

Observation Skills

1. Use the “How observant are you?” activity to demonstrate to the students that memory is not literal. We do not remember exactly what we see, our memories are affected by opinion, expectation, and other subjective factors.
2. Have the students discuss the factors that may affect memory. Then, use the “How observant are other people?” activity to allow the students to see how eyewitnesses may not be reliable.
3. Discuss Perceptual Fallacies and emphasize how the Scientific Method attempts to remove personal experience from the scientific process.
4. Demonstrate the effect that light can have on the way we perceive an object. Set up a dark area with only one source of light. Using either a red, blue or green light bulb, allow the students to briefly look at several colored paper cut-outs of various objects. For example, cut a heart shape from a yellow piece of construction paper, a diamond from a blue piece of paper and so on. Allow the students to look briefly at the cut-outs under red light. Ask them to write down the color of the object. Repeat this using different light bulbs and different cut-outs. You may want to follow-up with a discussion about the properties of light and combining light colors.

How observant are you?

This activity demonstrates our ability to remember details accurately. Testimony about personal experience is frequently used during an investigation. How accurately do people remember what they have seen? What factors may play a role in what we can remember and describe about something we have witnessed? Consider these questions as you do the following activity.

Directions:

1. Observe the [picture](#) for exactly 30 seconds. Look at everything you think might be important.
2. After 30 seconds, answer the questions below on a sheet of paper. (Do not read the questions before you look at the picture!!)
3. How observant were you? Compare your answers to the picture.

Questions:

1. What time was it on the clock?
2. How many people were in the scene? How many males? females?
3. Describe the person at the front of the line. Was it a man or a woman? Was he or she wearing a hat? What kind of clothes was the person wearing? Could you tell how tall the person was? Did he or she have any distinguishing features?
4. What day of the month was it?
5. Did you notice anything unusual in the picture?

Additional Challenge:

Try this activity with another picture. This time, put the picture away overnight and try to remember what you saw in the picture.

Go on to the next Observation Activity.

As you experienced, your own memory can sometimes fool you. But what about other people's memories? Try out this exercise to see how witnesses to the same scene remember different details. Think about how useful an individual's testimony can be. Does it help to have several witnesses to a scene?

Directions:

1. Choose several people to be observers and choose two people to be investigators.
2. Allow the observers to look at the [picture](#) for 30 seconds. The investigators should not look at the picture.
3. After 30 seconds, the investigators should begin questioning the observers. Each Investigator should question each observer. Then, the Investigators should attempt to reconstruct the scene based on the "eyewitness testimony".

Questions for Investigators:

Investigators can use these questions to guide their inquiry, but may also think of their own questions.

1. How many people were involved in the scene?
2. What can you tell about each individual's hairstyle, gender, approximate age, etc.
3. Was there anything unusual going on?

Compare the comments that the observers made. How many details were mentioned? Did some statements conflict with other statements? In what way? Why?

Perceptual Fallacies

Our normal perceptions do not correspond directly to reality. The things that we perceive (see, hear, smell, etc.) are not entirely determined by what our senses detect. Our perceptions are also determined by what we expect, what we know, what we believe.

* Our perceptions are not photographs they are *constructions*-something that our minds manufacture

* what we perceive is partially determined by what we know or believe

- * constructive perception has survival value - helps us make sense of the world
- * So, seeing is not necessarily believing. Here's why:

Perceptual Constancies

Our tendency to have perceptual experiences in the absence of stimuli

- * color constancy
- * We often perceive an object to be a color because we expect it to be a certain color. EXAMPLE: If you have a cutout of a tree and a donkey both made from green material, and lit by red light, people will often perceive the cutouts as green trees and gray donkeys.
- * You can have left brain/right brain conflict when reading words that are a certain color. [Try it yourself!](#)
- * We also perceive color sometimes when it is physically impossible. EXAMPLE: The vision cells in the center of the retina are the only ones that can see color. Therefore, we should only see color in the center of our visual field. Objects in our peripheral vision should not appear in color. But we see color throughout the field. Why? Color constancy! Try looking at colored objects with your peripheral vision - what do you see?
- * size constancy - learned perception (does a truck driving in the distance get smaller?)
- * You perceive the size of familiar objects (like a truck) to be the same size no matter how far away they are because you know that distance doesn't change the size of an object. However, the size of the image on your retina shrinks as an object moves away from you.
- * There is a tribe called the Ba Mbuti that provide evidence that size constancy is learned. This tribe lives in a thick jungle where they never are able to see more than a few yards away. When taken into a field and shown buffalo in the distance, they

asked what kind of insects they were. When told that the animals were buffalo, the tribes people thought it was witchcraft.

Expectation

We perceive what we expect to perceive

* Flashing light experiment- subjects were told to walk down a hall and stop walking when they saw a light flash. Many subjects stopped walking despite the fact that no flash was given. They simply expected a flash and believed they saw one. Similar experiments have shown subjects who could feel warmth, smell an odor, or feel an electric shock because they expected to.

* We have all experienced such hallucinations. Have you ever seen the hands on a clock move only to find out that the clock didn't run? Have you ever heard the phone ring when you were in the shower, but later found it had not rung at all?

* What other experiences have you had that may have been due to expectation?

Looking for Clarity in Vagueness

When our senses are confronted with a formless stimulus, we often perceive something distinct. We look at clouds, smoke, fuzzy paintings and see shapes that are familiar. This illusion is called pareidolia. Many cases of pareidolia are common:

* Man in the Moon - cultural example

* Samoans see a woman weaving

* Chinese see a monkey pounding rice

* East Indians see a rabbit

* Jesus' image in a tortilla - famous case of a housewife in New Mexico who found the shape in the skillet burns and took it as a sign of Christ's second coming.

* Messages in rock music

* Man in the shadows - Do you ever feel as though someone is following you?

* UFOs - we try to make something familiar out of a vague object.

* **The Blondlot Case and N-rays** - famous case in which scientist Rene Blondlot announced the discovery of N-rays, which could be detected by the human eye and were emitted by metals. They apparently increased the brightness. Blondlot claimed that this type of radiation was blocked by lead. Scientists could not reproduce his results because the experiments were entirely subjective. Another scientist named Wood challenged Blondlot while participating in a test of N-rays. He told Blondlot that a lead sheet was in place when it was not, and Blondlot claimed to see the rays. Wood then placed the lead sheet in front of the source of N-rays and Blondlot claimed to see the N-rays. Blondlot's observations depended entirely on his beliefs, and were not correlated to when the sheet was actually in place.

Memory

our memories are constructive, not literal

imagine a scene.....How do you look at it? Recall a scene - do you look at it through your own eyes?

Car accident film - hit vs. smash and long term memory - if people watch a car accident on film and are asked a question after viewing the scene, the wording of the question affects how the subject remembers the scene. When asked "How fast were the cars going when they smashed?", subjects reported faster speeds when asked about it again later than subjects who were asked, "How fast were the cars going when they hit?"

Selective memory - Dreams, we have over 250 a night but only remember a few of them, if any.

Judging

We can lead ourselves to believe that something is paranormal or supernatural when it actually isn't

Have you ever had a friend call just when you were thinking about them? It may seem strange or paranormal, but there are many more times when you think about someone or something and nothing related happens.

What are the chances that 2 people out of a party of 23 have the same birthday? $1/2$ ----- $1/1000$ ----- $1/40$ ----- $1/2020$

(the answer, surprisingly, is 1 in 2!)

How many things happen to you in the course of a day? Incredible pairings are more likely than you think.

Science is a systematic attempt to get around these limitations. Science tries to remove personal experience from the scientific process.

The Wife Puzzle

A lovely cashmere sweater was found torn to shreds (What a Crime!!) on the sidewalk in the international quarter.

The sweater police talked to six witnesses, including the shredder. The six were very open about what had happened. The only trouble was that none of them spoke any language the police could understand. Nevertheless, the police were able to piece together the following information:

1. The witnesses were three men and three women: Fred, John and William; Gloria, Gilda, and Barbara
 2. The men were married to the women, though not necessarily in the order listed.
 3. William's wife was the cashmere murderer.
 4. Fred speaks and understands only Basque.
 5. John is bald.
 6. The couple who live next door to Gilda and her husband have the same color hair she does, and speak both Spanish and Basque.
 7. William's wife recently gave Barbara a home permanent.
 8. Gilda's husband speaks only French.
- Who destroyed the lovely sweater?

Solution to the Wife Puzzle

If you can identify William's wife, you'll know the shredder.

William's wife isn't Barbara, because the former gave the latter a permanent. William's wife must be either Gilda or Gloria.

Fred's wife isn't Gilda, because he speaks only Basque and her husband speaks only French. So Fred's wife is either Gloria or Barbara.

If John is bald, he doesn't live next door to Gilda and he doesn't speak Spanish and Basque.

Therefore, John must speak French and be married to Gilda. Only Gloria can be William's wife and the horrible cashmere shredder.