episode by tapping into the body at regular intervals during my bike-ride, this can set of recognitional alarm bell (e.g. "I'm feeling worried"), which can prompt me to seek out the intentional object of that experience. This is possible given that the act of diverting attention to the body (i.e. the feelings of worry) rarely completely disarms my emotion of its intentional object or prevents it from returning and rumbling around in my mind. The very recalcitrance of the Hindrances is what armours top-down investigations of experience against some of these criticisms.

Altogether, we see that the meditative assembly of introspective knowledge is self-consciously presented as proceeding in a gradual, accumulative manner. It is sensitive to more problematic transformations induced by any individual step in this process and works around these, over time, to get a sense of the "lived experience" of the mediator. All things considered then, from

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[36] This is practiced in "mindfulness of the objects of clinging" where one gets more of a sense of the things one is pre-occupied with, rather than the manner of being pre-occupied itself. See Thiradhammo (2014, pp. 44-45) for a good personal account of how this might proceed.

this review of contemplative approaches to the investigation of emotion, three points emerge as "take home" messages about the appropriate ways to use focused introspective-attention.

Firstly, the literature helpfully emphasises that top-down introspective inquiry is often an *extended* and *piecemeal* affair (i.e. when one's introspective targets are complex). There is no reason to stipulate the engagement of a single introspective act able to simultaneously illuminate everything perfectly clearly.[37] The long historical engagement of Buddhist contemplatives with experience has led to an understanding of its complexities, and a complimentary *series* of different acts by which those complexities can be illuminated. So long as one is sensitive to the different effects of each probe, one can proceed safely.

Secondly, this helps us identify two further ways that transformation can be handled in the investigation of experience. Already we have seen that it is possible to exploit positive transformation whilst (1) *eliminating* distortion during the act of probing or (2) *filtering out* distortive idiosyncrasies that have come to infect reports in later stages. In the above examination of emotion, two more possibilities emerge. We can instruct introspectors to conduct a series of probes, asking them in each case to (3) *ignore* those aspects of experience that we know will be distorted by probing at the point of report (for example the intensity and "directed" nature of emotion) and to direct themselves only to those properties likely to be most reflective of lived experience (e.g. the broad bodily components of emotional kinds). This way, so long as one proceeds cognisant of the full set of phenomenological effects of focused introspective-attention, one can avoid being misled by them. For, just as turning on a light to investigate which of our relatives is occupying a dark room *changes* them, in the sense that it will raise their temperature ever so slightly, it does not change them with respect to the property we are interested in.[38] This approach is distinguished from *filtering out* (method (2)) in that it forestalls such distortions from even contributing to judgements about lived experience in the first place.

In contrast, it is also possible to (4) *derive knowledge* about the properties of lived experience from distorted properties themselves when employing top-down introspective attention. In the above analogy, we could also derive some knowledge of the person's temperature so long as we know either roughly how the light affects them (i.e. that it *raises* their temperature) or indeed how strongly (i.e. *how much* it raises their temperature). In the introspective case, knowing that the strength of an emotion is likely to decrease (*ceteris paribus*) upon bringing it into attention, we can infer certain things about the pre-reflective intensity of this emotion too – that it was *no more than* intensity-level X. In this way, we can arrive upon an increasingly accurate and complete understanding of our own lived experiences, while acknowledging that some such aspects of this picture are approached indirectly.

The third and final take-home point from the Insight Meditation literature's treatment of emotion is its emphasis upon *the body* as the route into the intentional act of experience (see also Depraz, Varela and Vermersch, 2003, p. 36). I've illustrated how this proceeds in the case of emotion,

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[37] Petitmengin (2006, pp. 237-238) also makes this point, but of what she calls 'retrospective evocation', that is, re-enacting different aspects of experience in memory.

[38] Thanks to Scott Sturgeon (personal correspondence) for this analogy.

though we might also use it to inform discussions about perception. Earlier, I noted how debates concerning transparency (§3.3) and sense-data (§3.5) might be explicable in terms of different ways of probing experience, rather than direct conceptual "distortions" of the experiences in question. It may be that transparency theorists, for instance, hold the view about perception that they do precisely because they are unaware of the appropriate means to draw attention to the intentional act of perception, while the meditation literature helps unveil the body as key here.

This possibility is further motivated by returning to Thompson's (2007) comments on perception. Earlier, I noted Thompson's proposal that perception always presents more than the sensory qualities the world; it presents also *subjective features* that it is possible to attend to. Thompson describes this in terms of the "self-presentation" involved in perception, which I understand here to mean the presentation of *aspects of the self,* as opposed to the world.[39] Drawing upon Husserl and Merleau-Ponty, he elaborates that self-presentation is made up of a 'pre-reflective bodily self-consciousness' (p. 265). For example, the presentation of the table's hardness is said to involve more than just registration of the table's rigidity, or the pressure it exerts upon me; it also involves a subtle awareness of my own corporeal engagement with the table, wherein I actively attempt to put pressure on and manipulate the table itself. From this perspective, awareness of the body is also a constitutive part of perceptual experiences. And it seems reasonable that we might heighten awareness of the intentional act of perceptual experiences by bringing attention to their *bodily features,* analogously to the way emotional experiences can be illuminated.

There is an important dis-analogy though between emotional and perceptual experiences. When attending to the bodily aspects of emotion, the emotion is temporarily sustained in the absence of its intentional object. However, it seems difficult if not impossible to turn away entirely from the objects of perception whilst sustaining those perceptions themselves. Thompson thus cautions that the appropriate means of attending to the intentional act here involves 'not […] turning our attention away from what that experience is *of* (that is, the intentional object)' (2007, p. 285) but by engaging an *extra* form of attention atop this basic kind.

Thompson offers only a short and speculative account of this dual attentional stance. He describes it to involve 'direct[ing] our attention to the appearance of the object […] *while vigilantly keeping in mind that appearances are objective correlates of subjective intentional states*' (p. 287). Here then we seem to have a balance of two things in play. One must hold the object in place, whilst "keeping in mind" the corporeal, active and subjective features of perception. Thompson's marks such "keeping in mind" as involving a kind of "cognitive attention". This suggests a new kind of top-down attention being employed once concentration upon the object itself has become steady, but one which

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[39] This should be understood differently to other uses of the term "self-presentation" (or "self-representation") which take the "self-(re)presenting" quality of perception to designate the implicit awareness *that* one is conscious of something, accompanying at least some of our experiences (see Rosenthal, 2002, p. 409; Zahavi, 2014, p. 15). I say more on this feature of the mind in §4.5. See Coseru (2009) for an understanding of self-presentation closer to my own and Thompson's (2007) interpretation, which Coseru attributes to Buddhist thinker Dignāga.

must somehow accentuate one's bodily involvement in the perceptual act without biasing against incoming sensory data (at least in any significant sense).

I must admit that this gesture remains obscure to me. It is difficult to understand both the practicalities of its performance, and how it can be made consistent with the models of top-down attentional control reviewed here. Nonetheless, relating these two presents an interesting avenue for future investigation. And I suggest that further engagement with the contemplative literature might assist here. Manuals devoted to *kasina* practice, for instance, involve detailed accounts of the steps by which one turns attention from the intentional object of perception to the intentional act itself (see Wallace, 1999). And further engagement with these texts may better unpack the nature and practicalities of such attentional gestures.

To summarise this third take-home point then, we can say that the Insight Meditation literature reinforces the idea that proficiency in heightening bodily awareness may be an important condition for proficiency in introspective endeavours and gives useful models for moving between act and object.

4.4 Concentration as a Preliminary Factor

Despite all the above qualifications about the appropriate use of focused introspective-attention, the Insight Meditation literature also emphasises its ultimate limitations within introspective endeavours. Some kinds of insight are simply unsuited to, and even hampered by, the deployment top-down skills, requiring other kinds of attention. This reflects a broader tendency within the literature to regard concentration as an ultimately *preliminary* factor, which is to eventually be de-emphasised in insight practices.

Focused introspective-attention's insufficiently lies in the narrowness of the experiences it promotes. It's tendency to inhibit things outside its scope means that it can remove surrounding components of experience that retain the shape and dynamism of that which is attended to. Similarly, inhibitory effects mean that such attention can ultimately obscure broader patterns of activity important for understanding the *causes and conditions* of suffering. The wider aim of insight practice is to develop and deploy "wise attention" (*yoniso manasikāra*) that discerns events in terms of the Four Noble Truths. This entails understanding more than just when craving and suffering are present, and their intrinsic properties; it demands familiarity with: how they came about; what makes them disappear; and what keeps them from returning (Thiradhammo, 2014, p. 26). Discernment of these patterns is best served by a kind of attention that is sensitive to such broad and diverse features of mental activity.

For these reasons Sujîva (2000) notes that the development of Right Concentration—that is, appropriate concentration for insight practice—does not mean pushing for extreme concentration at the expense of all else. Rather, it means developing a certain degree of proficiency in top-down attentional skill and then *de-emphasising* holding the mind in place, in favour of an interest or curiosity about the place one has been taken (pp. 145-147). Put differently, one employs top-down

attention to first bring the mind to rest on certain point. One then deploys a less selective attention that can be sensitive to whatever emerges within and *around* one's target, yielding a broadening in the range of experience (see Thompson 2015, p. 52).

Here, the subject is moving to a more distinctively *bottom-up* form of introspective attention, whose targets are determined (at least, most significantly) by the intrinsic features of experience. Nonetheless, it's seems that, here, the practitioner relies upon some of the 'natural steadiness' of higher-level concentrative states to hold the mind around a particular point. There is likely some residual, "hangover" effect of the self-organizing and self-sustaining properties of concentrative states (see §4.1) temporarily retained in this new state, allowing one's attention to centre upon and around a certain point, despite being open to broader patterns of activity. In this way, it will be possible to both *direct* one's focus whilst being sensitive to broader features of experience. This step approximates the "loosening" of attention that Petitmengin and Bitbol (2009) identify as an important stage in introspective investigations, to be entered after attention has been deliberately re-directed. They note:

> [u]nlike Focused-Attention [i.e. focused introspective-attention], which is narrow, concentrated on a particular content, this attention is panoramic, peripheral, open on a vast area. This diffuse attention is however very fine, and sensitive to the most subtle changes. Several people have described this openness to us as a subtle shift of the area usually perceived as the centre of attention towards the back of the skull, or from the head down into the body (p. 378).[40]

In recommending this eventual move to bottom-up forms of introspective attention, the Insight literature reinforces the idea that first-person methods can't rely solely on focused introspective-attention; a skill here needs to be paired with other capacities. While the ability to generate refined forms of concentration (including top-down and possible bottom-up kinds) is important, top-down, selective approaches to the investigation of experience should eventually be de-emphasised in favour of a more natural, unbiased and open curiosity, that better retains the mind's breadth and dynamism. A skill in focused introspective-attention is therefore a *condition* for investigation, whose exercise is eventually to be overtaken.

In this next stage of Insight practice, subjects rely upon a more general and involuntary sensitivity to experience, trained in Open-Monitoring practices (see §1.1). This involuntary sensitivity is usually illustrated by describing cases of its absence. A much referenced and relatable example is Armstrong's truck driver. Here, Armstrong (1980, pp. 59-60) relates the story of long-distance truck driver who, at some point in their travels, "comes to", realising that they have for the past while been driving without being aware of what they were doing, perhaps lost in some other thoughts. Here,

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[40] This deliberate "loosening" of attention also allows pre-reflective aspects of bodily experience to become more salient, despite their not being strictly focused, potentially offering another route into the intentional act of perception – when attention is not exclusively focused upon the perceptual object, it makes room for stimuli underpinning the perceptual act to become more conscious (see Petitmengin and Petitmengin, 2009, pp. 377-381).

Armstrong thinks we have sufficient reason to believe the driver had perceptual consciousness of stimuli required to drive; nonetheless, they were lacking some awareness *of* this consciousness – which Armstrong calls 'introspective consciousness'. It is this introspective consciousness that returns when the driver "comes to".

In the scientific literature, Thompson (2015, p. 52) notes that this phenomenon is captured under the concept of *meta-awareness*, which he glosses as 'awareness of awareness'. Though meta-awareness covers a varied and often conflicting set of capacities within cognitive psychology, we can conceive it rather broadly here in terms of one's automatic epistemic sensitivity to the contents of one's mind – something that needn't be prompted by deliberately "turning inwards".[41] And it is meta-awareness that comes to the fore in insight meditation once concentration has been built up to a suitable degree. Though, it must be emphasised that one first needs a *degree of proficiency* in top-down skills before this stage can be reached. Without skills in focused introspective-attention, the mind quickly run offs into different territory entirely. There will be no possibility to build up to more naturally stable states, nor therefore to direct one's inquiry at particular targets, leaving investigation a superficial and haphazard affair. So understood, focused introspective-attention is best conceived as an essential *preliminary* skill.

Yet there is an even more preliminary role played by this faculty, whose illumination shall be my final aim here. §4.5 will show how top focused introspective-attention can yield an extra type of epistemically-beneficial transformation in the longer-term. And this very transformation actually serves to improve the capacity turned to—meta-awareness—once focused introspective-attention has done its work.

4.5 Ground-Clearing

A final important characteristic of the Insight Meditation literature is its emphasis upon the preliminary "ground-clearing" function of top-down attentional control. In contemporary references to meditation, it is rarely emphasised that top-down attentional skills are used also in contemplative programmes to set the appropriate conditions *within which* to investigate experience, rather than

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[41] Somewhat confusingly, "meta-awareness" is sometimes used to describe only those occasions where one gains awareness of mental contents by such *deliberate turns inwards* (e.g. Chin and Schooler, 2009). This makes its use rather awkward here, for, though such deliberate introspective gestures are performed at the outset of Open-Monitoring meditation (i.e. one turns towards the whole of the experiential field), the practice aims to make one's sensitivity to experience more automatic and passive, rather than something that needs to be actively engaged, with this automatic capacity the primary target for improvement here (see Lutz et al. 2015, p. 640). An alternative term for this might be "inner perception", which Spener (2018) notes was coined by Brentano to describe the 'fairly automatic and passive awareness one has of one's own conscious experience, as one goes along in the world in an ordinary manner' (see Spener, 2018, p. 159) and set in deliberate contrast to "self-observation", where attention is actively and deliberately turned towards the mental (i.e. focused introspective-attention). For consistency with other meditation research though, I continue with the term "meta-awareness" here.

merely being ways to probe experience itself. As Gethin (1998) notes, Buddhist meditation regimes tend to be framed largely as a two-stage procedure:

> This then is the basic theory of Buddhist meditation stated in the terms of the oldest texts. While later schools and traditions may change and adapt the terminology used, while they may elaborate the stages and techniques in a number of different ways, while they may give distinctive technical accounts of the content of the knowledge gained […] the basic principle for the most part holds good: one stills and clears the mind and *then* turns it towards investigation and insight (Gethin, 1998, p. 176, emphasis added)

Gethin makes it clear here that investigation is proceeded by a ground-clearing procedure of "stilling" and "clearing", which usually occurs through concentrative (Focused-Attention) practices. Even in the contemporary Insight Meditation literature, where investigation and insight are prioritised, there is emphasis upon the supportive benefits of prior grounding in concentrative practices and the according development of the *jhānas* (see Sujîva, 2000, pp. 228-230; Nyanaponika, 1988, p. 62). Sujîva marks the ability to enter states of high concentration as an advantage (p. 230). While Nyanaponika (1988) notes that concentrative approaches to mindfulness of breathing can be used as 'a prelude to other exercises' (p. 62). Here top-down attention is something used not *within* the investigation, but as an important prior. How then does this yield epistemic benefits?

The broad proposal here is that repeated returning of the mind to a single object pacifies the mind of its habitual busyness; it generates states of relative quietude or calm that gives traditional Focused-Attention practices their framing as "tranquillity" (*samatha*) practices (Williams and Tribe, 2003, pp. 81-82; Gethin, 2004, p. 207). Importantly, this quietude is not something that immediately disappears once Focused-Attention practice is left behind. It seeps over into the post-concentrated state, producing a general or broad-scoped state of quietude.

This post-concentrated quietude can be understood by returning to earlier talk of *clarity*. In one of its Buddhist guises, clarity designates the emergence of aspects of experience without competition for attention. This can occur in a narrow sense, as when what one concentrates on emerges in relative isolation from distractors. But it can also occur in a broader fashion, where there is a more *general sparseness* to the mind. Though the mind is no longer "one-pointed" here, being populated by a broader variety of mental contents, there is nonetheless less going on in general, making for less competition amongst possible targets of introspection. And note that this supports the flip-side of mental clarity – vividness. With less mental elaboration, the mind's resources are distributed over a smaller range of phenomena, making one's experience of those phenomena richer.

With mental quietude achieved, mental contents emerging into the stream of consciousness will be easier to discern, both in the deliberate, top-down introspective probing of experience, and through more automatic meta-awareness capacities. On the latter note, Markovic and Thompson (2016) outline how 'meta-awareness requires maintaining openness to experience and overriding one's habitual tendency for conceptual elaboration' (p. 92). This makes focused introspective-

attention a key support for meta-awareness, for it can create a state where there is an ongoing disposition towards less elaborate processing of mental contents, allowing meta-awareness capacities to function more effectively. So understood, mental quietude does not *improve* meta-awareness capacities themselves; rather, it is the environment in which they function best.

Davis and Thompson (2015) link this idea to the earlier models of attention. They marshal evidence to suggest that raising phasic alertness—the region-specific sensitivity to stimuli, underpinning the local accentuation and isolation in acts of top-down attention—also raises *tonic alertness* in the longer term (Jha, Krompinger, and Baime, 2007; Robertson et al., 1998). Tonic alertness, recall, designates a person's broader degree of sensitivity to stimuli across the entire spectrum of sensory (including interoceptive) modalities. And we'd expect increases here to yield phenomenological changes akin to the broader-scale clarity characterising post-concentrated states. Less elaborate kinds of mental activity in the sparse post-concentrated landscape—especially, fewer *conceptual* dealings with experience (see Thompson, 2015, pp. 51-52)—allows for more cognitive resources to be devoted to remaining stimuli across the range of sensory (including interoceptive) fields, thereby accentuating what is left in experience, for the reasons reviewed in §2.4.3. Moreover, the phenomenological effects of tonic-alertness increases do not suffer from many of the problems associated with focused introspective-attention (i.e. those underpinned by *phasic* alertness increases), for they are more uniformly distributed across experience as a whole.

Importantly, these increases in tonic alertness are not simply residual effects that persist temporarily post-practice. They gradually come to permeate the everyday life of the meditator, becoming a more stable "trait" (Lippelt, Hommel and Colzato, 2014, p. 3; Kilken et al., 2015). This means that their supports to meta-awareness can extend here too. Davis and Thompson (2015) note that the reduction in conceptual elaboration, and consequent accentuation of the features of bodily experience (through raising tonic-alertness), can support awareness of body-based emotional reactivity in everyday life (p. 53). This happens without the need to go looking for such experiences, as one would when using focused introspective-attention as a probe, but thanks to its longer-term effects on the functioning of meta-awareness.

Classical Buddhist texts explain this transition from raised phasic to tonic alertness in terms of the "karmic arc". By removing some of the mental agitations (or karmic "seeds") in concentration practice, say particular Hindrances like "sensual desire", one pre-empts their future effects (their karmic "fruits"). By framing things as necessities, as the Hindrances do, individuals push themselves into discursive planning to attain those things (see Nyanaponika 2015, pp. 92-4). And this proliferation of discursive activity not only co-opts cognitive resources that could be spent in awareness, it promotes further Hindrances that do likewise, given the potential (and likelihood) for such plans to be frustrated. As the mind is less plagued by agitations then, Nyanaponika notes that 'the centrifugal forces of mind, making for mental distraction, will peter out' (p. 95), creating state of broad quietude for introspective investigations to flourish.[42]

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[42] For a more elaborate account of the contours of the karmic arc, as detailed in early Buddhist Abhidhamma texts, see Lusthaus (2003, chpts. 9-10).

We can summarise the general point here by saying that top-down skills help to create an appropriate *environment* for Insight practices to occur – whether this is done deliberately just prior to investigation or more organically over the long-term. Experiences arising (or even deliberately precipitated) in this environment won't be *reacted to* in the habitual way, creating a sparse, yet well-punctuated landscape, that is more amenable to description. In contemporary terminology, this broad-scale clarity can be distinguished as an "operational condition" for introspection – a condition under which introspective judgements tend to come out good or accurate (Goldman, 2004, p. 14; Spener, 2015, p. 303, 316). This is not too far from what is already suggested in some recent treatments of introspection. Spener (2015), for example, identifies a common set of conditions contributing to introspective accuracy, including the subject being 'alert, not distracted, not under the influence of drugs' (p. 316). Buddhist contemplative programmes merely systematise methods for producing conditions of alertness and non-distraction at the broadest-scale (in the clarity that spills over from Focused-Attention practice), so that it can be exploited in introspective endeavours. Thus, renowned Insight teacher Ajahn Chah has remarked that 'the deeper the calm, the deeper the insight' (cited in Thiradhammo, 2014, p. 42)

One might object that conducting introspective methods within this environment brings its own dangers of unrepresentativeness, offering a variant of the 'stilling the stream' objection from §3.2. Recall Brentano's claim that deliberate attention to emotions serves to "deaden" them. We might worry that the prospects of studying "real" anger, say, (of the intense and raging kind that actually drives our behaviours) is in fact *worsened* by the state of quietude traditionally cultivated as a precursor to Insight practice. This is an important objection, and we must be careful to acknowledge this and similar differences between the naïve introspector and the trained meditator. Nonetheless, so long as we are again sensitive to differences between the two (which Froese et al. (2011) remind us that meditators are well aware of (p. 265) and are used to incentivise practice), we will be able to exploit "revelatory" differences, whilst either minimising or accounting for more distortive differences in the four ways already outlined.[43]

We can also re-impress the difficulty of the soteriological project here. Practitioners will testify that meditative practice does not rapidly banish ordinary kinds of emotional reactivity from their existence. There may well be *less* instances of these, but only the most idealistic conception of the contemplative project will posit their complete disappearance. The very recalcitrance of the Hindrances ensures that important features of experience will therefore be shared (e.g. the emotional kinds noted in §4.3) and interrogable through the above methods. Yes, there will be increases in granularity here. Yes, there will be different levels of intensity when it comes to emotional experience. But one can be sensitive to these. And more productivity, one can then focus on the ways that meditative quietude might "prime" the mind to be more susceptible to the shorter-term probing of focused introspective-attention, rather than those ways that it takes the mind further away from that of the non-meditator.

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[43] It's also worth mentioning that meditators' journeys through to a different "default state" are likely to make them more familiar with the things that they have relinquished.

In conclusion then, two lessons can be drawn from the Insight meditation literature concerning the "ground-clearing" benefits of focused introspective-attention. One the one hand, practices devoted to ground-clearing can be employed immediately prior to introspective investigations to induce appropriate operational conditions. On the other hand, they can be used as standalone practices to exert longer-term trait changes to tonic alertness levels, and thereby the clarity of experience, which can be epistemically exploited without effort. This further secures the importance of top-down attentional skill within the introspectors toolkit.

5 Conclusions and Future Directions

In the above, I've sought to persuade that the transformative character of meditation practice can be an advantage to introspective methods within science. I've shown, in §2, that Focused-Attention meditations train a skill in focused introspective-attention, itself capable of inducing *epistemically beneficial* transformations to experience. Noting the many dangers surrounding such skill in §3, I've shown in §4 that a turn to the pedagogical literature on meditation, paired with proper scrutiny of models of top-down attentional control, reveals how these difficulties can be dealt with. In this way, I've argued that focused introspective-attention can play an important role in unveiling invariant features of human experience, particularly those of the emotions and affective states. In this way, it is an important component in the investigative repertoire of the proficient introspector. Moreover, it does this not in spite, but *in virtue* of its transformative qualities.

Undertaking the above, I've thus supported and clarified the broader Buddhist posit that transformation of the mind can actually be exploited, rather than avoided, in the mind's investigation, helping to break the popular spell that binds change to distortion. On this point, we can agree with Boyde Henry Bode, who noted over a century ago that '[t]he proper test for a sound introspection is not the degree of change which it introduces, but *the kind*.' (Bode, 1913, p. 88). So long as we remain sensitive to the *kind* of changes induced then by the skills we train, we will be able to use meditative methods effectively. In this work, I've identified the variable kinds of change induced by top-down introspective attention, and distinguished four ways that such changes can be handled for epistemic benefit:

(1) Induce beneficial kinds and *eliminate* distortive kinds
(2) Induce beneficial kinds and *filter out* the effects of distortive kinds upon reports
(3) Induce beneficial kinds and *ignore* distortive kinds at the point of report
(4) Induce beneficial kinds and *derive knowledge* from distortive kinds

These points also motivate some broad comments about the possible future directions of consciousness science, which I shall end on.

Scientific investigations of consciousness have typically sought to minimise change when it comes to the formation of introspective judgements and have thereby disparaged methods that seem open to it. This has meant a reliance on relatively off-the-cuff and often retrospective reports that attempt to minimise potential distortions by using inattentive and relatively untrained subjects in distant and cautious methods. Yet this bias against careful and attentive introspection has also led to a situation where the raw materials of our science – the introspective reports that shape our explanatory targets – are criticised on account of being both massively unreliable and inconsistent on one hand (Schwitzgebel, 2008), and hopelessly lacking in detail on the other (Chalmers, 1999). Chalmers notes that we've tended to capture only 'gross and simple features of conscious experience' with our descriptions or have ended up '[employing] language which is obviously course-grained and imprecise' (p. 10), talking relatively uninformatively in terms of 'an experience *of red,* [or] *of a horizontal line*' (emphasis added). Especially lacking is detail about the phenomenal character of such experience, which can express precisely *what* "it is like" to have an experience of anger, of red, of pain, or of even of thought.

In carving out an epistemic role for experiential transformation, we see instead that first-person methods need not be restricted to what one might call "preservational" types – those that aim to keep experience wholly intact. And the Buddhist traditions provide excellent models for these alternative transformational approaches. Of course, the refinement of introspective methods using Buddhist insights should also acknowledge that the Buddhist path is primarily a *soteriological* rather than epistemological one. When push comes to shove it will favour transformation over and above knowledge (i.e. even if transformations are distortive in nature). This means one must remain cautious when learning from contemplative approaches. Nonetheless, one should note that the path to reducing suffering in the Buddhist tradition is explicitly said to depend upon properly grasping the nature of things, articulated herein as "seeing and knowing how things really are" (*yathābhūtañāṇadassana*) (Davis and Thompson, 2015, p. 43, 56). This means that the soteriological and the epistemological elements of meditation practice intersect in a way that science can use to its advantage.

References

Albahari, M. (2006). *Analytical Buddhism: The Two-Tiered Illusion of Self*. Basingstoke, UK: Palgrave, MacMillan.

Albers, S. (2012) *Eating Mindfully*. Oakland, CA: New Harbinger Publications.

Armstrong, D.M. (1980) *The Nature of Mind and Other Essays*. Ithaca, NY: Cornell University Press.

Baluch, F. and Itti, L. (2010) Training top-down attention improves performance on a triple-conjunction search task. *PloS one*, 5 (2), e9127. doi: 10.1371/journal.pone.0009127

Barrouillet, P., Uittenhove, K., Lucidi, A. and Langerock, N. (2017) On the sources of forgetting in working memory: The test of competing hypotheses. *The Quarterly Journal of Experimental Psychology*, 71 (8), pp. 1714-1733.

Bayne, T. (2015) 'Introspective Insecurity', in T. Metzinger and J. M. Windt (eds) *Open MIND: 3(T)*, Frankfurt am Main: MIND Group. doi: 10.15502/9783958570214

Bayne, T. and Spener, M. (2010) Introspective humility. *Philosophical Issues*, 20, pp. 1-22.

Bayne, T., Hohwy, J. and Owen, A.M. (2016) Are there levels of consciousness? *Trends in Cognitive Sciences*, 20 (6), pp. 405-413.

Bays, J. (2009) *Mindful Eating: A Guide to Rediscovering a Healthy and Joyful Relationship with Food*. Boston: Shambhala Publications.

Bitbol, M. and Petitmengin, C. (2013) A Defense of Introspection From Within. *Constructivist Foundations*, 8 (3), pp. 269-279.

Block, N. (2005) Two neural correlates of consciousness. *Trends in Cognitive Sciences*, 9 (2), pp. 46-52.

Block, N. (2007) Consciousness, accessibility, and the mesh between psychology and neuroscience. *Behavioral and Brain Sciences*, 30 (5-6), pp. 481-499.

Block, N. (2011) Perceptual consciousness overflows cognitive access. *Trends in Cognitive Sciences*, 15 (12), pp. 567-575.

Bode, B.H., 1913. The method of introspection. *The Journal of Philosophy, Psychology and Scientific Methods*, *10* (4), pp. 85-91.

Bodhi, B. (2005) *In the Buddha's Words: An Anthology of Discourses from the Pali Canon*. Somerville, MA: Wisdom Publications.

Bosse, T., Jonker, C.M. and Treur, J. (2008) Formalisation of Damasio's theory of emotion, feeling and core consciousness. *Consciousness and Cognition*, 17 (1), pp. 94-113.

Brentano F. (1874/1995) *Psychology from an Empirical Viewpoint.* Rancurello, A. C., Terrell, T. D., and McAlister, L.L. (trans.) London: Routledge.

Britton, W.B., Lindahl, J.R., Cahn, B.R., Davis, J.H. and Goldman, R.E. (2014) Awakening is not a metaphor: the effects of Buddhist meditation practices on basic wakefulness. *Annals of the New York Academy of Sciences*, 1307 (1), pp. 64-81.

Brogaard, B. and Chomanski, B. (2015) Cognitive penetrability and high−level properties in perception: Unrelated phenomena? *Pacific Philosophical Quarterly*, 96 (4), pp. 469-486.

Bronkhorst, J. (1993) *The Two Traditions of Meditation in Ancient India*. Delhi: Motilal Banarsidass.

Carrasco, M., Fuller, S. and Ling, S. (2008) Transient attention does increase perceived contrast of suprathreshold stimuli: A reply to Prinzmetal, Long, and Leonhardt. *Perception and Psychophysics*, 70 (7), pp. 1151-1164.

Carter, O.L., Presti, D.E., Callistemon, C., Ungerer, Y., Liu, G.B. and Pettigrew, J.D. (2005) Meditation alters perceptual rivalry in Tibetan Buddhist monks. *Current Biology*, 15 (11), R412-R413.

Chalmers, D. (1999) First-person methods in the science of consciousness. *Consciousness Bulletin*, Fall, pp. 8–11.

Chalmers, D. (2004) How can we construct a science of consciousness? *The Cognitive Neurosciences III*, pp. 1111-1119.

Chin J.M. and Schooler J.W. (2009) 'Meta-Awareness', in W.P. Banks (ed.) *Encyclopedia of Consciousness (Volume 2)*. Oxford: Elsevier, pp. 33-41.

Cohen, M.A. and Dennett, D.C. (2011) Consciousness cannot be separated from function. *Trends in Cognitive Sciences*, 15 (8), pp. 358-364.

Colombetti, G. (2009) What language does to feelings. *Journal of Consciousness Studies*, 16 (9), pp. 4-26.

Colombetti, G. (2014) *The Feeling Body: Affective Science meets the Enactive Mind*. Cambridge, MA: MIT Press.

Corbetta, M. and Shulman, G.L. (2002) Control of goal-directed and stimulus-driven attention in the brain. *Nature Reviews Neuroscience*, 3 (3), pp. 201-215.

Coseru, C. (2009) Naturalism and intentionality: A Buddhist epistemological approach. *Asian Philosophy*, 19 (3), pp. 239-264.

Cousins, L.S. (1996) 'The origins of insight meditation', in Skorupski, T. (ed.) *The Buddhist Forum*, Vol. 4, 1994-1996, Tring, UK: The Institute of Buddhist Studies, pp. 35-58.

Crane, T. (2000) Introspection, intentionality, and the transparency of experience. *Philosophical Topics,* 28 (2), pp. 49-67.

Dahlstrom, D. O. (2015) 'Interoception and self-awareness: An exploration of interoceptive phenomenology', in Dahlstrom, D. O., Elpidorou A. and Hopp W. (eds.) *Philosophy of Mind and Phenomenology: Conceptual and Empirical Approaches.* New York: Routledge, pp. 141-164.

Damasio, A.R. (1999) *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*. New York: Harcourt.

Damasio, A.R. (2003) *Looking for Spinoza: Joy, Sorrow, and the Feeling Brain*. New York: Harcourt.

Davis, J.H. and Thompson, E. (2013) 'From the five aggregates to phenomenal consciousness: Toward a cross-cultural cognitive science', in S. M. Emmanuel (ed.) *A Companion to Buddhist Philosophy*. Chichester, UK: Wiley, pp. 585-597.

Davis, J.H. and Thompson, E. (2015) Developing attention and decreasing affective bias', in K. W. Brown, J. D. Cresswell, and R. M Ryan (eds.) *Handbook of Mindfulness. Theory, Research, and Practice*. New York: Guildford Press, pp. 42-62.

Dennett, D.C. (1993) *Consciousness Explained*. London, UK: Penguin.

Depraz, N., Varela, F. J. and Vermersch, P. (2003) *On Becoming Aware: A Pragmatics of Experiencing* (Vol. 43). Amsterdam: John Benjamins Publishing.

Desimone, R. and Duncan, J. (1995) Neural mechanisms of selective visual attention. *Annual Review of Neuroscience,* 18 (1), pp. 193-222.

Ditto, B., Eclache, M. and Goldman, N. (2006) Short-term autonomic and cardiovascular effects of mindfulness body scan meditation. *Annals of Behavioral Medicine*, *32* (3), pp. 227-234.

Dor-Ziderman, Y., Berkovich-Ohana, A., Glicksohn, J. and Goldstein, A. (2013) Mindfulness-induced selflessness: a MEG neurophenomenological study. *Frontiers in Human Neuroscience,* 7, 582.

Duncan, J. and Humphreys, G.W. (1989) Visual search and stimulus similarity. *Psychological review*, 96 (3), p. 433-458.

Dunne, J. (2011) Toward an understanding of non-dual mindfulness. *Contemporary Buddhism*, 12 (1), pp. 71-88.

Dretske, F. (1995) *Naturalizing the Mind*. Cambridge, MA: MIT Press.

Dreyfus, H. L. (1993) Review of 'The Embodied Mind'. *Mind*, 102 (407), pp. 542-546.

Dreyfus, G. (2011) Is mindfulness present-centred and non-judgmental? A discussion of the cognitive dimensions of mindfulness. *Contemporary Buddhism*, 12 (01), pp. 41-54.

Edelman, G. M. and Tononi, G. (2000) *A Universe of Consciousness: How Matter Becomes Imagination*. New York, NY: Basic Books.

Edelman, G.M., Gally, J.A. and Baars, B.J. (2011) Biology of consciousness. *Frontiers in Psychology*, 2, doi: 10.3389/fpsyg.2011.00004

Ericsson, K.A. and Kintsch, W. (1995) Long-term working memory. *Psychological Review*, 102 (2), p. 211-245.

Farb, N.A., Segal, Z.V. and Anderson, A.K. (2013) Mindfulness meditation training alters cortical representations of interoceptive attention. *Social cognitive and Affective Neuroscience*, 8 (1), pp. 15-26.

Farb, N., Daubenmier, J., Price, C.J., Gard, T., Kerr, C., Dunn, B.D., Klein, A.C., Paulus, M.P. and Mehling, W.E. (2015) Interoception, contemplative practice, and health. *Frontiers in Psychology*, 6, 763, doi: 10.3389/fpsyg.2015.00763.

Ferree, C. E. Rand, G. (1919) Chromatic thresholds of sensation from center to periphery of the retina and their bearing on color theory. *Psychological Review*, 26, pp. 16–41.

Firth, R. (1949). Sense-data and the Percept Theory. *Mind*, 58 (232), p. 434–465.

Fockert, J.W. de., Rees, G., Frith, C.D. and Lavie, N. (2001) The role of working memory in visual selective attention. *Science*, 291 (5509), pp. 1803-1806.

Fougnie, D. (2008) 'The Relationship between Attention and Working Memory', in Johansen, N. B. (ed.) *New Research on Short-Term Memory*. New York: Nova Science Publishers, pp. 1–45.

Fox, K.C., Zakarauskas, P., Dixon, M., Ellamil, M., Thompson, E. and Christoff, K. (2012) Meditation experience predicts introspective accuracy. *PloS one*, 7(9): e45370, pp. 1-9. doi: 10.1371/journal.pone.0045370.

Frith, C. (2002) How can we share experiences? *Trends in Cognitive Sciences*, 6 (9), p. 374.
Froese, T., Gould, C., and Barrett, A. (2011) Re-viewing from Within: A Commentary on First-and-Second-Person Methods in the Science of Consciousness. *Constructivist Foundations,* 6 (2) pp. 254-269.
Frondsal, G. (2005) Hindrances to Clear Seeing, *Insight Meditation Centre,* Available at https://www.insightmeditationcenter.org/books-articles/articles/the-five-hindrances-handouts/hindrances-to-clear-seeing/ (accessed 14 Sep 2018)
Gallagher, S. (1997) Mutual enlightenment: Recent phenomenology in cognitive science. *Journal of Consciousness Studies*, 4 (3), pp. 195-214.
Gallagher, S. (2005) Phenomenological contributions to a theory of social cognition. *Husserl Studies*, 21 (2), pp. 95-110.
Gallagher, S. and Francesconi, D. (2012) Teaching phenomenology to qualitative researchers, cognitive scientists, and phenomenologists. *Indo-Pacific Journal of Phenomenology*, 12 (sup3), pp. 1-10.
Gallagher, S. and Zahavi, D. (2008) *The Phenomenological Mind*. New York: Routledge.
Gethin, R. (1998) *The Foundations of Buddhism*. Oxford: Oxford University Press.
Gethin, R. (2004) On the Practice of Buddhist Meditation According to the Pali Nikayas and Exegetical Sources. *Buddhismus in Geschichte und Gegenwart*, 9, pp. 201–21.
Gethin, R. (2015) 'Buddhist Conceptualizations of Mindfulness', in Brown, K. W., Cresswell, J. D. and Ryan R. M. (eds.) *Handbook of Mindfulness: Theory, Research, and Practice*. New York: Guildford Press, pp. 9-41.
Godfrey, K. M., Gallo, L. C., and Afari, N (2015) Mindfulness-based interventions for binge eating: a systematic review and meta-analysis. *Journal of Behavioral Medicine*, 38 (2), pp. 348-362.
Goldie, P. (2002) Emotions, feelings and intentionality. *Phenomenology and the Cognitive Sciences, 1* (3), pp. 235-254.
Goldstone, R.L. (1998) Perceptual learning. *Annual Review of Psychology*, 49 (1), pp. 585-612.
Goldman, A. (2004) 'Epistemology and the Evidential Status of Introspective Reports', in Jack, A. and Roepstorff, A. (eds.) *Trusting The Subject? Vol. 2*. Thorverton, UK: Imprint Academic, pp. 1-16.
Grice, H. P. (2002) 'Some remarks about the senses', in Noë, A. and Thompson, E. (eds) *Vision and Mind: Readings in the Philosophy of Perception,* Cambridge, MA: MIT Press, pp. 34-55.
Grubert, A., Fahrenfort, J., Olivers, C.N. and Eimer, M. (2017) Rapid top-down control over template-guided attention shifts to multiple objects. *Neuroimage*, 146, pp. 843-858.
Harman, G. (1997) 'The intrinsic quality of experience', in Block, N. J., Flanagan, O. J., and Güzeldere, G. (eds) *The Nature of Consciousness: Philosophical Debates,* Cambridge, MA: MIT Press, pp. 663-676.
Hill, D.M., Craighead, L.W. and Safer, D.L. (2011) Appetite−focused dialectical behavior therapy for the treatment of binge eating with purging: A preliminary trial. *International Journal of Eating Disorders*, 44 (3), pp. 249-261.
Hölzel, B.K., Lazar, S.W., Gard, T., Schuman-Olivier, Z., Vago, D.R. and Ott, U. (2011) How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and neural perspective. *Perspectives on Psychological Science*, 6 (6), pp. 537-559.
Hong, P. Y., Lishner, D. A., and Han, K. H. (2014) Mindfulness and eating: An experiment examining the effect of mindful raisin eating on the enjoyment of sampled food. *Mindfulness*, 5 (1), pp. 80-87.
Hurlburt, R. (2009) Iteratively apprehending pristine experience. *Journal of Consciousness Studies*, 16 (10-11), pp. 156-188.

Jack, A.I. and Roepstorff, A. (2003) *Trusting the Subject I.* Special Issue of *Journal of Consciousness Studies*, 10, 9-10.

Jack, A.I. and Roepstorff, A. (2004) *Trusting the Subject II.* Special Issue of *Journal of Consciousness Studies*, 11, 7-8.

James W. (1890/2007) *The Principles of Psychology, Volume 1*. New York: Cosimo.

Jaynes, J. (1976) *The Origin of Consciousness In the Breakdown of the Bicameral Mind*. Boston, MA: Houghton Mifflin.

Jha, A. P., Krompinger, J., and Baime, M. J. (2007) Mindfulness training modifies subsystems of attention. *Cognitive, Affective, and Behavioral Neuroscience,* 7 (2), pp. 109–119.

Jones, S.R., Kerr, C.E., Wan, Q., Pritchett, D.L., Hämäläinen, M. and Moore, C.I. (2010) Cued spatial attention drives functionally relevant modulation of the mu rhythm in primary somatosensory cortex. *Journal of Neuroscience*, 30 (41), pp. 13760-13765.

Katsuki, F. and Constantinidis, C. (2014) Bottom-up and top-down attention: different processes and overlapping neural systems. *The Neuroscientist*, 20 (5), pp. 509-521.

Katterman, S.N., Kleinman, B.M., Hood, M.M., Nackers, L.M. and Corsica, J.A. (2014) Mindfulness meditation as an intervention for binge eating, emotional eating, and weight loss: a systematic review. *Eating Behaviors,* 15 (2), pp. 197-204.

Kerr, C.E., Jones, S.R., Wan, Q., Pritchett, D.L., Wasserman, R.H., Wexler, A., Villanueva, J.J., Shaw, J.R., Lazar, S.W., Kaptchuk, T.J. and Littenberg, R. (2011) Effects of mindfulness meditation training on anticipatory alpha modulation in primary somatosensory cortex. *Brain Research Bulletin*, 85 (3-4), pp. 96-103.

Kiken, L.G., Garland, E.L., Bluth, K., Palsson, O.S. and Gaylord, S.A. (2015) From a state to a trait: trajectories of state mindfulness in meditation during intervention predict changes in trait mindfulness. *Personality and Individual Differences*, 81, pp. 41-46.

Kind, A., (2013) 'The case against representationalism about moods', in Kriegel, U. (ed.) *Current Controversies in the Philosophy of Mind*. New York: Routledge, pp. 113-134.

Kordeš, U. and Markič, O. (2016) Parallels between Mindfulness and First-person Research into Consciousness. *Asian Studies*, 4 (2), pp. 153-168.

Kordeš, U. and Demšar, E. (2018) Excavating belief about past experience: experiential dynamics of the reflective act. *Constructivist Foundations*, 13 (2), pp. 219-229.

Kriegel, U. (2015) *The Varieties of Consciousness*. New York: Oxford University Press.

Kristeller, J. L., and Hallett, C. B (1999) An exploratory study of a meditation-based intervention for binge eating disorder. *Journal of Health Psychology*, 4, pp. 357–363.

Kristeller, J.L. and Wolever, R.Q. (2011) Mindfulness-based eating awareness training for treating binge eating disorder: the conceptual foundation. *Eating disorders*, 19 (1), pp. 49-61.

Lemaire, B. and Portrat, S. (2018) A Computational Model of Working Memory Integrating Time-Based Decay and Interference. *Frontiers in Psychology*, 9, doi: 10.3389/fpsyg.2018.00416

Lippelt, D. P., Hommel, B. and Colzato, L. S. (2014). Focused attention, open monitoring and loving kindness meditation: Effects on attention, conflict monitoring, and creativity – A review. *Frontiers in Psychology*, 5, 1083.

Lusthaus, D. (2003) *Buddhist Phenomenology: A Philosophical Investigation of Yogacara Buddhism and the Ch'eng Wei-shih Lun*. New York: Routledge.

Lutz, A., Lachaux, J.P., Martinerie, J. and Varela, F.J. (2002) Guiding the study of brain dynamics by using first-person data: synchrony patterns correlate with ongoing conscious states during a simple visual task. *Proceedings of the National Academy of Sciences*, 99 (3), pp. 1586-1591.

Lutz, A., Slagter, H.A., Dunne, J.D. and Davidson, R.J. (2008) Attention regulation and monitoring in meditation. *Trends in Cognitive Sciences*, 12 (4), pp. 163-169.

Lutz, A., Slagter, H.A., Rawlings, N.B., Francis, A.D., Greischar, L.L. and Davidson, R.J. (2009) Mental training enhances attentional stability: neural and behavioral evidence. *Journal of Neuroscience*, 29 (42), pp. 13418-13427.

Lutz, A., Jha, A.P., Dunne, J.D. and Saron, C.D. (2015) Investigating the phenomenological matrix of mindfulness-related practices from a neurocognitive perspective. *American Psychologist*, 70 (7), pp. 632-658.

Mack, A. and Rock, I. (1998) *Inattentional Blindness*. Cambridge, MA: MIT press.

MacLean, K.A., Ferrer, E., Aichele, S.R., Bridwell, D.A., Zanesco, A.P., Jacobs, T.L., King, B.G., Rosenberg, E.L., Sahdra, B.K., Shaver, P.R., Wallace, B.A., Mangun, G.R., Saron, C.D. (2010) Intensive meditation training improves perceptual discrimination and sustained attention. *Psychological Science,* 21 (6), pp. 829–839.

Markovich, J. and Thompson, E. (2016) 'Hypnosis and meditation: a neurophenomenological comparison', in Raz, A. and Lifshitz, M. (eds.) *Hypnosis and Meditation: Towards an Integrative Science of Conscious Planes*. Oxford: Oxford University Press, pp. 79-106.

McAuliffe, A. (2018) Concerns with the Validity and Practicality of First-Person Data: Where Do We Go from Here? *Constructivist Foundations*, 13 (2), pp. 238-239.

McDowell, J. (1994) The content of perceptual experience. *The Philosophical Quarterly*, 44 (175), pp. 190-205.

Moreland, J. D., Jameson, D. and Hurvich, L. M. (1972) 'Peripheral colour vision', in Jameson, D. and Hurvish, L. M. (eds.) *Handbook of Sensory Physiology: Vol. VII/4. Visual Psychophysics.* New York: Springer, pp. 517–536.

Ñānananda, B. (1971/1997) *Concept and Reality in Early Buddhist Thought: An Essay on Papañca and Papañca-Saññā-Saṅkhā.* Kandy, Sri Lanka: Buddhist Publication Society.

Nanay, B. (2009) Attention and perceptual content. *Analysis*, 70 (2), pp. 263-270.

Natorp, P. (1912) *Allgemeine Psychologie.* Tübingen: J.C.B. Mohr.

Nielsen, L., and Kaszniak, A. W. (2006) Awareness of subtle emotional feelings: a comparison of long-term meditators and nonmeditators. *Emotion,* 6, pp. 392-405.

Noë, A., Pessoa, L. and Thompson, E. (2000) Beyond the grand illusion: What change blindness really teaches us about vision. *Visual Cognition*, 7 (1-3), pp. 93-106.

Nummenmaa, L., Glerean, E., Hari, R. and Hietanen, J.K. (2014) Bodily maps of emotions. *Proceedings of the National Academy of Sciences*, 111 (2), pp. 646-651.

Nyanaponika, T. (1988) *The Heart of Buddhist Meditation*. York Beach: Samuel Weiser.

Nyanaponika, T. (2015) *The Vision of Dhamma*. 2nd edition, eBook, Onalaska, WA: BPS Pariyatti Editions. Available at https://store.pariyatti.org/Vision-of-Dhamma--PDF-eBook_p_2571.html (Downloaded 15 Sep, 2018)

Olivers, C.N., Peters, J., Houtkamp, R. and Roelfsema, P.R. (2011) Different states in visual working memory: When it guides attention and when it does not. *Trends in Cognitive Sciences*, 15 (7), pp. 327-334.

Overgaard, M., Gallagher, S. and Ramsøy, T.Z. (2008) Integration of first-person methodologies in cognitive science. *Journal of Consciousness Studies*, 15, 5, pp. 100-120.

Parvizi, J. and Damasio, A. (2001) Consciousness and the brainstem. *Cognition*, 79 (1-2), pp. 135-160.

Peacock, J. (2008) Suffering in Mind: The Aetiology of suffering in early Buddhism. *Contemporary Buddhism*, 9 (2), pp. 209-226.

Petitmengin, C. (2006) Describing one's subjective experience in the second person: An interview method for the science of consciousness. *Phenomenology and the Cognitive sciences*, 5 (3), pp. 229-269.

Petitmengin, C. (2007) Towards the source of thought: The gestural and transmodal dimension of lived experience. *Journal of Consciousness Studies*, 14, pp. 54-82.

Petitmengin, C. and Bitbol, M. (2009) The Validity of First-Person Descriptions as Authenticity and Coherence. *Journal of Consciousness Studies*, 16 (10-12), pp. 363-404.

Pinto, Y., van der Leij, A.R., Sligte, I.G., Lamme, V.A. and Scholte, H.S. (2013) Bottom-up and top-down attention are independent. *Journal of Vision*, 13 (3), pp. 1-14.

Pollatos, O. and Schandry, R. (2008) Emotional processing and emotional memory are modulated by interoceptive awareness. *Cognition and Emotion*, 22 (2), pp. 272-287.

Prinz, J. (2004) *Gut Reactions: A Perceptual Theory of Emotion*. New York: Oxford University Press.

Raz, A. and Buhle, J. (2006) Typologies of attentional networks. *Nature Reviews Neuroscience*, 7 (5), pp. 367-369.

Reinerman-Jones, L., Sollins, B., Gallagher, S. and Janz, B. (2013) Neurophenomenology: an integrated approach to exploring awe and wonder. *South African Journal of Philosophy*, 32 (4), pp. 295-309.

Roberts, M. (2018) Phenomenological Constraints: A Problem for Radical Enactivism. *Phenomenology and the Cognitive Sciences,* 17 (2), pp. 375-399.

Robertson, I. H., Mattingley, J. B., Rorden, C., and Driver, J. (1998) Phasic alerting of neglect patients overcomes their spatial deficit in visual awareness. *Nature*, 395, pp. 169–172.

Rosenthal, D.M. (2002) 'Explaining consciousness', in D.J. Chalmers (ed.) *Philosophy of Mind: Classical and Contemporary Readings*. Oxford: Oxford University Press, pp. 406-421.

Rupert, R.D. (2015) Embodiment, Consciousness, and Neurophenomenology: Embodied Cognitive Science Puts the (First) Person in Its Place. *Journal of Consciousness Studies*, 22 (3-4), pp. 148-180.

Schooler, J. and Schreiber, C.A. (2004) Experience, meta-consciousness, and the paradox of introspection. *Journal of Consciousness Studies*, 11 (7-8), pp. 17-39.

Schubert, R., Blankenburg, F., Lemm, S., Villringer, A. and Curio, G. (2006) Now you feel it—now you don't: ERP correlates of somatosensory awareness. *Psychophysiology*, 43 (1), pp. 31-40.

Schubert, R., Ritter, P., Wüstenberg, T., Preuschhof, C., Curio, G., Sommer, W. and Villringer, A. (2008) Spatial attention related SEP amplitude modulations covary with BOLD signal in S1—a simultaneous EEG—fMRI study. *Cerebral Cortex*, 18 (11), pp. 2686-2700.

Schubert, R., Haufe, S., Blankenburg, F., Villringer, A. and Curio, G. (2009) Now you'll feel it, now you won't: EEG rhythms predict the effectiveness of perceptual masking. *Journal of Cognitive Neuroscience*, 21 (12), pp. 2407-2419.

Schwitzgebel, E. (2008) The unreliability of naive introspection. *Philosophical Review*, 117 (2), pp. 245-273.

Schwitzgebel, E. (2011) *Perplexities of Consciousness*. Cambridge, MA: MIT Press.

Schwitzgebel, E. (2012) 'Introspection, what?', in Smithies, D. and Stoljar, D. (eds) *Introspection and Consciousness*. New York: Oxford University Press, pp. 29-48.

Schwitzgebel, E. (2014) 'Introspection', in Zelta, N. (ed) *The Stanford Encyclopedia of Philosophy* (Winter 2016 Edition), Retrieved from https://plato.stanford.edu/archives/win2016/entries/introspection/

Searle, J. R. (2000) Consciousness. *Annual Review of Neuroscience*, 23, pp. 557–578.

Seth, A.K. (2013) Interoceptive inference, emotion, and the embodied self. *Trends in Cognitive Sciences*, 17 (11), pp. 565-573.

Siegel, S. (2006) 'Which properties are represented in perception?', in Gendler, T.S. and Hawthorne, J. (eds.) *Perceptual Experience*. Oxford: Clarendon Press, pp. 481-503.

Shankman, R. (2008) *The Experience of Samadhi: An In-Depth Exploration of Buddhist Meditation.* Boston, MA: Shambala.

Sharf, R.H. (1995) Buddhist modernism and the rhetoric of meditative experience. *Numen*, 42 (3), pp. 228-283.

Sharf, R.H. (2015) Is mindfulness Buddhist? (and why it matters). *Transcultural Psychiatry*, 52 (4), pp. 470-484.

Shear, J. and Varela, F. J. (eds.) (1999) *The View from Within*. Thorverton, UK: Imprint Academic.

Simons, D.J. and Chabris, C.F. (1999) Gorillas in our midst: Sustained inattentional blindness for dynamic events. *Perception*, 28 (9), pp. 1059-1074.

Spener, M. (2011) 'Disagreement about cognitive phenomenology', in Bayne, T. and Montague, M. (eds.) *Cognitive Phenomenology*. Oxford: Oxford University Press, pp. 268-284.

Spener, M. (2015) Calibrating Introspection. *Philosophical Issues*, 25 (1), pp. 300-321.

Spener, M. (2018) 'Introspecting in the 20th Century', in Kind, A. (ed.) *Philosophy of Mind in the Twentieth and Twenty-First Centuries.* London: Routledge, pp. 148-174.

Stazicker, J. (2011) Attention, visual consciousness and indeterminacy. *Mind and Language*, 26 (2), pp. 156-184.

Sturm, W. and Willmes, K. (2001) On the functional neuroanatomy of intrinsic and phasic alertness. *Neuroimage,* 14 (1), S76-S84.

Sujîva, V. (2000) *Essentials of Insight Meditation Practice*. Revised Edition, eBook, Petalang Jaya, Malaysia: Buddhist Wisdom Center. Available at https://www.buddhanet.net/pdf_file/essentials.pdf (Downloaded 15 Sep 2018).

Sze, J.A., Gyurak, A., Yuan, J.W. and Levenson, R.W. (2010) Coherence between emotional experience and physiology: does body awareness training have an impact? *Emotion*, 10 (6), pp. 803-814.

Taylor, H. (2013) Is attention necessary and sufficient for phenomenal consciousness?. *Journal of Consciousness Studies*, 20 (11-12), pp. 173-194.

Teasdale, J.D. and Chaskalson, M. (2011) How does mindfulness transform suffering? II: the transformation of dukkha. *Contemporary Buddhism*, 12 (01), pp. 103-124.

Teper, R., Segal, Z.V. and Inzlicht, M. (2013) Inside the mindful mind how mindfulness enhances emotion regulation through improvements in executive control. *Current Directions in Psychological Science*, 22 (6), pp. 449-454.

Thiradhammo, A. (2014) *Working with the Five Hindrances*. Belsay, UK: Aruno Publications.

Thompson, E. (2007) *Mind in Life*. Cambridge, MA: Harvard University Press.

Thompson, E. (2009) 'Contemplative neuroscience as an approach to volitional consciousness', in Murphey, N., Ellis, G. F. R. and O'Conner, T. (eds.) *Downward Causation and the Neurobiology of Free Will*. Berlin: Springer. pp. 187-197.

Thompson, E. (2015) *Waking, Dreaming, Being*. New York: Columbia University Press.

Thompson, E., Lutz, A. and Cosmelli, D. (2005) 'Neurophenomenology: An Introduction for Neurophilosophers', in A. Brook and K. Akins (eds.) *Cognition and the Brain: The Philosophy and Neuroscience Movement.* New York: Cambridge University Press, pp. 40-97.

Thompson, E. and Cosmelli, D. (2011) Brain in a vat or body in a world? Brainbound versus enactive views of experience. *Philosophical Topics*, Vol. 39 (1), pp. 163-180.

Tononi, G. and Edelman, G. M. (1998) Consciousness and complexity. *Science,* 282, pp. 1846-51.

Varela, F. J. (1996) Neurophenomenology: A methodological remedy for the hard problem. *Journal of Consciousness Studies*, 3 (4), pp. 330-349.

Varela, F. J., Thompson, E. and Rosch, E. (1991/2017) *The Embodied Mind*: *Cognitive Science and Human Experience*. Revised Edition. Cambridge, MA: MIT Press.

Wallace, B.A. (1999) The Buddhist tradition of Samatha: Methods for refining and examining consciousness. *Journal of Consciousness Studies*, 6 (2-3), pp. 175-187.

Ward, D. (2012) Enjoying the spread: Conscious externalism reconsidered. *Mind*, 121 (483), pp. 731-751.

Wheeler, M. (2005) *Reconstructing the Cognitive World: The Next Step*. Cambridge, MA: MIT press.

Whiting, D. (2011) The feeling theory of emotions and the object-directed emotions. *European Journal of Philosophy*, 19 (2), pp. 281–303.

Williams, P. and Tribe, A. (2003) *Buddhist Thought: A Complete Introduction to the Indian Tradition*. London: Routledge.

Wolfe, J.M. and Horowitz, T.S. (2004) What attributes guide the deployment of visual attention and how do they do it? *Nature Reviews Neuroscience*, 5 (6), pp. 495-501.

Wu, W. (2014) *Attention.* London: Routledge.

Wundt W. (1897) *Outlines of Psychology*. C. H. Judd (trans.) Leipzig: Wilhelm Engelmann.

Zahavi, D. (2003) How to investigate subjectivity: Natorp and Heidegger on reflection. *Continental Philosophy Review*, 36 (2), pp. 155-176.

Zahavi, D. (2007) Killing the straw man: Dennett and phenomenology. *Phenomenology and the Cognitive Sciences*, 6 (1-2), pp. 21-43.

Zahavi, D. (2014) *Self and Other: Exploring Subjectivity, Empathy and Shame*. Oxford: Oxford University Press.

Zeimbekis, J. and Raftopoulos, A. (2015) *The Cognitive Penetrability of Perception: New Philosophical Perspectives*. Oxford: Oxford University Press.