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Expanding Our Understanding of Consciousness with Psychedelics Research

INTERVIEW WITH PROFESSOR DAVID PRESTI

BY HANNAH MILLER, SADE MUESSEL, AND PARI SACHDEV



David Presti is a professor of psychology, biology, and neurobiology at UC Berkeley. He has earned doctorates in molecular biology from Caltech and in clinical psychology from the University of Oregon. He has authored two books – *Foundational Concepts in Neuroscience: A Brain-Mind Odyssey* (Norton, 2016) and *Mind Beyond Brain: Buddhism, Science, and the Paranormal* (Columbia, 2018) – and created a public-education course, *Psychedelics and the Mind*, on edX. He is an executive committee member of the UC Berkeley Center for the Science of Psychedelics (BCSP) and has taught at UC Berkeley since 1991. Since the early 2000s, he has collaborated with Tibetan Buddhist monastic communities in India, Bhutan, and Nepal to cultivate scientific dialogue and teaching.

BSJ: In your paper about the collaborative dialogue between Buddhism and science, you describe the mind and world as interdependently co-created. Can you elaborate on what that entails and how this perspective may change how we view the science of consciousness as a whole?

DP: In the scientific paradigm that we use, we make an assumption that there is an objective world out there. We assume there is real stuff out there and we are aware of that at some level through our perception and try to make sense of it. From that, we develop our hypotheses, experiments, and theories. However, if you step back for a moment and take a look at that, you realize that it is an assumption that there is an objective world. Most of us just take it for granted. Of course it exists. What do you mean this [pointing to the table] is not real? But all we know is our awareness. The only thing we are sure about is our conscious awareness. We have a conscious awareness of whatever we are aware of, and from that, we do pattern analysis, look for connections between things, and develop a whole framework of science that allows us to describe the world.

Preceding science, there were simply perceptual models of what was going on so we could try to understand how to navigate things. We construct the way we explain the world through our consciousness. If there is a world out here and there is an awareness associated with

us, we become aware of that world only through our consciousness. Through that consciousness, we create explanatory frameworks that build our understanding of the world.

So there is a loop. Consciousness is the only thing we know, so the world is coming through that, and then out of that again comes our framework for understanding the world. There is a loop, an interconnection, or an interdependent connection. In quantum physics, there is a word called “entanglement”, and I am reluctant to use that word because it means something very specific in quantum physics, but it is kind of an entanglement, not a quantum entanglement, but an entanglement of our awareness of the world, our consciousness, our very capacity to have awareness, and the effect that the world is what we think it is. So it is looped. That is what I mean by that.

BSJ: In the future, what do you think are the most promising areas for collaboration between contemplative traditions and the hard science of the mind, such as neuroscience?

DP: They are complementary in that neuroscience tries to make sense of the physical and chemical processes in the brain during perception and awareness and to get some handle on the brain correlates of conscious awareness.

The contemplative practices, if you separate the methodology, have

been created over thousands of years within an ethical and spiritual framework. That is the most important thing about them, and we have extracted a little piece and said, “Well, if you focus on your breath for a little bit, you can improve your attentional focus and health”. That is great, but it is almost a side effect. What is valuable is that it provides tools to investigate the nature of awareness, which we have not done so far in Western science.

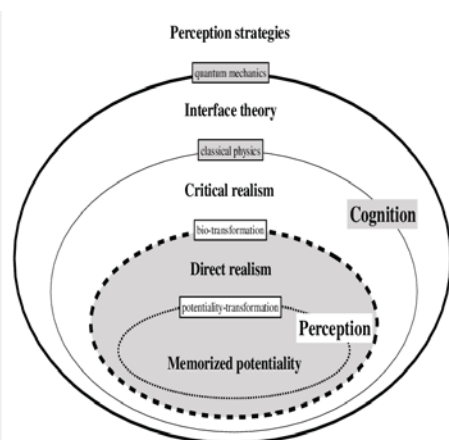


Figure 1: A diagram illustrating interface theory and its relationship to consciousness. Perception is shown as an evolved interface shaped for survival, rather than a direct view of objective reality, and highlights how mental potential allows the mind to interpret and predict the world, relating to the interdependence between mind and world.

BSJ: You argue for integrating first-person trained introspection with third-person neuroscience. From a technical perspective, what minimum protocol would you adopt so that introspective data can become reliable and comparable across lives?

DP: There has been exploration into that area over the last few decades. There is a field called neurophenomenology, which looks at neural activity in the brain measured by things like electroencephalography (EEG) and seeks to correlate that to reports of experience done with great specificity and detail. It would mean continuing to refine those methods of combining brain physiological measurements with self-reports of experience that can be used across people to look for replicability.

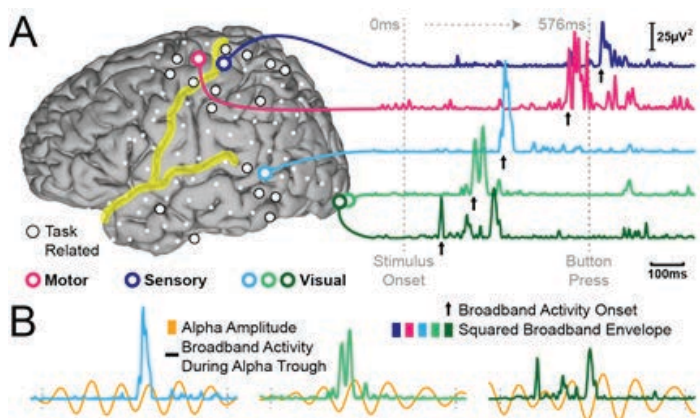


Figure 2: Image of neuronal activity recorded as brain waves via an electroencephalogram (EEG). When analyzed alongside self-reported experiences, EEGs provide deeper insights into cognitive patterns and consciousness.

BSJ: Transitioning to your work with LSD – specifically, your chapter about LSD in *The Handbook of Medical Hallucinogens*, where you explain the history and properties of LSD – do you believe LSD may become a mainstream tool in psychiatry?

DP: It is hard to say. Many folks believe in the application of psychedelics, especially in clinical studies focusing on psilocybin from psychedelic mushrooms or MDMA, for certain kinds of therapy. That research began early in the revival of this field several decades ago. LSD lasts much longer [in the brain], which makes it more difficult to manage in a laboratory or clinical setting, and it also carries sociocultural baggage. When people hear LSD, they think of the 1960s, demonstrations, and chaos. Psilocybin was a safer bet and easier to handle in research environments.

However, LSD may have unique properties that other psychedelics do not, which could be therapeutically beneficial. Some therapists, who have worked with LSD before its prohibition in the 1970s or in underground settings, believe that it will always be around and appreciated for its unique power. It is amazing that it was discovered through a series of serendipitous events. Whether it will have a prominent role in Western medicine like other psychedelics is unclear; everything is uncertain because of how rapidly things are changing.

Much of today’s research and development is tied to monetization and corporatization. Many ask, “Can I start a company and patent something about LSD to make money”? A lot of clinical research is driven by this question. But not at UC Berkeley, since we do not have a medical school and are not doing clinical research. We are taking a different approach with our projects here: we have one study going on right now that Michael Silver and his colleagues are doing, where they are looking at the effects of psilocybin on visual perception. As in, what does it do in the visual system that may underlie this? People experience hallucinations, including movement and changes in their visual perception as a result of ingesting psychedelics. So what might [Silver and his colleagues] specifically be able to tease out from brain imaging data around that? It is going to be a slow process to get results that can be generalized and replicated.

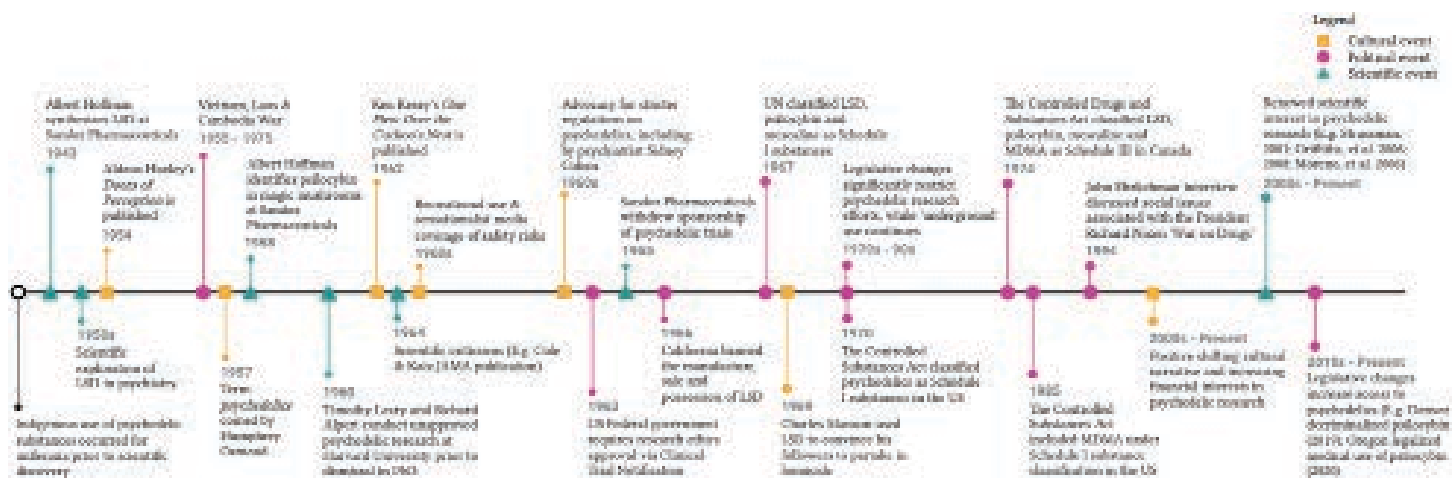
So, the short answer to the question: it is hard to say.

BSJ: Do you believe that if LSD were to become a mainstream tool, it would no longer be seen as counterrevolutionary?

DP: For me, psychedelics in general, and LSD even more so because of its history, are disruptors. They shake up the mind in ways nothing else in medicine does. In that sense, they will always be somewhat revolutionary. There is a fantasy that these substances will be easily controlled by the biomedical system through regulations and approvals, but there is often a lack of appreciation for how powerful they are and how much they can disrupt things unpredictably. We will have to see how that plays out. I do not know how it is going to go, but it is going to be interesting and not necessarily a smooth ride.

BSJ: UC Berkeley has a rich history of psychedelics and revolutionary culture reflected in events like the Free Speech Movement in the 1960s. How has this institution’s history shaped your understanding of LSD in psychedelics and your research?

DP: I love that piece of Berkeley’s history, that we have this long history of having our finger on the pulse of the culture and



activism. I am super interested in it and one of the things I do in my teaching and writing about the subject is try to keep it alive. I find that a lot of people entering our university now are not very aware of that history or they may know a little bit about, say, free speech (because of the Free Speech Café) but [they do not know] how rich and complex it was. And so, I use every opportunity I can when there is time in classes, if I am talking about a subject that touches on some piece of this history, in order to bring that in some way.

In that sense, [Berkeley's history] has shaped what I do in my education, because I am always trying to bring it into class. I do that for other subjects, not just for psychedelics; I encourage engagement with socioculturally important issues because the Free Speech Movement was not about LSD or any kind of psychedelic; it was about free speech. It was about being able to engage in political dialogue on campus and it is amazing that that was not even acceptable prior to the movement. I also encourage exploration of other parts of Berkeley's history: right now, in my freshman seminar on consciousness, we are spending two weeks watching the movie *Oppenheimer* and talking about facets of that history, given that *Oppenheimer* was a professor here for 14 years. So, [the history] shapes what I do in my education and my educational process.

BSJ: Do you have additional examples of how you might tie that history into your teaching?

DP: I am doing it all the time. I gave a whole lecture last year on the history of psychedelics with folks specifically at Berkeley. There is a decal class, Introduction to Psychedelic Science, of which I am the faculty sponsor, and for one of my very first examples – the oldest example I had – there was a person by the name of Adelle Davis. Ever heard of her? In Adelle Davis’ day, back in the 1940s and 1950s, she was the most prominent writer on food and the importance of nutrition and eating healthy. She was way ahead of the curve with getting those kinds of ideas out and she wrote a number of books, including cookbooks. It turned out she was a Berkeley graduate, way back in the 1920s. But in the 1950s, when it was legally possible to conduct LSD therapeutic research, she somehow ended up as a subject in research studies using LSD. And so, she took it on a number of occasions. Then, she wrote a whole book about it, but she published it under a pseudonym named Jane Dunlap. That is an interesting facet of Berkeley history, which nobody would ever know about, even if they’ve heard of Adelle Davis. Timothy Leary, one of the most

recognized names in the history of LSD and other psychedelics in the United States, was getting his PhD in psychology at UC Berkeley in the 1950s and actually lectured here part-time for a little bit before going to Kaiser in Oakland and starting the psychology department there. He lived right up above campus, and he is another kind of famous part of Berkeley's psychedelic history.

One of the famous chemists who synthesized millions of doses of LSD back in the 1960s, a guy named Owsley, lived in this neighborhood and had a girlfriend who was a chemistry student at UC Berkeley, so there is also a rich history there. It has been interesting for me to learn those things and I think students seem to appreciate it when I bring that into classes.

BSJ: If there had not been a pause or any federal restrictions on clinical LSD research, would there still have been a cultural difference, or would modern medicine look very different now? How do you think what you teach would be different?

DP: There was a lot of research in psychiatry, especially during the 1950s and 1960s, and then it all came to a halt at the end of the 1960s and the beginning of the 1970s, when everything became illegal, and it became kind of socially frowned upon to even want to do that kind of work. There was a lot of association of these clinical trials with LSD at that time because LSD was the only widely known psychedelic. There were mushrooms, and although psilocybin had been identified in 1958, very few people knew of it; mushrooms had not really penetrated the culture yet, whereas LSD has been readily available for quite a few years. So, mostly it was LSD, but there were still other psychedelics out there, too. And then all the research completely stopped. If it had not stopped, it certainly would have continued to reveal really interesting things. How much of that would have ended up impacting everything now, 50 years later? It is hard to say because, as I mentioned earlier, it is such a disruptive and complex substance. It could have played out in any number of different ways.

And the other thing that is very different in the landscape now is that so much of the research seems driven by money and corporate interest. Motives come down to how one can commodify, corporatize, monetize, and make money out of it. And people did not think that way 50 years ago in science; they were doing science for the basic kind of revelations that might be revealed about how the brain worked, and also to just help people develop tools that would be clinically useful, not with their prime directive being, “How can I make a lot of money out

of this”? The whole world of finance and “Big Pharma” has shifted so dramatically over my lifetime really. So it is possible that [LSD] could become a commercial rival, but again, it is so dynamic that it is hard to know for sure. There are people out there now working on preparations of LSD that may be patentable and then useful for psychedelic-assisted therapy, so it is not going away, but the whole process is quite slow and unpredictable.

BSJ: The social stigma of LSD has played a large role in the research process of these drugs. What are other current limitations to our understanding and the research of LSD’s effects?

DP: I think the limits of our ability to research its effects come down to subjectivity versus objectivity. If we look at something from an objective neuroscience lens, you can give somebody a psychedelic (LSD, psilocybin) and try to measure various things going on in their body empirically. You can measure their brain activity using devices like EEG and fMRI and you try to make some conclusions from that data. You can collect their phenomenological reports, its feeling, and its correlation with things you are measuring in the brain. But the brain, as you know, is really, really complex, and brain imaging data is often very hard to interpret. So, in order to get meaningful information, you sometimes have to narrow your question.

One thing that folks are looking at is what is going on at the molecular level. As in, how does the molecule actually bind to the receptors and the cells [in the brain]? How might it change the efficacy of cellular communication, making it stronger, weaker, or altered in some way? There are all of these things happening, and that will continue to happen. How long will it take before we can say, “Oh, right, now we really understand something about what’s going on here”? I do not know. When it comes to the really big changes that folks can experience—this whole transformation of their mindset about the world in some way that some people report—to explain that in some simple way about a brain process is certainly not possible at this point.

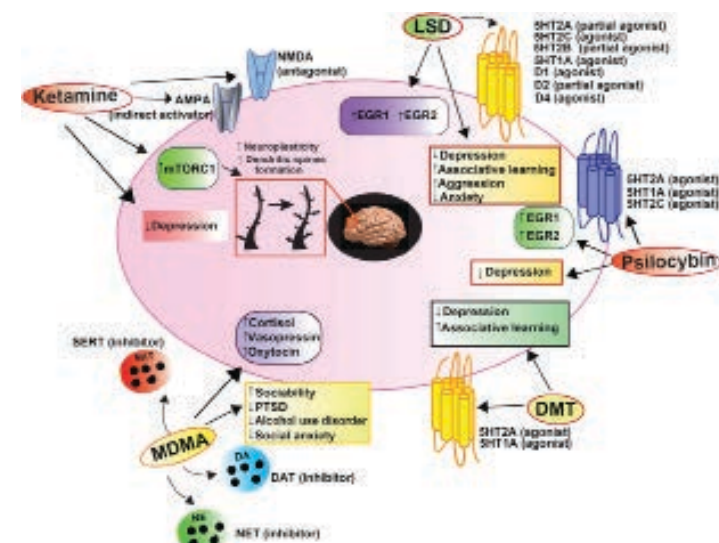


Figure 4: LSD (top right) has complex effects on neurotransmitters in the brain, which may explain why such compounds elicit highly variable responses in test subjects.

BSJ: What motivates you to continue researching consciousness and psychedelics?

DP: The reason I am interested in the science of consciousness and psychedelics in particular, is that my deeper interest is the science of expanding a way to get more scientific insight into what is going on with our mind, with our consciousness, with our awareness, and how that relates to the rest of what we conceive of as reality.

So, how to carry that out...? That is my big interest, and psychedelics are important probes of that. Often, under the influence of psychedelics, people completely transform how they think about their relationship with the world and what their consciousness even is. That is a very interesting window into one way that you might be able to expand a science around this. And I think they will be valuable for that.

The reason I am interested in any of this is that I believe—I hope—that by deepening our insight into the nature of who we are as conscious living beings and how we are connected with the rest of what we think reality is and to one another and to other living beings and to the planet, it might have a beneficial impact on behavior. That we may behave more respectfully, to ourselves, to one another, to other living beings, to the biosphere, and to the planet as a whole. Ultimately, this is hoping to be in service of the greater good in some way and of the future.

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