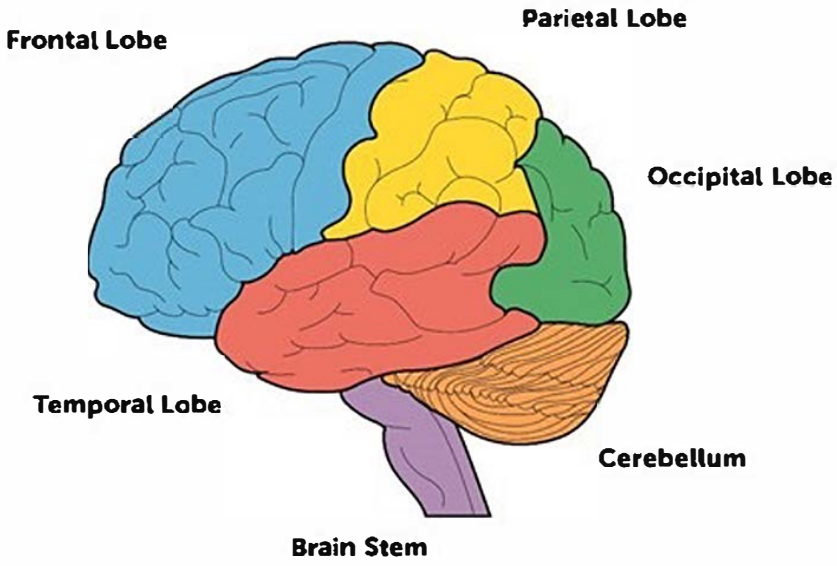
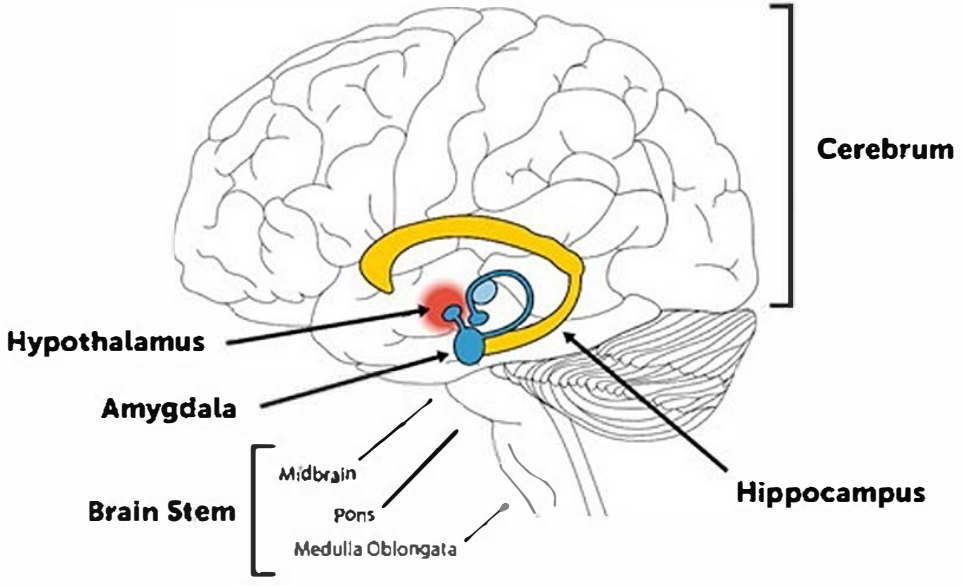
Summary of Brain Anatomy: Behavior and the Brain

ZERO TO THREE





Handout 6.1

Behavior Skills and the Brain Worksheet

For each behavior listed on the left, fill in the specific area(s) of the brain associated with that behavior in the right-hand column.

Areas of the brain: Brain stem, hypothalamus, amygdala, hippocampus, frontal lobe, parietal lobe, temporal lobe, occipital lobe

BIRTH–9 MONTHS	AREA OF THE BRAIN
1. Strong heartbeat	1.
2. Cries to indicate need/wants	2.
3. Responds to familiar faces	3.
9–18 MONTHS	**AREA OF THE BRAIN**
1. Begins to say "no"	1.
2. Separation anxiety	2.
3. Points to common objects	3.
18–36 MONTHS	**AREA OF THE BRAIN**
1. Asserts independence	1.
2. Plays "pretend" with other children	2.
3. Show fears of objects (monsters, dark)	3.
36–60 MONTHS	**AREA OF THE BRAIN**
1. Shows empathy toward other children	1.
2. Takes turns and shares	2.
3. Begins to understand right from wrong	3.

Handout 6.2

Glossary of Brain Structures

Amygdala: The brain structure responsible for analyzing the emotional significance of events, and perceiving and expressing emotion (e.g., happy, sad, scared). The amygdala is present at birth but undergoes significant structural and functional development across infancy and early childhood (Callaghan & Tottenham, 2016; Society for Neuroscience, 2016). When you experience highly charged emotional reactions, such as seeing a dog that is running toward you, looking like he may bite you, it is your amygdala that is being activated.

Brain stem: The brain structure that connects the spinal cord to the forebrain, or upper brain. The brain stem receives input from the body and sends input back to the body to regulate basic processes such as the functioning of our heart and lungs. The brain stem controls reflexes and involuntary processes like breathing and heart rate. The brain stem is partly responsible for our "fight, flight, or freeze" response when we are experiencing stress (Siegel, 2010).

Frontal lobe: One of four lobes of the cerebral cortex, used to make decisions, such as what to eat and drink, as well as for critical thinking. This is where personality is formed and where we carry out higher mental processes such as planning.

Hippocampus: The brain structure responsible for the storage of long-term memories as well as for the memory of the location of objects or people. The hippocampus develops gradually during our early years and continues to grow new connections throughout our lives (Siegel, 2010; Society for Neuroscience, 2016). We would not be able to remember where we parked our car in a parking lot without the work of the hippocampus.

Hypothalamus: The brain structure responsible for controlling our body temperature, thirst, hunger, sleep, circadian rhythm (our sleep/wake cycle), moods and emotions, stress reactions, and the production of many of the body's essential hormones that help control different cells and organs (Society for Neuroscience, 2016).

Occipital lobe: One of four lobes of the cerebral cortex, the occipital lobe enables us to correctly understand what our eyes are seeing. It works very fast to process the rapid information we are taking in through our eyes. Just as the temporal lobe makes sense of auditory information, the occipital lobe makes sense of visual information so that we are able to understand it. If our occipital lobe were impaired or injured we would not be able to correctly process visual signals (Society for Neuroscience, 2016).

Parietal lobe: One of four lobes of the cerebral cortex, the parietal lobe processes sensory information such as taste, temperature, and touch. This processing happens almost instantaneously. A person would not be able to feel sensations of touch and temperature and would even be partially or completely unaware of his own body if the parietal lobe were damaged.

Temporal lobe: One of four lobes of the cerebral cortex, the temporal lobe is responsible for hearing and selective listening. It receives sensory information such as sounds and speech from the ears. It is also key to being able to *comprehend,* or understand, meaningful speech. This lobe makes sense of all the different sounds being transmitted from the sensory receptors of the ears.