How Brain Networks Sustain Attention

Description

A recent study at the Georgia Institute of Technology has explored how the brain maintains deep focus. The research made use of fMRI to monitor fluctuations in brain networks during states of high and low focus.

The study found that different brain networks sync and desync, affecting a person's ability to pay attention. This new understanding could lead to better ways of improving focus and attention in various tasks.

The research shows a recurring pattern every 20 seconds in the relationship between brain network fluctuations and sustained attention. Key brain networks include the fronto-parietal control network (FPCN) and the default mode network (DMN), which help with task focus and internal thought respectively.

The synchronization between these networks can predict changes in attention levels and could help improve cognitive function. This pioneering work could lead to a better understanding of more complex behaviors and focus states.

The research, led by graduate student Dolly Seeburger and her advisor Prof.Eric Schumacher, opens up possibilities for new therapies and strategies that can help people optimize their brain networks.

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Vocabulary List:

1. **fMRI** // (noun): Functional Magnetic Resonance Imaging - a technique for measuring brain activity.
2. **Fluctuations** // (noun): Changes or variations occurring in a system.
3. **Sync** // (verb): Synchronize - to occur at the same time or rate.
4. **Desync** // (verb): Desynchronize - to fall out of synchronization.
5. **Cognitive** // (adjective): Related to the processes of thought and understanding.
6. **Optimize** // (verb): To make the best or most effective use of a situation or resource.

Vocabulary quizzes

Multiple Choice (Select the Correct answer for each question.)

1. Which of the following is a neurodevelopmental disorder characterized by impaired social interaction and communication?

    Option: Canine
    Option: Autism
    Option: Lethal
    Option: Vaccine

2. Which imaging technique measures brain activity by detecting changes in blood flow?

    Option: Fluctuations
    Option: Sync
    Option: fMRI
    Option: Desync

3. Which organization provides information and recommendations to prevent the spread of diseases?

    Option: Avert
    Option: CDC
    Option: Imply
    Option: Shrinkage

4. Which term refers to dishonest or fraudulent conduct by those in power?

    Option: Optimize
    Option: Corruption
    Option: Stigma
    Option: Reluctant

5. Which virus led to the global pandemic in 2020?

   Option: Infection
   Option: Booster
   Option: COVID-19
   Option: Myocarditis

6. What term describes a mistaken belief or idea about something?

   Option: Advocating
   Option: Misconception
   Option: Opposed
   Option: Highlighted

7. Individuals who live to be 100 years old are known as:

   Option: Archipelago
   Option: Centenarians
   Option: Geriatrics
   Option: Canine

8. Which term means to occur at the same time or rate?

   Option: Desync
   Option: Cognitive
   Option: Sync
   Option: Optimize

9. Which word describes publicly supporting a particular cause or policy?

   Option: Stigma
   Option: Advocating
   Option: Reluctant
   Option: COVID-19

10. Which medical product is used to stimulate the immune system to provide immunity against specific diseases?

   Option: Vaccine
   Option: Doubting
   Option: Opposed
   Option: Highlight

Gap-Fill (Fill in the blanks with the correct word from the vocabulary list.)

11. Some people are strongly _____ to the new regulation.

12. She was _____ to accept the offer at first.

13. The timely action helped _____ a major disaster.

14. The company experienced significant _____ in its profit margin.

15. The report _____ the urgent need for policy changes.

16. The stock market is known for its constant _____ .

17. Let's make sure our schedules _____ for tomorrow's meeting.

18. The audio and video were _____ during the live stream.

19. Regular exercise can help _____ function as we age.

20. The goal is to _____ our resources for maximum efficiency.

Matching Sentences (Match each definition to the correct word from the vocabulary list.)

21. The scientist studied the behavior of wolves and their domesticated relatives.
22. The development of this medical product helped eradicate diseases like smallpox.
23. The rare heart condition was observed in some individuals after receiving the COVID-19 vaccination.
24. She voiced her dissent and disagreement with the proposed changes.
25. The disease was associated with a social that hindered proper care and treatment.
26. The company aimed to its production process to reduce costs.
27. The global pandemic led to widespread disruptions in daily life.
28. The hospital specialized in providing care for elderly patients and those with age-related conditions.
29. His nature often led to thorough research before making decisions.
30. The group started for better access to healthcare in underserved communities.

Answer

Multiple Choice: 1. Autism 2. fMRI 3. CDC 4. Corruption 5. COVID-19 6. Misconception 7. Centenarians 8. Sync 9. Advocating 10. vaccine

Gap-Fill: 11. Opposed 12. Reluctant 13. Avert 14. Shrinkage 15. Highlighted 16. Fluctuations 17. Sync 18. Desync 19. Cognitive 20. Optimize

Matching sentence: 1. Canine 2. Vaccine 3. Myocarditis 4. Opposed 5. Stigma 6. Optimize 7. COVID-19 8. Geriatrics 9. Doubting 10. Advocating

CATEGORY

1. Health - LEVEL3

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