2e | Summary of the Brain: Structure and Function

In summary, we began this module by talking about some of the basic structures of the brain.

We first talked about the Phylogenetic Division which contains the hindbrain, which contains some of the most evolutionarily primitive structures; responsible for transmitting information from the spinal cord to the brain, regulating life support functions, and helping to maintain balance. And the midbrain which contains many "relay" centres to transfer information between brain regions. And then the forebrain which contains the thalamus, the hypothalamus, hippocampus, amygdala, and the cerebal cortex, structures that are mostly directly implicated in cognitive processes such as memory, language, planning, and reasoning.

Within the forebrain we spent a little bit more time talking about the cerebral cortex and the four different lobes of the cerebral cortex. These are the frontal lobes which are involved with movement, planning, and executive functioning, the parietal lobes which are involved with reception and integration of sensory information and spatial processing, the occiptal lobes which are involved with processing visual information, and the temporal lobes which are involved in processing auditory information as well as information about taste and smell.

We then talked about some traditional methods for determining the localization of brain function and how it has been inferred from studies of patients with focal brain lesions. Here, we also talked about double associations and how they are a very informative means of isolating specific functions to specific brain regions.

We ended this module by talking about brain imaging techniques. There have been a variety of modern techniques that have been developed to measure the function of the brain during cognitive processes. We briefly talked about CAT scans, MRI, PET scans, fMRI, and ERP.

When designing functional neuroimaging experiments and analyzing them researchers typically use the subtractive technique. This technique provides a means of isolating cognitive processes and brain regions whose activity varies in an experimental task compared to a control task.