Visual Representations in Cognitive Research

Visual representations are pictorial images that help explain abstract ideas and provide evidence that is difficult to observe in another way. They also help researchers obtain clarity for a better understanding of certain phenomena. Three examples of visual representation that are useful in cognitive research include neuroimaging, diagrams, and photographs.

The first example, neuroimaging, includes fMRI, a non-invasive method that is able to produce thorough images of brain activity using strong magnetic fields and radio waves. This has been very useful for important research around brain functioning disorders by providing a visual representation of what is happening inside the brain. A research study done by Baron-Cohen et al., used fMRI brain imaging in understanding social intelligence in high functioning autism. The fMRI was useful in demonstrating that “the STG and amygdala show increased activation when using social intelligence” in normal subjects, while “patients with autism or AS activated the fronto-temporal regions but not the amygdala”.

The second example, a diagram, is a straightforward drawing that portrays the appearance, composition, or function of something. A graph is an example of a diagram that compares the relationship between two or more variables. When scientists collect data that is highly quantitative and numerical, graphing allows a visual organization of this data so researchers can better observe patterns. For example, if a researcher wants to understand the relationship of a person’s mood and the time of day, representing the data by plotting it on a graph can make it easier to see a trend.

Lastly, a photograph is a useful visual representation in cognitive research. A photograph captures an instance of reality that can then be referenced and analyzed repeatedly for an indefinite amount of time. For instance, if a researcher wanted to understand a particular facial expression triggered by certain emotional events, photographs could be taken of the person’s face during particular events and then compared. Using photographs as visual representation makes it more efficient and accurate than physically observing each time.

It is apparent that visual representation is significant in cognitive research. It allows for more efficient and effective analysis by creating a clearer understanding of certain phenomena, as well as a tool in presenting data and results of research. Neuroimaging, graphs, and photographs are three examples that demonstrate the usefulness of visual representation in cognitive research.