



Concurrent Session C Presentations

Saturday 11/10

2:30–3:30 PM

C01 - Panel

Kave Ballroom

Presenters:

Moderator: Brooke Lavelle, *Courage of Care*

Panelist: John Dunne, *University of Wisconsin*

Panelist: Rob Roeser, *Pennsylvania State University*

Panelist: David Germano, *University of Virginia*

Title: *The Student Flourishing Initiative in Higher Education*

Abstract: Higher Education is intended to prepare our students to have rich and meaningful personal and professional lives and to equip them for the challenges of engaged citizenship. Yet, our universities largely separate student academic development from personal growth. Moreover, today's college students are faced with increasing stresses over finances, academics, social pressures, and future careers, leading to anxiety, depression, substance abuse, dysfunctional relationships, and poor performance. Three major public universities – the Pennsylvania State University, the University of Virginia, and the University of Wisconsin-Madison – have come together for the Student Flourishing Initiative, whose mission is to help students flourish by empowering them with knowledge and practices for navigating their lives in college and beyond by engaging with human flourishing through the intellectual and practical study of approaches from the sciences, arts and humanities, while simultaneously exploring and developing their own values and capacities through powerful experiential practices. This includes a first-year course called The Art and Science of Human Flourishing and a broader digital platform of resources and tools. Designed to assist students in attaining holistic wellbeing, deeper awareness, and a strong foundation for success, the course and

platform is uniquely experiential, combining personal practices and transdisciplinary curricula spanning the arts, sciences, and humanities. By cultivating greater awareness, compassion, and insight, students develop the skills, understanding, and resiliency to thrive. We are planning a research study to explore the effects of this course on over thousands of incoming college students from diverse backgrounds.

C02 - Panel

Coyote + Buzzard + Eagle

Presenters:

Moderator: J Kim Penberthy, *University of Virginia School of Medicine*

Panelist: Michael Swanberg, *University of Virginia School of Nursing*

Panelist: Martin Davidson, *University of Virginia Darden School of Business*

Panelist: Dallas Ducar, *The University of Virginia*

Title: *Off the Cushion and Into the Streets: Diversity and Inclusion in Contemplative Science*

Abstract: Current contemplative science in the USA remains largely focused on cisgender, white, North American, populations. We propose a discussion oriented to fostering a diverse and inclusive community engaged in contemplative sciences. This discussion will focus on the role of contemplative practices in diverse populations, including the adaptation of established and effective mindfulness-based interventions for use in more diverse populations and inclusion of a broader spectrum of society in contemplative science. We will focus on strategies for adaptation and diversification of mindfulness practices as well as any potential risks involved with overly modifying proven interventions for specific populations. We will also explore mindfulness practices already used by a variety of populations and the inclusion of these techniques into mainstream society. Additionally, we will focus on the role of social justice in implementing and enhancing contemplative programming and the potential impact on individuals, community and the larger society. The discussion will include the following questions that will start our conversation with the audience and between the panel members. Questions: Where do you notice successful examples of diversity and inclusion in your contemplative community or society at large? Where is the line between developing specialized interventions for specific populations without being too exclusionary? How do we develop an inclusive community while also being specific to marginalized groups. How can we encourage people to get "off the cushion" and turn their contemplative practice into a just social movement?

C03 - Panel

Bird + Roadrunner

Presenter:

Moderator: Javier Garcia Campayo, *Universidad de Zaragoza*

Panelist: Alejandro Chaoul, *University of Texas, The Jung Center's Mind Body Spirit Institute*

Panelist: Catherine Crane, *University of Oxford*

Panelist: Julieta Galante, *University of Cambridge*

Title: *What Makes a Good Randomized Controlled Trial in Contemplative Research? A Discussion on Challenges and Solutions*

Abstract: Randomized controlled trials are the hallmark of evidence-based medicine and form the basis for translating interventional research into practice. For the last decades, they have been playing a unique role providing evidence in support of contemplative practices that has caught the eye of the wider scientific community, policy makers, and the public. This is having a large impact in contemporary Western societies, with contemplative practices beginning to be available in public institutions including health services. However, conducting a randomized controlled trial involves many methodological challenges. Some are inherent to the design, and some are linked to testing contemplative interventions. Most randomized controlled trials in contemplative research suffer from a number of shortcomings that significantly limit their impact. While avoiding some requires considerable resources, there may be accessible ways to get around others. Giving attention to improving trials will pay off in achieving a larger impact. In this session, contemplative researchers with different backgrounds (experimental psychology, public health, philosophy) and experiences in conducting randomized controlled trials, will engage with the audience in reviewing the challenges and discussing ways of improving and enriching trials from a "what works" perspective. Reflecting with hindsight on their own experiences conducting trials they will consider: What makes a good randomized controlled trial in contemplative research? What are the main methodological challenges? How could these be addressed in ways accessible to most contemplative researchers? Discussants will speak for up to 10 minutes each, leaving time for structured and unstructured interaction with the audience.

C04 - Papers

Komatke A

Session Title: *Cognitive Mechanisms and Effects of Mindfulness*

Session Abstract: Cognitive functions like sustained attention, internal attention, and executive functions are fundamental to mindfulness practice. Accordingly, research focusing on the effects of mindfulness and meta-awareness on key explanatory cognitive functions is essential to gain a better understanding of the cognitive mechanisms of mindfulness practices and interventions. This paper session will include three talks utilizing distinct methods to study the cognitive mechanisms of mindfulness. Amit Bernstein will present a novel conceptual and methodological paradigm to study and quantify (dys)regulation of internal attentional processing of negative (self-referential) thought and the theorized regulatory effects of meta-awareness on internal processing of thought. Arnaud Delorme will present findings from a novel paradigm using probe-caught experience samples during concentration meditation to study electrophysiological indicators of absorption and mind wandering episodes. David R. Vago will present a systematic review of the mindfulness literature investigating the effects of mindfulness-based interventions on critical cognitive processes.

Moderator: Yuval Hadash

Paper C04a

2:35–2:50 PM

Title: *Regulation and Meta-Awareness of Internal Attention in Mindfulness and Mental Health*

Presenter: Amit Bernstein, *University of Haifa*

Authors: I Amir, L Ruimi, A Bernstein

Abstract: The training of attentional processing of internal events (e.g., thoughts, emotions) is theorized to serve a central salutary function in mindfulness meditation and mindfulness-based interventions for mental health. Yet, to-date, research has predominantly focused on (a) dysregulation in the processing of external-perceptual information (e.g., environment threats or rewards) as opposed to internal experience; or (b) changes in "cold" cognitive processes (e.g., sustained attention, working memory span) following mindfulness-based interventions. 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 thoughts). Data collection is ongoing. We plan to present findings, first, regarding the role of dysregulated internal attentional processing of self-referential thought in emotional vulnerability (negative repetitive thinking, depression); and, second, regarding the theorized regulatory role of meta-awareness on the regulation of internal attention. We will discuss the translational implications of this work for contemplative methods designed to train meta-awareness and internal attention as means to improve mental health.

Paper C04b

2:55–3:10 PM

Title: *Reduced Mind Wandering in Experienced Meditators*

Presenter: Tracy Brandmeyer, *University of California, San Diego*

Authors: A Delorme, T Brandmeyer

Abstract: One outstanding question in the contemplative science literature relates to the direct impact of meditation experience on the monitoring of internal states. In particular, to what extent does meditation influence the tendency of the mind to wander. To assess the relation between mind wandering and meditation, we tested 2 groups of meditators, one of non-expert (of moderate level of experience) and one of expert meditators. We designed a novel paradigm using self reports of internal mental states based on an experiential sampling probe paradigm presented during ~1 hour of seated concentration meditation to gain insight into the dynamic measures of electroencephalography (EEG) during absorption in meditation as compared to reported mind wandering episodes. Our results show that expert meditation practitioners report a greater depth and frequency of sustained meditation, whereas non-expert practitioners report a greater depth and frequency of mind wandering episodes. This is one of the first direct behavioral indices of meditation expertise and its associated impact on the reduced frequency of mind wandering, with corresponding EEG activations showing increased frontal midline theta and somatosensory alpha rhythms during meditation as compared to mind wandering in expert practitioners. Frontal midline theta and somatosensory alpha rhythms are often observed during executive functioning, cognitive control and the active monitoring of sensory information. Our study thus provides additional new evidence to support the hypothesis that the maintenance of both internal and external orientations of attention may be maintained by similar neural mechanisms, and that these mechanisms may be modulated by meditation training.

Paper C04c

3:15–3:30 PM

Title: *Does Mindfulness Really Affect Cognition? Assessment of the Current Literature*

Presenter: David R. Vago, *Vanderbilt University Medical Center*

Authors: DR Vago, S Lazar, E Moitra, W Britton, E Loucks, J King, C Fulwiler, L Hoge, Z Schuman-Olivier, L Sager, P Acero, J Scharf, A Cheaito, T Dumais, J Lipsky, H Kimmel, S Peters, H Rahrig

Abstract: Cognition refers to a number of processes associated with information processing, sensing and acting in and on an environment in a meaningful way. Several theoretical models have been developed to explain the cognitive processes impacted by mindfulness-based meditation. From

attention to working memory and executive functioning, within the field of contemplative neurosciences the evidence to support changes in cognition as a result of manualized protocols delivering mindfulness-based skills needs to be carefully evaluated. This talk summarizes a recent systematic review of the literature investigating effects of mindfulness-based interventions on metrics of cognition. An evidence map was developed to provide an overview of the current literature on Mindfulness-Based Cognitive Therapy (MBCT), Mindfulness-Based Stress Reduction (MBSR), and their variations. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed for the reporting of this review. After screening 10,802 unique citations, and eliminating nonrandomized interventions, studies with no control group, studies with sample size less than 10, samples of participants under 18 years of age, and computer-based delivery, 141 relevant studies remained. A team of research staff lead by two doctoral-level cognitive domain experts identified 38 studies that were deemed relevant to the assessment of an MBI's effect on cognition so that a comprehensive assessment could be reported for the effects of mindfulness practices on cognitive outcomes.

C05 - Papers

Komatke B

Session Title: *Towards Empirically-Oriented Investigation of Non-Dual Awareness*

Session Abstract: Non-dual awareness (NDA) has been identified as an important aspect of spiritual awakenings, from contemplative trainings practiced in both traditional wisdom traditions and in emerging contemporary “Dharma” teachings (such as Mindfulness-Based Stress Reduction and Mindfulness-Oriented Recovery Enhancement). Although NDA itself may not necessarily be an ultimate goal or destination, attaining NDA may signify an important landmark for one’s contemplative development. The purpose of this Group Paper Session is to explore the merit of investigating NDA in the context of emerging interdisciplinary contemplative studies. The panel will consider how best to investigate NDA in empirically tractable ways, with three presentations by an interdisciplinary panel consisting of a research psychologist, a counseling psychologist with psychometric expertise, and a translational contemplative clinical scientist. In the end, the panel will open the discussion to the audience, with the hope of identifying outstanding issues for better understanding of NDA in contemporary contemplative practice.

Paper C05a

2:35–2:50 PM

Title: *Are We Ready to Investigate Nondual Awareness Scientifically?*

Presenter: Yoshio Nakamura, *University of Utah*

Author: Y Nakamura

Abstract: Ordinary experience is structured by the duality of subject-object distinctions. However, multiple philosophical and mystical traditions point to the possibility that this dichotomy may be transcended in special states of nondual awareness (NDA). NDA can be defined as a state of consciousness that rests in the background of all conscious experiencing—a background field of awareness that is unified, immutable, and empty of mental content, yet retains a quality of cognizant bliss. This field is thought to be ever present, yet typically unrecognized, obscured by discursive thought, emotion, and perception. Multiple philosophical traditions also suggest that nondual awareness facilitates fundamental insights into both the nature of reality and the emptiness of the self, producing states of bliss and a sense of well-being. Despite the centrality of NDA in contemplative traditions, it has remained a marginalized topic in Western psychology. This situation has been further reinforced by the fact that there is no psychometrically validated instrument for assessing NDA. This Group Paper Session will make a first step towards remedying this deficiency by approaching NDA as an empirically tractable problem. The first presentation will provide an overview on the construct of NDA and its presumed underlying components. NDA has been classically and philosophically described as having two primary dimensions: self-transcendence and bliss. Modern psychological theory also helps us understand NDA in terms of relational self-transcendence and annihilational self-transcendence. These conceptual reviews provide the basis for how to tackle the problem of measuring NDA in scientifically meaningful ways.

Paper C05b

2:55–3:10 PM

Title: *Creating NADA*

Presenter: Adam Hanley, *University of Utah*

Author: A Hanley

Abstract: Nondual awareness is an altered state of consciousness that is well documented in religious and meditative traditions. Yet, no standardized method of measuring nondual awareness currently exists. To address this gap, we developed and validated two forms of the Nondual Awareness Dimensional Assessment (NADA). The first form captured dispositions toward nondual awareness (NADA-T) and the second form captured states of nondual awareness (NADA-S). Four large samples were recruited to examine the structure of the NADA-T using principal components analysis and bifactor exploratory structural equation modeling as well as the NADA-T's convergent and discriminant validity. A fifth sample was recruited to conduct a randomized controlled experiment examining the impact of a single mindfulness induction on nondual awareness as measured by the NADA-S. Results revealed two, interpretable dimensions of the NADA-T—self-transcendence and bliss—indicating that

both dimensions were components of a second-order nondual awareness construct. Positive correlations were observed between the NADA-T and theoretically aligned constructs, such as decentering. Mindfulness practitioners reported higher NADA-T scores than non-practitioners, and practice frequency was positively correlated with NADA-T scores. Finally, a mindfulness induction increased nondual awareness relative to an active-listening task. Findings indicate that the NADA-T and -S are valid measures, and that continued use and refinement of these instruments may provide useful insights into the prevalence, correlates, mechanisms, and consequences of nondual states of awareness and their relations to health and illness. Systematic, quantitative investigation of nondual awareness has much to contribute to the emerging field of contemplative science.

Paper C05c

3:15–3:30 PM

Title: *Searching for NDA in a Clinical Trial Study*

Presenter: Eric Garland, *University of Utah, College of Social Work*

Author: E Garland

Abstract: The third presentation by Eric Garland will discuss the clinical utility of NDA, as a means of creating and inducing the experience of interconnectedness that may underlie therapeutic benefits for ameliorating suffering and managing symptoms. His discussion will touch on Mindfulness-Oriented Recovery Enhancement (MORE), which unites training in mindfulness, reappraisal, and savoring skills to target the mechanisms underlying prescription opioid misuse and chronic pain symptoms, and he will present preliminary findings, describing potential impacts of MORE on NDA in opioid-treated chronic pain patients undergoing MORE treatment sessions. MORE uniquely emphasizes NDA during mindful breathing instruction. In an ongoing NIH-funded randomized controlled trial, opioid-treated chronic pain patients were randomly assigned to receive 8 weeks of MORE or 8 weeks of an active social support group control condition. Findings indicate that MORE significantly increased the dimension of self-transcendence on the NADA-T, relative to the control. Furthermore, increases in self-transcendence mediated the effect of MORE on reducing pain severity at 3-month follow-up, suggesting that increasing NDA via MORE may have therapeutic benefits for managing pain. As such, NDA is tractable to contemplative clinical interventions and may serve as a potentially important treatment target. Although NDA has been typically considered as a rare, unusual state of the mind that may not necessarily result from exposure to mindfulness-based interventions (MBIs), our study produced encouraging findings, suggesting that newly developed tools will allow us to pursue a fruitful domain of inquiry on the nature and extent of NDA experienced by participants in MBIs.

C06 - Papers

Komatke C

Individual Presentations

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

Paper C06a

2:35–2:50 PM

Title: *Are School-Based Mindfulness Interventions Effective? A Systematic Review and Meta-analysis*

Presenter: Kristen Brendel, *Aurora University*

Authors: K Brendel, BR Maynard, MR Solis, VL Miller

Abstract: Evidence suggests that students today are experiencing high levels of stress as well as other emotional and developmental challenges that may impede their ability to learn and succeed in school. As schools have struggled to find ways to support students' overall well-being and improve achievement, one approach gaining widespread support by schools, practitioners and policy makers to address multiple and varied outcomes is mindfulness-based interventions (MBIs). The purpose of this review was to examine and synthesize evidence of MBIs implemented in school settings with primary and secondary school students on academic, behavioral, cognitive and socioemotional outcomes to inform practice and policy. Effect sizes were calculated using the standard mean difference effect size statistic, corrected for small sample size bias (Hedges' g). Meta-analysis, assuming random effects models using inverse variance weights, was used to quantitatively synthesize results across studies. 35 studies met inclusion criteria for this review. Meta-analytic findings indicate small, yet statistically significant effects on cognitive outcomes ($k=10$; $g=0.25$ (95% CI [0.06, 0.43], $p=.01$) and socioemotional outcomes ($k=28$; $g=0.22$ (95% CI [0.14, 0.30], $p<.001$), and small and non-significant effects on academic outcomes ($k=5$; $g=0.27$ (95% CI [-0.04, 0.57], $p=.08$.) and behavioral outcomes ($k=13$; $g=0.14$ (95% CI [-0.02, 0.30], $p=.08$). Heterogeneity was small and not statistically significant in all meta-analyses except for behavioral outcomes ($I^2=48%$; $T^2=.034$; $Q=22.96$, $p=.03$).

Paper C06b

2:55–3:10 PM

Title: *Mapping the Field of Mindfulness in the Curriculum: A Systematic Review of Fifteen Years of Mindfulness in Education*

Presenter: Oren Ergas, *Hebrew University and Beit Berl College*

Authors: O Ergas, L Hadar

Abstract: In the past fifteen years, there has been an exponential rise in the incorporation of mindfulness practice(s) across educational settings. However, "mindfulness in education" spans diverse implementations (e.g., mindfulness-based interventions, contemplative pedagogies), instrumental and non-instrumental aims, as well as different justifications (Barbezat & Bush, 2014; Schonert-Reich & Roeser, 2016). These are developing into a complex curricular discourse (Hyland, 2015; Owen-Smith, 2017; Reveley, 2016). The current study sets out to present an inclusive state-of-the-art mapping of the field and its development, encompassing its diversity, and tensions based on grounded theory methodology. The study aims to inform policy makers, educational theorists, researchers, and practitioners as well as the general public, as to the potentials, tensions and aims of mindfulness in contemporary curricula. We conducted several searches in various databases to uncover empirical and conceptual peer-reviewed papers published between 2002 and 2017, focused on mindfulness practice (diversely defined) applied, discussed, demonstrated and/or empirically studied within secular educational setting (preK, primary, secondary & higher). We established and refined paper-selection criteria and used grounded theory methodology to develop a coding system. 352 papers were retained, read through and coded based on 15 categories each entailing several subcategories accounting for diverse features of the papers. We performed basic descriptive statistics for each category and used cross tabulation to understand general trends in the data. Our presentation will discuss methodological considerations and key findings, including the development of five curricular strands over years, psychological/secular/Buddhist/scientific framings of mindfulness, educational aims, critical perspectives, gaps, and future directions.

Paper C06c

3:15–3:30 PM

Presentation withdrawn by presenter

C07 - Papers

Ant

Individual Presentations

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

Paper C07a

2:35–2:50 PM

Title: *The MATCH study (Mindfulness and Tai Chi for Cancer Health): A Preference-based Multi-site Randomized Comparative Effectiveness Trial of Mindfulness-Based Cancer Recovery (MBCR) vs. Tai Chi/Qigong (TCQ) for Distressed Cancer Survivors*

Presenter: Linda Carlson, *University of Calgary*

Authors: L Carlson, M Specia, D Oberoi, K Toivonen, J Jones, D Santa Mina, P Wayne, P Faris, T Beattie, K Patel

Abstract: A growing number of cancer survivors suffer high levels of distress, depression and stress, as well as sleep disturbance, pain and fatigue. Two different mind-body interventions helpful for treating these problems are MBCR and TCQ. However, while both interventions show efficacy compared to usual care, they have never been evaluated in the same study or directly compared. This study is the first to incorporate innovative design features including patient choice while evaluating two interventions to treat distressed cancer survivors. The design is a preference-based multi-site randomized comparative effectiveness trial. Participants (N=600) with a preference for either MBCR or TCQ will receive their preferred intervention; while those without a preference will be randomized into either intervention. Further, within the preference and non-preference groups, participants will be randomized into immediate intervention or wait-list control. Total mood disturbance on the Profile of mood states (POMS) post-intervention is the primary outcome. Other measures taken pre- and post-intervention and at 6-month follow-up include quality of life, psychological functioning, cancer-related symptoms and physical functioning. Exploratory analyses investigate biomarkers (cortisol, cytokines, blood pressure/Heart Rate Variability, telomere length, gene expression), which may uncover potentially important effects on key biological regulatory and antineoplastic functions. Health economic measures will determine potential savings to the health system. While the study is currently ongoing, preliminary enrollment and compliance data will be presented in addition to study design. Five cohorts have been recruited in Calgary since the fall of 2016 and three cohorts in Toronto since spring 2017.

Paper C07b

2:55–3:10 PM

Title: *C07b - Factors Associated With Reduced Fatigue in Qigong and Sham Qigong Interventions for Breast Cancer Survivors*

Presenter: Linda Larkey, *Arizona State University*

Authors: L Larkey, D James

Abstract: Breast cancer survivors (BCSs) frequently experience symptoms persisting well beyond treatment. Physical activity (PA) effectively ameliorates fatigue and other symptoms, but many women will not adopt the recommended moderate to vigorous PA. We explored effects of two low intensity interventions, Qigong (QG) versus sham Qigong (SQG) (without meditative or breath focus) on fatigue and other symptoms. QG significantly reduced fatigue compared to SQG in a randomized controlled trial (previously published). This study examines predictors associated with fatigue improvement. Eighty-seven fatigued female BCSs were consented/randomized to attend 12-weeks of QG or SQG, assessed at pre- and post-intervention for fatigue (FSI), sleep quality (PSQI), heart rate variability coherence (HRVC/parasympathetic activation), and components of meditative movement (MMI). Predictors of change in fatigue scores were explored using linear regression. Eighty-seven women completed this pilot study (42 QG; 45 SQG) (M age= 58.8 years). Overall model was significant ($p=.011$) with $R^2=.300$. Factors most strongly associated with improvements in fatigue were sleep quality, breath focus and meditative connection. HRVC only approached statistical significance but comparison of QG to SQG showed significant difference between interventions on parasympathetic activation. Gentle exercise (rather than standard PA) may be an option for relieving BCSs' fatigue. Improvements in fatigue with gentle exercise are related to meditative/breath focused activities and improved sleep. Parasympathetic activation is less understood as a potential factor mediating fatigue. These factors are important to explore in understanding the role of low intensity exercise in post-treatment protocols for improving wellbeing among BCSs.

Paper C07c

3:15–3:30 PM

Title: *Effects of Meditation and Tai Chi Training on Executive Attention: Increased Event Related Brain Potentials in the Anterior Cingulate and Fronto-parietal Networks in a Task-Switch Paradigm*

Presenter: Marjorie Woollacott, *University of Oregon*

Authors: M Woollacott, P Burgos, T Hawkes, G Cruz

Abstract: The purpose of this study was to compare the efficacy of executive attention networks for long-term practitioners of meditation and Tai Chi as compared to aerobic walkers and a sedentary control group. We hypothesized that Tai Chi and meditation-trained groups would show better executive function than the aerobic exercise group. 54 adults (Tai Chi, $n=10$; meditation, $n=16$; aerobic exercise, $n=16$; sedentary, $n=12$) were tested on a visuo-spatial task switch test during electroencephalographic (EEG) dense-array recording of event-related potentials (ERPs). Results showed that the Tai Chi and meditation groups but not the aerobic group showed larger P3b ERP switch trial amplitudes compared to sedentary controls. Our additional analysis indicates that three areas of the cerebral cortex involved in executive attention function contributed to these differences between the groups. They are superior frontal cortex, posterior parietal cortex (mainly contributing to the negative wave of the ERP, called N2), and the anterior cingulate cortex, mainly contributing to the

later positive part of the ERP, called P3. Tai Chi and meditation groups, which had the lowest switch costs, also showed the highest contributions to the ERP in the N2 window coming from the superior frontal and parietal cortex, and in the P3 window coming from the cingulate cortex. Our results indicate that long-term Tai Chi and meditation practice significantly benefit the neural substrates of executive function, as compared to aerobic exercise alone.

C08 - Papers

Quail

Individual Presentations

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

Paper C08a

2:35–2:50 PM

Title: *Mindfulness and Wisdom: Differential Effects of Awareness and Acceptance for Reasoning About Social Conflicts*

Presenter: Ekaterina Pogrebtsova, *University of Guelph*

Author: E Pogrebtsova

Abstract: Although research on the personal benefits of mindfulness is abundant, whether mindfulness can improve social functioning requires further exploration. Based on past theory and limited empirical studies, we examined how the state mindfulness experiences of awareness and acceptance may facilitate wise reasoning during social conflict via various affective and cognitive mechanisms. A sample of 188 undergraduate students completed online questionnaires over three time points separated by two-week intervals over the course of the school year. This resulted in a total of 514 responses after data cleaning. At each time point, participants chose an everyday social conflict they had recently encountered and completed validated measures regarding their experiences during their chosen social conflict. Results from multilevel mediation analyses showed that the state mindfulness experience of awareness showed a positive direct relation with wise reasoning, whereas acceptance showed no direct relation with wise reasoning. However, both acceptance and awareness related to lowered impulsivity, which in turn related to heightened experiences of wise reasoning. Additionally, awareness related to heightened perspective taking from an outsider's point of view, which in turn related to the wise reasoning facet of recognizing the limits of one's own knowledge. This study advances the understanding of how mindfulness can enhance wise reasoning during social conflicts

via perspective taking and lowered impulsivity. Implications for future research and practice suggest that promoting the mindfulness states of internal and external awareness and acceptance in daily life can not only lead to personal, but also interpersonal benefits.

Paper C08b

2:55–3:10 PM

Title: *Mindful Acceptance Improves Social Relationships: A Randomized Controlled Dismantling Trial*

Presenter: Emily Lindsay, *University of Pittsburgh*

Authors: E Lindsay, S Young, KW Brown, J Smyth, JD Creswell

Abstract: Loneliness and social isolation are a growing public health concern, yet few interventions are effective for enhancing the quality or quantity of social relationships. Accumulating evidence suggests that mindfulness interventions can reduce loneliness, cultivate compassion and empathic concern, and improve relationship satisfaction. The active ingredients of mindfulness training underlying these improvements are unclear. Although the social context of interventions may play a role, developing mindfulness-specific skills - (1) monitoring present-moment experiences with (2) an orientation of acceptance - may change the way people perceive and interact in their social networks. We predicted that developing openness and acceptance toward present experiences is critical for improving social relationship outcomes. In this dismantling trial, 153 stressed community adults were randomly assigned to a 14-lesson smartphone-based intervention: (1) training in both monitoring and acceptance (Monitor+Accept), (2) training in monitoring only (Monitor Only), or (3) active control training. For three days before and after the intervention, ambulatory assessments were used to measure social relationship processes in daily life. As predicted, Monitor+Accept training reduced loneliness and increased the daily number of social interactions and interaction partners compared to both Monitor Only and control trainings. However, there was little evidence that either mindfulness intervention enhanced perceptions of social connectedness during interactions. In early stages of mindfulness practice, developing an orientation of acceptance may encourage greater engagement within one's social network, which may decrease loneliness. Overall, this study shows that smartphone mindfulness training can enhance social relationship processes, and that acceptance training is an important driver of these effects.

Paper C08c

3:15–3:30 PM

Title: *Mindfulness Improves Awareness & Service Learning Improves Civic Engagement Among Vietnamese College Students*

Presenter: Thao Le, *University of Hawaii Manoa*

Authors: TN Le, K Duoang, KT Nguyen

Abstract: Research on delivery and effects of contemplative practices has primarily focused on cognitive/affective changes with limited exploration toward relational and social transformation. Personal and social transformation need one another; personal transformation alone can be self-absorbing and self-referencing, and social transformation without personal transformation can be unsustainable and untenable (Loy, 2015). Using a 3 x 2 repeated MANOVA with 186 Vietnamese students in central Vietnam, this prevention pilot study tests the hypothesis that an integrated mindfulness and service learning training (engaged mindfulness) will facilitate higher levels of personal and social connectedness as compared to mindfulness only or service learning training only. Findings revealed no difference among the intervention groups over time with univariate significance on awareness and civic attitude. Post-hoc analyses indicate expected trends. The mindfulness only group improved on awareness and focus, whereas the service learning group improved on civic engagement, while the group that received both mindfulness and service learning showed slight improvements on both measures “ mindfulness and civic engagement. Content analyses of reflections revealed themes of harmony and group building skills. Overall, the results reveal promising indications that mindfulness and service learning trainings are adaptable and beneficial for Vietnamese young adults, especially if they are conducted with cultural sensitivity. Further, there are specificity of outcomes associated with different contemplative modalities.

C09 - Papers

Horse

Individual Presentations

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

Paper C09a

2:35–2:50 PM

Title: *Can Mindfulness in Healthcare Professionals Improve Patient Care? An Integrative Review and Proposed Model*

Presenter: Sarah Braun, *Virginia Commonwealth University*

Authors: SE Braun, P Kinser, B Rybarczyk

Abstract: Mindfulness in healthcare professionals (HCPs) is often discussed as a tool for improving patient care outcomes, yet there has not been a critical evaluation of the evidence, despite a growing

body of research on mindfulness-based interventions (MBIs). The primary goals of this integrative review were to evaluate the evidence for and propose a model by which MBIs in HCPs may exert effects on patient care outcomes. Scientific databases were systematically searched for articles investigating the effects of mindfulness in HCPs on measures of patient care. Patient care outcomes were operationalized under the following headings: patient safety, patient-centered care, patient treatment outcomes, patient satisfaction, and HCP-reported patient care. Twenty-six studies were identified (N=1277), which provide strong support for mindfulness' effects on HCP-reported patient care. Moderate support was found for patient treatment outcomes and patient-centered care. There was overall weak evidence to support the effects of HCP-mindfulness on patient safety and patient satisfaction. Mindfulness in HCPs appears to be related to several aspects of patient care. Recommendations are made to improve upon on the research base and address methodological weaknesses including clearly defining conceptualizations of mindfulness, measuring and analyzing potential mechanisms of change, using second- and third-person outcomes, and comparing MBIs with active control groups. Finally, based on the extant literature in mindfulness research, a model is proposed to clearly evaluate the mechanisms through which mindfulness in HCPs may lead to enhanced patient care quality and safety.

Paper C09b

2:55–3:10 PM

Title: *The Mindful Surgeon: A Randomized Pilot Feasibility and Efficacy Trial of Mindfulness-Based Stress Resilience Training in Surgery*

Presenter: Carter Lebares, UCSF

Authors: C Lebares

Abstract: Burnout and distress in surgery are associated with poor mental health and diminished performance. Formal mindfulness training has been shown to improve well-being, cognition and performance in other high-stress populations, but has not been tried in surgery. We examined the feasibility and efficacy of such training in the unique environment of surgical residency. A pilot RCT of modified MBSR (n=12) versus an active control (n=9) was conducted with surgery interns, in 2016. Feasibility was evaluated using mixed methods and efficacy was evaluated objectively with a survey of well-being, an assay of executive function, validated surgical skills modules and functional brain scans performed at baseline, post-intervention and 1 year. Training was found to be feasible but depended upon the cultivated support of all stakeholders. Modified MBSR was acceptable as evidenced by high attendance, home practice, perceived efficacy and integration. As compared to active controls, mindfulness-based stress-resilience training yielded medium to large effect sizes for increased mindfulness, increased resilience, less stress and better cognitive function. Surgical skills were improved (p=0.03) with very large effect size. Post-intervention functional brain scans showed unique activity in the right PFC and precuneus during a task of emotional regulation. Formal

mindfulness-based stress-resilience training is feasible and acceptable for surgical interns at a tertiary academic center. In this pilot RCT, moderate to large effect sizes were found suggesting improved well-being, cognition and motor skills as a result.

Paper C09c

3:15–3:30 PM

Title: *Mindfulness Based Interventions with Healthcare and Human Services Workers*

Presenter: Michael McIntyre, *St. Boniface Hospital Research Centre*

Authors: M McIntyre, D MacDonald, M St.Hilaire, M Halldorson, J Kornelsen

Abstract: It is well established that health care and human services workers encounter levels of stress, depression, and burnout substantially greater than population means. The Catholic Health Corporation of Manitoba has offered a set of mindfulness-based interventions (MBIs) designed to support and nurture staff in 15 varied communities of service. These range from a tertiary-care teaching hospital to community health clinics. The interventions included Mindfulness Based Stress Reduction, Mindful Self-Compassion and Compassion Cultivation Training. Fully trained teachers offered all interventions. The present study aggregated data from all three MBIs. Data were collected at the beginning and end of the interventions, and at three and six months thereafter to assess longitudinal stability of observed changes. Statistically significant, longitudinally stable changes were found in the full scale and subscales of the Self-Compassion Scale, the Five Facet Mindfulness Questionnaire, the Perceived Stress Test, the Positive Affective Well-Being Scale, and the Fear of Compassion scale (notably, the Fear of Compassion for Self subscale). All but one of the Copenhagen Burnout Inventory subscales were significant and longitudinally stable. Differences in the FACIT Spiritual Well-Being Scale and the Personal Distress Subscale of the Interpersonal Reactivity Index manifested less stable significant differences. Both the Utrecht Work Engagement and Pommier's Compassion scales demonstrated few scattered differences. The puzzling absence of differences in the Compassion Scale may reflect a ceiling effect. In conclusion, MBIs occasioned significant, stable increases in mindfulness, self-compassion, and well-being and decreases in fears of compassion, burnout, and perceived stress in a high-risk group of workers.

C10 - Papers

Jackrabbit

Individual Presentations

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

Paper C10a

2:35–2:50 PM

Title: *Interoceptive Awareness Training Positively Impacts Emotion Regulation Capacity: Results From a Study for Women in Treatment for Chemical Dependency by C J Price, K Pike, & E A Thompson at University of Washington and S E Crowell at University of Utah*

Presenter: Cynthia Price, *University of Washington*

Authors: C Price

Abstract: This NIH-funded study tested the efficacy of Mindful Awareness in Body-oriented Therapy (MABT) as an adjunct to outpatient treatment for chemical dependency for women. With MABT individuals explicitly learn interoceptive awareness skills to facilitate self-care and regulation in daily life. Interoceptive awareness, i.e. the awareness of inner bodily sensations, is a key component of mindfulness approaches, involving the ability to consciously identify, access, and appraise internal bodily sensations. Brain imaging studies suggest the importance of interoception for regulation among substance users, however this is the first clinical treatment study to address these relationships. Women in chemical dependency treatment (N=187) were randomly assigned to one of 3 study conditions: MABT, Women's Health Education (WHE) or Treatment as Usual (TAU) only. Participants completed measures at four time-points over the one-year study, including assessments of interoceptive awareness, self-reported emotion regulation difficulties, and respiratory sinus arrhythmia (RSA) - a psychophysiology indicator of emotion dysregulation. Multi-level mixed-effects linear regression was used for the analysis. The MABT group, compared to WHE and TAU, showed significant pre-post intervention improvements in interoceptive awareness, emotion regulation (self-report), and RSA - examined at rest and in response to stressors and a body awareness meditation. These improvements were largely maintained through 6 and 12 month follow-up. These findings show that a highly traumatized sample of women can learn interoceptive awareness skills with individualized coaching. The results demonstrate the positive influence of interoceptive awareness on emotion regulation capacity, yielding new and important clinical implications for research and treatment.

Paper C10b

2:55–3:10 PM

Title: *Dispositional Mindfulness and Emotion Regulation of Primary School Children in Vietnamese Context: A Neurodevelopmental Study*

Presenter: Thy Nguyen, *Bangor University*

Authors: T Nguyen, D Dorjee

Abstract: While several cross-sectional and dispositional mindfulness studies in adults investigated the links between trait mindfulness and neuroscientific markers of emotion regulation, no dispositional studies so far examined such links in children from a neurodevelopmental perspective. In this study, we examined the associations between dispositional mindfulness and different aspects of emotion regulation assessed using first-person methodology (self-interpretation using SenseMaker), self-reports and event-related brain potentials (ERPs) in Vietnamese primary school children (N = 166). The preliminary analysis of self-report questionnaire scores and self-interpreted narratives revealed positive relationships between dispositional mindfulness in children and their ability to be aware of and control their own emotions as well as their interactions with friends and adults in emotional situations. Dispositional mindfulness was also positively linked to positive affect in children. As mindfulness has originated in Buddhism which has a long history in Vietnam, the cultural context could have influenced the associations. We therefore also assessed cultural values (such as adherence to authority) via children's behaviors in their stories and found that values related to power distance, emotional expression and experience correlated with dispositional mindfulness and emotion regulation scores. However, the relationships were mixed and differed between older primary school children (age above 9 years) and younger ones (age from 7 to 9 years). The initial findings suggest interesting positive relationships between mindfulness and emotion regulation and well being of children with possible modulation by cultural values from a neurodevelopmental perspective. Implication for cultural dimensions of research on mindfulness in school settings will be discussed.

Paper C10c

3:15–3:30 PM

Title: *A Randomized Mindfulness Intervention for Middle Manager Well-Being*

Presenter: Christopher Lyddy, *University of Providence*

Authors: C Ahlvik

Abstract: In this randomized controlled field study we explore the relationship of mindfulness to the personal resources of middle managers. Drawing on Job-Demands Resources (JD-R) theory, we anticipated that mindfulness training would act as a resource for managers, and we predicted this

would correspond with lower stress and burnout and higher engagement. Furthermore, we also expected mindfulness training to result in increased psychological detachment. We tested these hypotheses with 130 middle managers drawn from four large organizations in Northern Europe who were randomly assigned to an abbreviated 8-week Mindfulness-Based Stress Reduction (MBSR) training or to a wait-list control. Questionnaire data was collected before and after the intervention. Consistent with the hypotheses, our results showed that mindfulness training was significantly related to decreased stress and burnout and increased detachment, while the relationship between mindfulness training and engagement was marginally significant. This study makes important contributions to both the JD-R and mindfulness at work literature. While researchers have suggested that mindfulness may function as an individual-level recovery intervention, this has not been empirically documented until now. In line with JD-R theory, we suggest that mindfulness training reduces the level of strain that employees experience in response to the job demands they face. In other words, rather than directly reducing job demands, mindfulness diminished the strain experienced by these demands. Further, due to its randomized controlled intervention design, the study provides strong evidence for the causal impacts of mindfulness training, which addresses a major limitation of prior management research on mindfulness.

C11 - Papers

Rattlesnake

Individual Presentations

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

Paper C11a

2:35–2:50 PM

Title: *The Quantify Project on Desire and Craving: An Opportunity for Open Science Discovery*

Presenter: Christy Wilson-Mendenhall, *University of Wisconsin-Madison*

Authors: C Wilson-Mendenhall, P Condon, W Hasenkamp, K Quigley, L Barrett

Abstract: The Qwantify project on desire and craving emerged from synthesis of modern Psychology and centuries-old Buddhist philosophy. The nature of our desires—what we want and why—is arguably at the core of well-being. Using experience sampling methods, we designed this study to investigate the wide variety of desires that people experience, the contexts in which they arise, and how they shape emotional life. To encourage discovery, we are making de-identified data from this project available through the Open Science Framework (OSF). Data were collected via the Qwantify app. Recruitment occurred primarily through the Mind & Life Institute's social media platform and press releases. Participants who downloaded the app were randomly alerted 2-5 times each day. When responding to an alert, participants answered questions about what, if anything, they wanted in that moment, the intensity of wanting, and how they wanted to feel. They also responded to several other questions about social, physical, and emotional aspects of their experience. We will present an overview of the study design and data available through the OSF, review initial findings, and discuss strengths and challenges of the method. At the time of this abstract, over 450 people have downloaded the app and responded to at least five alerts, with ~70% of participants reporting prior meditation experience (ranging from less than a year to 40 years of experience). Approximately 240 participants have responded to 50+ alerts, typically over the course of 2-3 weeks, which is ideal for multi-level modeling approaches.

Paper C11b

2:55–3:10 PM

Title: *A Mobile App to Increase Well-Being and Reduce Stress: A Randomized Controlled Trial*

Presenter: Cássia Coelho, *Brain Institute - Instituto Israelita de Ensino e Pesquisa Albert Einstein*

Authors: CC Coelho, SS Lacerda, PR Toba, CC Barrichello, E Amaro Jr., EH Kozasa

Abstract: Introduction: The IMS Institute for Healthcare Informatics reported that apps focused on general wellness corresponded, in 2015, to 65% of all 165,000 health & medical apps, however, few have robust scientific evidence about their efficacy. Objective: To evaluate the effectiveness of a stress management and well-being promotion mobile app for women employees at a private hospital. Methods: A total of 490 women randomized between Control (CG, n = 240) and Intervention (IG, n = 250) groups participated in this study. Module I of the well-being mobile app was a 4-week program with 4 classes per week. Each class was composed of a brief theoretical content and a 15-minute guided practice (relaxation, breathing, attention and meditation). The active-control app was composed of 4 assessments per week that encouraged participants to observe their mental disposition. Before and after this 4-week period, questions were applied within the app to assess participants' subjective levels of stress and well-being. ANOVA was used to evaluate outcomes, considering two conditions (control and intervention) and two distinct periods (baseline and post-intervention). Results: The groups were homogeneous regarding baseline characteristics and, although both groups had showed a significant increase in general well-being as a function of time, only the intervention group presented

significant increase in work-related well-being, as well as significant decreases in work-related stress and general stress. Conclusion: Results indicate that training by the well-being mobile app was highly effective in improving employee stress and well-being levels compared with the levels observed in the active-control group.

Paper C11c

3:15–3:30 PM

Title: *The Feasibility, Acceptability, and Efficacy of Digital Meditation Training for Teachers: A Randomized Controlled Trial*

Presenter: James Floman, *Yale University*

Authors: JL Floman, KA Schonert-Reichl

Abstract: Teaching is a profession with atypically high occupational burnout and attrition. A major source of teacher stress is time pressure. Thus, scalable psychological interventions designed to improve teacher social-emotional functioning must be accessible. Accordingly, the present randomized controlled trial (RCT) investigated the feasibility, acceptability, and efficacy of digital mindfulness meditation (MM) and kindness meditation (KM) training for K-12 teachers (N = 121). Music relaxation (MR) training was employed as an active control group. After six weeks of training (approximately one hour a week), teachers reported the digital MM and KM practices to be highly engaging, and moderately efficacious and satisfying. Notably, teachers reported the digital MR practices to be equally engaging, efficacious, and enjoyable. Additionally, from pre-test to post-test, self-reported negative affect and stress declined in all training groups, yielding conventionally large effects. The MM group alone showed improvements in positive affect and trait mindfulness from pre-test to post-test, yielding small to moderate effects. There were no between-group differences in affect or mindfulness. These preliminary results suggest that digital meditations may be feasible and acceptable psychological interventions for K-12 teachers. However, no differences were found between the MM and KM groups compared to the MR active control group. As such, placebo effects and demand characteristics may have (at least partially) confounded the efficacy results. This raises questions regarding the effectiveness of short-term digital meditation trainings for teachers. Future research is needed that employs validated behavioral measures and longitudinal designs to elucidate the potential efficacy of digital meditation training for educators.

C12 - Papers

Gila Monster

Session Title: *Papers - Impact of Mindfulness Training on Biological, Behavioral, and Psychological Outcomes Among First Responders*

Session Abstract: First responders such as firefighters and law enforcement officers experience unique and critical stressors as part of their work. The detrimental impact of occupational stressors on ability to perform duties adequately has far-reaching consequences for first responders and the communities they serve. Although police and fire departments have embraced critical incident debriefing programs in response to acute traumatic events, much less attention has been afforded to proactively delivered interventions intended to enhance stress resilience in this population. This symposium reviews findings from three novel mindfulness-based preventive intervention studies targeting biological, behavioral, and psychological first responder outcomes, including health risk, stress reactivity, and aggression. Across studies, results suggest mindfulness training can be an important method to improve health outcomes and mitigate the impact of occupational stress on first responders.

Paper C12a

2:35–2:50 PM

Title: *Feasibility and Preliminary Impact of Mindfulness-Based Resilience Training on Health Risk, Stress Reactivity, and Aggression Among Law Enforcement Officers*

Presenter: Michael Christopher, *Pacific University*

Authors: M Christopher, S Bowen, R Goerling, M Hunsinger

Abstract: As first responders who are frequently exposed to job-related trauma, law enforcement officers are at an elevated risk of adverse health outcomes. The stressful nature of policing and the substantial limitations of both tertiary and secondary prevention suggest a real need for primary prevention research on ways to increase resilience and reduce aggression. The primary objective of this study was to assess feasibility and gather preliminary outcome data on Mindfulness-Based Resilience Training (MBRT) for law enforcement officers. Participants (n=61) were randomized to either an 8-week MBRT course or a no intervention control group. Self-report and physiological data were collected at baseline, post-training, and three months following intervention completion. Attendance, adherence, post-training participant feedback, and interventionist fidelity to protocol all demonstrated feasibility of MBRT for law enforcement officers. Compared to no intervention controls, MBRT participants experienced greater reductions in salivary cortisol, self-reported aggression, occupational stress, burnout, sleep disturbance, and increases in psychological flexibility and non-reactivity at post-training; however, group differences were not maintained at three-month follow-up. This initial randomized trial suggests MBRT is a feasible intervention. Outcome data suggest MBRT targets key physiological, psychological, and health risk factors in law enforcement officers, consistent with the potential to improve officer health and public safety. However, follow-up training or "booster" sessions

may be needed to maintain training gains. Implications of these findings and preliminary data from a multisite MBRT trial will also be discussed.

Paper C12b

2:55–3:10 PM

Title: *The Impact of Mindfulness Training on Stress-Related Health Outcomes in Law Enforcement and Potential Mechanisms of Action*

Presenter: Daniel Grupe, *Center for Healthy Minds, University of Wisconsin-Madison*

Authors: D Grupe, S Sommerfeldt, C McGehee, C Smith, R Davidson

Abstract: High rates of exposure to chronic and acute stressors put police officers at elevated risk for a host of stress-related health conditions, including sleep disorders, cardiovascular disease, and mental health disorders including depression and PTSD. Although police departments have embraced critical incident debriefing programs in response to acute traumatic events, much less attention has been afforded to proactively delivered interventions intended to enhance stress resilience in this population. We recently completed a 12-month pilot study of a law enforcement-specific, mindfulness-based training program in 30 urban police officers, and identified significant improvements in subjective sleep quality, perceived stress, and mental health symptoms. Here, we present initial results from a randomized controlled trial of mindfulness training vs. waitlist control involving 120 police officers from 3 police agencies. In addition to subjective sleep quality, activity trackers provide us with objective sleep data from officers in the field. We are investigating the impact of mindfulness training on inflammatory markers associated with cardiovascular risk, depression, and PTSD. Finally, by examining the effects of this training on the temporal dynamics of cortisol release and a specific behavioral assay of hippocampal function, we are testing the hypothesis that mindfulness training normalizes disrupted cortisol rhythms and enhances hippocampal function, which may subsequently contribute to improved mental health outcomes. In addition to improving quality of life for police officers and the communities these officers serve, this work may elucidate biological mechanisms of resilience relevant for other high-stress populations, and address whether these mechanisms can be enhanced via contemplative interventions.

Paper C12c

3:15–3:30 PM

Title: *The Impact of Mindfulness Training and At-home Practice on Attentional Performance in Firefighters*

Presenter: Ekaterina Denkova, *University of Miami*

Authors: E Denkova, A Zanesco, K Chichester, S Rogers, A Jha

Abstract: Mindfulness training (MT) can strengthen cognitive resilience in military cohorts over high-demand intervals. Herein, we evaluate the feasibility and efficacy of MT in firefighters, who face similar high-demand situations over protracted time intervals. Firefighters (N=121) were assigned to an MT program (n=42), an active comparison relaxation training program (RT, n=31), or served as no-training waitlist controls (WLC, n=48). Both the MT and RT were contextualized for the firefighter context and consisted of 4, 2-hour training sessions delivered over 4 weeks by the same expert trainer as well as 10-15 minutes of assigned daily at-home practice. MT and RT participants were to submit daily practice logs and provide feedback regarding the training and trainer after the end of the training. The majority of MT and RT participants who completed the study returned their practice logs, strongly agreed that the training was useful, and rated the trainer's performance as exceptional. Attentional performance was tested in all participants via the sustained attention to response task before (T1) and after (T2) the 4-week training interval. Repeated-measures ANOVA did not reveal significant time (T1, T2) by group (MT, RVT, WLC) interaction on attentional performance. However, regression analyses with at-home practice time as a regressor revealed that the greater the amount of practice, the more attentional performance improved (from T2 to T1) in MT, but not RT. These findings highlight the key role of mindfulness practice in achieving attentional benefits.