



Concurrent Session B Presentations

Friday 11/9
3:45–4:45 PM

B01 - Panel

Kave Ballroom

Presenters:

Moderator: Eboni Bugg, *Charlottesville Area Community Foundation*

Panelist: Margaret Cullen, *Compassion Institute*

Panelist: Caverly Morgan, *Peace in Schools*

Panelist: Rev. angel Kyodo williams, *Transformative Change*

Panelist: Jeffrey Proulx, *Oregon Health & Science University*

Title: *Knowing How to Not Know - Making Contemplative Programs More Welcoming and Inclusive*

Abstract: Before we discuss issues of diversification and inclusivity, how might we bring attention to the assumptions embedded within our starting points? Meditation centers and mindfulness curricula in the US have predominantly served a narrow swath of educated, white, cisgender, heterosexual, middle and upper-middle class people. This interdisciplinary panel of scholars, professionals and practitioners are each grappling with the question of how to broaden the accessibility of contemplative programs to groups that better reflect the diversity of our communities. Our perspectives are necessarily impacted by race, gender, culture, sexual orientation, regions, practice traditions and class. This conversation is meant to instigate contemplation. We will explore how we, culturally, hold conversations about inclusion and diversity that render outcomes that are often necessary, but insufficient. We will discuss issues related to research in ethnic minorities, including trust, communication networks, and relationships with community partners. We will reflect on how community strengths and existing contemplative traditions can make contemplative programs more inclusive and responsive. We will also share places we have fumbled in the past and current dilemmas we face as we grapple with issues of equality and inclusivity in our respective settings. How can we, rather than operating from a

fixed mindset, cultivate an approach that invites inquiry and the ability to ‘not know?’ How might an embodied contemplative approach to social issues that are inherently undermined by dominant culture, invoke the deep wisdom and action that arises from ‘not-knowing’?

B02 - Panel

Coyote + Buzzard + Eagle

Presenters:

Moderator: Timothy Harrison, *Emory University Center for Contemplative Science and Compassion-Based Ethics*

Panelist: Carol E. Beck, *Emory University Center for Contemplative Science and Compassion-Based Ethics*

Panelist: Brendan Ozawa-de Silva, *Emory University Center for Contemplative Science and Compassion-Based Ethics*

Panelist: Pollyanna V. Casmar, *University of California School of Medicine Department of Psychiatry*

Title: *Tailoring Contemplative Training in Resiliency and Compassion for Populations with Specialized Circumstances*

Abstract: The past decade has seen the emergence of a variety of forms of compassion training (CT) based in contemplative practice, each meant to enhance individuals' natural capacity for kindness to oneself and others, which a growing body of research links to increased physical and emotional resiliency and well-being. While CT is generally perceived as being relevant to a variety of populations, especially individuals functioning in high stress environments, significant questions have arisen regarding how to communicate the content, methods, and benefits of CT to diverse populations " each with its specific circumstances " while optimizing CT's efficacy and addressing issues of inclusivity. Drawing from both research and teacher experience with the implementation of a specific form of CT, CBCTÂ® (Cognitively-Based Compassion Training), with various populations " incarcerated women, military veterans with PTSD, and highly-stressed healthcare professionals" this panel will explore several timely and pragmatic questions. What challenges arise in making CT relevant to people of diverse backgrounds, beliefs, and cultural and socio-economic contexts? How does tailoring of a CT program impact fidelity and how do we identify the 'essential features' to retain? How should the growing understanding of trauma and the need for greater inclusivity in contemplative research impact teacher preparation and training? And finally, are there best practices emerging in contemplative pedagogy to navigate the delicate balance between universalizing claims of efficacy and the specific needs of individual groups?

B03 - Panel

Bird + Roadrunner

Presenters:

Moderator: Tsondue Samphel, *Emory University*

Panelist: Arri Eisen, *Emory University*

Panelist: Thukten Dema, *Jangchub Choeling Nunnery*

Panelist: Rangdol Yeshe, *Drinking Kagyu Jangchupling Monastery, Drepung Losel Ling Monastery, Emory University*

Title: *Emory Tibet Science Initiative: Bridging Two Worlds for One Common Humanity*

Abstract: Over the past decade, the Emory Tibet Science Initiative (ETSI) has had significant impact on the educational and scientific practices, and the personal worldviews of the scientists, monastic students and contemplatives in the project. This discussion will address research questions, approaches, and results that have begun to emerge from this unique collaboration—results that are rippling out to affect teaching and research across the United States and the monastic institutions in India. As the two cultural worlds of modern science and Tibetan Buddhism become more intertwined, four "research impacts" have emerged from ETSI. We will focus on these four examples and discuss the rigorous research approaches to them: (1) Studies into how to teach science across cultures most effectively; (2) Initial development of new approaches and interventions to relieve suffering (including collaborations in investigating the effects of meditation on mental health, cancer, and other disease-states); (3) Development of novel research projects by monastics in collaboration with lay scientists (including studies in environmental health, mind-body health, and monastic diet and sleep patterns); and (4) Analysis of changes in the nature of research questions asked by scientists as a result of their teaching the monastics in ETSI (such as questions related to biological development and microbiome-host interactions). We will address questions such as how should we integrate personal/religious/ethical beliefs into the teaching of science, specifically the theory of evolution. Do scientific insights gained by monastic students affect their contemplative practices, and thus leading to new ways of relieving suffering?

B04 - Papers

Komatke A

Individual Presentations

This session contains individually submitted paper presentations. Details for each paper are listed in the subsessions below.

Paper B04a

3:50–4:05 PM

Title: *Mind-Body Interventions for Recovery From Mild Traumatic Brain Injury and Post-Concussion Syndrome: Systematic Review of Evidence and Potential Mechanisms*

Presenter: Rebecca Acabchuk, *University of Connecticut*

Authors: R Acabchuk, N Babbott-Bryan, A Ficara, B Johnson

Abstract: Mild traumatic brain injury (mTBI; also known as “concussion”) is a pervasive injury. Symptoms of mTBI may resolve spontaneously or persist over time, leading to post-concussion syndrome (PCS). MTBI/PCS symptoms may be: 1) physical, including pain and fatigue; 2) emotional, including anxiety, irritability, anger, or depressive symptoms; 3) cognitive, including impaired attention and concentration. Unfortunately, it is difficult to predict which outcome path a patient will follow given the lack of objective diagnostic criteria for mTBI, and current treatment protocols do not include behavioral strategies to reduce the likelihood of persistent debilitating symptoms. Yet, mind-body interventions (MBIs; e.g., meditation, yoga and other mindfulness-based practices) offer the potential to facilitate recovery from mTBI/PCS. We conduct the first systematic review of studies investigating MBIs for mTBI treatment. To provide insight into potential mechanisms, we also compile evidence from the ever-growing body of research on MBIs in broader populations for therapeutic benefits that address common symptoms of brain injury. We use this evidence to propose a schematic model of mechanisms through which meditation and MBIs may assist mTBI/PCS symptoms, including: reducing stress, inflammation, and rumination; increasing cognitive abilities such as focus, concentration, emotional regulation, and self-efficacy; and balancing the autonomic nervous system. This work highlights the need for further research to advance treatment protocols to improve clinical outcomes for mTBI/PCS, such as prophylactic strategies; conducting studies prospectively; potential tools for assisting meditation (e.g., EEG-neurofeedback, mindful-touch); and graded application of movement-based MBIs (e.g., yoga).

Paper B04b

4:10–4:25 PM

Title: *A Mechanistic Model of Mindfulness, Substance Use, and Parenting Deficits*

Presenter: Sarah Priddy, *University of Utah*

Authors: SE Priddy, MR Riquino, EL Garland

Abstract: The rate of opioid use during pregnancy has increased nearly five-fold during the past decade, resulting in poor birth outcomes and increased healthcare costs. Opioid use over time leads to changes in neurocircuitry, including increased sensitivity to stress (e.g., parenting stress) and decreased sensitivity to natural rewards (e.g., rewards associated with caregiving), which may contribute to child maltreatment and/or decreased child well-being. In this presentation, we will present a mechanistic model describing how mindfulness-based interventions address stress sensitivity and reward dysregulation, and in turn may promote sensitive caregiving and child well-being among mothers using opioids during pregnancy and their infants. Though theoretical papers exist describing how mindfulness approaches address the mechanisms of addiction and a model of mindful parenting, our aim is to bring these together and describe how mindfulness can address the neurobiological mechanisms that lead to the development and maintenance of maternal substance use, attachment deficits, and parenting deficits leading to more attentive, effective caregiving, healthy attachment, and healthy infant development. First, we will discuss the relationship between substance use, stress, reward deficits, attachment, and parenting behavior. We will then outline how mindfulness can address substance use and parenting deficits by reducing attentional bias to drug cues, decreasing stress, and increasing salience of infant cues. Finally, we will present the design and preliminary findings of our ongoing randomized controlled trial testing this model.

Paper B04c

4:30–4:45 PM

Presentation withdrawn by presenter.

B05 - Papers

Komatke B

Session Title: *Contemplative Practices in Medical Education: Fostering Resilience, Well-being and Quality of Care*

Session Abstract: Western medical education approaches are often regarded as primarily focused on factual knowledge about disease and treatment, while overlooking the acquisition of self-regulatory skills necessary to maintain health and well-being and to navigate the increasingly complex systems in which medical professionals work. Increasingly however, health care leaders and educators recognize

the need to address clinician burnout, foster professional resilience and well-being, and institute approaches that assist clinicians to thrive and flourish. Concerns about the health and well-being of healthcare professionals provide an opportunity for substantive changes, as accreditation organizations now mandate educational approaches and content that address health professional burnout, resilience and well-being. The experts in this session will describe some programs they have been part of instituting that involve the development of self-regulatory skills through meditation, mindfulness and yoga-based practices. They will also more broadly discuss the value and importance of integrating these contemplative practices into medical education curricula.

Moderator: Laura Schmalzl

Paper B05a

3:50–4:05 PM

Title: *Mindful Practice: A Key to Quality of Care and Clinician Resilience*

Presenter: Michael Krasner, *University of Rochester Medical Center*

Author: M Krasner

Abstract: Mindful Practice® is an empirically studied approach for addressing health professional burnout, improving clinician well-being and enhancing patient-centered qualities. It has been used in medical student, residency, continuing medical education, as well as inter-professional health educational settings. Mindful Practice refers to qualities exhibited by exemplary clinicians that transcend clinical specialty and clinical experience. These qualities include the ability to be attentive and curious, to adopt a "beginner's mind", and to embody presence, with the goal of achieving greater awareness and insight into one's own work. These qualities can also be transmitted to trainees. This talk will review the foundations of Mindful Practice and its applications in health professional education and experience to date. Reported outcomes reviewed include effects on well-being, burnout, empathy, and patient-centered attitudes among health care professionals and trainees. Future directions related to the use of contemplative practices in medical education in the context of the current medical institutional and organizational culture will also be discussed.

Paper B05b

4:10–4:25 PM

Title: *Teaching Interoceptive Awareness to Medical Students Through Massage and Meditation*

Presenter: Wolf Mehling, *Other Center for Integrative Medicine at University of California San Francisco*

Author: W Mehling, L Morinis, S Adler

Abstract: In an academic and medical world of electronic records, sophisticated imaging techniques and virtual reality, many medical students and clinicians become literally "out of touch" with patients as well as their own physical body. This talk will describe an approach aimed at counteracting this trend by introducing instruction of mindful bodily awareness into a medical school curriculum. Specifically, it will describe the development and implementation of a program combining hands-on massage and meditation that has now been taught to 1st and 2nd year medical students for over 10 years. The program consists of a series of 9 weekly 120-minute classes during which students learn how to perform a full body massage, with the first 15 and last 5 minutes of each session being dedicated to guided body-scan based sitting meditation and mindful breathing practices. Reported outcome measures of the program will include qualitative and quantitative analyses of student evaluations, as well as pre-post changes in self-reported interoceptive awareness using the Multidimensional Assessment of Interoceptive Awareness (MAIA). Results will be discussed in the broader context of the impact that contemplative practices focusing on body awareness can have on both physical and mental health in upcoming generations of physicians.

Paper B05c

4:30–4:45 PM

Title: *Training for Awareness, Resilience and Action in Medical School*

Presenter: Eva Henje Blom, *University of Umeå Medical School*

Author: E Henje Blom, O Tymofiyeva, T Yang

Abstract: Training for Awareness, Resilience and Action (TARA) is a program originally developed for the treatment of adolescent depression. TARA was designed to target specific neural mechanisms underlying adolescent depression, and framed within the National Institute of Mental Health Research Domain Criteria. It includes yoga and mindfulness based practices, and focuses on training of autonomic, emotional and cognitive self-regulation, interoceptive awareness, relational skills, as well as value-based committed action related to personal and systemic issues. Pilot studies evaluating the TARA program with adolescents suffering from depression have shown that it reduces depressive symptoms and anxiety, while improving psychological flexibility, sleep and mindfulness. TARA is currently being adapted for use with medical students to foster resilience, integrity and effectiveness, and prevent burnout in the context of their medical training and future professional practice. Self-regulation, metacognition, relational skills and analysis of systemic issues are all crucial factors for being able to navigate and thrive in the demanding context of most healthcare professions. This talk will outline the rationale and relevance of each sub-component of the TARA program to foster such skills, especially as it relates to its application in medical education.

Authors:

B06 - Papers

Komatke C

Session Title: *Mapping Developmental Changes in Mindfulness and its Associations with Well-being across Early and Middle Adolescence*

Session Abstract: This session highlights emerging research on the development of mindfulness across adolescence. Developmental science is only beginning to understand how facets of mindfulness change normatively across adolescence in the absence of formal training programs, and how they can be intentionally cultivated through age-appropriate interventions. Paper 1 reveals that from 8th through 9th grade, adolescents improve in their capacity to become aware of, yet “take a step back” from, difficult experiences. Moreover, within-person changes in mindfulness predict reductions in perceived stress and improvements in emotional functioning. Paper 2 documents normative increases in scores on the Mindful Attention Awareness Scale across the entire span of middle adolescence. Results also suggest that girls and boys show similar change in mindfulness across adolescence. Finally, Paper 3 documents improvements in mindfulness and self-compassion among middle adolescents following an 8-week intervention, and further, that changes in these qualities are associated with mental health and resilience.

Paper B06a

3:50–4:05 PM

Title: *Developmental Changes in Mindful Non-Reactivity During the Transition to High School and Relations to Stress and Well-Being*

Presenter: Brian Galla, *University of Pittsburgh*

Authors: BM Galla, E Tsukayama

Abstract: Mindfulness is defined as a non-reactive awareness of subjective experience. Surprisingly, almost nothing is known about how mindfulness develops naturally across adolescence, and whether changes in this mental quality support well-being in the absence of formal training programs. The current study tracked longitudinal changes in mindful non-reactivity in a large (N=1,657), racially and socioeconomically diverse sample during the transition from middle to high school. Students completed self-report questionnaires once every six months for two years. Data were collected from October 2014 (fall 8th grade) to May 2016 (spring 9th grade). Mindful non-reactivity was assessed using three items adapted from prior research (e.g., "I can be aware of my feelings and emotions without having to react to them"). Students also completed items assessing perceived stress and positive affect. Growth curve models indicated that mindfulness increased linearly from fall of 8th grade to fall of 9th grade, but then growth slowed through spring of 9th grade. Random intercept cross-lagged

panel models also showed that within-person changes in mindfulness predicted improvements in perceived stress and positive affect. This is one of the first studies to examine naturalistic development in mindfulness during adolescence. The data showed that from 8th to 9th grade, adolescents improved in their capacity to become aware of, yet "take a step back" from, difficult experiences. Changes in mindfulness also predicted reductions in perceived stress and improvements in emotional well-being. Together, these data suggest that mindfulness may boost resilience during the stressful transition from middle to high school.

Paper B06b

4:10–4:25 PM

Title: *Developmental Changes in Mindful Awareness During Middle Adolescence*

Presenter: Michael Warren, *Western Washington University*

Authors: MT Warren, L Wray-Lake, M Mahmoodzadeh

Abstract: Despite abundant research on the benefits of dispositional mindfulness and mindfulness-based interventions, little is known about the normative developmental course of mindfulness. Given dramatic strides during adolescence in competencies (e.g., self-regulation) that may support mindfulness, we chose the high-school years as a suitable time window to study developmental change in mindfulness. Using an accelerated cohort design to examine the longitudinal trajectory of mindfulness from ages 13 to 18, we employed data from a 4-year study of 2,159 U.S. adolescents (55% female) from high schools in California, Minnesota, and West-Virginia. A subset of 3 items from the Mindful Attention Awareness Scale displayed partial measurement invariance, indicating that the measure functioned similarly across the 4 measurement waves. Latent growth curve analyses found that, after controlling for cohort, mindfulness displayed a significant linear increase from ages 13 to 18. Gender was not associated with the developmental trajectory of mindfulness, indicating similar growth curves in mindfulness across genders. Overall, this research provides initial evidence that—in the presumed absence of formal training—mindfulness increases during high school, and this pattern of change is similar for boys and girls. Future research should examine which individual (e.g., self-regulation) and contextual (e.g., parental support) assets predict mindfulness development. Such work would complement randomized controlled trials by providing clues as to how to cultivate mindfulness in everyday contexts.

Paper B06c

4:30–4:45 PM

Title: *A Mindful Self-Compassion Program for Adolescents: A Within-Person Association of Mindfulness, Self-Compassion, and Emotional Wellbeing Outcomes*

Presenter: Karen Bluth, *University of North Carolina, Chapel Hill*

Authors: K Bluth, TA Eisenlohr-Moul

Abstract: Adolescence is a developmental period during which numerous mental health problems emerge and worsen. For example, nearly a quarter of all adolescents experience anxiety, mood and behavior disorders; problems associated with severe impairment in multiple domains of life. The purpose of this study was to examine whether a novel, mindful self-compassion program designed specifically for adolescents would decrease stress, depressive symptoms, and anxiety, and increase resilience, gratitude, and curiosity/exploration (positive risk-taking), and to examine whether measured mindfulness and self-compassion co-varied with these outcomes over time. Forty-seven adolescents in the southeast U.S. participated in an 8-week mindful self-compassion course in five cohorts. Self-report measures were assessed at pre-intervention, post-intervention, and 6-week follow-up. Multilevel growth analyses revealed that perceived stress, resilience, curiosity/exploration, and gratitude all improved significantly across time. Within-person mindfulness and self-compassion both co-varied with decreases in perceived stress and depressive symptoms across time. Mindfulness also co-varied with reductions in anxiety, and self-compassion co-varied with increases in resilience and curiosity/exploration across time. Moderation tests showed that, compared to males and adolescents in middle school females and adolescents in high school showed more robust increases in self-compassion from pre- to post-intervention. These results suggest that a relatively brief training in mindful self-compassion can improve self-reported mindfulness and self-compassion, and that improvements in these personal qualities may promote improvements in mental health and resilience during a critical period of socioemotional development.

B07 - Papers

Ant

Individual Presentations

This session contains individually submitted paper presentations. Details for each paper are listed in the subsessions below.

Paper B07a

3:50–4:05 PM

Title: *Compassion: The Perception of Common Humanity*

Presenter: Debbie Ling, *Monash University*

Author: D Ling

Abstract: There has been a significant increase in research into compassion with investigation into the neural correlates of compassion and the development of compassion training programs. Yet there is still a lack of agreement over definitions of compassion and what are its core elements. This impacts on the rigour of compassion research. There is broad consensus that compassion is a concern when confronted with another's suffering and a desire to alleviate that suffering. However, some conceptualisations of compassion vary significantly from this consensus view. Compassion is considered a virtue, it recognises the inherent worth and dignity of all humans, and is often the core value of hospitals, schools and charities. Compassion acknowledges the universality of suffering, that all humans seek happiness and do not wish to suffer. The perception of common humanity has been suggested by several authors to be the central component of compassion. A critical review of the literature suggests that compassion has 5 key elements: (i) compassion is a concern regarding the suffering of another and a desire to alleviate that suffering; (ii) compassion is focused on the other, it does not contain self-reference elements; (iii) compassion arises in response to an identification with a common humanity; (iv) compassion is a motivation, it does not inherently include action; (v) compassion is a process of appraisals. The Sequential-Relational Model of Compassion is proposed to capture the core appraisals of compassion and illustrate the complex array of factors required for compassion to come into being.

Paper B07b

4:10–4:25 PM

Title: *Improving Children's Welfare by Direct and Indirect Practice of Mindfulness and Care*

Presenter: Ricardo Tarrasch, *Tel Aviv University*

Authors: R Tarrasch, R Berger

Abstract: Throughout childhood, emotional and attentional regulatory capacities grow significantly, and are particularly sensitive to external influence. Thus, the practice of mindfulness provides promising gains in these critical stage. Meta-analyses have shown improvements in cognitive performance, coping behaviors, and resilience, after mindfulness interventions among children, however, few studies collected follow-up measures. Incorporating mindfulness into the education system could follow three approaches: a direct approach, in which the intervention is delivered directly to students; an indirect one, in which the teacher develops a personal mindfulness practice, or a combination of both. The indirect approach holds an advantage by offering a global effect, rather than one limited to the intervention's sessions. In addition, teachers' emotional and social competence have been posited as mediators in exerting these effects on students. The "Call to Care" program, originally launched by the Mind & Life Institute, cultivates skills aimed at receiving and extending care to oneself, together with extending care to others. The program provides social-emotional skills, contemplative-based training, and cooperative learning strategies that help fostering a "community of

care" in the classroom. 324 pupils participated in the study, 175 in a combined approach, 51 in an indirect approach, and 98 controls. Significant improvements were obtained, and persisted after a 6-months follow up period, in both the combined and indirect approach groups in anxiety, stress, somatization, well-being, attachment to the teacher, mindfulness, attention and class atmosphere. The results support the efficacy of the more cost-effective indirect approach in improving children's welfare.

Paper B07c

4:30–4:45 PM

Title: *Evaluating the Effect of a Mindfulness-Oriented Academic Success Course on College Student Achievement*

Presenter: Adam Burke, *San Francisco State University*

Author: A Burke

Abstract: National data reveals that one in four students leave college before completing sophomore year, with a disproportionate percentage being students from minority and lower SES families. Reasons for attrition are diverse and include institutional and individual factors. In light of the varied contributors, a novel 16-week undergraduate academic success course (ASC) was developed. A key course principle and practice element was a mindfulness-oriented model influenced by Bandura's social learning theory of reciprocal determinism. The goal was to extend the utility and benefits of conventional academic metacognition techniques. Students who took the course between spring 2010-2016 (n=706) were compared with a campus population sample matched on key variables, including age, sex, minority status, and college SAT/ACT scores (n=706). The academic success course participants attended one 3-hour class per week. They learned to apply a theoretically-grounded model to better recognize, understand and address ongoing school/life challenges. This included working mindfully throughout the semester on a specific academic challenge. Two key metrics of student success were selected for between group comparison—final cumulative GPA and time to graduation. Final cumulative GPA was higher for the ASC students than the matched sample. ASC mean (SD) was 3.13 (0.48) versus control 2.94 (0.60), $p < .0001$, representing GPAs of B and B-. There was no significant difference in time to graduation. Results suggest that teaching students a mindfulness-oriented approach to school challenges may contribute to improvements in academic persistence and effectiveness.

B08 - Papers

Quail

Individual Presentations

This session contains individually submitted paper presentations. Details for each paper are listed in the subsessions below.

Paper B08a

3:50–4:05 PM

Title: *Neural and Behavioral Effects of Mindfulness Practices on Executive Attention and Emotional Regulation*

Presenter: Aminda O'Hare, *University of Massachusetts Dartmouth*

Authors: A J O'Hare, N Lunny, Z Gemelli, A Tironati

Abstract: The impacts of mindfulness practices on executive attention and emotional regulation have been growing. These studies explore the interactions between emotion and attention and individual differences in anxiety and mood following training in mindfulness practices using event-related potential (ERP) methodology. In both studies participants were assessed using an emotion-word flanker task pre- and post-training. In study 1, participants completed either 8-weeks of mindfulness-based stress reduction training (MT, n=18) or 8-weeks of deep reading training (DR, n=19). The MT group had reduced trait worry scores, $p < .001$, and reduced neural recruitment on interference trials, as indexed by the P1 ERP component, $p < .05$, compared to the DR group. In study 2, participants from two sections of the same psychology course either completed focused attention (FA) meditation (n=24) or self-compassion (SC) meditation (n=20) training throughout the semester. The FA group had reduced cognitive interference effects on the flanker task compared to the SC group, $p < .05$; however, they showed no improvement in mood or anxiety metrics. The SC group had no changes in their performance on the flanker task; however, they had reduced scores on worry, anxiety, stress, and depression measures compared to the FA group, all p 's $< .05$. These results support that MBSR training can influence both cognitive and affective behaviors (study 1). Further, we support that the different aspects of MBSR training have unique effects when practiced in isolation (study 2).

Paper B08b

4:10–4:25 PM

Title: *Learning Not to Fear: Mindfulness-Meditation Improves Retention of Fear Extinction*

Presenter: Gunes Sevinc, *Harvard University*

Authors: G Sevinc, B K Hölzel, J Greenberg, T Gard, J A Hashmi, M Milad, S W Lazar

Abstract: Mindfulness Based Stress Reduction (MBSR) programs have been widely utilized to ameliorate psychiatric and stress-related symptoms, however the mechanisms of change are still

largely unknown. Mindfulness meditation involves refraining from cognitive avoidance and thus provides a basis for internal exposure to aversive stimuli. Thus, we hypothesized that mindfulness-based interventions create a context akin to behavioral exposure and thereby alter participants' neurobiological responses to the aversive stimuli. We tested this hypothesis in a randomized longitudinal study using a well-established 2-day fMRI fear-conditioning and extinction protocol. Meditation-naïve participants completed either 8-week MBSR (n=42), or stress management education (SME, n=25) programs. Behavioral changes, and alterations in neural activation patterns associated with extinction memory from pre to post interventions were assessed using fMRI. The groups exhibited differential patterns of change during extinction recall: the MBSR intervention was associated with significant increases in right supramarginal gyrus from pre to post intervention, compared to the control intervention as well as with the differential functional coupling of the hippocampus. These results indicate that MBSR improves extinction memory predominantly through enhancing neural activity in regions associated with attentional input to memory during recall of extinguished stimuli. Considering that the ability to recall that a stimulus is no longer associated with threat is critical for healthy emotional functioning, these results suggest the improvement in this ability may be a key mechanism through which mindfulness meditation ameliorates psychiatric and stress-related symptoms.

Paper B08c

4:30–4:45 PM

Presentation withdrawn by presenter

B09 - Papers

Horse

Individual Presentations

This session contains individually submitted paper presentations. Details for each paper are listed in the subsessions below.

Paper B09a

3:50–4:05 PM

Title: *Immediate Effect of Focused Attention and Open Monitoring Meditation on Mind-Wandering and Meta-Awareness of Mind-Wandering in Experienced Meditators*

Presenter: Toru Takahashi, *Graduate School of Human Sciences, Waseda University*

Authors: T Takahashi, I Kawashima, M Fujino, H Kumano

Abstract: Mindfulness meditation has been shown to immediately decrease mind-wandering, defined as distracted attention from current tasks. However, it is unknown whether focused attention meditation (FAM) and open monitoring meditation (OMM), components of mindfulness meditation, immediately decrease mind-wandering. It is also unknown whether each meditation immediately increases the meta-awareness of mind-wandering. Therefore, we examined the immediate effect of each meditation on mind-wandering and meta-awareness. Seventeen experienced Vipassana meditators (4 female; age: 41.5 ± 9.7 ; meditation hours: 3579.6 ± 3247.5) were recruited. Participants performed a sustained attention to response test (SART) before and after an intervention for the following three conditions: rest (the first day), FAM, and OMM (the second or third day, counterbalanced). Each intervention was conducted in separate three days and lasted one hour (total) respectively. SART is go/no go task where "no go" targets are rarely presented, inducing mind-wandering. SART included repeated thought probes asking the degree of mind-wandering, meta-awareness, and sleepiness. We also used the number of commission errors to "no go" targets and the variance of response time to "go" targets as measures of mind-wandering. ANOVA was performed for three conditions: rest, FAM, OMM \times two periods: pre- and post-intervention. Results showed that only meta-awareness showed significant interaction. Post-hoc tests showed that meta-awareness significantly increased for OMM only. OMM is therefore considered to foster a detached perspective from thoughts. One hour of rest may have a similar effect on mind-wandering to taking a nap. There was hence no interaction as participants reported higher sleepiness when at rest.

Paper B09b

4:10–4:25 PM

Title: *The EMBODY Task: Identifying the Object of Attention During Breath Meditation*

Presenter: Helen Weng, *University of California, San Francisco*

Authors: H Weng, J Lewis-Peacock, R Hecht, M Ikeda, D Ziegler, M Uncapher, N Farb, L Duncan, V Goldman, S Skinner, M Chao, A Gazzaley

Abstract: Meditation skills may improve mental and physical health symptoms; however, the mechanisms of action are unclear due to measurement issues in identifying the internal object of attention during meditation. The EMBODY task provides a novel framework where machine learning applied to fMRI data can identify the fluctuating object of attention during breath meditation. The task was piloted and validated in 16 adults, including 8 meditators (≥ 5 years of weekly practice) and 8 age and gender-matched controls. In Step 1 of the EMBODY Task, participants directed their internal attention to areas of the body (breath, feet) and non-body (mind wandering, self-referential processing, MRI sounds). Using multi-voxel pattern analysis (MVPA) applied to wholebrain individual-level data, all

five neural patterns were recognized above chance (classification accuracies >41% [chance: 20%], $t(15) > 4.83$, $p < 0.001$), demonstrating that neural patterns for each internal mental state were distinct. In Step 2, 10 minutes of breath meditation were decoded using three patterns from Step 1 (breath, mind wandering, and self-referential processing), which produced a second-by-second readout of mental states. In Step 3, novel metrics of internal attention were calculated, including percentage time attending to breath (mean=38.0%) or mind wandering (mean=32.4%). Participants attended to the breath more than mind wandering or self-referential processing ($t(13) > 2.62$, $p < 0.05$), and preliminary tests suggest that meditators spent more time attending to breath vs. mind wandering compared to controls (Group*Condition interaction $F(1, 12) = 5.14$, $p < 0.05$). The EMBODY task provides a novel framework to measure interoception that is trained by meditation, and holds promise to elucidate mechanisms of therapeutic action.

Paper B09c

4:30–4:45 PM

Title: *Chakana: An Experimental Framework for Neurophenomenology*

Presenter: Juan Santoyo, *Brown University*

Author: J Santoyo

Abstract: Chakana is an experimental framework for the concurrent production and analysis of first-person experiential data and neurophysiological measures. In this approach, experts with training in metacognitive techniques use neurofeedback to identify strategies for modulating a neurophysiological signal of interest. The effects of these strategies, referred to as Neurofeedback Informed Meditation Techniques (NIMT), are subsequently tested in naïve groups to assess whether that NIMT modulates the targeted neurophysiological signal and associated behavioral measures. Results from three experiments offer a proof-of-concept for this framework by demonstrating the development of a NIMT for modulating EEG and fMRI-based measurements of activity in the posterior cingulate cortex (PCC), a node of the default mode network implicated in psychiatric illness. Additionally, we report initial results from an experiment using this framework to develop a NIMT for modulating EEG-based alpha-band activity in the primary somatosensory cortex. This research demonstrates how the chakana framework can be used to explore links between experiential and biophysical phenomena in a rigorous and model scientific procedure. The chakana framework offers an important strategy for a science of consciousness and it is of particular relevance for neurophenomenology given that it provides a procedure for producing and relating first-person experiential data and neurophysiological data. Moreover, this approach offers a tool for the development of clinically-relevant mental training techniques and in doing so reframes neurophenomenology as a clinical tool. Furthermore, we propose that this framework introduces an experimental and epistemological framework of use in the ongoing development of a contemplative science.

B10 - Papers

Jackrabbit

Individual Presentations

This session contains individually submitted paper presentations. Details for each paper are listed in the subsessions below.

Paper B10a

3:50–4:05 PM

Title: *Deflecting the Second Arrow: A Neural Biomarker-Based Investigation of Pain Modulation in Short-Term and Long-Term Mindfulness Training*

Presenter: Joseph Wielgosz, VA Palo Alto / Stanford University

Authors: J Wielgosz, DM Perlman, JA Mumford, A Lutz, TD Wager, RJ Davidson

Abstract: Mindfulness-based interventions are known to be effective for managing physical pain, and understanding the neural mechanisms involved is important for optimizing their effectiveness. We applied a pair of neuroimaging-based pain signatures, targeting nociceptive processing (NPS) and pain-modulatory cognition (SIIPS-1), to study the effects of mindfulness training on acute pain response. Participants in an eight-week MBSR intervention showed a significant decrease in NPS response, while among long-term practitioners, intensive retreat practice predicted reductions in SIIPS-1 response. Results also suggest differences in effects on signature responses across MBSR, active control and waitlist groups; between short-term and long-term training; and between cumulative effects of everyday practice and intensive retreat in long-term practitioners. Behaviorally-validated neural biomarkers provide a new type evidence for studying mindfulness-based intervention effects. Findings for pain support the importance of context, duration, and specific vs. non-specific factors for the effects of mindfulness training.

Paper B10b

4:10–4:25 PM

Title: *The Effects of Mindfulness Practice on Psychological Wellbeing in Mothers of Children With Autism Spectrum Disorder*

Presenter: Nancy Miodrag, California State University, Northridge

Authors: I Weiner, N Miodrag, J Rivas, S Stemberidge, D Boyns

Abstract: Mothers of children with Autism Spectrum Disorder (ASD) report high levels of psychological stress compared to other groups of mothers. They also report a significantly lower sense of self-efficacy about parenting their child with ASD and higher levels of stress and depressive symptoms compared to mothers of children who are typically developing. Practicing mindfulness has been shown to reduce stress among vulnerable populations, but such interventions have only recently been examined among mothers of children with ASD. Our study contributes to the research on mindfulness practice as a means to increase wellbeing for these mothers. Twenty-seven mothers were assigned among three groups: mindfulness (n=11), discussion-based (n=6), and control (n=10). Mothers in the intervention groups attended 8 weekly, 90 minute sessions. Mindfulness intervention focused on techniques of breath counting, body scans, and loving-kindness practice. The discussion-based group held conversations about parenting children with ASD. Controls received no intervention. All participants completed pre- and post-measures on self-esteem, self-efficacy, psychological wellbeing, parenting stress, and life satisfaction. Results suggest significant differences for the mindfulness group on: life satisfaction, self-esteem, self-efficacy, overall psychological wellbeing and psychological wellbeing subscales of autonomy, environmental mastery, personal growth, positive relations, and purpose in life. There were no significant results for the discussion-based and control groups. Results from focus groups provide support for the pre-posttest comparisons, and that participants in the mindfulness group developed acceptance of their life circumstances, as well as practical tools to cope with the uncertainties of stressful parenting.

Paper B10c

4:30–4:45 PM

Title: *Measuring the Mindfulness of Others: Development and Validation of the Observed Mindfulness Measure*

Presenter: Larissa Bartlett, *Menzies Institute for Medical Research, University of Tasmania*

Author: L Bartlett

Abstract: This paper presents the development and validation of the Observed Mindfulness Measure (OMM). Qualitative research suggests mindfulness training can have external benefits, such as improved workplace team dynamics and better patient care. An individual's mindfulness needs to impact others for there to be external effects, and so we define observed mindfulness as the noticeable tendency of another person to be mindful. The OMM was developed in three phases using qualitative and quantitative methods and following approval from an institutional research ethics committee. (i) Item selection: We pooled 102 items from five popular self-report mindfulness measures, and re-worded 30 items for psychometric testing following consultation with a global panel of mindfulness experts. (ii) Item performance: usability, interpretability and factor structure were tested in a community sample (n=332). (iii) Construct validity: was assessed using correlations within

participant-observer pairs (n=90, recruitment underway) for OMM data and self-reported mindfulness, distress, emotional regulation, resilience, reactivity and empathy. Principle component and exploratory factor analyses indicated 18 items loaded to a clear three-factor structure: awareness, acceptance and attentiveness. Results of all analyses will be presented, and temporal stability, sensitivity to change and predictive utility will be tested using a third convenience sample (n=70 pairs) from a controlled trial of mindfulness training currently in recruitment. The OMM aligns with key terms in the definition of mindfulness, and may prove a useful research tool for understanding the external effects of mindfulness training. In intervention research it may also help cross-validate study findings by supplementing self-reported data.

B11 - Papers

Rattlesnake

Session Title: *Preventive Contemplative Education: Mindfulness to Promote Mental Health in Educational Contexts*

Session Abstract: In recent years there has been an international interest in the application of mindfulness in educational contexts. At the same time, there has been an international increase in the prevalence of early-onset common mental disorders such as anxiety and depression. Recent research has been trying to understand if mindfulness-based interventions applied in educational contexts could have a preventive effect by promoting mental health and generating resilience among youth. Three randomized controlled trials are presented in the panel session. The studies were conducted in different countries (United Kingdom, Brazil and Chile) and on different age groups (elementary school-children and university students). They investigated the preventive effects that mindfulness-based interventions can have by observing their impact on different variables indicative of positive mental health. For this, objective measures—neuronal and behavioral tasks—and subjective measures—self reports—were used.

Moderator: Javier Garcia Campayo

Paper B11a

3:50–4:05 PM

Title: *Effectiveness of Providing University Students with a Mindfulness-Based Intervention to Increase Resilience to Stress: A Pragmatic Randomised Controlled Trial*

Presenter: Julieta Galante, *University of Cambridge*

Authors: J Galante, G Dufour, M P Vainre, A Wagner, J Stochl, A Benton, E Howarth, P B Jones

Abstract: Background More young people are going to university, but there is concern about an increasing demand for student mental health services. We designed a pragmatic randomised controlled trial to test the hypothesis that providing mindfulness courses to university students would promote their resilience to stress. Methods University of Cambridge students without severe mental illness or crisis were randomised to join an 8-week mindfulness course adapted for university students (MSS), or to mental health support as usual (SAU). The primary outcome was self-reported psychological distress during the examination period measured using the Clinical Outcomes in Routine Evaluation Outcome Measure. Main outcome intention-to-treat analysis was masked to allocation. Findings In total, 616 students were randomised; 74% completed the primary outcome measure; 59% of the MSS arm participants completed at least half of the MSS course. MSS significantly reduced distress during the exam period compared with SAU: 57% of SAU participants had distress scores above a validated clinical threshold level compared with 37% of MSS participants. SAU distress worsened over the year whereas MSS scores improved after the course and were maintained during exams. The effect on academic performance was nuanced. Active monitoring revealed no adverse reactions related to self-harm, suicidality or harm to others. Interpretation Our results replicate evidence from several smaller trials conducted across a range of higher education institutions and countries. Mindfulness training appears an effective component of a wider student mental health strategy, but there is a need for comparative effectiveness research on preventative mental health interventions for students.

Paper B11b

4:10–4:25 PM

Title: *The Effects of Mindfulness Practice on Neural Correlates of Executive Functions in Elementary School Children: A Cluster-Randomized Controlled Trial*

Presenter: Carlos García Rubio, *Universidad Autónoma de Madrid*

Authors: C García-Rubio, C Andreu, D Dorjee, K Schonert-Reichl, J Albert

Abstract: Interest in the applications of mindfulness practice in education is growing in the scientific and contemplative community. Recent research has shown that mindfulness practice in schools may be beneficial for executive functions, EFs, which are abilities crucial for social-emotional development and positive mental health. The study of the effects of mindfulness practices on children's neural correlates of EFs may provide relevant information about the health and educational impacts of mindfulness-based interventions in this population. However, no published studies assessed such changes from the neuroscience perspective. The aim of the present study was to investigate the effects of a mindfulness-based intervention in elementary school children on the neural correlates of executive functions in a randomized controlled trial. Children from four 4th grade classrooms drawn from two socioeconomically deprived schools in Santiago de Chile were randomly assigned to either receive a mindfulness-based intervention (N=50) or serve as active controls receiving a social skills

program (N=50). Data on neural correlates of EFs was obtained using two EF tasks (Go/Nogo and Flanker). Electroencephalography was used to record the N2/P3 (response inhibition) and ERN/Pe (error processing) event-related potentials. Also, behavioural measures of self-regulation and questionnaire measures were obtained. During the panel session this innovative project will be presented along with its preliminary results. This project was awarded the European Mind and Life Francisco Varela Award 2016. Results could contribute to understanding how mindfulness practice can promote cognitive and social-emotional development and positive mental health.

Paper B11c

4:30–4:45 PM

Title: *Effects of the Mindfulness-based Health Promotion (MBHP) Program on Neuropsychological Functions of Brazilian College Students: An Exploratory RCT*

Presenter: Marcelo Demarzo, *Universidade Federal de São Paulo - Mente Aberta Brazilian Center for Mindfulness and Health Promotion*

Authors: K Cicuto, D Fuentes, M Navarro-Gil, P Herrera-Mercadal, J Garcia-Campayo, M Demarzo

Abstract: Objective: to investigate the effects of a mindfulness-based intervention on neuropsychological functions of healthy college students. Methods: a randomized controlled study was performed with a purposive sample of 51 participants divided into 2 groups: mindfulness intervention and control (waiting list). Apart from self-report assessments on mindfulness, anxiety and depressive levels; the effects of the mindfulness intervention were investigated on the following neuropsychological parameters: attention, memory, and impulsivity. Results: a positive and moderate effect size of the mindfulness intervention was observed only on impulsivity and mindfulness levels when compared to controls. Conclusion: mindfulness training may improve neuropsychological functions of college students, especially on impulsivity and mindfulness levels. Further protocols should confirm these findings and address long-term effects of the intervention.

B12 - Papers

Gila Monster

Session Title: *The Impact of Objective Mindfulness Practice Adherence on MBI Outcomes Among High-Stress Populations*

Session Abstract: Chronic stress has been shown to affect physical and mental health. Mindfulness-Based Interventions (MBIs) have demonstrated effectiveness in minimizing the consequences of chronic stress among high stress populations. Adherence data are an important

factor influencing MBI outcomes. They elucidate the extent to which adhering to an intervention influences the outcomes. Studies have documented that participants who endorse more (duration and frequency) mindfulness practice present better outcomes. This symposium will present data on the relationship between objective adherence to formal mindfulness practice (FMP) and health-related outcomes in RCT MBIs among samples of police officers, physicians, military veterans, and stressed older adults. All the studies used iMINDr, a custom software developed to objectively track home FMP. Additionally, the relationship between self-reported informal mindfulness practice and health-related outcomes will be presented. The impact of adherence to practice on MBI outcomes will be discussed, as well as preferred practices among these highly stressed populations.

Paper B12a

3:50–4:05 PM

Title: *Objective Adherence to Meditation Interventions in Multiple Stressed Populations*

Presenter: Helané Wahbeh, *Institute of Noetic Sciences*

Authors: H Wahbeh, B Oken

Abstract: Adherence data elucidate the extent to which adhering to an intervention influences the outcomes of interest. Drug trials use Medication Event Monitoring System and pill counts as objective adherence measures. No such standards exist in mind-body research yet. Adherence to home practice is usually assessed through self-report, which must be interpreted with caution, as there are no objective measures validating their accuracy. To accurately and objectively track home-practice adherence, we developed iMINDr, a custom software application for use with an iPod Touch. We have collected iMINDr data in multiple meditation studies in stressed and depressed older adults as well as combat veterans with PTSD. Unexpectedly, subjective and objective adherence reports were highly correlated across samples and adherence was a significant covariate in multiple outcomes of the PTSD study. Challenges in supporting meditation adherence in stressed populations and the benefits of having an objective adherence measure will be discussed.

Paper B12b

4:10–4:25 PM

Title: *Adherence to Informal, but Not Formal, Mindfulness Practice Correlates With Resilience and Team Cohesion Among Interdisciplinary Primary Care Teams*

Presenter: Dana Dharmakaya Colgan, *Oregon Health and Sciences University*

Authors: DD Colgan, M Christopher

Abstract: MBIs are associated with reduced burnout among primary care providers. Understanding the differential effects of formal and informal practices on outcomes may refine the development and

effectiveness of MBIs for this population. Mindfulness-Based Wellness and Resilience (MBWR) is an 8-week resilience training designed for interdisciplinary primary care teams. Adherence to formal and informal mindfulness practice was collected in a waitlist controlled pilot study (n=38). Adherence to formal practice was tracked by iMindr. Adherence to informal practice was collected weekly with a self-report questionnaire. Post-training surveys gathered practice preferences and perceived supports and barriers to practice. Informal practice was significantly correlated with post-MBWR resilience, nonjudgmental awareness, and team cohesion. Attendance and adherence to formal practices were not significantly correlated with post-MBWR outcomes. Preferred practices, perceived supports, and barriers to practice adherence will be reported. PCP-tailored protocols that incorporate IMP may bolster the development of resilience within health care environments.

Paper B12c

4:30–4:45 PM

Title: *Adherence to Formal and Informal Mindfulness Practice Correlated to Reduced Aggression and Improved Resilience Among Law Enforcement Officers*

Presenter: Leticia Ribeiro, *Pacific University Oregon*

Authors: L Ribeiro, DD Colgan, C Hoke, R Geoerling, M Hunsinger, B Oken, M Christopher

Abstract: Law enforcement officers (LEOs) experience high levels of stress and burnout that have been linked to negative outcomes, including aggressive behavior and excessive use of force. Mindfulness has shown to reduce negative affect among stressed populations. Studies suggests higher frequency and duration of practices are related to better outcomes indicating that the effectiveness of MBIs are accounted for by home practice. We ran an RCT with LEOs (n=61) randomly assigned to an 8-week Mindfulness-Based Resilience Training (MBRT), and assessed at pre- and post-intervention. Participants in the MBRT condition had their formal practices (FP) tracked by iMINDr and informal practices (IP) through self-reports. Baseline to post-MBRT change scores in aggression were negatively correlated with frequency and duration of FP. IP was negatively correlated with baseline to post-MBRT change scores in aggression, anger, and positively correlated with resilience. Implications regarding specific practices predicting outcomes following MBIs in this population will be discussed.