Sensation converts energy into nerve impulses

Neuroplasticity: Our ability to adapt gives us the ability to survive. Each system has a different method of adapting.

Perception interprets nerve impulses. All this data is compiled to give us a rough shape of the world and allows us to interact with the environment

Vision: Light > Photoreceptor > Photo activation > Neural activity > Awareness

Sensation: Stimuli to nerve impulse

The image is upside down in our retina, but our brain flips the image so we correctly see the image. Neuroplasticity allows us to adapt.

Visual shift results from adaptation of signals coordinating visual and motor systems. People are able to adjust this new orientation, and when the goggles are removed, people continue to make mistakes with their original eyes (no goggles). Learning new types of motor tasks is a collaboration between visual and motor systems.

Perception fills in the void of unattended and missing information. In hemi-spatial neglect a person ignores the left side of the world. They see everything normally but just don’t register it.

The blind spot is filled in by the context. Our brain automatically fills in this void according to context. Your brain adds context that does not exist; it makes it up for a seamless experience.

We only pay attention to a limited set of information in the environment.

Change blindness: Even with directed focus, attention limits lead us to miss information. You have to direct attention to it.

Attention is a dialogue between bottom-up and top-down processing.

Brain assumes: Light from above

If you turn your head, the other side would be assumed as spheres

Brain assumes: Like objects are grouped together and helps you determine if a stimulus is friend or foe

Objects grouped together, move together. Most people can automatically perceive that the person is walking toward you. We can even detect sex and physical traits just by biological motion. Biological motion reveals emotional state. And you can determine how you should interact with a human being.

With minimal information you know how to interact with a person. Just by their biological motion you can tell their sex, emotion, weight, etc.

Information is compressed as it moves to V1. It is captured by the eyes, travels to the retina, then the optic tract.

There is a lot of compression of information. A lot of burden is put on the primary visual cortex.

The curious case of a patient TN

He cannot see what is visually infront of him. However, even though is primary visual cortex is destroyed on both sides, he can still display some visual processing. When he was showed a picture of an angry person, he showed a flinch response. Patient TN still responded to the angry face.

Emotional blindsight

Action blindsight

Blindsight functions by subconscious activity in secondary visual pathway. TN is able to identify threating stimuli and orient objects and some levels of motion. Some primitive levels of motion still remain intact and active.

TMS = Transcranial magnetic stimulation

Uses magnetic pulses to stimulate a specific brain region, and activates that region of that brain temporary. You can direct a pulse to the primary visual cortex and create a blindsight for a normal person. A person will still be able to orient their hand correctly to match the arrow