



Navigating The Dynamics Of Human And Animal Languages: A Literature Review

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<i>Abstract</i>	
	Research on the differences between animal and human communication has become prevalent. We examine the evolution of language and the cognitive capacities that distinguish humans from other animals. The degree to which animal communication and human language are similar, as well as whether language is fundamental, are topics of discussion. This article reviews research on animal communication and draws comparisons with our understanding of the development of human language. Our goal is to present various points of view and provide a basic understanding of this subject. Studies indicate that although animals are able to comprehend their own kind's needs and thoughts in different ways, humans are able to understand each other in different ways as well. Animals use non-visual displays, sign language, and vocalizations to communicate within their species and occasionally across ecosystems, but humans use language to construct sentences with proper grammar.
CC License CC-BY-NC-SA 4.0	Keywords: <i>human language, animal language, literature review, communication system</i>

Introduction

There are several definitions for the term "language." Some people emphasize how important our brains are to language, viewing it as a mental ability unique to humans. According to some definitions, human languages are structural systems with rules that link particular units to specific meanings. These rules govern a system of signs known as grammar.

Language is what sets humans apart from all other animals. Aronoff (2007) asserts that every known human society has some sort of language, and although some nonhuman species may have somewhat sophisticated communication systems, language is still the most effective means of information transfer in their systems. The majority of approaches to language study come from a linguistic perspective, with an emphasis on what linguistics has discovered about language in the last 200 years. Linguists study the linguistic behavior of individual human languages in order to determine the basic characteristics of this shared human capacity.

Chen, Y. (2023) states that it is commonly known that animals can communicate with each other and with groups of animals in their natural habitats by exchanging information. There are several different modalities involved in this communication, such as tactile, visual, and auditory cues. Scholars have studied the various contexts in which animals use communication.

Firstly, animals often use alarm calls to alert others to the presence of a predator. The group's ability to respond as a unit to possible threats depends on this type of signaling. Animals can warn one another by making particular vocalizations or visual cues, encouraging a group effort to avoid danger. In addition,

numerous species display unique signals that function as warning signs of impending aggression or as signals of retreat readiness. This kind of communication is especially common when there are rivalries for resources like food, mates, or territories. Within a population, these signals are essential for creating social hierarchies, reducing conflict, and encouraging cooperation.

Over the last 25 years, several groups of researchers who posit shared characteristics between human language and non-human animal communication have conducted extensive studies on humans, apes, rodents, birds, and other species. While language, characterized by grammar and vocabulary, is a structured system, the question of whether animals use language remains unresolved despite ongoing research into their communicative behaviors.

The 1960s and the mid-1970s were an exciting time for researchers studying animal abilities. An important turning point in the field was reached in 1973 when three ethologists, von Frisch, Lorenz, and Tinbergen, were awarded the Nobel Prize in Physiology or Medicine. The "cognitive revolution" in psychology also brought forth the idea that nonhuman intelligence levels were related to human intelligence. This gave researchers the idea to investigate a variety of behaviors, including communication, among various species. Griffin (1976) urged more research, arguing that knowledge of interspecies communication may provide light on animal minds. Simultaneously, research was being conducted on "animal language," which involves teaching apes and dolphins to speak human speech. Although earlier attempts had been unsuccessful, researchers were making some headway in their exploration of alternative communication methods.

Analyzing the evolutionary relationship between human language and animal communication systems reveals parallels that could indicate a common ancestor. This review examines the evidence currently available, placing particular emphasis on productivity, context dependence, symbol combinations, and discrete symbols, in order to evaluate the notion that these two communication systems have a common basis. Both animal and human communication systems use discrete symbols, but human language uses them more frequently. A difference between human language and animal communication systems is the way symbols can be combined. While each show varying degrees of context dependence, human language exhibits it more than the other. The capacity of human language to generate an infinite number of messages from a limited set of symbols is its unique quality, known as productivity. The study aims to clarify the intricate evolutionary connections between animal and human languages, providing insight into both common and distinctive aspects of their communicative abilities within the exciting and expansive field of language research.

Related Studies and Literature

Gestural Communication

Primates use olfactory, tactile, visual, and auditory signals, among other senses, to communicate. But rather than being classified according to their sensory modality, these signals are frequently classified according to cognitive processes, which results in differences between gestures, facial expressions, and vocalizations (Liebal et al., 2013b). With a few notable exceptions, not much research has been done on the purposeful application or meaningful combinations of facial expressions (see Waller et al., 2015; Scheider et al., 2016).

Pointing gestures and their referential role have received a great deal of attention in the field of gestures. Pointing gestures are developed early in human development and are used to refer to a variety of external entities, including people, objects, and events. Pointing gestures, in contrast to fixed meanings, are interpreted based on the context and mutual understanding between the giver and the recipient (Liebal et al., 2013a). Pointing motions in primates have mostly been studied in relation to interactions with humans, where they are employed to ask for food rewards or objects that are not normally accessible (Call and Tomasello, 1994; Bullinger et al., 2011). Similar to humans, the meaning of primate pointing gestures relies on context and shared understanding with the human experimenter (Bohn et al., 2016). Another form of referential gesture is the iconic gesture, depicting specific objects or actions and establishing a non-arbitrary relationship between the gesture and its referent. Although the concept of iconicity varies across studies, evidence suggests that primates use iconic gestures, often to request specific items.

Furthermore, the significance of gestural communication in the evolution of human language is highlighted by Michael Tomasello's research. His research on great apes suggests that the symbolic communication found in human language may have its origins in gestural communication (Tomasello, 2008). The ability to convey meaning through gestures points to shared attention and intentionality as common cognitive underpinnings.

Shared Cognitive Framework

Finding the fundamental cognitive skills required for effective communication is a step in the search for shared cognitive foundation. Even though human language is complex, scientists are trying to identify the cognitive processes that underlie the communication systems of all other animals. Because it acknowledges that some cognitive abilities may have ancient roots and lay the foundation for the complex linguistic abilities observed in humans, this research contributes to our understanding of the evolution of language.

In 1957, Chomsky proposed the idea of universal grammar, which is a set of principles and a natural cognitive structure that people have from birth and which helps them learn languages. While Chomsky concentrated on the unique characteristics of human language, cognitive science research investigates the common cognitive underpinnings of all species. Studies on non-human primates, such as chimpanzees and bonobos, explore their capacities for symbolic representation, abstract concept comprehension, and problem-solving in an effort to uncover links between the evolution of animal and human language (Tomasello, 2008). Though distinct from human language, these cognitive capacities suggest shared underpinnings that may have aided in the evolution of more sophisticated linguistic abilities.

Distinctive Features of Human Language

Human language was once thought to be a formal, structured system that was different from the emotional, situation-specific communication that animals engage in. Even Darwin distinguished "articulate language," viewing it as a radically distinct system, in his study contrasting animal and human emotions. These opinions were shaped by a long-standing Western philosophical tradition emphasizing human reason and language models that concentrated on our capacity for predictable, decontextualized meaning-conveying.

Tomasello disputes this view, claiming that the ability for shared intentionality is a special feature of human communication. Humans are able to communicate through acts of shared attention, intentions, and goals, unlike animals. Tomasello contends that human communication is fundamentally cooperative, despite the fact that many animal communications serve individualized functions (such as mating or warning of danger). It entails creating social ties within a community and exchanging information for the benefit of both parties. According to Tomasello (2008), language has undergone cultural evolution in addition to genetic evolution. Animal communication systems do not exhibit the cultural transmission of language evolution and adaptation that characterizes human languages.

Language's Cultural Evolution

The dynamic and culturally evolving system of human language reflects the diversity of human societies. According to this theory, languages adapt to the changing needs, values, and experiences of the communities that use them over time through cultural processes. With the help of pertinent references, we examine the dynamic character of language evolution in this context. According to evolutionary linguistics, language evolves culturally rather than genetically and is driven by linguistic rather than natural selection, in contrast to animal communication systems (Steels, 2012).

The distinctive structural characteristics of human language enable flexible communication. Recently, scholars have looked to cultural evolution as a theory to explain how these characteristics came to be. Experiments conducted in laboratories, where participants communicate and learn through artificially created systems, have shown to be especially insightful. Language transmission to new speakers, communicative use, community interactions, and global structure all have an impact on language structure.

William Labov explores the effects of cognitive and cultural factors as he explores the complex dynamics of language evolution in "Principles of Linguistic Change." The primary focus is on the cultural transmission of language, highlighting the ways in which linguistic traits are inherited within a society and passed down from one generation to the next. Understanding how language changes as a result of cultural practices, norms, and interactions between speakers is greatly aided by Labov's work.

Transferring linguistic traits from one generation to the next is a part of cultural evolution. Language change is shaped by cognitive and cultural factors, as Labov's research highlights. This shows that language is not just a byproduct of biological evolution but is intricately linked to cultural dynamics.

Socio-Cognitive Abilities in Animals

Animals possess complex cognitive processes that they use to communicate and work together in social environments, which are referred to as socio-cognitive abilities. These skills span a wide range of cognitive processes, which are essential for interacting with others and surviving in social settings. These processes include communication, perception, learning, and problem-solving.

In humans, the ability to form and maintain relationships, collaborate with others, and solve problems collectively is all dependent on socio-cognitive skills. These abilities are deeply ingrained in our neurobiology and have developed over millions of years of human development. Moreover, animal species vary widely in their socio-cognitive capacities, with some exhibiting exceptionally high cognitive feats. Dolphins, for example, communicate through tools, and some primates use intricate gestures to convey information about their intentions and environment.

The neural basis of socio-cognitive skills in animals, like monkeys with a specific brain region called the amygdala that is responsible for processing social information, has been the subject of numerous studies. There is a close relationship between emotional-motivational systems and decision-making processes, as this region is also involved in emotional processing and decision-making.

According to Jardat & Lansade (2011), some species have remarkable abilities to recognize us or to detect and interpret the emotions or signals sent by humans. For example, sheep and horses can recognize the face of their keeper in photographs, dogs can react to our smells of fear, and pigs can follow our pointing gestures. Nevertheless, the studies are unequally distributed across species: there are many studies in animals that live closely with humans, such as dogs, but little is known about livestock animals, such as cattle and pigs. However, on the basis of existing data, no obvious links have emerged between the cognitive abilities of animals toward humans and their ecological characteristics or the history and reasons for their domestication. Nonetheless, animals exhibit a wide range of socio-cognitive skills, from simple to complex, with some species displaying exceptionally high levels of cognitive proficiency. These skills are essential to animals' daily lives because they are backed by specific brain regions and intricately linked to emotional and motivational systems. Socio-cognitive skills are demonstrated by behaviors like cooperation, communication, and alliance building in a variety of species, including yellow-bellied marmots.

Research Objective

Compare and contrast the human and animal languages.

Methodology

First, the researcher organized a review according to the body of literature that was accessible to bolster the assertion. In this paper, a semi-systematic literature review approach was used because there is a sufficient amount of literature on the subject. The review process was completed after the literature was gathered and categorized. The analysis phase was covered in the third step, and the review was then documented. The present procedural framework was developed through hands-on experience and is a combination of different standards and guidelines that Wong et al. (2013) recommended for conducting literature reviews.

Results and Discussions

The fundamental characteristics of human language have been gradually revealed through research, primarily carried out over the past 25 years, despite the difficulties involved in studying language in comparison and the controversies surrounding it. It has also improved our knowledge of non-human animals' cognitive functions and capacity for communication. Generally speaking, it appears that animals only communicate about their physical needs, feelings, and survival-related issues like food sources, predator presence, and mating. It is important to keep in mind, though, that communication may serve purposes other than basic needs, such as group cohesion and coordination (observed in dolphins and bats).

There are those who contend that animal communication is limited to transmitting information about objects that can be perceived by the senses. This suggests that information about abstract or nonexistent entities cannot be transmitted by animals. However, there are some exceptions concerning non-present concrete entities, i.e., past perceptions that are not present during communication. For example, chimpanzees and bonobos referring to displaced entities, or honeybees dancing about far-off scenarios in time and space. In these situations, the information being conveyed is predicated on an earlier perception, implying a representation of the perceived object, so the senses are not necessary for communication at that specific time. The ability to refer to non-present concrete entities may have been a precursor in the evolutionary development leading to humans' capacity to communicate about abstract or nonexistent entities, even though this doesn't mean that bees and chimps can communicate about such entities.

The "vocabulary" of animals is said to be far less than that of humans when it comes to the set of elements used for communication, such as sounds or signs. As an example, a conservative estimate suggests that by the time a child reaches the age of three, they will normally have produced about 500 distinct words (meaning they will have understood at least twice that many) (Gershkoff & Hahn, 2007).

There is a substantial disparity in non-human animal cognition when it comes to the perception of human speech, even in spite of the obvious similarities between humans and animals. A limited and restricted productive ability coexists with a broad and complex perceptual capacity, which is indicative of this imbalance. Given this, it is conceivable that the earliest perceptual abilities that exist in birds and some mammals are the basis for the evolutionary development of human language. These abilities may have come together at some point during evolution with the development of human skills for structural organization and conceptual abstraction, which were not necessarily present in the species from which perceptual abilities originated. Kuhl's auditory hypothesis (as reviewed in Heimbauer, 2012) is consistent with this idea.

In addition to pointing out the communicational similarities between humans and animals, Ramirez (2023) emphasized in her paper the benefits of pet-human relationships. Accordingly, developing a positive relationship with a pet can help to promote empathy, compassion, and nonverbal communication. Pets teach children many valuable lessons about life, including how to be good stewards of their inner thoughts and secrets, connect with nature, teach lessons about life, and respect all living things.

Conclusion and Recommendation

Since language is essential to human existence, it is difficult to envision a world without it. It is frequently regarded as a special quality and has the ability to influence human thought. Investigating human language and contrasting it with animal communication provides information about the earliest phases of human language, which may be comparable to animal communication. Animal and human language differ greatly from one another, but their underlying principles are similar. Animals and humans both use body language, which is one obvious similarity. Because humans can communicate ideas about things that are not there, conversations about the past, present, and future are made possible. The similarities between animal and human communication are largely highlighted by Hockett's design theory of cultural transmission. According to this theory, people acquire language skills through interaction with native speakers, even though they are born with the ability to speak. The ability to communicate through language is essentially inherited from previous generations. Studies reveal striking similarities between a baby's learning process and that of a bird. Thus, human language reveals many similarities with animals rather than necessarily distinguishing humans from them.

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