



Module 9 : Language and Animals

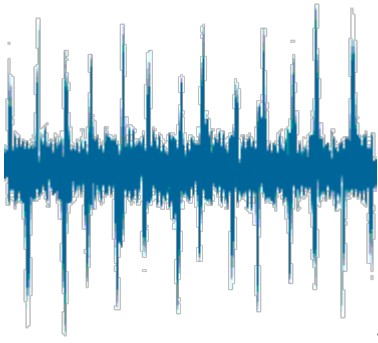
- An overview of language and animals, with an experiment
- The types of communication
- The ability to speak
- Training the human language

This module will focus on the languages that animals use, as well as their ability to learn human words. It will cover:

- An overview of language and animals, with an experiment
- The types of communication
- The ability to speak
- Training the human language
- 13 language features

Language and Animals - 4m54s

9.1 Introduction



Language and animals have been a constant interest to scientists.

Humans are the only primates with a complex language. Researchers also consider our language to be the most expressive. It could be said that, as humans, we do not understand the language of other animals; therefore, we are making assumptions as to the complexity and expressiveness of animal communication. Rather than get marred down by the debate it is better for you to understand that language and animals are a part of animal psychology. Language occurs in many forms; therefore, being able to read behaviour in animals, as well as the different tones of sound used, is very important.

A mother recognises certain cries from her baby. You might have heard a mother say, "Oh that's my child's hungry cry" or "my baby needs a nappy change", however, the crying 'sounds the same' for both needs. A mother is able to listen to the differences in sound and differentiate what her baby requires.

A pet owner can do the same with their pet.

They can listen to the nuances of a bark, meow, squawk or other sounds to determine what their pet needs. Try an experiment with a pet you have.

For this example, a cat will be used. Say you have a cat and you are about to get a treat for your pet. Your pet realises you have the treat bag from the sound. A 'desperate' meow is heard as the cat waits for you to open the bag. As the cat waits it tries to get to the bag or circles around your legs. After a treat is given there is a second meow combined with a purr. The first behaviour is asking for a treat not only with the meow but with the use of its body, to get closer to the treat bag or to wrap around your legs. The second meow is appreciation that is coupled with a purring response to show happiness.

If you do not have a cat then study any pet you have for a week. Listen to their responses at different times, such as when you feed your pet, return home, sit on the couch, go to bed, play with your pet, or ignoring your pet. Record the sounds and body language your pet uses to get your attention. You will start to notice your pet's language.

9.2 Types of Communication



Humans have various types of communication: interpersonal, nonverbal, written and oral.

Interpersonal communication is a way to communicate between groups of people. Typically, this type of communication is used when individuals are familiar with each other.

Nonverbal communication is sign language and body language.

Written communication is defined by any written words, symbols or images created with the intent of making an idea clear to another person.

Oral communication is a speech or formal communication between strangers with a desire to teach or share important information.

Animals display mostly verbal and nonverbal communication. However, certain animals such as primates are capable of sharing a written form of language. You could also interpret certain vocal signals between animals as oral communication, particularly when an adult animal is teaching their offspring. A command can be given to a group or to offspring to elicit certain responses as a way to learn or to keep the group safe. It is different from interpersonal communication that may be meowing, barking, or other noises among animals.

A good example of interpersonal communication among animals is with birds. Several birds have mating calls that the male will use to woo the female. By our definition this is more of an interpersonal communication because it is between two individuals who are close to each other or at least trying to be. Think of it as flirtation between two humans, with the goal of becoming better acquainted.

If you do not want to break down communication into oral and interpersonal then you can consider any sound an animal makes as a verbal type of communication, versus nonverbal. Nonverbal communication in primates also includes hand signals. Chimps are able to learn human sign language, but they can also use their hands, arms and appendages as a means of communicating in their own language. We might see these arm movements as wayward gestures, but those who study primates recognise them as gestures that are indicative of communication.

Written communication is generally a trait seen in animals being trained for such communication. For example, elephants and primates that paint can communicate through written or drawn images. It does not mean we, as humans, will understand the images but animals can still use tools to create images.

In the wild you can see verbal and nonverbal communication.

Most pets, except for birds that can learn words, will have verbal communication in their own language. Birds can be taught phrases; however, science has yet to confirm their understanding of these words from our language. It is known that Irene Pepperberg taught an African Grey Parrot 100 words of our vocabulary, but she could not determine if the parrot understood the words in context.

Although certain birds can mimic our words there is a major debate regarding certain bird species and their ability to comprehend our language.

It is known that primates, dogs and cats can learn words.

Primates show a degree of understanding through sign language; however, there is also a theory that it is more of a conditioned response to words and phrases taught to primates. Obviously, cats and dogs cannot respond in our language, but they can respond to commands, tone of voice and their names.

If you call a dog's name and follow the name with a command then the dog will eventually learn to pay attention to their name and complete the command.

A cat is less responsive with regards to commands and it is another matter of debate as to whether they understand but ignore their human teachers. The general theory is that cats have great comprehension and memory recall, but they are stubborn and tend to ignore what they do not want to do.

J.M. Pearce wrote *An Introduction to Animal Cognition*, in which it is stated that animal communication is the "transmission of a signal from one animal to another", where the sender will benefit from a response received from the "recipient". If you are analysing animal communication strictly by animal definition and not in comparison to a human's, the types would differ.

Pearce labels animal communication types as the following:

- Chemical signals
- Smell
- Movement
- Touch
- Posture
- Sound
- Visual signals.

Chemical communication

Animals communicate very strongly using scent. They use scent to ward off predators, mark their territories and attract mates. Young deer will sniff at their mother's glands to identify them. Mule deer sniff at each other's hind legs. Many animals have scent glands in their claws and will leave behind some scent when they scratch at a tree.

Tactile communication

Tactile communication is using touch to convey emotions or needs. Dogs may nuzzle you out of affection while horses kick each other to establish dominance or compete for a mate. Some species of primates will clean each other to bond better.

Specific movements of animals like their posture and facial gestures are communications to others. For example, a cat's tail has several movements that it will make. Certain signals indicate they are willing to play, while other movements are a direct warning to another animal not to approach. A curved body with hair standing up and a cat being on their tiptoes means the cat is posturing in defensive attack.

Auditory communication

Sound is by far the most common form of communication from Pearce's list based on the various calls, meows and other verbal signals like a dog's bark, groundhog's chirping and a big cat's roar.

In addition to the obvious dog and cat sounds, there are thousands of ways animals communicate using sounds. A hippopotamus, for instance, has its ears positioned on top of its head so that they can hear even while they're underwater.

Similarly, while dolphins use ultrasonic sounds (too high frequency for our ears), blue whales use infrasonic sounds (too low frequency for our ears).

Visual communication

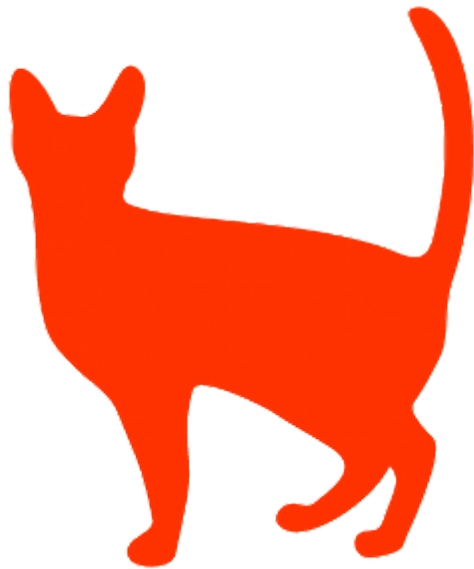
Visual animal communication can be categorised into two: Badges and displays. Badges are the natural shape and colour of an animal that the species uses to communicate (usually for mating purposes).

For example:

The bright yellow feathers of a male goldfinch attracts females.

Displays are when an animal or bird invests efforts into displaying their attractions. For instance, a male peacock will open out his feathers to attract the peahens.

FACT



When your cat rubs up against you, she is actually marking you as "hers" with her scent.

Source: cats.alpha.pl

9.3 Animal Speech



Several studies have tried to teach various animals how to understand the human language.

Primates like chimps are typically used in these experiments because their minds are capable of understanding complex communication. Yet, chimps are unable to form the words they learn in sign language. In the 1970s a researcher analysed dolphins' complexity of signals with echolocation, as well as the vocal chords of dolphins. It was postulated that if dolphins had vocal chords they would be able to understand human language and use it. This is a study that cannot be proven and therefore largely dismissed. The point is: an animal's ability to communicate in human language is hindered by their anatomy, at the very least.

This inability to use the human language does not mean there is no complexity in their form of communication.

Animal language, as we understand it, has the ability to attract mates, repel enemies, signal submission or aggression, advertise their species, warn of predators approaching, and communicate about food. Pearce believes certain signals or communications are instinctive, while others had to be

learned.

9.4 13 Language Features

Chomsky is one of the most important researchers and linguists of the human language. He postulated that animal communication is nowhere near the complexity of human language because there is no universal grammar used by other species. MacPhail, who also studied Chomsky's work, went further to say non-humans cannot acquire human language because there is a lack of mechanism such as vocal chords.

C.F. Hockett created a list of 13 "design features" that he believes make a language a language like humans have.

They are as follows:

- **Vocal-auditory channel** - sound is emitted from the mouth and heard by an auditory system. This feature applies to many animals, but there are exceptions, and even sign language does not fall under this first feature.
- **Rapid fading** - it is a signal that will only last for a short period of time. It is specific to sounds and does not include chemicals or smells that would fade slowly.
- **Broadcast transmission and directional reception** - this type of feature is where the recipient is able to tell which direction the signal came from and thus determine the originating person or animal of the signal.
- **Interchangeability** - this type of language or communication is about male and female behaviours. These differ and are not interchangeable between sexes.
- **Specialisation** - is a signal produced for communication, but not a result of certain behaviour. In other words, a dog that is panting has a sound that goes along with panting, but it is an incidental sound.
- **Total feedback** - as humans, we hear what we are saying and certain animals can hear their sounds, but not all can perceive their own messages.
- **Semantics** - is a signal that has meaning.
- **Discreteness** - in language there are discrete units, where different units change the meaning of the signal.
- **Arbitrariness** - there is an arbitrary relationship that forms between the meaning and the signal given. The signal is in some way related to the meaning like words in various human languages can mean the same thing.
- **Displacement** - this is in relation to space or time, based on things or events.

- **Traditional transmission** - is where each generation "learns a system of communication from the preceding generation".
- **Productivity** - is where language is an open system, with an infinite amount of different ways to create messages.
- **Duality of patterning** - this is where words are units, which are used to make up a longer phrase with a meaning behind the phrase. The meaning can change based on the words used. It is this 13th item that separates human language from all other animals.

Certain features in this list apply to certain animals, but not one animal other than humans have them all.

Assignment

Animal Communication

Time: 20+ minutes

This assignment will allow you to consider various methods of animal communication.

Download the worksheet below and complete.

[Download Worksheet](#)

Summary

Animals have their form of language that science considers less complex than human language.

There are 13 features of human language and animal species may have one or more of these features, but they never have all 13 according to Hockett.

Despite the limitations in species, with regards to forming actual words, there are animals capable of understanding the words humans use. Dogs, cats, and other primates, for example, are able to learn words. Primates are also able to use sign language.

The ability to understand the human language may be there based on brain capability and learning abilities; however, there are certain mechanisms animals do not have. Without these mechanisms, an animal is unable to form words, even though they can form sounds.

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