

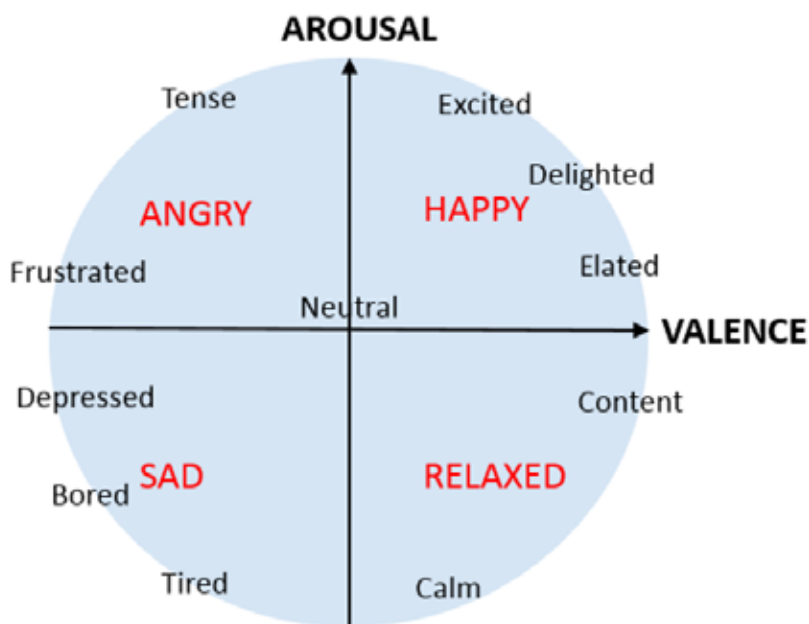
The Emotional State of Animals

Emotions are a tricky thing to define. In fact, even researchers who study the emotions of animals have conflicting viewpoints. What can be agreed upon is that **emotions** are subjective states that are experienced by an individual in response to internal or external stimuli. With this broad definition, many things an animal does can be considered emotions. Because this definition is so broad, researchers use the term **affective state** to describe how an animal feels.

Affective states are longer-lasting emotions that are not caused by a single stimulus or event but rather are based on prior experiences. Affective states can be studied by first looking at research on emotions in humans. Because all animals—including humans—have a shared ancestor, we can apply methods from human psychology and neuroscience to make inferences about the affective state of animals. When stressed or experiencing a strong emotion, both humans and many animals experience increases in their heart rate and biological measures like adrenaline. Even though there are many similarities between humans and non-human animals, animals may have additional or different behavioral responses based on their physical anatomy and instincts. For example, both humans and mice can have a fear response to a loud, startling, high-pitched noise; however, humans are unlikely to react to the sound of a hawk in the same way that a mouse would react, as a mouse would be innately fearful of the noise.

When discussing affective states and emotions, it is important to consider the level of arousal and valence of the emotion (Figure 46). In this context, **arousal** refers to how intense the emotion is. Emotions like happiness, fear, and anger are all considered to be high-arousal emotions while boredom and relaxation are low-arousal emotions. **Valence** describes how pleasant an emotion is. Feelings of calm, relaxation, and happiness are all high-valence emotions. Boredom and sadness are examples of low-valence emotions. All emotions can be classified within these categories and fit into one of four quadrants. Happiness is a high-valence and high-arousal emotion while sadness is a low-arousal and low-valence emotion. Though we may not be able to definitively name the emotional states of animals, we can measure and assess their valence and arousal to fit within these categories by examining behavior and biological markers.

FIGURE 46



Animal emotions can be described in terms of arousal and valence. High-arousal emotions activate the autonomic nervous system while low-arousal emotions activate the parasympathetic nervous system. The valence describes how positive or negative the experience is. With this graph, simple emotions can be placed into one of the quadrants using behavior and physiological measures to evaluate the emotions an animal might be experiencing.⁴⁶