National Consortium on Alcohol & NeuroDevelopment in Adolescence - Adulthood (NCANDA-A)

Duke University • UC San Diego • SRI International •
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2022 Newsletter
ncanda.org

Shout Out to NCANDA at Duke University

Dr. David Goldston, PhD is a Child & Family Clinical Psychologist and Associate Professor of Psychiatry and Behavioral Sciences at Duke University. He joined NCANDA in 2021 as Principal Investigator for the Duke Research Site in Durham, NC, bringing to the team expertise on suicide prevention and depression treatment for adolescents with substance misuse. Learn more about Dr. Goldston and our other NCANDA investigators at www.ncanda.org/investigators.php.

What's the Difference between MRI and fMRI?

Functional magnetic resonance imaging (fMRI) records brain activity, whereas structural MRI captures brain anatomy. NCANDA collects both MRI and fMRI scans.

fMRI detects differences in signal strength caused by blood oxygenation level changes in brain areas when neurons fire while doing one task relative to activity when resting or doing a different task. fMRI can tell us what brain regions are engaged in specific tasks.

Structural MRI produces the brain pictures you receive from NCANDA and displays the brain's gray matter, white matter, and cerebrospinal fluid. Gray matter is composed of neurons, which comprise cell nuclei, dendrites, and synapses. White matter includes axons, which are the extensions of neurons that relay signals between brain structures such as the amygdala, hippocampus, cerebellum, and regions of the cortex.

www.mayfieldclinic.com/pe-fmri_dti.htm
www.ncbi.nlm.nih.gov/books/NBK553239/

COVID-19 Mental Health & Substance Use

We all have been affected by the COVID-19 pandemic-with shut-downs, separation from friends and family, illness, and much more. NCANDA is helping to identify the effects that the COVID-19 experience has had and continues to have on youth and emerging adults. By comparing results from tests and questionnaires obtained before the pandemic to the same measures obtained during phases of the pandemic, NCANDA is in the special position to detect patterns of mental health, disposition, physical wellness, and variation in alcohol and other substance use that occur with the evolution of the pandemic. This information may identify problems that could be alleviated with positive attention or therapy. We thank you for your continued participation, which is essential in our collective pursuit in understanding the emotional effects of the pandemic on individuals.

https://pubmed.ncbi.nlm.nih.gov/35413486/
https://pubmed.ncbi.nlm.nih.gov/34726149/

To learn more about the effects of drinking, go to https://www.niaaa.nih.gov/

Binge Drinking and Brain Development

NCANDA studies brain development in a large group of people spanning a wide age range, each with repeat assessments over time. NCANDA provides an unprecedented examination of the relationship between adolescent alcohol use and gray matter volume development into adulthood.

Study findings reveal that binge drinking is associated with accelerated gray matter volume loss over time, with the greatest impact in early adolescence. Volume declines were greatest in frontal lobe regions involved in executive control and temporal lobe regions involved in memory processes. Binge drinking (that is, having 4 or more drinks on an occasion for girls/women, 5 or more for boys/men) was the drinking pattern most linked to this decrease in gray matter.

www.academic.oup.com/cercor/advance-article/doi/10.1093/cercor/bhab368/6419841

Word Play

Have you seen the viral email chain containing a paragraph written using scrambled words and been amazed that you can read it? Your ability to interpret the meaning of this jumbled language is linked to your brain's capacity to infer context. Our brain processes all letters in a word simultaneously, so when we see a series of letters, it uses these shapes to form a picture of the word and compares that to the most approximate visual representation stored in our brain. Despite this ability, letter order does matter. Letters that are switched at the beginning of a word decrease reading ability more than those that have been jumbled at the end, while letters rearranged in the middle have the smallest effect. Deciphering incomplete or scrambled words is also aided by redundancy in language.

www.science.howstuffworks.com/life/inside-the-mind/human-brain/you-can-read-scrambled-words-certain-conditions.

Unscramble for Brain Facts!

1. Teh hmaun barin raehces full mutarity aruond age 25.
2. Hmauns sue teh wohle bairn all teh tmie, not jsut %10.
3. Teh tmreaopl lboe geerneats meormies and etnmoios.
4. Hmauns hvae teh largset forntal lebos of any aminal.
5. Teh pons, prat of teh bairnsetm, is ivnolved in baerthnig.

www.livescience.com/29365-human-brain.html