



“Integrating First-Person and Third-Person Perspectives in Contemplative Science”

Day: Wednesday 11th July 2018 Time: 9:00 – 10:15 am Track: Working Mechanisms

Efforts to understand the mechanisms of contemplative practices are fast growing yet face critical challenges. Much of what we know about these mechanisms is grounded in limited retrospective self-report data, indirect behavioral correlates, and reverse inference (Davidson & Kaszniak, 2015; Van Dam et al., 2017). Accordingly, leading scholars have highlighted the importance of developing novel research methods integrating first-person (phenomenology) and third-person methods (behavioral tasks, neuroimaging) to enable measurement and study of mechanisms of contemplative practices with greater rigor, depth and phenomenological validity (e.g., Varela & Shear, 1999). More specifically, such novel “cross-perspective” integrative measurement methods may prove important to delineating the specific cognitive, affective, behavioral, interpersonal and neurobiological processes subserving different contemplative practices (e.g., attentional, constructive and deconstructive). This symposium will therefore present four inter-related talks presenting innovative integrations of first-person and third-person methods in multiple domains of contemplative science to advance understanding of the processes sub-serving contemplative practices. Judson Brewer will present emerging conceptual and methodological innovations designed to bridge first-person subjective phenomenology with third-person neuroimaging measurement to understand the nature and function of contemplative practices. Yuval Hadash and colleagues will present a novel paradigm utilizing a phenomenological first-person perspective combined with third-person analysis of behavioral markers to measure attentional processes sub-serving the dynamics of attention and awareness in (open-monitoring) mindfulness meditation. Amit Bernstein and colleagues will present a novel conceptual and methodological paradigm to study and quantify (dys)regulation of internal attentional processing of negative (self-referential) thought. The paradigm combines a first-person perspective experimentally eliciting the phenomenology of negative self-referential thoughts with third-person indices of attentional processing of those thoughts. Finally, Fynn-Mathis Trautwein and colleagues will present findings from the ReSource Project investigating the effects of different contemplative practices on domain-specific first- and third-person measures of attention, compassion, and cognitive perspective-taking. Following the lectures, speakers will discuss challenges in integrating first- and third-person perspectives in the measurement and study of mindfulness and related processes and possible future directions for this area of contemplative science.



Symposium overview

- Presenter 1** **Judson Brewer** - Neurobiological Underpinnings of Contemplative Practices: Is there Common Ground?
- Presenter 2** **Yuval Hadash** - A Novel Phenomenological and Behavioral Measure of Attention and Awareness in Mindfulness Meditation: The Mindful Awareness Task (MAT)
- Presenter 3** **Amit Bernstein** - Measuring Internal Attention to Thoughts: Conceptual Model and Paradigm
- Presenter 4** **Fynn-Mathis Trautwein** - Differential Benefits of Mental Training Types for Attention, Compassion, and Theory of Mind
- Chair:** ***Amit Bernstein***



Neurobiological Underpinnings of Contemplative Practices: Is there Common Ground?

Judson Brewer

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Massachusetts Institute of Technology, Cambridge, United States

Background and objectives: What's happening in (and to) my brain when I meditate? This question is asked time and time again by individuals undertaking contemplative practices, journalists writing articles about mindfulness, and scientists trying to figure out what is happening on a neurobiological level during these practices.

Methods: A growing number of studies have been published in an attempt to answer this question across a wide range of contemplative traditions, level of practitioner experience and scientific tools employed therein. Yet, in aggregate, what have we learned about this basic question? Is there a way to bring all of these traditions and data together, as a starting point for moving toward an answer?

Results: In this talk, I will attempt to highlight basic commonalities in contemplative practices and how these link with reproducible neuroimaging findings in the field. I will also describe emerging tools (e.g. neurophenomenology) that can be used to bridge the gap between subjective experience and brain activity, and how these can be used to confirm previous findings and open avenues for future exploration.

Discussion and conclusion: Finally, I will suggest how answering the question of “what’s happening in my brain when I meditate” can be used for pragmatic benefit in clinical settings.



A Novel Phenomenological and Behavioral Measure of Attention and Awareness in Mindfulness Meditation: The Mindful Awareness Task (MAT)

Yuval Hadash, Liad Ruimi, Or Harel, Amit Bernstein

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Background and objectives: An important next step in the field of mindfulness measurement is the development of methods quantifying attentional processes subserving the dynamics of attention and awareness in mindfulness meditation. These processes include: (1) sustained meta-awareness, (2) disengagement from mindlessness, (3) intentional shifting of meta-awareness and (4) an open field of awareness. To-date, measurement of these processes has been limited to self-report scales, inference from visual attention measures, and behavioral tasks designed to measure one facet of attention in mindfulness meditation – focused attention. Accordingly, we developed a novel paradigm – the Mindful Awareness Task (MAT) – utilizing a phenomenological first-person perspective combined with third-person analysis of behavioral markers to measure attentional processes subserving the dynamics of attention and awareness in open-monitoring mindfulness meditation.

Methods: In the MAT participants provide real-time self-caught reports (behavioral markers) of their attention and awareness during a 20-minute open monitoring mindfulness meditation, by verbally stating a label describing each experience they notice and pressing a button when they notice their breath. We measure mindfulness processes using variables derived from (1) manualized qualitative coding of the content of participant's verbal reports, and (2) computerized algorithms analyzing the timing and order of participant's self-caught reports.

Results: We will report preliminary findings from a recently completed study (N=144; data analysis is currently underway) testing the MAT's psychometric properties and its associations with (first-person) self-report measures of mindfulness and with (third-person) behavioral measures of attention and executive functions. We will also present findings regarding changes in mindfulness processes over the course of the MAT meditation as well as temporal relations between these changes in order to illuminate dynamics of attention and awareness in mindfulness meditation.

Discussion and conclusion: We will discuss the psychometric properties, construct validity, incremental validity (cf. self-report scales) and utility of the MAT as a measure of attentional processes in mindfulness meditation.



Measuring Internal Attention to Thoughts: Conceptual Model and Paradigm

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Background and objectives: The training of attentional processing of internal events (e.g., thoughts, emotions) is theorized to serve a central salutary function of mindfulness meditation and mindfulness-based interventions on mental health. Indeed, dysregulation in attentional processing of motivationally-relevant information has been implicated in the etiology and maintenance of prevalent mental disorders. Yet, to-date, research has predominantly focused on dysregulation in the processing of external-perceptual information (e.g., environment threats or rewards) as opposed to dysregulation of attention to internal experience, or their interaction.

Methods: We therefore developed a methodological paradigm to measure and study (dys)regulation of internal attention. We present idiographic negative (or neutral) self-referential auditory sentences to participants, in their own (recorded) voice, to mimic to the extent possible the experience and phenomenology of thinking. The methodology is designed to trick brain source-localization (internal vs. external source) and to elicit a phenomenological sense of authorship and identification with each thought stimulus over which we have experimental control. These pseudo-internal stimuli are presented as part of established experimental tasks augmented to enable quantification of attentional processes (e.g., disengagement from internal self-referential thoughts). Data collection is ongoing.

Results: We will present preliminary findings with respect to the expression of (dys)regulated internal attentional processing of thought and potential role(s) in emotional vulnerability and mental health symptoms.

Discussion and conclusions: We will discuss the translational implications of this work for mindfulness and related intervention methods designed to improve regulation in attentional processing of negative self-referential thoughts as a means to improve mental health.



Differential Benefits of Mental Training Types for Attention, Compassion, and Theory of Mind

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Background and objectives: A variety of mental training practices exists within contemplative traditions and secularized meditation programs. Based on first-person engagement, these practices have been differentiated according to their phenomenology as well with respect to the experienced outcomes. Thus, some practices are thought to cultivate attention, whereas others focus on affective or cognitive change. While general efficacy of such practices has been established, it is unclear to which extent different types of practice have the same or specific effects on mental functioning. The present study therefore aimed to evaluate the specificity of training effects within three crucial outcome domains of mental training, namely attention, compassion and cognitive perspective taking (i.e. theory of mind).

Methods: In a large-scale longitudinal study we tested effects of three consecutive three-month training modules: The Presence Module aimed at attention and interoceptive awareness, the Affect Module targeted socio-affective qualities, and the Perspective Module focused on socio-cognitive skills. The study design, consisting of three training cohorts and a retest control group (N = 332), allowed comparing the different training modules against retest as well as against each other. A cued flanker task was employed as a behavioral marker of attention (targeted by the Presence Module), and a video-based task assessed theory of mind performance (targeted by the Perspective Module) and self-reported compassion (targeted by the Affect Module).

Results: Results indicated improvements of attention across different types of training over the first three months. For compassion, effects of the Affect Module exceeded those of the other modules; and theory of mind only showed improvements after socio-cognitive training. Thus, Presence had selective effects on attention, Affect had predominant effects on compassion, and Perspective was the only module to enhance theory of mind.

Discussion and conclusion: The results validate the notion – derived from first-person engagement in contemplative practice – that different types of exercise differentially affect mental capacities. It thus seems a promising endeavor to develop and refine typologies of contemplative practices based on both, first- and third-person observation. This may yield a reliable foundation for evidence-based interventions adapted to the needs of different education, labor, and health settings.