Week 2 Assignment
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Part 1:

a. The brain stem is a part of the nervous system that is particularly susceptible to injury simply because it is located at the back of the neck, where it is relatively exposed compared to most of the nervous system. Injury to the brain stem can cause “locked-in syndrome” which causes patients to become “unable to move or communicate”(Kraft) save through eye movements and blinking. Injury can also be a “very fatal health condition”(Kraft) as the brain stem is responsible for regulating crucial functions like heartbeat and breathing.

b. Being a part of the brain “essential for learning and controlling movement”(Bastain), damage to the cerebellum is unfortunate. Damage to this area leads to “poor motor control”(Bastain), such as irregular reaching motions and poor targeting. Currently it is to our understanding that the cerebellum does “not impair primary sensory functions”, however some studies show that it “plays a role”(Bastain) in the perception of visual motion, meaning that coordination could be inhibited by damage to this area of the brain. Damage to the cerebellum also impairs a process “referred to as adaption”, which acts to account for a “predictable new demand”(Bastain) for movement to take place. Overall damage to the cerebellum causes significant impairments in function.

c. Damage to the cerebral hemispheres significantly inhibits function of the central nervous system, with each hemisphere inhibiting unique functions. Damage to the frontal lobe causes “loss of the ability to solve problems”, while damage to the back of this lobe can cause “weakness of paralysis”(Huang). If the middle of this lobe is damaged, people may become apathetic and “thinking becomes slow”. Damage to the back causes people to have “difficulty expressing themselves in words”(Huang), which is called Brocas Aphasia. Damage to the front of this lobe may cause “difficulty temporarily holding information” in working memory, “reduced fluency of speech”, apathy, inattentiveness, delayed responses to questions, and a lack of inhibition (Huang). Damage to the parietal lobe causes people to be less aware of “how the body relates to the space around it”(Huang), as this part of the brain is heavily involved in spatial perception. Damage to the left part of the temporal lobe means “memory for words can be drastically impaired”, while damage to the right may cause “memory for sounds and music to be impaired”(Huang). If the occipital lobe is damaged, people “cannot recognize objects by sight” though they may be “unaware they cannot see”, a disorder “called cortical blindness” (Huang).

d. Damage to the hippocampus may cause what is known as “anterograde amnesia”(Myers). This refers to loss of “ability to form new memories”, while older memories “may be safe”(Myers). Thus someone with damage to the hippocampus may be recall events before the injury but may have relatively little memory after.

e. The amygdala is responsible for emotion and decision making. It is involved in cognitive function assessing risk and deciding whether or not a risk is worth taking within a certain situation Thus damage to this area of the brain causes people to be more likely to take “bigger risks with smaller potential gains”(Moisse).

Part 2:

Prevention of concussions in sports is as simple as preventing head injury, which proves to be very difficult considering that many sports involve close contact at high speeds. Concussions are “usually caused by a blow to the head”(Mayo Clinic Staff), and as such using helmets can be effective at preventing or mitigating injury. Despite this there is relatively little to be done besides using protection to avoid concussion. Concussions are particularly common for people who play a “contact sport, such as football”(Mayo Clinic Staff). Most people recover fully after a concussion, however there may be other risk factors for post concussion syndrome such as a “history of depression, anxiety, PTSD”(Mayo Clinic Staff) and others. Athletes should “never return to play or vigorous activity”(Mayo Clinic Staff) when signs and symptoms of a concussion are present. A second impact on a concussed brain may result in “rapid and usually fatal brain swelling”(Mayo Clinic Staff) presenting a real danger to concussed patients without a diagnosis. Practicing regular exercise can “improve balance” which helps prevent concussions by avoiding injury in the first place, as well as “educating others about concussions”(Mayo Clinic Staff) in order to prevent injury from taking place. While concussions present a real danger to athletes, they can be avoided.

Part 3:

Illusions can bring us happiness because they are entertaining and engaging. Looking at illusions gives us an entertaining way of taking a look at the world through the eyes of an artist, who sees how we examine the world and is able to create an illusion which tricks us into seeing something which we think we cannot see. Because illusions trick us and cause us to be inclined to focus on and re imagine what we are seeing, they bring happiness into our lives. In my own life, happiness is a rare but welcome sensation as I usually seek contentment over happiness recognizing the close relationship between happiness and illusion. I find happiness in people who I connect with and who show me the world is not as cold as it often seems, as well as learning new skills and tools which I can use to protect myself from the things that make me unhappy. Happiness to me is somewhat faceted as I rarely am able to find it alone, it usually comes from others and takes place outside of my influence alone.

One illusion covered in the video is called “Crazy Nuts” by Jerry Andrus. This illusion uses two dimensional shapes which are made to look three dimensional in order to demonstrate the shallowness of our initial perception and show us that objects may not always have the texture we initially interpret them to have. Another illusion is known as Haemakers Cube, which uses a three dimensional object with curved lines to show that objects are not always constructed how we initially view them. The curved object appears to have straight lines until it is rotated. Kitakoa’s perceptual drift illusion uses still two dimensional objects to demonstrate the illusion of motion. Looking at a still image we see the illusion that the objects are moving because of the way in which they are laid out.

Synesthesia is a condition which is often both useful and burdensome to artists. Resulting from the brain mixing senses, synesthesia causes people to hear colors, see sounds, and encounter other experiences of mixed senses. This can be beneficial to artists because they can hear how their music sounds just by seeing it written, but can also be confusing because extensive visual stimulus can be distracting for artists who are trying to create music. Some synesthetes report “experiencing sensory overload”(Carpenter) which makes it difficult for them to function with this condition. As such some musicians with synesthesia use blindfolds when preforming in order to prevent their vision from interfering with their music. Synesthesia can also make people much more aware of their surroundings. The most common form of synesthesia is “sounds, music or voices seen as colors”(Carpenter) which allows people to be visually aware of their surroundings simply by hearing what is happening near

them. This means increased spatial awareness which can be useful in situations where someone is under threat and extensive understanding of the proximity is necessary in order to act and mitigate the threat.

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