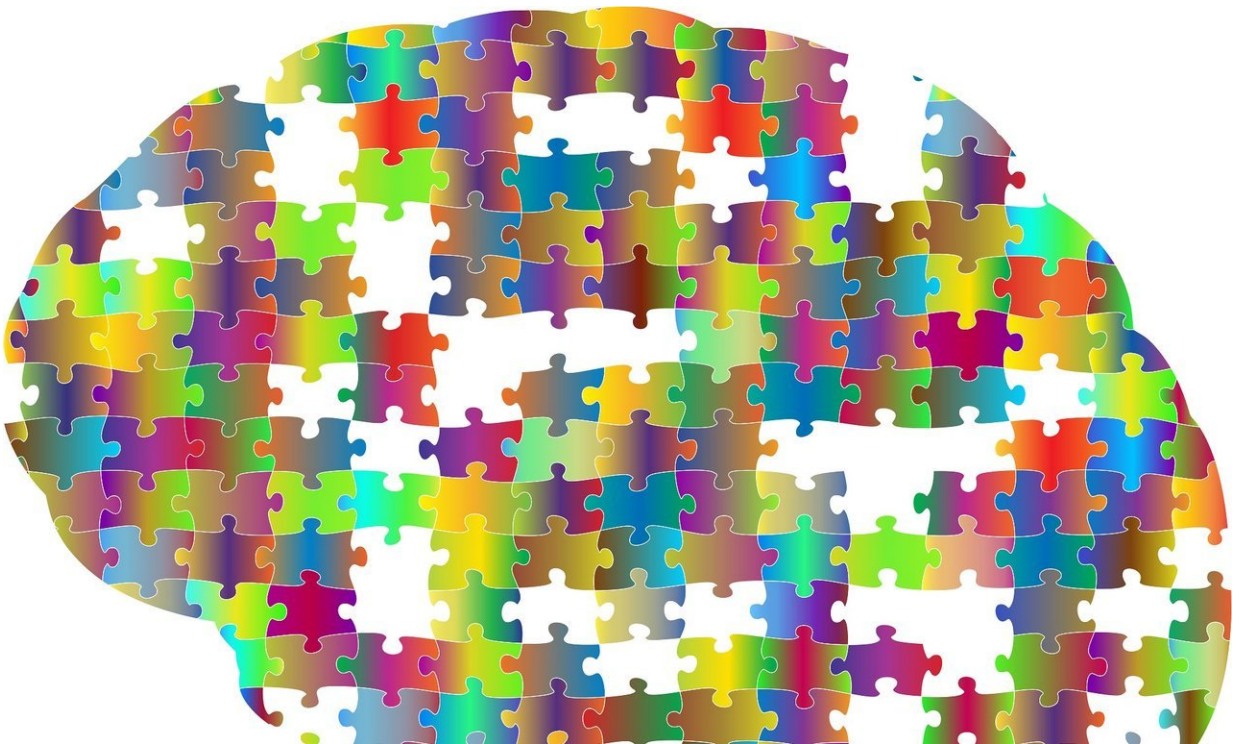


# New approaches in neuroscience show it's not all in your head

February 16 2018, by Kelly Tyrrell

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Our own unique experiences shape how we view the world and respond to the events in our lives. But experience is highly subjective. What's distressing or joyful to one person may be very different to another.

These differences can matter, especially as a growing body of research

shows that what happens in our inner landscapes - our thoughts about and interpretations of our [experiences](#) - can have physical consequences in our brains and bodies.

This was the subject of a talk given Feb. 16 by University of Wisconsin-Madison Center for Healthy Minds founder and director Richard Davidson at the 2018 Annual Meeting of the American Association for the Advancement of Science, titled: How the Mind Informs the Brain: Depression and Well-Being.

"How we experience the world affects us in more ways than we previously thought," says Davidson, William James and Vilas Professor of Psychology and Psychiatry at UW-Madison. "We're finding that emotions and thoughts can alter neural pathways in the [brain](#) in relatively short amounts of time and even affect processes like gene expression and aging."

Davidson says tapping into the role experience plays in [mental health](#) could help scientists and clinicians design better interventions to treat disorders such as anxiety and depression.

This framework stands in contrast to the tendency of neuroscientists to place more value on behavior in lieu of studying experience. In his talk, Davidson made the case for more fully integrating emerging scientific knowledge of the mind-body connection with neuroscience study design.

Not only should individual experience be more fully accounted for and measured in neuroscience studies, Davidson argues, efforts to do so are revealing previously unknown neural networks that are implicated in well-being and [mental health](#) disorders.

The problem, he says, is that experience has long been thought of as synonymous with behavior, when in fact the two are separate and can

influence each other.

Davidson and other scientists in the field have used imaging tools like [functional magnetic resonance](#) imaging (fMRI) and electroencephalography (EEG) to measure activity and structures in the brain while observing relationships between specific neural networks and behaviors.

"What's exciting about these findings is that when we take experience into account, certain neural mechanisms are implicated that would not otherwise be identified," he says. "The findings underscore the importance of taking both experience and behavior into account when building neural accounts of emotion, well-being and psychopathology.

Studies of mindfulness and meditation serve as examples of interventions that focus on experience. These forms of mental training hold the potential to influence how people notice sensations and form emotional responses to the events around them in ways that can affect their biology and actually drive behavior.

Previous research related to emotional well-being and depression can act as helpful models, Davidson says, because there is evidence that psychological interventions that include mental training practices to increase positive qualities of mind such as attention, kindness and compassion can leave lasting effects on the brain and physiological aspects of health.

In theory, scientists can take this information and begin looking at other interventions that influence experience to see what kind of impact on the brain and body they may have.

Davidson is excited for new study methods enabled by smartphones because they can gather critical data about a person's experience at

specific intervals during the day - outside of the lab - in more natural, everyday environments. Called "experience sampling," the idea is to deliberately gather information about a person's mental state and [experiences](#) to create a larger picture of how his or her [brain](#), behavior and [experiences](#) interact.

Provided by University of Wisconsin-Madison

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