

Good vibrations improve mood

John J.B. Allen

SPECIAL TO THE ARIZONA DAILY STAR

The experiences we have, the choices we make: Anything we do changes our brains.

When people experience mood disorders such as depression, the drug therapies and talk therapies that help recovery also change brain activity.

Postdoctoral student Jay Sanguinetti and I are studying whether manipulating brain activity directly using ultrasound can help people recover by altering their mood.

The method we use, Transcranial Ultrasound (TUS), creates

EXPERIENCE SCIENCE

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mechanical vibrations that are too fast to hear. The vibrations travel through the skull into the brain via a simple headband attached to the ultrasound machine.

We discovered TUS by chance when we met with UA anesthesiologist Dr. Stuart Hameroff to record brain activity during a surgery. In our collaboration with

Hameroff and biomedical engineer Jamie Tyler, now an Arizona State University associate professor, we are among the first laboratories in the world to stimulate human brain activity using TUS.

Our first studies targeted the brain areas important for emotion regulation. We found just 30 seconds of TUS increases a person's positive mood, whereas wearing the device without the ultrasound turned on did not.

We have replicated that finding in four separate studies. Now we are assessing how TUS alters brain activity by recording brain electrical activity before, during



JAY SANGUINETTI / UA DEPARTMENT OF PSYCHOLOGY

UA psychology researchers are studying whether delivering ultrasound vibrations to people's brains can improve their mood. Here Davi Vitela models the headband used in the ultrasound treatment.

and following TUS.

Our research suggests TUS could have wide application, including treatment of disorders such as depression.

ABOUT THE SCIENTIST



John J.B. Allen is a University of Arizona Distinguished Professor of Psychology. His research examines factors that

promote risk for mood disorders like depression and anxiety. His laboratory routinely examines physiological factors, in both the brain and body, that increase risk. He also works on the development of new treatments for mood disorders, including brain stimulation like TUS.