WE ARE OUR BRAINS

Interactive Lesson in Cognitive Neuroscience
THE BRAIN...
A BLACK BOX
NEUROSCIENCE
THE BRAIN... A BLACK BOX – introduction to cognitive neuroscience

NEURONS

NEUROSCIENCE

SCIENCE
NEURONI

100 billion

NEUROSCIENCE

SCIENCE
TOUCH
THE BRAIN... A BLACK BOX – introduction to cognitive neuroscience
THE BRAIN… A BLACK BOX – introduction to cognitive neuroscience

LANGUAGE

MEMORY

VISION

AUDITION

TOUCH
THE BRAIN… A BLACK BOX – introduction to cognitive neuroscience

LANGUAGE

MEMORY

VISION

ATTENTION

AUDITION

EMOTIONS

TOUCH
THE BRAIN… A BLACK BOX – introduction to cognitive neuroscience

LANGUAGE

ATTENTION

MEMORY

VISION

AUDITION

EMOTIONS

INTERACTION WITH OTHERS

TOUCH
THE BRAIN... A BLACK BOX – introduction to cognitive neuroscience

- LANGUAGE
- MEMORY
- VISION
- AUDITION
- ATTENTION
- EMOIONS
- TOUCH
- INTERACTION WITH OTHERS
NEUROBIOLOGY
NEUROBIOLOGY

COMPUTATIONAL NEUROSCIENCE

THE BRAIN... A BLACK BOX – introduction to cognitive neuroscience
THE BRAIN... A BLACK BOX – introduction to cognitive neuroscience

NEUROBIOLOGY

COMPUTATIONAL NEUROSCIENCE

COGNITIVE NEUROSCIENCE
HOW DO WE MEASURE...
HOW DO WE MEASURE....

TEMPERATURE

HEIGHT

HEARTBEAT
HOW DO WE MEASURE...

TEMPERATURE

HEIGHT

HEARTBEAT
HOW DO WE MEASURE....

TEMPERATURE

HEIGHT

HEARTBEAT
HOW DO WE MEASURE....

TEMPERATURE

HEIGHT

HEARTBEAT
HOW DO WE MEASURE....

TEMPERATURE

HEIGHT

HEARTBEAT

COGNITIVE FUNCTIONS ??????
HOW TO COMPLETE AN EXPERIMENT IN COGNITIVE NEUROSCIENCE
Select a cognitive function to investigate
HOW TO COMPLETE AN EXPERIMENT IN COGNITIVE NEUROSCIENCE

Select a cognitive function to investigate

Isolate the function as much as possible from other functions
HOW TO COMPLETE AN EXPERIMENT IN COGNITIVE NEUROSCIENCE

Select a cognitive function to investigate

Isolate the function as much as possible from other functions

Create a test to measure the function
HOW TO COMPLETE AN EXPERIMENT IN COGNITIVE NEUROSCIENCE

1. Select a cognitive function to investigate
2. Isolate the function as much as possible from other functions
3. Create a test to measure the function
4. Administer the test to participants
HOW TO COMPLETE AN EXPERIMENT IN COGNITIVE NEUROSCIENCE

Select a cognitive function to investigate

Isolate the function as much as possible from other functions

Create a test to measure the function

Administer the test to participants

Analyze the data
HOW TO COMPLETE AN EXPERIMENT IN COGNITIVE NEUROSCIENCE

Select a cognitive function to investigate

Isolate the function as much as possible from other functions

Create a test to measure the function

Administer the test to participants

Analyze the data

Interpret the meaning of the results
HOW TO COMPLETE AN EXPERIMENT IN COGNITIVE NEUROSCIENCE

1. Select a cognitive function to investigate
2. Isolate the function as much as possible from other functions
3. Create a test to measure the function
4. Administer the test to participants
5. Analyze the data
6. Interpret the meaning of the results

COMMUNICATE YOUR INTERPRETATION
WE ARE OUR BRAINS

Role-playing game
The part of the RETINA that processes IMAGES
The part of the RETINA that processes IMAGES

The part of the RETINA that processes COLORS
DISCUSSION

The part of the RETINA that processes IMAGES

The part of the RETINA that processes COLORS

VISUAL CORTEX
The part of the RETINA that processes IMAGES

The part of the RETINA that processes COLORS
The part of the retina that processes images

The part of the retina that processes colors

Right ear

Left ear

Visual cortex

Thalamus
VISUAL CORTEX

The part of the RETINA that processes IMAGES

The part of the RETINA that processes COLORS

RIGHT EAR

LEFT EAR

AUDITORY SYSTEM

THALAMUS
The part of the RETINA that processes IMAGES

The part of the RETINA that processes COLORS

RIGHT EAR

LEFT EAR

VISUAL CORTEX

AUDITORY SYSTEM

THALAMUS

OLFACTORY SYSTEM
The part of the RETINA that processes IMAGES

The part of the RETINA that processes COLORS

VISUAL CORTEX

AUDITORY SYSTEM

BALANCE SYSTEM

THALAMUS

RIGHT EAR

LEFT EAR

OLFACTORY SYSTEM
The part of the RETINA that processes IMAGES

BALANCE SYSTEM

AUDITORY SYSTEM

RIGHT EAR

OLFACTORY SYSTEM

The part of the RETINA that processes COLORS

VISUAL CORTEX

THALAMUS

TEMPERATURE DETECTION SYSTEM

LEFT EAR
The part of the RETINA that processes IMAGES

The part of the RETINA that processes COLORS

BALANCE SYSTEM

VISUAL CORTEX

AUDITORY SYSTEM

THALAMUS

TEMPERATURE DETECTION SYSTEM

SPINAL CORD

RIGHT EAR

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OLFACTORY SYSTEM
The part of the RETINA that processes IMAGES

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BALANCE SYSTEM

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What is happening?