Why is perception an important aspect of survival

Perception is important because it keeps us connected to the world. Perception helps to keep us alive. We are able to sense danger by a constant key mediator between stimulus and response. The knowledge gained from perception is equally as important as any of the other senses, if not more important. Perception allows us to see danger from a far, helps us discriminate and identify objects we encounter with everyday.

Perception is basically a pattern-recognition process coupled with some functional consequences for the system which performs such pattern-recognition. (Moreno, P. 67) Perception involves the eye and the visual cortex of the brain working together. Our eyes are the organs that provide visual sensory input to the brain. Light from the outside world reflects off objects and passes into the eye through the pupil. It is focused by a lens then strikes the retina at the back of the eye. The retina is effectively a two dimensional array of cells. These cells are photosensitive, and output different signals to the brain according to the type of light that stimulates them. The retina therefore provides a two dimensional image called a retinal image. It provides a rapid assimilation of information from the environment to help guide our actions. (Schwartz, P. 30) At higher levels of processing, perception and cognition are closely interrelated, which is the reason why we’re able to see and understand the events, and objects around us. However, sometimes “ no one can perceive 100% of all things at times” (Brignall, P. 2) perception isn’t always reliable when it comes to illusions.

The perception process includes selection, organization, and then interpretation. Selection happens when we select the stimuli through our visual sense. Next step is organization, and one of the greatest contributors

was Gestalt. The Gestalt’s principle explains that our visual system has its own rules when organizing images. Therefore, we can easily see patterns presented in certain ways. Gestalt’s principle listed the five different patterns we encountered. Similarity occurs when objects look similar to one another. People often perceive them as a group or pattern. Continuation occurs when the eye is compelled to move through one object and continue to another object. The viewer’s eye will naturally follow a line or a curve despite if there was a gap in between. Closure occurs when the viewer automatically can tell what the object is even if there is an incomplete or a space missing in the picture. Our visual system can automatically perceive it as a whole even if there are missing information. Proximity occurs when single elements are placed so close together that they tend to be perceived as a group. When the unity of the elements comes together, it can be perceived as one huge object. Finally, figure and ground occurs when an object (figure) stands out from the background (ground) this will effectively make the image clearer. (Saw, P. 1)

Studying Gestalt’s theory gives us an understanding of how our visual system works when we perceive the world. Gestalt said, “ The whole is greater than the sum of the parts,” which eventually led to the focus on the relationship between the parts and the whole of a composition. Since the visual world is so complex, our mind has developed strategies for coping with the confusion. The mind tries to find the simplest solution to a problem. One of the ways it does this is to form groups of items that have certain characteristics in common.

The last step of the process is interpretation; we attach meanings to the stimuli. The meanings can vary depending on our beliefs, values, expectation, and other personal factors. Hence, the reason no one perceives an object the same way.

In addition, it is important to acknowledge the reason why our eyes are located in the front and not the side. The position of our eyes gives us the ability for depth perception. Some animals have eyes on the side of their face and though they lack depth perception, they can see a wide angle of their environment in which we can’t see. Depth perception is the most essential tool in surviving. For an example, depth perception allows us to tell if a car is coming closer and thus we take precaution and move out of the way. However, a bird for instance has eyes on the side of its head. When a car drives by the bird will lack the ability to tell how far the car is from it. As a result, sometimes there are dead flattening birds on the streets.

Another important aspect of perception is the fact that it helps us to detect, discriminate, identify. Detect requires less effort, it is as simple as locating a candle light in the dark. While discriminate is a bit more difficult, we have to learn to determine whether two stimuli is the same or different. Identification will require more effort from our system; we have to learn to identify a precise object, an example is determining the stripes of snake to determine which one is safe and which is poisonous. (Sekuler, P. 112-115) Every day we have to discriminate and identify unknown objects we cross by and we succeed with the help of our visual system. Our visual system analyzes all the features of an object, the shadings, the colors, the size, the shape, in order to identify the known and unknown objects. By adopting and gaining

knowledge from our visual sense, it allows us to live in harmony with the objects and deal with events around us. It helps us get through life without bumping into too many things, to find and acquire the right food, use power tools, calculate how far an object is away from us, how fast it is travelling, how fast we are travelling and how much if any to alter our course to avoid colliding with other objects.

Our eyes are very unique, only humans and certain animals can use their sight to its full capacity. We get to see the world as a three dimensional sphere with a high degree of accuracy. The fact that each eye has a slightly different view of the same object helps us judge the distance between us and the objects around us. Depth perception is one of the most important aspects of survival that depends on our vision. Convergence is when both eyes focus on an object helping us determine the distance between us and the object, which is obviously important in our daily lives. We take this natural skill for granted while it’s one the most fascinating advantages we have as humans. In the 19th century Ewald Hering came up with a system for convergence. “ Hering proposed a mechanism to account for eye conjugacy known as Hering’s law of Equal Innervation. According to this law, the two eyes move in a conjugate manner because receive identical signals from the brain.”(Moschovakis, P. 1118) While we consider our sight as nothing but vision, with disturbance in one of our eyes it could lead to serious psychological disorders.

Optometrist, are doctors specializing in eye care, dealing with anything from prescribing vision glasses to minor surgeries. Unfortunately in situations like loss of sight in one or both of the eyes because of a serious condition or a

devastating accident doctors are usually helpless. “ Sudden loss of sight in one eye or the loss of an eye often necessitates immediate and extensive medical and psychological intervention. From this loss, patients will experience sudden loss of depth perception, decrease of visual field and, most frequently, depression.” (Ihrig, P. 593) Such serious complications with valuable organs can change our lives forever. People face these issues frequently as a result of conditions of their work and especially during war as soldiers. Acquired Monocular Vision Rehabilitation (AMVR) is a program designed to help people with newly developed problems with one of the eyes. “ This program organizes vision rehabilitation, eye care professionals, and social caseworkers to help patients cope with the obstacles they face when suddenly transitioning to monocular vision.” (Ihrig, P. 594) With help, patients with newly acquired monocular vision can learn skills to help them overcome depression and get the most out of the situation.

Monocular vision impairs movement of the body over all. “ Monocular viewing results in the loss of binocular visual cues and leads to strategic changes in visuomotor processing by way of altered safety margins.” (Jackson, P. 237) people with monocular vision have altered perception of objects. Instead of converging with both eyes to see details of depth, the image is put together as a whole by one eye to be perceived for what it is. Objects appear different size then they actually are which in return alters how a person would normally figure out the distance between the person and the object. Therefore perception of the world around the person changes drastically. Obviously binocular vision is going to be superior to monocular in nearly every way, that’s why naturally humans have two eyes.

Monocular vision has an advantage in persistence tasks based on seeing things as a whole by bringing everything together. A model of visible persistence based linear systems supports that idea. “ If we assume that the goal of the visual system is to detect change, then the various counter – intuitive findings become less counter – intuitive. Factors that improve vision will improve the likelihood of detecting change. Bright lights, long lights, and binocular viewing make it is easier to detect change. Because persistence is the failure to detect change, these same conditions lead to shorter persistence estimates.” (Wolford, P. 162) This idea makes sense, people that deal with sight through one eye would have to focus more on getting around, all of the pressure on a single eye would mean that a person would have to struggle to see everything relative to survival meaning focusing on what they perceive at the time to sort things together to see the main picture. In this case binocular vision would certainly promote higher concentration on the surrounding which in return would result in much better attention to details and seems like it would help the brain process more information. In that case almost every other visual task is certainly superior with binocular presentation.

“ Beyond its relevance to perceptual theory, the study of monocular information about egocentric distance is important because a large proportion of the general population is effectively monocular. A reasonable estimate of this proportion is 15-20%, including those with anisometropia, amblyopia, and strabismus as well as one-eyed individuals.”(Bingham, P. 145) Several experiments were performed to distinguish precise difference in depth perception. Research in perception of distance with monocular vision

showed expected distortions within results. “ The most common result has been that distances are systematically underestimated on the basis of monocular optical flow. When estimates are plotted against actual distances, the slope of the judgment curve is significantly less than 1. Different distortions have been found when estimates are based on static binocular information. In this case, near distances tend to be overestimated and far distances underestimated. (Bingham, P. 146) Results also showed that touching an object as feedback to strengthen perception of distance was not in any way helpful to monocular viewing. “ In conditions representative of normal everyday reaching, reaches performed with monocular vision reflected compression of perceived distances and decreasing resolution of distances as distance increased. In contrast, binocular reaches were accurate and relatively precise.”(Bingham, P. 165)

“ In conclusion, previous studies that have investigated the effects on reach-to-grasp movements of removing binocular vision have yielded conflicting results. By one account, monocular vision results in impairments to size-constancy mechanisms and produces, as a consequence, underestimates of target distance and object size. By a second account, removal of binocular visual cues leads to increased visuomotor uncertainty and produces strategic changes in visuomotor safety margins. In the current study, we demonstrate that evidence consistent with each of these accounts can be observed within a single study.”(Jackson p. 240)

Most of the time, the interpretation of the received energy is consistent with it. Sometimes, however, our interpretation is incorrect and perception is not always perfection. These misinterpretations are called illusions. An illusion is

a sensory perception that causes a false or distorted impression, or a misrepresentation of a “ real” sensory stimulus When we observe an illusion, we perceive something that does not correspond to what actually exists in the real world. They convince us of things that are not true. In many visual illusions, the perceived features of an object such as its size or orientation are influenced by nearby objects. In contrast, the presence of nearby, fixed objects often enhance the perceived spatial location of another object. This “ visual attractor illusion” was stronger when the attractor object was task-relevant rather than irrelevant and diminished as the experiment progressed, suggesting that it was modulated by attention. We suggest that the brief appearance of an object (the attractor) distorts perceptual space and draws in the perceived location of a neighboring object. Alternatively, localization of a masked target may be weighted toward the position of a concurrently presented visual transient. (Makovski, P. 5) We can perceive the continuity of an object or event by integrating spatially/temporally discrete sensory inputs. The mechanism underlying this perception of continuity has intrigued many researchers and has been well documented in both the visual and hearing modalities. It is important that the illusory continuity of the vibration cannot be distinguished from the physically continuous vibration. These results therefore suggest that the continuity illusion is common to multiple sensory modalities and that it reflects a fundamental principle of perception. (Kitagawa, P. 2)

Many common perceptions involve illusions although people are not aware of it. Illusions are misperceptions that are perceived by most people, and are based on a specific stimulus received under certain conditions. The example

of this vision illusion is that we often seem to enjoy being tricked in this way! Magicians use illusions. In fact, magicians are sometimes referred to as illusionists. Famous magicians, like the great Harry Houdini, admit that what they do is to create illusions. They do not do the impossible, they just seem to do it. Also, people get the illusion of depth in paintings, stereoscopes and holographs, even though these are presented to us on two-dimensional surfaces. Another good example of an illusion which we simply take for granted is the motion picture. Actually there are two illusions involved when we go to see a movie. The first is that there is really nothing moving as we experience the film. That is not quite correct. What is moving is a series of still photographs on a reel of film. Each is exposed for only a very short time and our eyes and brain to not see the separate still shots but see figures on the screen moving quite naturally. The second part of the movie illusion is the sound. When an actor speaks we fully accept that the words are coming from his or her mouth. The fact is that the sounds are actually coming from speakers well off to the side of the screen and possibly even in back of us. Yet as the actor walks across the scene we accept that the words are coming from his or her mouth from a different spot on the screen-a misperception, and therefore an illusion.

Perception of color is achieved in mammals through color receptors containing pigments with different spectral sensitivities. The process of color perception is literally all in the mind, with the eye containing the equipment which responds to light so that the brain can process it. Color perception is important for many animals because it can be used to distinguish more of the natural environment, and because colors are often used as sign. For

instance, poisonous mushrooms are sometimes brightly colored as a warning. Color perception changes across the visual field. Sensitivity to red-green color variations declines more steeply toward the periphery than sensitivity to luminance or blue-yellow colors. It is thought that this decline is due to the increasing size of receptive fields of parvocellular retinal ganglion cells and the unselective or random contribution of L- and M-cones to the receptive field surround.(Hansen, P. 12) Besides, Newton suggested that colors be arranged in a circle with white at the center and the spectral colors/hues (red, orange, yellow, green, blue, indigo, and violet) around the circumference, where the more “ desaturated” a color, the closer it is to the center of the circle. Newton also had the idea of representing a given color’s quantity by a small circle drawn about the position of the color on the large circle, and the area of the small circle was thought to be proportional to the quantity of the color. According to Newton, the position of a mixture of colors could be determined by calculating the center of gravity of the weighted individual components. Newton’s color mixture law states that if two color mixtures yield the same sensation of hue, then the mixture of these two mixtures will also yield the same hue sensation. Also, his synonymous law of equilibrium in color mixing refers to the mixture of two hues to yield an intermediate hue. (Grassman)

Furthermore, People perceive colors categorically. But what is the role of the environment (or nature)–specifically, language–in color perception? The effects of language on the way people categorize and perceive colors have been considered to be minimal, but recent evidence suggests that language may indeed change color perception. Compared with colors from the same

lexical category, discrimination of colors from different linguistic categories provoked stronger and faster responses in the left hemisphere language regions, particularly when the colors were presented in the RVF.(Paul Kay).

According to the dictionary, Perception, in psychology, is described as the mental organization and interpretation of sensory information.