

## FDA approves video game based on UCSF brain research as ADHD therapy for kids

June 15, 2020 - 12:50pm

By *Laura Kurtzman* [1]



The U.S. Food and Drug Administration has approved the first video game therapeutic as a treatment for attention deficit hyperactivity disorder (ADHD) in children, based on research by UC San Francisco's Adam Gazzaley, MD, PhD [2].

In 2013, Gazzaley published a paper in *Nature* reporting that six weeks of training with a video game called *Neuroracer* [3], in which the player seeks to discern relevant cues from distracting ones during a car race simulation, improved attention in older adults. The results were striking, given that attention markedly declines with age.

Gazzaley believes that enhanced function in a brain network involved in cognitive control, which is necessary to pursue goals, explains the improvements, both in the older adults he studied and in the children who can now be treated with a kids' version of the technology, called *EndeavorRX*. Gazzaley is a co-founder of Akili, which produces *EndeavorRX*, and which conducted clinical trials of the game as an ADHD treatment with researchers Duke University.

In the 2013 research, Gazzaley's lab measured low-frequency brain waves in the prefrontal cortex, as well as the coherence between frontal and posterior regions of the brain. As the older drivers in *Neuroracer* became more adept at the multitasking challenges of the game, their brains modulated this key neural network so that it came to resemble the activity seen in the brains of young adults.

The *Neuroracer* study published in *Nature* formed the basis of the patent that Akili's

EndeavorRx is based on,? said Gazzaley, who directs the Neuroscape Center at UCSF [4] and is a professor of neurology, physiology and psychiatry. ?Of course, there has been much development and many more studies since then ? not all of which, including the ADHD research, we did. But this is our technology at its core.?

## Further coverage

- **U.S. Food and Drug Administration:** FDA permits marketing of first game-based digital therapeutic to improve attention function in children with ADHD [5]
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## About UCSF Psychiatry

The UCSF Department of Psychiatry [6], UCSF Langley Porter Psychiatric Hospital and Clinics [7], and the Langley Porter Psychiatric Institute are among the nation's foremost resources in the fields of child, adolescent, adult, and geriatric mental health. Together they constitute one of the largest departments in the UCSF School of Medicine and the UCSF Weill Institute for Neurosciences, with a mission focused on research (basic, translational, clinical), teaching, patient care, and public service.

UCSF Psychiatry conducts its clinical, educational and research efforts at a variety of locations in Northern California, including UCSF campuses at Parnassus Heights, Mission Bay and Laurel Heights, UCSF Medical Center, UCSF Benioff Children's Hospitals, Zuckerberg San Francisco General Hospital and Trauma Center, the San Francisco VA Health Care System, and UCSF Fresno.

## About the UCSF Weill Institute for Neurosciences

The UCSF Weill Institute for Neurosciences [8], established by the extraordinary generosity of Joan and Sanford I. "Sandy" Weill, brings together world-class researchers with top-ranked physicians to solve some of the most complex challenges in the human brain.

The UCSF Weill Institute leverages UCSF?s unrivaled bench-to-bedside excellence in the neurosciences. It unites three UCSF departments?Neurology, Psychiatry, and Neurological Surgery?that are highly esteemed for both patient care and research, as well as the Neuroscience Graduate Program, a cross-disciplinary alliance of nearly 100 UCSF faculty members from 15 basic-science departments, as well as the UCSF Institute for Neurodegenerative Diseases, a multidisciplinary research center focused on finding effective treatments for Alzheimer?s disease, frontotemporal dementia, Parkinson?s disease, and other neurodegenerative disorders.

## About UCSF

UC San Francisco (UCSF) [9] is a leading university dedicated to promoting health worldwide through advanced biomedical research, graduate-level education in the life sciences and health professions, and excellence in patient care. It includes top-ranked graduate schools of dentistry, medicine, nursing and pharmacy; a graduate division with nationally renowned programs in basic, biomedical, translational and population sciences; and a preeminent biomedical research enterprise.

It also includes UCSF Health <sup>[10]</sup>, which comprises three top-ranked hospitals?UCSF Medical Center and UCSF Benioff Children?s Hospitals in San Francisco <sup>[11]</sup> and Oakland <sup>[12]</sup>?as well as Langlely Porter Psychiatric Hospital and Clinics, UCSF Benioff Children?s Physicians, and the UCSF Faculty Practice. UCSF Health has affiliations with hospitals and health organizations throughout the Bay Area. UCSF faculty also provide all physician care at the public Zuckerberg San Francisco General Hospital and Trauma Center, and the San Francisco VA Medical Center. The UCSF Fresno Medical Education Program is a major branch of the University of California, San Francisco?s School of Medicine.

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**Source URL (modified on 06/16/2020 - 3:51pm):** <https://psychiatry.ucsf.edu/news/fda-approves-video-game-based-ucsf-brain-research-adhd-therapy-kids>

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- [2] <https://profiles.ucsf.edu/adam.gazzaley>
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- [4] <https://neuroscape.ucsf.edu/>
- [5] <https://www.fda.gov/news-events/press-announcements/fda-permits-marketing-first-game-based-digital-therapeutic-improve-attention-function-children-adhd>
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