

UC Davis Center for Mind and Brain 2015 Research Summit

PERSPECTIVES ON MINDFULNESS: THE COMPLEX ROLE OF MEDITATION RESEARCH

May 21, 2015

In recent years, the number of published studies of mindfulness-based interventions has grown exponentially in both basic and clinical domains. Despite this increased interest, the bases of the effects reported in these studies are not well understood. The purpose of this symposium is to articulate a spectrum of views on what mindfulness is, to explore the often unexamined methodological complexity of research in this area, and to highlight the importance of context in interpreting these findings. We will examine ways in which the research findings and their communication may contribute to unrealistic expectations at the individual and institutional level, and can contribute to misconceptions regarding the larger goals of contemplative practice in modernist and secular settings.

PROGRAM

8:30-9:00 am: Coffee and Registration

Session I: Setting the Stage—Context and Perspective

9:00-9:05 am: *Welcoming Remarks.*

Steve Luck, PhD. Professor of Psychology, Director, Center for Mind and Brain, University of California, Davis.

9:05 am: *Opening and a Musical Offering.*

Clifford Saron, PhD. Associate Research Scientist, Center for Mind and Brain, University of California, Davis.

Barbara Bogatin, Cellist, San Francisco Symphony.

Prelude in G Major for Unaccompanied Cello by J.S. Bach

9:15-9:45 am: *Context Matters: Steps to an Embodied Cognitive Science of Mindfulness.*

Evan Thompson, Ph.D., Professor, Department of Philosophy, University of British Columbia.

Neuroscience typically conceptualizes mindfulness as inner observation of a private mental realm of thoughts, feelings, and body sensations, and models mindfulness as a process occurring in the brain, visible in part through neuroimaging tools. This approach, however, is inadequate for two reasons. First, there is likely to be no one-one mapping between neural networks and cognition; rather, the mapping is likely many-many. Second, the neurobiological conditions for mindfulness should not be equated with mindfulness itself, which, as classically described, consists in the integrated exercise of a whole host of cognitive and bodily skills in situated and ethically directed action. For these reasons, mindfulness should not be conceptualized as inner mental observation instantiated in the brain, but rather as a mode of skillful cognition for situated action. To develop this approach, I combine classical Buddhist accounts with embodied cognitive science. I also explore the implications of this approach for the Buddhism-cognitive science dialogue.

9:45-10:15 am: *The "work" of religion and its role in the assessment of mindfulness practices.*

Robert Sharf, Ph.D., D. H. Chen Distinguished Professor of Buddhist Studies, Department of East Asian Languages and Cultures at the University of California, Berkeley.

A comprehensive assessment of mindfulness practices must include sociological factors that often go under the rubric of "religion." My analysis draws from sociology, anthropology, and history of religions. Thus, rather than privilege the perspective of the individual (much less "subjective experience"), I start from the perspective of the social collective or "life-world" (Lebenswelt) in which the self emerges. Religion plays a key role in the maintenance of the life-world, particularly at moments (often precipitated by grief, trauma, depression, psychotropic drugs, etc.) when the seeming integrity and coherence of this world is compromised. Engaging in mindfulness practice entails adopting a particular orientation toward the world, and, just as important, identifying with a larger community that shares this orientation. It may be that the therapeutic benefits of mindfulness practices are due, in part, to identifying as a member of this spiritual sodality and adopting its values and perspectives.

10:15-10:45 am: *A Phenomenological Model for Understanding the Diversity of Mindfulness.*

John Dunne, Ph.D., Associate Professor, Department of Religion, Emory University.

One of the obstacles to research on mindfulness is the widespread assumption that a single definition can adequately characterize it. Often single,

overarching definitions are derived from traditional Buddhist sources, but on closer inspection, these sources themselves turn out to be highly diverse and even contradictory. This talk begins by exploring the diversity of opinion within Buddhist sources and their relationship to contemporary accounts of mindfulness. In this context, a new phenomenologically oriented approach to mindfulness is proposed along with a model for characterizing mindfulness in its diversity. The model, a product of a long collaboration, locates different styles of mindfulness and stages of development in relation to key phenomenological dimensions that can be used to generate hypotheses about the mechanisms and effects of mindfulness practice.

10:45-11:05 am: Coffee Break

11:05-11:35 am: *How to Formulate a Spirituality Reuptake Inhibitor.*

Alan Klima, Ph.D., Professor, Department of Anthropology, University of California, Davis.

This presentation will linger on three statements that can possibly intersect scientific and spiritual worlds of belief and practice and which if looked at too closely might cause disruptions in the metabolic connections between science, meditation, and the consensual realities formed in culture: 1) "I am the body," 2) "I can learn to control and shape myself," and 3) "I know what I want and I can discover what to do in order to get it." While we do not yet know what effects protracted attention to and questioning of these statements might have on researchers' brains, it is beginning to become clear that these three assumptions have been passed over quickly in the contemporary proliferation of mindfulness cultures and have thus sanitized from them certain not unimportant considerations such as surrender, devotion, and formlessness.

11:35-11:50 am: *Discussant comments - Critical questions raised by the prior four talks*

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Eve Ekman, Ph.D. Post-doctoral Scholar, Osher Center for Integrated Medicine, University of California, San Francisco.

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David Meyer, Ph.D. Distinguished Professor, Psychology Department, University of Michigan.

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Helen Weng, Ph.D. Post-doctoral Scholar, Osher Center for Integrated Medicine, University of California, San Francisco.

11:50-12:30 pm: *Panel Discussion and Audience Q & A*

12:30-1:30 pm: *Lunch at the Center for Mind and Brain*

Session II: Challenges Facing Research on Mindfulness and Meditation

1:30-2:00 pm: *My Life Direction is Changing (or Not): Network Analysis of World View and Personal Goal Shifts During the Course of an Intensive Meditation Retreat.*

Jen Pokorny, Ph.D. Assistant Project Scientist, Center for Mind and Brain, University of California, Davis.

Alex Norman, Ph.D., Post Doctoral Scholar, Center for Mind and Brain, University of California, Davis.

We examined whether participation in a 3-month intensive meditation retreat would influence participants' worldview and approach to life, as well as their goals and priorities, using a novel approach applying graph theory and network analysis to traditional qualitative analysis methodology. Semi-structured interviews conducted with participants in the Shamatha Project while on retreat were transcribed and coded. Networks created from the codes provided a visual mapping of the qualitative data and allowed us to extract metrics representative of the content. Preliminary results from 6 retreatants found thematic trends in the role of gender and the type of goals and priorities discussed. Dramatic changes were not reported, however, as retreatants typically maintained the worldview and life goals that they had upon arrival, though they may view them differently after participation. Findings indicate that the retreat setting allows participants to reassess and ultimately reassert one's approach to and priorities in life.

2:00-2:30 pm: *Taking Brain Data Off Its Pedestal: Using Qualitative Methods in Studies of Mindfulness to Situate and Contextualize Neurophysiological Data.*

Catherine Kerr, Ph.D., Assistant Professor of Family Medicine (Research), Assistant Professor of Medicine (Research), Brown Medical School, Brown University.

In this presentation, I will describe how we have used our qualitative investigations of mindfulness and mind-body therapies to situate and contextualize our understandings of neurophysiological data related to body awareness. Specifically, we have used methods and constructs derived from medical anthropology (e.g., illness narrative, explanatory model, embodiment, phenomenological/therapeutic process) to understand how participants process and describe their experiences with mindfulness and mind-body

therapies; resultant qualitative data has provided critical information for constructing rich, phenomenologically informed models of how mindfulness training affects brain dynamics. More generally, we propose that ethnographically informed qualitative investigation has the potential to demystify studies of mindfulness and the brain and to help scholars and a larger public reflect on the ways in which we privilege brain data above other sources of information.

2:30-3:00 pm: *After active controls in meditation studies: Where's the beef?*

Melissa Rosenkranz, Ph.D., Associate Scientist, Center for Investigating Healthy Minds, University of Wisconsin-Madison.

Over the past 2 decades, a substantial and growing number of studies have compared training in Mindfulness-based Stress Reduction (MBSR) to active comparison interventions and demonstrated their equivalence in promoting a wide range of wellbeing-related outcome measures. This begs the questions: Is there anything unique about training in meditation? Do comparison interventions promote mindfulness implicitly? Who is most likely to benefit from meditation training? As we embark on our third large study that compares the impact of MBSR training to an active comparison intervention on affective processing, attention, and health-related outcomes, I will share what we have learned and our reflections on these questions, as well as what future questions they raise

3:00-3:20 pm: Coffee Break

3:20-3:35 pm: *Discussant responses to the prior three talks*

Discussants: Eve Ekman, David Meyer, Helen Weng

3:35-4:00 pm: *Panel discussion and audience Q & A*

4:00-4:30 pm: *When Doing Nothing, Too Hard, Is Too Much: Adverse Effects of Meditation – Perils, Pitfalls and Resolution.*

Willoughby Britton, Ph.D., Assistant Professor, Departments of Psychiatry and Public Health, Brown Medical School, Brown University.

Buddhist-derived meditation practices, particularly mindfulness meditation, are being applied to medical conditions, psychiatric disorders, schools and businesses. These secular applications are largely contextualized in a medical health model, without much attention to or knowledge of traditional Buddhist texts which carefully outline contemplative practices trajectories and associated experiences. As a result, the widespread application of meditation

in clinical and secular settings is proceeding without much knowledge of the full range of experiences that can arise in the context of practice. In the Varieties of Contemplative Experience (VCE) project, our research team interviewed more than 100 well-known meditation teachers, practitioners and Buddhist scholars about the range of contemplative experiences that can arise in the context of meditation practices. In order to maximize treatment efficacy and minimize harms, more information about the full range of meditation-related experiences needs to be integrated into existing training and support structures.

4:30-5:00 pm: *Past and Future Meet Present: The Center for Mindfulness' Research Priorities Seen Through a Lens of History, Looking at a World of Change.*

Judson Brewer, M.D. Ph.D., Associate Professor in Medicine and Psychiatry, University of Massachusetts Medical School.

Through his pioneering work 35 years ago in developing the Mindfulness Based Stress Reduction program, a standardized, and researchable mindfulness program, Jon Kabat-Zinn, helped to set the western wheel in motion. Today, mindfulness is featured on the cover of Time Magazine, on 60 minutes and at Google (among others). This talk will delineate some of the current opportunities and challenges that the Center for Mindfulness faces as it looks to support this growing field of research.

5:00-5:20 pm: Coffee Break

5:20-5:55 pm: Discussant Responses to Prior Two Talks, Panel Responses, Audience Q & A, and Overall Discussion with All Presenters

Discussants: Eve Ekman, David Meyer, Helen Weng

5:55-6:00 pm: *Meeting Closing and Musical Reflection*

Clifford Saron

Barbara Bogatin, cello

Sarabande in G Major for Unaccompanied Cello by J.S. Bach

6:00-7:00 pm: Reception with speakers at CMB

Speaker Biographies



Barbara Bogatin, cellist, has been a member of the San Francisco Symphony since 1994, and holds Bachelor and Master of Music degrees from The Juilliard School. Before joining the San Francisco Symphony she played with New York Chamber Soloists, the New York Philharmonic, Casals Festival, and as principal cellist with Milwaukee and New Jersey Symphony Orchestras. She has performed and recorded on Baroque cello and viola

da gamba with Aston Magna, the Amati Trio, Connecticut Early Music Festival and New York's Classical Band, and played at Chamber Music Northwest, Chamber Music Society of Lincoln Center and Tahoe Summerfest. With her husband, Clifford Saron, she has led workshops on meditation and music practice at Spirit Rock Meditation Center, the Esalen Institute, Stanford Symposium for Music and the Brain, Telluride Compassion Festival and the Institute for Mindfulness South Africa Conference.



Judson Brewer, MD PhD is the Director of Research at the Center for Mindfulness and associate professor in medicine and psychiatry at UMass Medical School. He also is adjunct faculty at Yale University, and a research affiliate at MIT. A psychiatrist and internationally known expert in mindfulness training for addictions, Brewer has developed and tested novel mindfulness programs for addictions, including both in-person and app-based treatments. He has

also studied the underlying neural mechanisms of mindfulness using standard and real-time fMRI, and is currently translating these findings into clinical use. He has published numerous peer-reviewed articles and book chapters, presented to the US President's Office of National Drug Control Policy, been featured on 60 minutes, at TEDx, in Time magazine (top 100 new health discoveries of 2013), Forbes, Businessweek, NPR and the BBC among others. He writes a blog for The Huffington Post.



Willoughby Britton, PhD is an Assistant Professor of Psychiatry and the Director of the Clinical and Affective Neuroscience Laboratory at Brown University Medical School. She specializes in clinical neuroscience and development of novel treatments for major depression and other emotional disturbances. As a clinician, she has been trained as an instructor in Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-based Cognitive Therapy (MBCT), and has taught mindfulness to both clinical and non-clinical populations,

including prison inmates, the terminally ill, drug abusing adolescents, and in school-based mindfulness programs. As a researcher, she has been studying the effects of contemplative practices on the brain and body for more than a decade, with a special emphases on practice-specific effects, or in other words “Which practices are best or worst suited for which types of people or conditions and why”. She is investigating the varieties of contemplative experience, including adverse effects and difficult stages of the contemplative path.



John D. Dunne , PhD is an Associate Professor in the Department of Religion at Emory University. In the upcoming academic year he will move to the Center for Investigating Healthy Minds at the University of Wisconsin-Madison. He was educated at Amherst College and Harvard University, where he received his Ph.D. from the Committee on the Study of Religion in 1999. Before joining Emory’s faculty in 2005, he taught at the University of Wisconsin-

Madison and held a research position at the University of Lausanne, Switzerland. His work focuses on Buddhist philosophy and contemplative practice, especially in dialog with Cognitive Science and Psychology. His publications include a monograph on the Buddhist epistemologist Dharmakīrti and scientific studies of Buddhist contemplative practice with colleagues from various institutions, including the Center for Investigating Healthy Minds and the Mind and Life Institute. His current research and publications focus especially on the varieties of mindfulness and the contemplative theories that inquire into its nature.



Eve Ekman, PhD’s research interest in burnout, meaning in work, and empathy among care providers was inspired by her clinical work as a medical social worker in the emergency department of San Francisco General Hospital. As a trained teacher of the applied emotion regulation and mindfulness intervention Cultivating Emotional Balance (CEB), Eve dedicated her dissertation research toward studying the relationship between meaning in work, burnout and

empathy, and developing a CEB-based pilot intervention to reduce stress and increase meaning in work and empathy for guards in a Juvenile Jail in California. Eve graduated with a doctorate from UC Berkeley Department of Social Welfare in Spring 2014; she received her masters in 2006 from the same institution. At the Osher Center for Integrative Medicine, Eve will continue her research investigations and develop trainings on meaning in work, burnout and empathy to support medical residents in the hospital setting.



Alan Klima, PhD is Professor of Anthropology at the University of California, Davis. He has studied Buddhist meditation in Thailand for the last 25 years, including meditation on corpses, as well as the styles that have been transmitted into contemporary Thai and Euro-American cultures commonly known as “vipassana.” As a teacher of meditation, he has so far strictly refrained from any reference to the brain, and is currently on a mission to

discover whether this is stubbornness or a potential budding insight that could be expressed in his current writing project entitled, *Surrender and the Mindfulness War Machine*, a theological reflection on contemporary mindfulness cultures through the lens of Deleuze and Guattari’s concept of “war machines” (which are not bad or evil things in their philosophy, but nomadic assemblages originating, but not always remaining, in tension with the State or other ossifications such as scholarly and scientific disciplines).



Steven J. Luck, PhD is the Director of the Center for Mind & Brain and a Professor of Psychology at the University of California, Davis. Dr. Luck’s research focuses on the intersection of vision and higher cognitive processing. His laboratory has developed methods that are now widely used to assess the capacity and precision of visual working memory, leading to an explosion of research on the structure of internal mental representations and how they

vary across individuals and groups. Dr. Luck also studies neurocognitive processing in schizophrenia, where he has found many aspects of impaired cognition can be explained by changes in network dynamics that lead to an aberrant hyperfocusing of attention. Dr. Luck is also a leading expert on the use of event-related brain potentials (ERPs) to measure the neural activity underlying cognition. He is a fellow of the American Psychological Association, the Society of Experimental Psychologists, and the American Association for the Advancement of Science, and he is the winner of many prestigious awards, including the Troland Award from the National Academy of Sciences.



David E. Meyer, PhD is a Distinguished Professor in the Cognition and Cognitive Neuroscience Program of the Psychology Department at the University of Michigan, and an elected member in the US National Academy of Sciences. The American Psychological Association and Association for Psychological Science have honored him with their Distinguished Scientific Contribution and William James Fellow Lifetime Achievement Awards. His scholarly interests fall in the

areas of Mathematical Psychology, Cognitive Science, and Psychological

Neuroscience broadly construed. Over the past five decades, articles and book chapters from research in his lab have addressed a variety of empirical and theoretical issues regarding human perception, attention, learning, memory, language, decision-making, problem solving, multi-tasking and executive cognitive control. His approach to these topics combines rigorous experimentation with detailed precise formal (e.g. computational) theoretical modeling. Since 2005, a significant portion of his professional effort has also been devoted to fostering the objectives of the Mind and Life Institute and its advancement of Contemplative Science through research initiatives regarding mindfulness, meditation techniques, contemplative practice, and Buddhist scholarship. Prof. Meyer has broad interests in the various classical Wisdom Traditions and looks forward to the further wedding of Western Science with Eastern insights into the ultimate nature of Reality and the relative human condition.



Catherine Kerr, PhD is director of translational neuroscience at the Contemplative Studies Initiative at Brown University. Her neuroscience research focuses on neural dynamics underlying embodied attention and the sense of touch. Her team was the first to publish results showing how embodied attention changes cortical rhythms in the “touch cortex” (primary somatosensory cortex) and how mindfulness is associated with enhanced modulation

of these embodied attentional rhythms. In addition to these neurophysiological studies, she has drawn on her background as a qualitative researcher and investigator of placebo effects to pioneer methods for linking quantitative, neural studies with qualitative studies of patient experience. She is likely the only first author to have been published in *Journal of Neuroscience*, *Brain Research Bulletin* and *Culture Medicine and Psychiatry* (a medical anthropology journal). Central to her approach is a consideration of descriptions of embodied experience in contemplative practice found in patient narratives and contemplative texts. Her current research focuses on isolating neurophysiological, immunological and experiential mechanisms underlying cancer survivors' reports of “energy” and vitality in contemplative practice.



Alex Norman, PhD is a Postdoctoral Scholar at the Center for Mind and Brain, University of California, Davis. He completed his doctorate at the Department of Studies in Religion at the University of Sydney in 2010. He has lectured at the Department of History and Philosophy at the University of New South Wales, and the School of Social Sciences and Psychology at the University of Western Sydney, and in Studies in Religion at the University of

Sydney, and held a research position at the Australian Catholic University. His

central research interest is the confluence of travel and religious practices. His book *Spiritual Tourism* (Continuum 2011) examines the intersection of travel and secular spiritual practice by contemporary Westerners. He also researches new religious movements, and co-edited the *Handbook of New Religions and Cultural Production* (Brill 2012). He is co-Editor of the *International Journal for the Study of New Religions*, and Managing Editor of the *Journal of Sociology*.



Jen Pokorny, PhD is an Assistant Project Scientist working with Dr. Clifford Saron on the Shamatha Project, a longitudinal, multidisciplinary project examining the effects of intensive meditation practice. She has a diverse background in fields such as anthropology, systems neuroscience, animal behavior, and developmental cognitive neuroscience. She obtained her PhD in Psychology from Emory University, working with renowned primatologist Dr. Frans de Waal while investigating face recognition in capuchin monkeys. In 2012, they received the Ig Nobel Prize in Anatomy for demonstrating that chimpanzees can identify other chimpanzees from seeing photos of their behinds. For postdoctoral training, she participated in the Autism Research Training Program at the UC Davis MIND Institute, conducting fMRI studies of children and adolescents with autism. Jen is also Head of Education Programs for Think Elephants International, a 501(c)3 non-profit that works to conserve Asian elephants through research of elephant cognition and the implementation of conservation education programs in the US and Thailand. Currently, her research at UC Davis focuses on developing novel methods to quantify qualitative data using graph theory and network analysis, and on examining the physiological and affective effects of meditation training.



Melissa Rosenkranz, PhD is an Associate Scientist at the Center for Investigating Healthy Minds at the University of Wisconsin-Madison. She received her Ph.D. from the University of Wisconsin-Madison in 2008, where she continues her work with Dr. Richard Davidson. Her career has been focused on the involvement of emotion and affective neural circuitry in health and disease for over a decade. In particular, she is interested in the neural-immune and biochemical mechanisms by which individual differences in affective responding modulate resilience to and progression of disease. Much of this work has examined the role of affect-related neural circuitry in linking stress and emotion with exacerbations in asthma, using both PET and fMRI. A complementary facet of Melissa's research examines the impact of meditation training on affective responding as it relates to resilience and vulnerability to chronic disease. Toward this effort, she is currently leading an investigation of

the effects of MBSR training on emotion-related neural reactivity, airway inflammation, and disease expression in individuals with asthma.



Clifford Saron, PhD, Research Scientist (effective 7/15) at the Center for Mind and Brain and MIND Institute at the University of California at Davis, received his Ph.D. in neuroscience from the Albert Einstein College of Medicine in 1999. Dr. Saron is Principal Investigator of the Shamatha Project, a longitudinal investigation of the effects of intensive meditation on physiological and psychological processes central to well-being, attention, emotion regulation and health. It was conceived with and taught by Alan Wallace, with the talents of a large consortium of researchers at UC Davis and elsewhere. In 2012, Dr. Saron and his colleagues were awarded the inaugural Templeton Prize Research Grant in honor of H.H. the Dalai Lama from the John Templeton Foundation to continue this work. Dr. Saron also studies sensory processing and integration in children with autism spectrum disorders (ASD), and is part of a large collaborative study examining if mindfulness-based interventions can ease the chronic stress of mothers of children with ASD.



Robert Sharf, PhD is D. H. Chen Distinguished Professor of Buddhist Studies in the Department of East Asian Languages and Cultures, and Chair of the Center for Buddhist Studies, at the University of California, Berkeley. He received a B.A. in Religious Studies (1979) and an M.A. in Chinese Studies (1981) from the University of Toronto, and a Ph.D. in Buddhist Studies from the University of Michigan (1990). He works primarily in the area of medieval Chinese Buddhism (especially Chan), but he has also published on topics in Japanese Buddhism, Buddhist art, ritual studies, and methodological issues in the study of religion. He is author of *Coming to Terms with Chinese Buddhism: A Reading of the Treasure Store Treatise* (2002), co-editor of *Living Images: Japanese Buddhist Icons in Context* (2001), and is currently working on a book tentatively titled "Thinking about Not Thinking: Buddhist Struggles with Mindlessness, Insentience, and Nirvana."



Evan Thompson, PhD, is the author of *Waking, Dreaming, Being: Self and Consciousness in Neuroscience, Meditation, and Philosophy*; *Mind in Life: Biology, Phenomenology, and the Sciences of Mind*; and *Colour Vision: A Study in Cognitive Science and the Philosophy of Perception*. Thompson is the co-author with Francisco J. Varela and Eleanor Rosch of *The Embodied Mind: Cognitive Science*

and Human Experience. He is also the co-editor with Philip David Zelazo and Morris Moscovitch of *The Cambridge Handbook of Consciousness*, and with Mark Siderits and Dan Zahavi of *Self, No Self? Perspectives from Analytical, Phenomenological, and Indian Traditions*. In addition, he is the author of more than 70 articles, chapters, and reviews in the fields of philosophy and cognitive science. He received his B.A. in Asian Studies from Amherst College (1983) and his Ph.D. in Philosophy from the University of Toronto (1990). He held a Canada Research Chair at York University (2002-05), was Professor of Philosophy at the University of Toronto (2005-2013), and is now Professor of Philosophy at the University of British Columbia. In 2014, he was the Numata Invited Visiting Professor at the Center for Buddhist Studies at the University of California, Berkeley. Thompson is also a Fellow of the Royal Society of Canada.



Helen Weng, PhD is a postdoctoral scholar at the Osher Center for Integrative Medicine at the University of California, San Francisco. In general, Helen is interested in how contemplative practices can improve communication within and between individuals, and how this in turn improves psychological and physical health. Helen is a clinical psychologist who has studied the impact of short-term compassion meditation on altruistic behavior and

neural responses to suffering, and she has integrated contemplative practices within psychotherapy to treat individuals with anxiety, depression, gender dysphoria, borderline personality disorder traits, and HIV. She is extending her research interests to study 1) novel ways of measuring body awareness using fMRI methods and 2) social rejection and interoception in depressed and anxious teenagers after a 12-week mind-body intervention. Helen is also interested in developing mind-body interventions for underserved populations in the Bay Area using a community-engaged approach.

Organizing Committee: Clifford Saron, Ph.D., Chair; Catherine Kerr, Ph.D.; David Meyer, Ph.D.; & Evan Thompson, Ph.D.

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Notes