

Resting-state EEG can predict sertraline treatment outcomes

February 11 2020



A latent-space machine learning algorithm tailored for resting-state

electroencephalography (rsEEG) can predict treatment outcomes with sertraline in depression, according to a study published online Feb. 10 in *Nature Biotechnology*.

Wei Wu, Ph.D., from South China University of Technology in Guangzhou, and colleagues designed a latent-space [machine learning](#) algorithm tailored for rsEEG and applied it to data from an antidepressant treatment prediction study in depression to identify treatment-responsive neurobiological phenotype.

The researchers found that symptom change was predicted in a manner that was specific for sertraline versus placebo and generalizable across study sites and EEG equipment. The sertraline-predictive EEG signature generalized to a second depression sample; reduced EEG-predicted symptom improvement was seen using the sertraline-defined model for historically treatment-resistant patients compared with those showing partial response. In a third independent data set, two properties of the predictive signature were examined: convergent validation and neurobiological significance. In this sample, the rsEEG-derived outcome predictions indexed prefrontal neural responsivity, as measured by concurrent transcranial magnetic stimulation (TMS). The smaller the rsEEG-predicted symptom improvement with sertraline, the better the response to TMS treatment over the right dorsolateral prefrontal cortex with concurrent psychotherapy in a fourth depression treatment data set.

"These findings ground in individual-level neurobiology a treatment-responsive phenotype obscured within the broader clinical diagnosis of depression and its associated biological heterogeneity, and lay a path towards machine learning-driven personalized approaches to treatment in [depression](#)," the authors write.

Several authors disclosed financial ties to the biopharmaceutical industry.

More information: [Abstract/Full Text \(subscription or payment may be required\)](#)

Copyright © 2020 [HealthDay](#). All rights reserved.

Citation: Resting-state EEG can predict sertraline treatment outcomes (2020, February 11) retrieved 14 January 2023 from <https://medicalxpress.com/news/2020-02-resting-state-egg-sertraline-treatment-outcomes.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.