

Can brain training games reduce adolescent anxiety? FSU researchers seek answers

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(Photo: FSU)

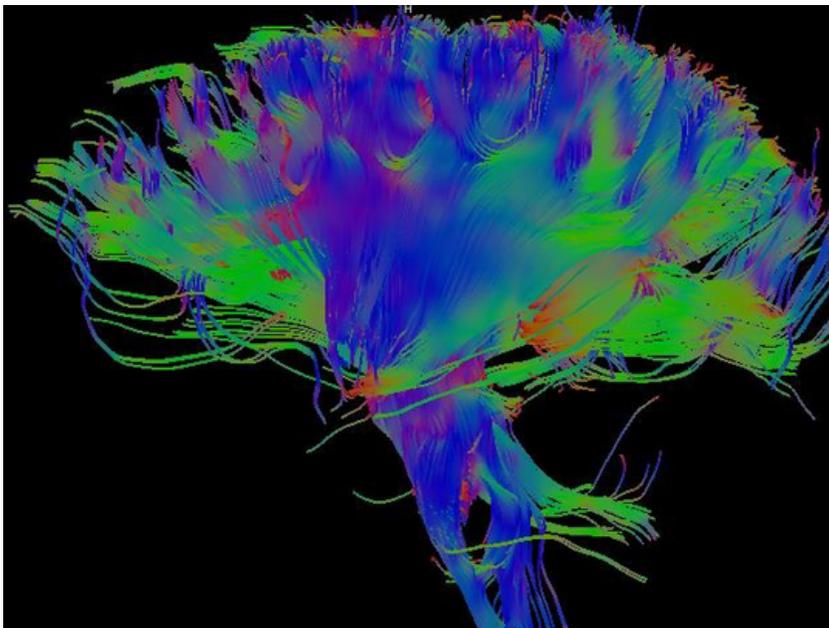
One of the College of Medicine's newest faculty members has a five-year project working with adolescents to detect and possibly reduce the risk of anxiety.

Greg Hajcak, Ph.D., is co-principal investigator on a National Institute of Mental Health grant exceeding \$3.2 million. He is a professor in the biomedical sciences and psychology departments and is the scientific director of FSU's Functional Magnetic Resonance Imaging (fMRI) Facility, housed in the College of Medicine. It allows

researchers from across the university to advance exploration in areas including psychological disorders, memory, cognitive control and changes associated with aging.

"The images you can capture with this machine are simply incredible," FSU Vice President for Research Gary K. Ostrander said last fall when it was unveiled. "It is analogous to upgrading from an old Polaroid instant camera to one of today's high-end digital offerings."

Hajcak (pronounced Hi-Chuck) is a clinical neuroscientist who uses functional MRI and other neuroimaging methods to measure brain activity related to risk for anxiety and depression. He brought the NIMH grant with him when he was recruited from Stony Brook University. The study is referred to as TRAIN: Teen Risk for Anxiety Investigated through Neuroscience.



Brain image from Greg Hajcak study on anxiety using functional MRI and other neuroimaging methods to measure brain activity related to risk for anxiety and depression. *(Photo: Florida State)*

"It's a study on 11- to 14-year-olds, and involves measuring brain activity and following the adolescents over two years," Hajcak said. "In addition, many of them do 'brain training' games at home, and we're examining whether this training alters brain activity associated with anxiety risk. We're looking to get 300 adolescents enrolled in Tallahassee."

The two-site study, which began last fall, involves both FSU and San Diego State University.

For the TRAIN project, his team is focusing on EEG-based measures of how the brain responds to making mistakes – a distinct neural response called the error-related negativity, or ERN. It's the electrical activity recorded when people make mistakes. He and other researchers have found that ERN is larger among adults with anxiety disorders. And as his team has studied younger and younger people, the results have suggested that an increased ERN can also be a reliable predictor of anxiety.

In Hajcak's ongoing study, the focus is on whether the ERN predicts increases in anxiety in adolescence, and whether attention training can reduce the ERN and risk for anxiety. Some of the participants in the TRAIN study will be randomized to complete 16 "sessions" of computerized trainings intended to increase the ability to disengage from threat. That type of attentional training has been shown to reduce anxiety – and the TRAIN project is designed to determine whether it may work by reducing how reactive the brain is to detecting its own mistakes.

To learn more about enrolling in the study, call 850-644-9869 or email train.study@psy.fsu.edu.

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