

The Empowerment through Science & Technology Initiative (ESTI)

ESTI'S GOAL IS TO PROVIDE YOU WITH ACCURATE INFORMATION ON SCIENCE, TECHNOLOGY, AND HEALTH.

Get In Touch

Are you interested in learning how to use your technology?

At ESTI, we're hoping to start online workshops on how to use specific technologies and get the most out of your products. If this is something you'd be interested please fill out this survey (https://cutt.ly/ESTI_survey)!

Participate in a study about how COVID-19 and the public health crisis impacts out behavior. Please visit this site (www.colelab.org/covid.html) for more information, and check out this infographic (https://cutt.ly/study_info) on how to sign up.

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MYTH BUSTERS

Sources:

1.JN;, J. (n.d.). Adolescent maturity and the brain: The promise and pitfalls of neuroscience research in adolescent health policy. Retrieved February 24, 2021, from <https://pubmed.ncbi.nlm.nih.gov/19699416/>

MYTH: Brain Development is Finished by Puberty

It is a longstanding belief that brain development is finished once a person reaches puberty. However, this is a myth. This misunderstood information has shaped policies and laws which are concerned when a person is considered developmentally mature. For example, in the United States, a person is considered an adult when they reach the age of 18, but the legal age to consume alcohol is 21. However, neuroimaging studies have shown that brain development continues well into adulthood and approximately until the age of 30.

Over the course of maturation, the frontal lobes are among the last to become fully developed. The frontal lobes are responsible for higher order cognition such as planning, making memories, and impulse control. An important consideration, then, when making decisions about policies and laws is to align the guidelines with the neuroscientific data, and let scientific evidence guide "typical" development looks like during adolescence. Therefore, to effectively create policies related to adolescents based on neuroimaging data, more research must be done to outline the boundaries of "normal" development.

MIT Neuroscientists Discover Brain Circuit Responsible for Motivation for Learning

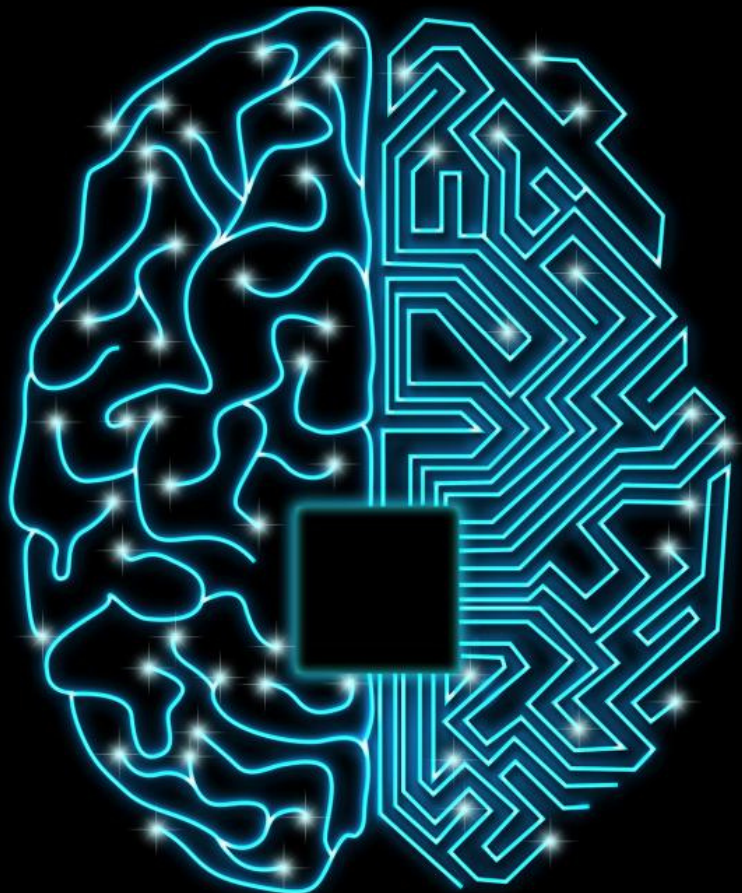
Studies have shown that continually learning helps keep the brain active and sharp as we age, and reduces our chances of developing neurodegenerative diseases like Alzheimer's and dementia. However, finding the motivation to learn may decline as we age. Neuroscientists at the Massachusetts Institute of Technology (MIT) have discovered a brain circuit that may be responsible for making decisions involving cost and reward.

In the study, mice were more engaged in the task when this brain circuit was activated. But, when the circuit was suppressed, mice were disengaged. These results suggest that in addition to normal age-related mental decline, this knowledge could be beneficial to people with mental disorders that interfere with their ability to evaluate situations involving cost and reward.

Neuro News

Sources:

1. Anne Trafton | MIT News Office. (n.d.). Study helps explain why motivation to learn declines with age. Retrieved February 24, 2021, from <https://news.mit.edu/2020/why-learn-motivate-age-decline-1027>





This Month in Science

Sources:

1. Palca, J. (2020, November 09). Pfizer says Experimental Covid-19 vaccine is more than 90% effective. Retrieved February 24, 2021, from <https://www.npr.org/sections/health-shots/2020/11/09/933006651/pfizer-says-experimental-covid-19-vaccine-is-more-than-90-effective>
2. Double-blind, placebo-controlled study. (n.d.). Retrieved February 24, 2021, from <https://www.winchesterhospital.org/health-library/article?id=21849>
3. Palca, J. (2020, November 16). Moderna's COVID-19 Vaccine shines in clinical trial. Retrieved February 24, 2021, from <https://www.npr.org/sections/health-shots/2020/11/16/935239294/modernas-covid-19-vaccine-shines-in-clinical-trial>

Understanding the Potential COVID-19 Vaccines

Recently, companies Pfizer and Moderna have announced that their potential COVID-19 vaccines both have over 90% efficacy.

Pfizer's clinical trial included 43,538 volunteers, 42% of whom had "diverse backgrounds" according to NPR[1]. Each participant received either the real vaccine or a placebo vaccine, 21 days apart. This analysis comes after there were 94 cases of COVID-19 among the participants. Even though the FDA won't approve Pfizer's vaccine for emergency use until there are 164 cases of COVID-19 among the participants, this is an optimistic outcome for a vaccine that has taken less than a year to develop.

Moderna announced that their potential vaccine has 94.5% efficacy. Moderna's clinical trial included 30,000 volunteers. Each participant received two doses of the real vaccine or placebo vaccine, 28 days apart. This analysis comes after 95 cases of COVID-19 occurred among participants. Of the 95 cases, 90 were from participants of the placebo group and 11 of those cases were severe.

Both Pfizer and Moderna use the same technology to create their vaccine, which involves using mRNA (messenger RNA). Additionally, both of their clinical trials are double-blind, placebo-controlled studies[2].

Participate in research from home! Participate in a study about how COVID-19 and the public health crisis environment impacts our behavior.

If interested in participating, visit colelab.org/covid.html.

Breaking the Cycle of Insomnia During the Pandemic

The pandemic has disrupted everyday life in ways that no one could have imagined, and this includes sleep. Studies in China and Europe have shown that isolation affects sleep patterns in both children and adults. The ongoing pandemic and the US elections are high stressors that contribute to high anxiety and sleep deprivation.

Here are a few tips to help get a better night's sleep during the pandemic:

- **Contact your doctor:** If your insomnia is caused by a stressful/upsetting event, the quickest way to get better is to contact your doctor.
- **Get out of bed:** Working from home is challenging and can cause confusion between what's considered a home-space and work-space. Separate the two by not staying in bed with your laptop and getting dressed for the day.
- **Reset your bedtime routine:** Set your schedule to what it was before the pandemic, and do relaxing activities to help prepare your mind and body for bed (read, take a hot shower, listen to music, etc).
- **Kill the screens:** Blue light from your laptop/phone can make it difficult to fall asleep, so keep your technology in a separate place from your bed/room and stop using screens at least an hour before bed.

Health

Sources:

1. Zuckerman, C. (2020, November 15). Break the cycle of insomnia. Retrieved February 24, 2021, from <https://www.nytimes.com/2020/11/14/at-home/insomnia-advice.html>

