Meeting Report: Contemplative Science Summit
Out of the Lab and Into the World: The Next Chapter of Contemplative Science

By Savannah VandenBos, Jessica Meisman, and Alexander Mudd
Center for Mind and Brain
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The field of contemplative science has made significant strides in the study of meditation, attention, and cognition in the past 15 years. The vast majority of this work has been conducted in a laboratory setting, which has provided insights into mechanisms and processes, but leaves open key questions of how these practices integrate into daily life and influence how practitioners move through the world. The Contemplative Science Summit was a day-long gathering that brought together contemplative scholars, researchers, and scholar-activists from a range of disciplines to present their work and explore how research in this field can move out of the lab and increase connection to the wider world. In alignment with this goal, the event was hybrid, with in-person participants gathering at the UC Davis Mondavi Center and remote participants joining the conversation over Zoom. The day opened with a land acknowledgement as well as agreements for mindful listening in multicultural contexts from the East Bay Meditation Center to remind all those present that contemplative science is not just the science of contemplative practice, but the practice of doing science contemplatively. After a welcome from Dr. Ron Mangun, Director of the Center for Mind and Brain, a presentation about the mission and work of the Tianqiao and Chrissy Chen Institute by Dr. Yan Li, and an orientation to the day from Dr. Clifford Saron, Director of the Saron Lab and Chair of the meeting Organizing Committee, the talks began. Midway through the day, there was an address from Dr. Estella Atekwana, Dean of Letters and Science at UC Davis, reflecting on the value of the meeting to the UC Davis community. The day was organized into three symposia, each comprising three talks. Videos of the meeting are available here. The meeting program includes talk titles, abstracts, and speaker bios.

Symposium I. The first symposium showcased innovations in creatively using technology and gathering data from participants outside of a laboratory context. These varied talks explored less traditional ways of gathering research data, why we remember what we do, and the effectiveness of mobile apps for meditation training.

The first talk of the day was presented by Drs. Quinn Conklin, Brandon King, and Alea Skwara, all Postdoctoral Scholars in Dr. Clifford Saron's lab at the UC Davis Center for Mind and Brain and meeting co-organizers. Dr. Conklin introduced how the COVID-19 pandemic has influenced the work their research group is conducting. Dr. Conklin's curiosity about the potential for contemplative practices to support people during the pandemic led her to conduct a remote, holistic study of the topic called "The Contemplative Coping During COVID-19 Study." Her emphasis on engaging with study participants as collaborators rather than passive subjects is a shared value that can be seen in the work of many of the symposium scholars. Dr. Alea Skwara presented her work developing methods for collecting high quality data remotely from

participants in “home labs”. On this venture she has validated a method for remote eye tracking and physiological measures of skin conductance and heart rate. While collecting this type of data remotely is possible, it is challenging to develop protocols with enough detail for research participants to be successful but not overwhelmed as they take on an active role in the scientific process. In addition to working alongside Dr. Skwara on remote data collection protocols, Dr. Brandon King has been creating a high quality picture stimulus set for use among the research community. He presented the work that he and his colleagues have done to develop a large, thematic picture stimulus set that distinguishes between different subcategories of “positive” images by splitting them into social and nonsocial contexts, and “negative” images by splitting them into images of threat, harm, and suffering. The Saron Lab’s stimulus set and insights from their trials with remote data collection have the potential to greatly support and inform remote studies in other labs.

In one of our favorite talks of the day, Dr. Vishnu Murty from Temple University discussed how our memory of events is deeply influenced by our affective and cognitive lens, including past experiences, relational aspects of any particular event, and emotional reactions. He creatively utilized a hyper-realistic haunted house with live actors that takes place every year in Philadelphia to safely place research participants into a state of realistic threat. His research team recorded participants’ heart rate and asked them to describe their memories of the experience a week later. They found that heart rate was predictive of individual reports of fear. Participant descriptions of the house in times of greater fear emphasized sensory detail over objective aspects of the events, providing further evidence that memories formed under threatening conditions can be accurately described as fragmented.

Dr. Murty also looked at the impact that a mindset of curiosity can have on people under threatening conditions. Curiosity was able to help people emotionally regulate under conditions of threat just as effectively as standard cognitive reappraisal techniques, yet felt easier and more enjoyable. Adopting a curious lens also supported participants’ memory. This novel finding offers insight into new approaches that might mitigate the negative effects that threat can have on the way we encode and recall information. Contemplative practice may benefit practitioners by helping them cultivate a curious mindset and the benefits that come with it. It was particularly interesting to hear Dr. Murty’s anecdotes about the serendipitous inspirations behind his research and the influence of his contemplative practice.

Dr. Paul Condon from Southern Oregon University discussed how app-based mindfulness trainings have the potential to support people who do not have access to in-person trainings. However, contemplative practices have an important relational aspect to them that is hard to recreate in most meditation apps. Dr. Condon described how compassion research in general is disconnected from what he calls compassion’s “relational core,” and how this lack of relationality to others can serve as a barrier to compassion. Bringing together research on early life attachment and a traditional Buddhist practice called “guru yoga,” Dr. Condon and his colleagues have been developing secular meditations to prime attachment security. These meditations focus on the sense of being held in a safe, loving, or inspiring presence–whether that is a person, a place, or even a piece of art–to cultivate a sense of relational security.

Research on this work suggests that when people are primed to feel relationally secure, they are less reactive to emotional threat and more likely to engage compassionately with others, demonstrating the importance of the relational core of compassion.

Taken together, the first symposium showcased creative approaches to conducting research that meets participants in their lives, rather than doing experiments in an artificial laboratory setting. These designs and techniques can offer a myriad of benefits to science, specifically allowing for more diverse sample populations and gathering more ecologically valid data. While the scalability and economy of app based trainings can be enticing, Dr. Condon's work reminds us that we should also be aware of the shortcomings of these digital formats and find innovative ways to mitigate them when possible.

Symposium II. The second symposium foregrounded the role of context and cognitive frames in shaping science. The speakers addressed the reasons *why* we do the research we do, language processing models and human learning, and how our social ecosystem influences our outlooks and research. We were invited to adopt a broader lens to examine the role of science and research, our individual motivations, and the larger interrelated context in which it resides.

Dr. Kamilah Majied of California State University Monterey Bay brought to light the reality that science has the potential to be inclusive, anti-racist, and embodied, but instead often continues to oppress or exclude people by its reenactment of characteristics of what is known as white supremacy culture. White supremacy culture is more insidious than overt racism, and permeates the priorities of science and academia. It operates at the individual and systemic levels by upholding values such as individualism, quantity over quality, and the idea that written sources of information are more legitimate than other ways of knowing. Dr. Majied's talk emphasized that our attempts in science to quantify and concretely measure every construct are misaligned with the very nature of the human experience. She asserted that the act of interacting with other people is a kind of research itself, meaning that poetry, teaching, melody, and movement are all ways of studying the world through lived experience. She also pointed out that the people whom scientists commonly refer to as minority groups are in actuality among the global majority, and that referring to the people of these communities as "minorities" further serves white supremacy culture by assuming a white, western reader. Dr. Majied spoke to the power of making simple shifts in our language and thinking, such as changing our terminology to better remind us all that each community is a part of the collective whole which we all contribute to, by changing terms like "Black people '' to phrases such as "those of us who are Black," for example. Dr. Majied reminded us of the fundamental importance of not just studying contemplative practices, but bringing a stance of contemplation and inquiry to our efforts, particularly by investigating our own biases and assumptions, as a way of embodying and enacting the world we are working together to create.

The talk given by Dr. Uri Hasson of Princeton University was the least directly connected to the field of contemplative science, but with the cultural rise of Deep Learning AI models such as ChatGPT, it provided thought provoking grounds for contemplative science to build off of both scientifically and philosophically. He described his work to build language models that behave

similarly to human language processing using rich, real world data. Current deep language models depend upon algorithmic learning via statistical probabilities, but human thinking is marked by us going against the probabilities. While many language models can predict the next word a human was thinking of saying, there are still some limits to them. Dr. Hasson's next goal is to create a model that learns the way a human child does so that the model can "think" linguistically similarly to how humans do. This ultimately gives rise to ethical questions about using AI models, as well as questions about just *how* close these models can actually get to predicting, modeling, and producing human or human-like behavior.

Dr. Laurence Kirmayer of McGill University began by introducing the idea of cultural psychiatry, which is a field that recognizes that mental health issues are embedded in cultural contexts, and that all contexts are in some sense cultural. His work is focused on how to equip practitioners to be better prepared to respond to the people they will be caring for with different cultural backgrounds than their own. While Western psychology operates from an individualistic lens, humans are innately interdependent. Contemplative practices, spirituality, and an integration of cultural context into psychiatry may help us bridge the gap between what Western psychology offers and the true needs of individuals with mental health concerns.

These three talks were a celebration of and call for a deeper humanity. Dr. Hasson's talk reminded us that although computational neural net architecture, statistical analysis and big data have allowed us to create dazzling linguistic displays through artificial intelligence that can often seductively mimic human thought, the uniqueness of our human language is that we are unpredictable and somewhat messy. Dr. Majied and Dr. Kirmayer both reminded us that research does not exist in a vacuum, and researchers are humans embedded in larger stories and communities. The pursuit of objectivity has historically been core to scientific motivations, but this impossible goal is yet another antiquated reflection of white supremacy culture that it is time we shift away from. We all have filters through which we view the world. Acknowledging these filters and the context we are embedded within promotes a more nuanced and integrated view of the world.

Symposium III. The third symposium showcased the work that the presenters are doing in the world to enact positive change: supporting restorative justice, adapting mindfulness training for people in high-stress, high-demand professions such as first responders, and utilizing mindfulness as a tool to support peacemaking. A core theme here was stories and best practices for Community Based Participatory Research (CBPR). This style of research involves collaborating extensively with the communities that are being served and studied. The participants help to steer the direction and design of the research, offering their knowledge of the context they live in and the needs of their community. The success of this research method points to the values of intellectual humility, receptivity, and symbiotic approaches in the realm of science. In the current hyper-competitive climate of academia we can only hope that this success will encourage a systemic shift that promotes more collaboration among scholars and the populations they study.

sujatha baliga, JD, a restorative justice practitioner and 2019 MacArthur Fellow, proposed that attendees rethink the criminal legal system and who it serves. Our current colonial-Western legal system in the United States focuses on punishing people who have harmed, and does so both ineffectively and without asking for input from people who have been harmed. Restorative justice puts the focus on those harmed, asking what they need, and whose responsibility it is to meet those needs. Restorative justice has roots in indigenous practices, and sujatha urged us to remember and honor its indigenous origin particularly by seeking out indigenous teachers when approaching this work. This process brings together the person who was harmed, the person who caused harm, and their community members to share their experiences in service of understanding how best to remedy past wrongdoings. This approach to justice is interpersonally complex and requires empathy, self-awareness, and contemplative skills. Even still, restorative justice is an approachable process for anyone as long as the individuals involved are motivated to engage.

Dr. Amishi Jha of the University of Miami pointed out the importance of being able to pay attention and hold information in mind (working memory), especially for people in high-intensity fields such as military and medical professions. She demonstrated that performance slowly declines throughout prolonged periods of high cognitive demand, such as pre-deployment basic training for military members. Mindfulness instruction appears to provide a buffer against performance degradation during these high demand intervals, suggesting that integrating these mindfulness trainings into high intensity workplaces could be beneficial both for professionals and those who rely on their work to be done well. However people in these professions often have limited time and energy that they are willing or able to devote to contemplative practice. Over many years, Dr. Jha has engaged in CBPR with these communities to develop contemplative training approaches that work for them, and adapt practices to high demand contexts. In these efforts, she has found that trainings have an even stronger impact when delivered by individuals within the community. For example, in military settings, mindfulness training facilitated by military psychologists is better received than trainings led by experienced mindfulness teachers. This suggests that teaching with greater personal understanding of the context and circumstances of trainees' lives plays a significant role in the effectiveness of mindfulness practice, and points to CBPR as both a tractable and transformational approach.

Dr. Nava Levit-Binnun, from Reichman University in Israel, is focused on utilizing mindfulness as a tool for engaged societal change rather than merely individual relief. She is introducing mindfulness into Israeli society by collaborating with “change agents” who bring these tools directly into their communities. She believes that mindfulness has the potential to spark change at both the micro levels of interpersonal and relational conflicts, as well as the macro levels of societies troubled by discrimination and conflict. Inspired by the desire for peace building in the tumultuous political climate of Israel, Dr. Levit-Binnun founded the Sagol Center for Brain and Mind to research ways that mindfulness can support people in navigating conflict, such as by fostering emotion regulation and collaborative conversation. Their research showed that mindfulness interventions reduced hostility and perceived threat of Palestinians for Israelis. When bringing mindfulness techniques to Ethiopian Jews who face discrimination in Israel,

many students reported their traditional coffee ceremony, the buna, contains many of the elements of mindfulness and compassion described in Dr. Levit-Binnun's training. In the final moments of the day, a Zoom participant asked Dr. Levit-Binnun if she was going to continue looking at the buna ceremony, since the collaborator she had previously been studying the buna with had recently passed away. Dr. Levit-Binnum suggested that perhaps the Zoom participant could collaborate with her on this and he expressed mutual interest, forming the beginning of hopefully an exciting new collaboration on the spot—a unique moment in this hybrid meeting.

This symposium left us inspired by highlighting the real world work being done to benefit people. Mindfulness can serve us in many domains that extend beyond individual well being.

At the end of a long and thought-provoking day, participants and presenters alike left with full minds and budding questions. We were particularly inspired by the way that this research can positively impact the world at large. As we look to ways this research might continue in the future, the synergy of the diverse presenters becomes apparent. In our current world of fiercely divided political groups and international hostility, researching tools for de-escalating conflict and promoting understanding across ideological divides is of utmost importance. The work of Dr. Murty on the power of curiosity to shift the lens of threat could be woven into Dr. Levit-Binnun's work to better understand how a curious mindset might support conflict resolution. The work of sujatha baliga, Dr. Jha and others highlight the importance of working collaboratively with the people we hope to serve. We know that tribalism and the tendency to favor people similar to us and dehumanize people who are different is deeply ingrained human behavior that often blocks progress in creating empathy between mutually disparaging groups. Crafting the tools to help bridge deep divides is not an easy task, and we believe that research and work investigating the role that mindfulness can have on our ability to positively engage will be essential. It is also unfortunately true that many within research communities do not recognize the potential of this emerging field of contemplative science despite its numerous contributions at this early disciplinary stage. Discrimination, dogma, and fanaticism are present in every corner of society, but we cannot expect to treat these ailments if we cannot carefully and mindfully examine them. We take heart knowing that this community of presenters is dedicated to doing rigorous science that will promote a world with less division and greater compassion, and we look forward to seeing their future work.