Northeastern University
College of Engineering

Weekly STEM Newsletter - Week 20 (10/9 - 10/16, 2020) -
Psychology

Introduction

"Can you read my mind?" seems like a very common question non psychologists seem to ask psychologists or people that study psychology. While psychology is the study of the human mind and its behavior, knowing about the brain does not mean you can see people's thoughts. It is more about learning why we do certain things or think certain thoughts. Psychology aims to observe common behaviors and explain why it occurs.

The purpose of psychology is to be able to better predict future behavior from collected research. Once we can better understand the human mind and behavior, we can start to change the negative behaviors and possibly control it better. There are many different areas of psychology. This is because us humans are capable of doing many different things in many different areas, so it makes sense to study our behavior in all these different ways. One area of psychology is Clinical Psychology which is focused on using science and clinical knowledge to understand psychological distress to be able to improve wellbeing. Another area of psychology is developmental psychology which looks at how our thoughts, feelings and behaviors change from childhood to adulthood. Most change occurs during childhood, so this is the area developmental psychologists focus on. Some psychologists are more concerned with how humans learn, study our memory, and try to come up with new learning strategies. This is called Educational Psychology. Cognitive psychology is related in the sense that it is the study of mental processes such as memory, attention, thinking, problem solving, and language use. There are still many more areas of psychology such as Behavioral Psychology, Engineering Psychology, Forensic Psychology, Industrial Psychology, Sports Psychology, and many more.

Northeastern Connections

Faculty Connection

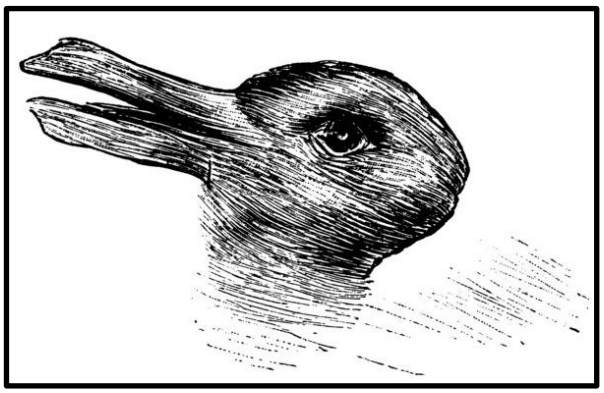
Iris Berent is a psychology professor at Northeastern University that focuses on human's core knowledge, experimental philosophy, experimental phonology (the system of sounds in languages), language and reading. Dr. Beret studies how humans can learn something as complex as language. Like a true scientist, Dr. Beret questions many things like "How much knowledge do we have when we are first born? Is it zero? What do people think?". Dr. Beret's research has looked into different areas of human nature and how much we actually understand of it. So not only does she think about how humans come to learn, but she looks into what humans think about how humans come to learn. Most people seem to think that we are born with no knowledge, but does this view affect our understanding of what we know and our perception of ourselves? This relates to most of us thinking that our minds and bodies are separate but research into this tells us that they are more connected than we think. What is interesting is that the same people that believe that we are born with no knowledge believe that animals could be born with certain skills and abilities, so why not us?

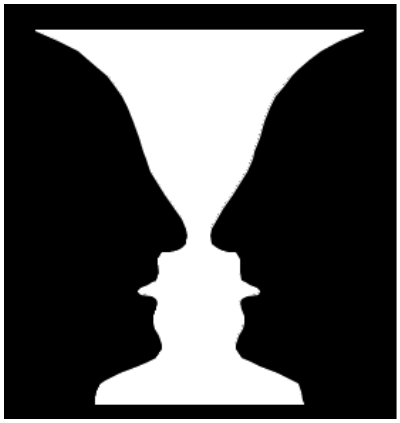
Student Connection

Yolanda Whitaker is a Psychology major at Northeastern University. She did her Co-op (the full-time 6 month employment between her studies) at a lab in the Behavioral Health Partial Program at Harvard Medical School. Her work focused on cognitive processes, which as we explored meant mental processes such as memory, attention, thinking, problem solving, and language use. She chose to look at the specific sections of impulsivity and cognitive interpretation bias. Cognitive interpretation bias is when we interpret neutral information with a certain bias. For example, if someone has a neutral facial expression but someone thinks it is an angry or mean one. Yolanda also had the opportunity to have one-on-one clinical assessments with patients where she used an electroencephalogram (EEG). This is a piece of equipment that is used to measure and study brain activity. This allowed her to collect neuropsychological data for data analysis which will be very useful for her future research. Yolanda has completed an independent research project and hopes to continue to research through pursuing a PhD in clinical psychology.

Do Now

What do you see in the images below:



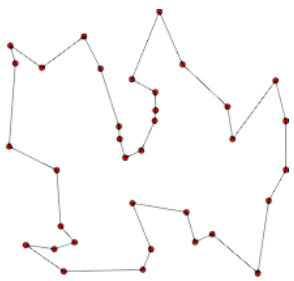


1. Do you see a duck or a rabbit?
2. Do you see an old woman or a young woman?
3. Do you see a vase or two faces?

Did you know that different people see different things at first? Why don't we all see the same thing?

At first, you might think that this has something to do with our eyes. Maybe some people have better eyes? Although this could be a factor, the main reason has more to do with our brains. It has to do with our perception and our past experiences. For the first example, some psychologists believe that the more creative individuals will notice a rabbit first, and can easily switch between seeing the duck and the rabbit. For the second one, older audiences tend to see an old woman (the younger woman's neck is the older woman's chin, the chin is the older woman's nose, etc) first. For the last one, this has more to do with focus. When we spot an object we fail to notice unexpected ones simply because we are focused on another one. Show your family these different illusions! What do they see?

For more optical illusions check out: Optics4Kids | List of: Optical Illusions, Auditory Illusions



Activity

Time to put your thinking caps on! What better thinking cap to have than a brain cap! Our brain is responsible for making all the decisions, storing our memories, thinking, feeling, and so much more. But which section of the brain is responsible for what? And where do all our memories go?

Materials Needed:

You can do this activity two ways: using paper or using paper mache.

If making a paper model:

- 2 sheets of paper
- Glue or tape
- Colored pencils or markers
- Scissors

If using paper mache:

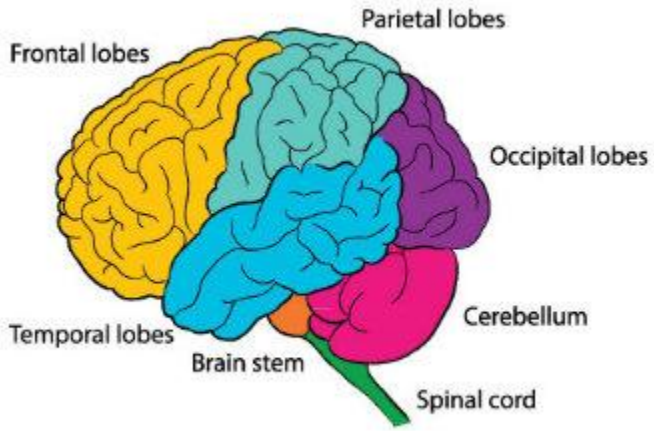
- Poster paints
- Balloon
- Newspaper
- ½ cup of flour
- ½ cup of water

Steps:

Follow this tutorial for the paper model: [Paper Brain Hat Tutorial]

For the paper mache:

1. Blow up the balloon to a size that is closest to the size of your head (make sure the top of the balloon is at least as wide as the top of your head)
2. Mix the flour and water in a bowl and make sure you get rid of any lumps
3. Tear the newspaper into small pieces
4. Dip the newspaper pieces into the flour and water mixture and layer the top of the balloon.
5. Do this until the top half of your balloon is covered in several layers
6. Allow the paper mache to dry. You can add more layers if needed (make more water-flour mixture if needed and make sure each layer dries before adding a new one).
7. Once your "brain" (paper mache) is dry, pop the balloon. Paint the different sections of the brain and label them. Use the image below as a guide.
8. Let the paint dry and have fun wearing it!



Discussion Questions:

- What functions do the frontal lobes offer?
- What are the temporal lobes responsible for?
- Which lobe interprets vision (responsible for seeing color, light, and movement)?
- Which part is responsible for the communication between the brain and the body?

Share Your Results

We'd love to know how the activity and/or the "do now" turned out! What worked and what didn't work? Please share with us something you learned and/or send us pictures! Email us at stem@northeastern.edu.

Related links/Extensions

- Luminosity -- Brain Games to improve cognition
- Optics4Kids -- More optical illusions
- Britannica Kids -- Psychology
- Crash Course Psychology
- National Geographic -- Brain Games Series