Nonverbal Communication: Animals and Humans

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Bachelor's Thesis

Supervisor: Alma Vančura, Ph.D. Assistant Professor

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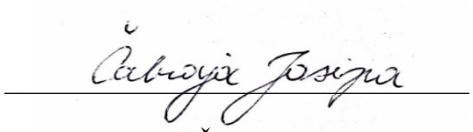

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Abstract

Communication between individuals of the same species is one of the most crucial segments of any species' existence. Communication can occur both verbally and nonverbally and, according to Birdwhistell (1970, as cited in Moore et al. 2014, p. 4)) and Philpott (1983, as cited in Moore et al. 2014, p. 4), 60 to 70% of human communication is nonverbal. Nonverbal communication in humans consists of several subcodes, like haptics, kinesics, proxemics, physical appearance, vocalics, and chronemics. They serve to repeat, conflict, complement, substitute and accent what is being said verbally. Humans are the only animals who use their brains to communicate verbally, i.e. use language for communication together with nonverbal cues. Instead of subcodes, animals use signals. The most common types of signals, according to Håkansson and Westander (2013) are chemical signals, known as pheromones. There are also acoustic, olfactory, visual, tactile, seismic (felt through vibrations), and electrical signals that animals can use. Animals communicate to obtain their identity, to recognize others, to protect their territory, find shelter and food, mate, and raise their young in order to obtain their species. The works that tried to find and explain connections between animals and humans with regard to nonverbal communication started a long time ago (Moore et al., 2014), and it is believed that nonverbal communication is a mixture of innate and learned behaviour. This paper deals with nonverbal communication in humans and animals and its different subocdes, as well as its use in humans and different animal species. It also discusses the difference between innate or learned behaviour in humans and animals and its connection to nonverbal communication.

Keywords: Nonverbal communication, subcodes, signals, humans, animals

Sažetak

Jedan od važnijih dijelova postojanja bilo koje vrste jest komunikacija između njihovih jedinki. Komunikacija se može odvijati verbalno i neverbalno te je, prema Birdwhistellu (1970) i Philpottu (1983), 60 do 70% ljudske komunikacije neverbalno (prema Moore et al. 2014, str. 4). Ljudska neverbalna komunikacija sastoji se od nekolicine potkodova kao što su haptika, kinezika, proksemija, fizički izgled, glasovni signali i kronemika. Oni služe za ponavljanje, suprotstavljanje, nadopunjavanje, zamjenjivanje i naglašavanje onoga što je verbalno rečeno. Ljudi su jedina vrsta koja koristi mozak za verbalnu komunikaciju, tj. koristi jezik zajedno s neverbalnim znakovima za komuniciranje. Umjesto potkodova, životinje koriste signale. Prema Håkanssonu i Westanderu (2013), najčešći su kemijski signali ili feromoni. Postoje i akustični, olfaktivni, vizualni, taktilni, seizmički (koji se osjete putem vibracija) te električni signali. Životinje komuniciraju kako bi održale svoj identitet, prepoznale druge jedinke, zaštitile svoj teritorij, pronalazile sklonište i hranu, razmnožavale se i brinule o svojim mladima da očuvaju svoju vrstu. Istraživanje povezanosti neverbalne komunikacije između ljudi i životinja počelo je davno (Moore et al. 2014) i danas se vjeruje kako je neverbalna komunikacija mješavina urođenog i naučenog ponašanja. Ovaj završni rad daje pregled neverbalne komunikacije kod ljudi i životinja i njihovih različitih potkodova. Također, raspravlja o urođenom i naučenom ponašanju kod ljudi i životinja.

Ključne riječi: neverbalna komunikacija, supkodovi, signali, ljudi, životinje

Contents

1. Introduction

Nonverbal communication is a term that contains various definitions referring to the same concept. According to Knapp et al. (2013 p. 8) nonverbal communication is considered any type of communication between two living beings that does not include words, "assuming words are the verbal element". However, this definition omits the importance of both the receiver and the sender of the message, i.e., nonverbal communication is considered successful only when the receiver of the message has successfully interpreted the signals sent by the sender (Moore et al., 2014). Nonverbal communication is divided into several studies and subcodes. Moore et al. (2014) separate nonverbal communication into studies such as haptics (the study of touch), proxemics (personal space, environment, and territory), kinesics (body movement), vocalics (paralanguage), chronemics (time), body alterations and coverings, and the covert subcode of chronemics (time).

Both humans and animals use nonverbal communication to communicate with other members of their species. To animals, whose vocal cords and brains are not developed enough for coherent verbal communication, nonverbal communication is their only source of communicating with other members of their species. According to Håkansson and Westander (2013), animals communicate in order to mate, to express their identity, to recognize group members, to find and share food, warn others for dangers and comprehend those same warnings from others.

Along with deliberate messages that humans and animals encode there exist undeliberate messages which are not controlled by either humans nor animals. They represent messages "you naturally communicate to others via a series of static nonverbal cues that include your body shape and facial features, and you can burst into tears when sad" (Knapp et al. 2013, p. 4). Undeliberate nonverbal messages in humans also include microexpressions. Frank and Svetieva (2014) explain that microexpressions are brief, involuntary facial expressions humans make when experiencing an emotion which last for half a second or less. They cannot be faked. Due to their briefness, microexpressions are difficult to read when speaking to someone but can be a great insight into human emotions when videotaped and reviewed. Animals also encode undeliberate nonverbal chemical signals, and according to Håkansson and Westander (2013) :

> chemical signals are divided into two groups: pheromones, which are used between individuals of the same species and received by some kind of smelling organ, and allomones, which are detected by other species as well, and often in direct contact with the source, e.g. by taste. Pheromones typically activate

sexual behaviour, but they are also used to mark territory, signal alarm and recognize group members (p. 38).

2. The Study of Nonverbal Communication: Animals and Humans

One of the initial and the most influential works that describes the chief expressive actions in some animals and humans was Darwin's The Expression of the Emotions in Man and Animals published in 1872. Ekman (1973, as cited in Knapp et al., 2013, p. 21) explains the importance of this work for the modern scientific studies of nonverbal communication: "This work sparked the modern study of facial expressions, and many of Darwin's observations and ideas have been validated by other researchers". Janik (2001) in his work Nature and Nurture in Animal Communication calls for the need to look at the course of evolution to understand certain innate or learned behaviors in animals. Wiley (2006) wrote Signal Detection and Animal Communication which is an introduction to signal detection theory and its applications in psychophysics in animals from a biological standpoint. He describes, for example, how an acoustic signal in animals, is often perceived against a background of sounds with more or less similar frequencies, intervals, or other patterns. Giuggioli et al. (2011) conducted a research about how animals retain their territories and have concluded that they use their scents as borders to scare off other animals. Since their scents linger in the air only for a short amount of time, they must revisit their territory borders often to retain their space. Håkansson and Westander (2013) wrote Communication in Humans and Other Animals, in which they compare Hockett's (1968) design features between humans and animals such as the use of displacement, duality of patterning, arbitrariness and learning. Each of these features are found in nonhuman communication, but rarely all at the same time, and often only to a small extent. Wyatt (2014) in his article Pheromones and Animal Behavior (Chemical Signals and Signatures) wrote about the importance of pheromones, i.e. chemical signals, in animal communication and he concluded that in social insect colonies, primer effects of pheromones help match caste development of colony members, and their behaviors to colony needs. The previously mentioned authors are just some that dealt with animal and human nonverbal communication.

2.1. Uses of Nonverbal Communication in Humans

Nonverbal communication is extremely important when conveying information and messages to others. It is almost impossible to comprehend the totality of the message without

it. Humans use nonverbal cues alongside verbal ones to complete their message and to optimize the encoding process. Communication is better and more successful when nonverbal and verbal cues come together to portray one complete, fused message. While observing how feelings are transmitted in messages, Mehrabian (1968, 1981, as cited in Moore et al.,2014, p.4) concluded that as much as 93% of emotions are portrayed nonverbally. Mehrabian further indicates that 38% of emotional meaning of a message is vocal, 55% is expressed vocally, and that only 7% of emotional meaning is expressed verbally. Many other scientists do not underestimate the importance of nonverbal communication; however, they estimate we use about 60 to 70% of nonverbal cues while conveying an emotional message. Nonverbal communication, however, has many uses. It is a great misconception that nonverbal communication is only used to convey emotions while verbal communication serves to express ideas through words of a specific language. According to McNeill (2000, as cited in Knapp et al. 2013) nonverbal cues are often used for purposes other than showing emotion, such as using eye movements to tell each other when it is time to switch speaking turns. Also, people commonly use hand gestures while talking to help convey their ideas. We use nonverbal communication to repeat what has been said by, for example, pointing a finger in a certain direction and nodding or shaking the head. Sometimes, nonverbal communication may conflict what is being said. This is shown in the discrepancy between what is being said and what is the actual truth, as common with liars. If a person is asked where they hid an item, they might completely deny hiding something, however, they might inadvertently move their eyes in the direction of the hidden item. This phenomenon is called a microexpression. Frank and Svetieva (2014) describe microexpressions as a special case of a facial expression of emotion. They define it as a facial expression which illustrates an emotion, full or fragmentary, that is expressed only for half a second or less. Complementing cues may help with further explaining what is being verbally communicated. Speakers use this nonverbal cue to their advantage to convey their message in a clear, interesting way. Nonverbal communication may also substitute its verbal counterpart; instead of saying ‘I am uncomfortable’ you can move away from someone, stiffen your shoulders, shift your body so that it is facing away from them and look away. You may also accent verbal communication with nonverbal communication by accentuating words and phrases you find most important. Finally, you may use nonverbal regulating cues to ensure a conversation is going in the right direction or to switch topics of the conversation. You may also use nonverbal regulating cues to completely end a conversation.

3. Nonverbal Communication in Humans

As mentioned in the Introduction (see 1.), nonverbal communication has numerous subcodes which include haptics, kinesics, proxemics, physical appearance, vocalics, chronemics and some other cues which are still being researched (Moore et al., (2014). This section will briefly describe these these subcodes, starting with kinesics.

3.1. Kinesics

Kinesics is a large umbrella term focusing on nonverbal communication that is communicated via body movement:

> Dynamic body movement and positioning typically include the following: gestures; movements of the limbs, hands, head, feet, and legs; facial expressions, such as smiles; eye behavior, including blinking, direction and length of gaze, and pupil dilation; and posture. The furrow of the brow, the slump of a shoulder, and the tilt of a head are all considered body movements and positions. (Knapp et al. 2013, p.12).

Gestures fall under the category of kinesics and they can emphasise words we are saying or they can completely substitute verbal communication. Knapp et al. (2013) divide them into speech independent or speech related gestures (e.g. throwing up an ‘okay’ sign, or a ‘thumbs up’ would be a speech independent gesture, while stretching your arms out to show how big that fish was you caught last week would be a speech related gesture).

Posture is considered to be one of the many parts of kinesics. Posture is a term used for the way a person carries themselves, most of the time connected with how the spine is positioned, with the limbs and neck following that position. People that slouch and push their shoulders together with their neck bent towards the floor give of a quite insecure impression. By contrast, someone with their shoulders pushed back, a straight back and eyes fixed on something in front of them, give off the feeling of security and confidence.

Haptics are also part of kinesics and they represent nonverbal communication communicated via touch. According to Knapp et al. (2013) that touch can be self or other-focused. When a person appears nervous, they might be touching their own hands, or caressing their own hair as a soothing motion to calm themselves down. When it comes to touching other people, what is socially acceptable depends on how close you are to the person you want to touch.

3.2. Haptics

When first interacting with another person, we tend to greet them before starting a conversation. Nonverbal communication helps us in greeting someone and the way we do it differs depending on what culture one is a part of. In most of the world, a firm handshake is acceptable among all genders along with one, two, or even three kisses on the cheek that are common in certain European countries like Russia, Poland or Serbia. Some cultures do not use touch when greeting each other, like most Asian cultures which take a bow during a greeting. Bowing is also considered a sign of nobility and respect in other cultures (Nodoushan and Ali, 2006). In recent times, an elbow or fist bump have become popular greeting techniques due to the COVID-19 pandemic outbreak. Mela and Whitworth (2014) conducted a research that showed how fist bumps and so-called dap greetings show reduced bacteria transfer when compared to a traditional handshake. Because of that, greetings that do not include palms touching have been popularised by the media since 2020.

3.3. Facial Expressions

Emotions are reflected on the face, and are essential part of facial expressions. Based on Ekman's research in New Guinea in 1969 (work published in 1970), there are six basic emotions innate to all humans in the world, no matter what culture they come from and these are happiness, sadness, anger, disgust, fear, and surprise. According to (Knapp et al., 2013, p. 13) ''facial expressions also can function as regulatory gestures, providing feedback and managing the flow of interaction''.

3.4. Proxemics

Proxemics, according to Knapp et al. (2013) is a study of the use and perception of personal and social space. Physical environment may influence the way you perceive a situation or a person, and you may subconsciously create a judgment about someone due to proxemics:

> ''Environmental factors include the furniture, architectural style, interior decorating, lighting conditions, colors, temperature, additional noises or music, and so on amid which the interaction occurs. Variations in arrangements, materials, shapes, or surfaces of objects in the interacting environment can be extremely influential on the outcome of an interpersonal relationship. This category also includes what might be

> called traces of action. For instance, as you observe cigarette butts, orange peels, and wastepaper left by the person you will soon interact with, you form an impression that will eventually influence your meeting with him or her.'' (Knapp et al. 2013, p. 11)

Hall, in his book *The Silent Language* (1973) described the basic ideas behind proxemic theory. The first idea is that there are four types of distances people keep. Intimate distance is reserved for the people you are the most intimate with and it is within a radius of 45 centimetres. Personal space may reach up to 1.2 meters, and it includes our friends, acquaintances, and people we choose to have day-to-day conversations with. Social distance is 3 meters in radius, reserved for habiting in public places around strangers. Lasty, public space is anything over three meters around us and it is reserved for everyone not included in the spaces mentioned above. Someone's relationship may decide the comfortability of appearing in each of these spaces. (2) Each individual chooses their own outlines. Certain cultures communicate closer to each other, seeming to others as if they are invading each other's personal spaces. (3) Proxemic behaviour is learned mostly from observing others and it is not innate to humans, which is why it varies from culture to culture. (4) The physical distance between two or more individuals communicating indicates the type of relationship they have. Also, body angles, touch, eye contact and other nonverbal subcodes reveal the familiarity between people. Proxemics is an important nonverbal subcode because its correct use may subconsciously affect our mood and opinions.

3.5. Statical Nonverbal Cues

The way a person looks and presents themselves can also be considered as a nonverbal subcode. Humans are aesthetic creatures and what we observe visually may control the way we form opinions about other people. According to Knapp et al. (2013), these are called statical nonverbal cues. Facial features, height, weight, skin colour, gender, and general attractiveness nonverbally influence communication between two or more people. Artifacs, or ''objects associated with interactants'' (Knapp et al, 2013, p.11) like clothes, hair, eyeglasses, jewellery, scars, cosmetics, tattoos, piercings and accessories influence physical appearance, thus influencing the flow of communication. Different social circumstances and cultures require a specific way of presenting physical appearance and it is important to understand and act according to them.

3.6. Vocalics

Vocalics represent an important nonverbal subcode, but are not to be confused with verbal communication, since vocalics by itself are not words, i.e. we are not looking at the meaning of the words, however, they do cooccur with words. Different vocalics have different important meanings in cultures around the world, according to Calero (2005). Sounds like whistling might mean we are calling for our friend in a crowd of people, or that someone is trying to compliment a woman's looks in a distasteful way. You may use *uhm, uh* sounds while speaking and you may appear nervous or less confident. Moore et al. (2014) claim that sounds like grunts, screams, laughs, gasps, sighs and even silence all fall under the study of vocalics. Eight attributes contribute to the vocalic meaning associated with the sounds produced. Those are loudness, pitch, duration, quality, regularity, articulation, pronunciation, and silence. Other than the eight attributes, there are modifications of the voice we may listen to and acknowledge as nonverbal communication. According to Trager (1958, as cited in Moore et al., 2014) these are called voice qualities: pitch range, vocal control, glottis control, pitch control, articulation control, tempo control, resonance, and rhythm control. Vocalics have a certain function in our nonverbal communication, as Moore et al. (2014) state. The first function concerns identification and self-presentation of the speaker. For example, when we hear a voice over the phone, we know exactly who we are talking to or, if not, we make certain assumptions about the speaker based only on their voice. The second function is controlling the interaction. The third function is relationships with other interactants which often ‘’affects the voice we choose to use’’ (Moore et al. 2014, p.241) The fourth and fifth functions deal with displaying cognitive and affective information. The sixth and final function represents deception. There are, according to Heinberg (1964, as cited in Moore et al., 2014), eleven voice types based on the degree of pleasantness or unpleasantness associated with the voice. Out of the eleven voices, ten are considered unpleasant and they are: breathy voices, tense voices, breathy-tense (connected to anxiety), nasal, denasal, orotund (energetic, proud) flat, thin (connected with immature women), throaty, and fronted.

3.7. Chronemics

Lastly, Moore et al. (2014) defined chronemics as the way people use and structure time as a way of nonverbal communication. According to them, there are three ways time can generally be perceived. Firstly, it is perceived on an individual/psychological level, meaning

people either value their time or not. The second level is biological where time is perceived as a cycle and as having certain periods (we are first new-borns, then toddlers, pre-teens, teens, adolescents etc.). The last level is cultural or subcultural and that means time is viewed through the different cultures and how they perceive time as a nonverbal communication. Hall (1969) categorized time in eight different categories ranging from the ‘‘imaginary’’; to the ‘‘real’’. He started from sacred time; it is rooted in mythology and represents where someone is in relation to something out of this world (an artist’s sacred time is while he is doing art). During this time, we perceive time in a different way, and it passes by quite quickly. Profane time is formulated and it consists of centuries, decades, years, months, weeks, days, hours, minutes. Micro time, according to Hall (1969), is the meaning we give to waiting and punctuality. Sync time is connected with moving at various paces or beats. Personal time is how different people perceive things lasting longer or shorter; e.g., someone can say their day passed by quickly or it felt like a lifetime. Metaphysical time is unexplainable to the human mind and is still being researched. It represents phenomena like deja vu. The last two categories are more ‘tangible’, and they represent biological and physical time, meaning it is possible to count to ten and state that ten seconds have passed. Moore et al. (2014) talk about the importance of culture and time, explaining that cultures fall into two categories: monochronic and polychronic. Monochronic cultures, like North America, like doing things one at a time on a clearly defined schedule while polychronic cultures, like South Europe, allow several things to happen at once. When talking about time and chronemics, Moore et al. (2014) separate time into informal, formal, and technical. ‘‘At least six factors influence our perception of informal time: duration, punctuality, urgency, activity, and variety’’ (Moore et al. 2014, p. 293). Formal time refers to the way a culture views and teaches time as a conscious entity. This creates time systems we operate on like minutes, hours, days, weeks, months, years, decades, centuries etc. These systems are important because they shape our everyday lives from our salaries, wages, schedules, time we spend doing something, how much we value our time etc. Technical time is time used in science, like km/h or m/s and it is not significant to nonverbal communication.

4. Nonverbal Communication in Animals

Humans are the only animal species that communicate with the help of both verbal and nonverbal communication. Verbal communication represents actual words being used in a certain language to transmit one’s thoughts and information from one human to another. Any other species of animals do not have brains developed in such a way to use a language to

communicate with one another. Because of this, their vocal cords have developed in a completely different way than those of humans. So, in order for animals to communicate within their own species, to preserve their safety, territory, and the longevity of their species, they communicate using exclusively nonverbal communication. By looking at animal behavior, we may learn about how and why they communicate. According to Manning and Stamp Dawkings (2012) communication between animal species is said to occur when one animal responds to the signals sent out by another animal. However, animals can also communicate between species:

> Burghardt (1970) cites the example of foraging ants which lay scent trails when they have found food. Its nest mates follow the scent trail, but so does a small snake (Leptotyphlops) which uses the scent trail to find the ants' nest, where it devours the brood. Most of us would probably refer to the scent trail as a signal, evolved by the ants for communicating with each other, but although the snake undoubtedly obtains information from the ants, we would probably not want to say that the ants communicated with the snake (p. 145).

Not only do animals communicate with other nonhuman animals, communication between animals and humans also exists and it is most visible with the appearance of pets. The most common types of signals, according to Håkansson and Westander (2013) are chemical signals, known as pheromones, acoustic, olfactory, visual, tactile, seismic which are felt through vibrations, and electrical signals.

4.1 Uses of Nonverbal Communication in Animals

After establishing the different signals animals use to nonverbally communicate, it is important to understand the reason why animals have to communicate at all. In a list of reasons why communication is a big part of animal behavior, Tomecek (2009) states that obtaining identity is the most important part of nonverbal communication in animals: ‘‘Because there are millions of species on Earth, every animal must be able to recognize his or her own kind. Otherwise, animals would waste time and energy trying to mate with individuals that belong to other species’’ (p. 105). Many mammals and birds are monogamous so recognizing their mate is important even after mating and producing offspring to remain parental figures to their young. Tomecek (2009) lists four contexts in which animals communicate, the first one being obtaining mates. In order to prolong the existence of their species, animals must mate. They do so by attracting a mate via nonverbal communication or competing with other suitors. ‘‘They use different forms of communication, including song, dance, flashy colors, and acts of strength

and bravery'' (Tomecek 2009 p. 105). The next context is, as explained by Tomecek (2009), establishing dominance and defending their territory. Just like in the human world, it is important to obtain social hierarchy and to establish an alpha which leads the whole group and takes action when trouble occurs in the animal kingdom. Other members of the group know their roles as well and work in cohesion to obtain peace and safety within the group. ''Depending on the type of animal, an individual gets his or her rank in different ways. Often, especially among male group members, the highest-ranking individuals are the strongest and most able to stand up to the physical challenges'' (Tomecek 2009, p. 105). Animals protect their territory over one particular area because that is the place where they have everything they need to survive; food, water and shelter. They establish their boundaries and keep other predators away, challenging any animal that crosses their territory. However, when food supply becomes sparse, they send their alphas to invade other territories to provide food for the group. Coordinating group behaviors is also a reason why social animals communicate. The last context is caring for young. In order for the offspring to survive, the parental care and behavior is extremely important, as before mentioned, by using different nonverbal signals.

4.2. Pheromones

According to Wyatt (2003), pheromones are molecules used for communication between animals. ''A broader term for chemicals involved in animal communication is semio-chemical (from the Greek semeion sign)" (Law & Regnier 1971, as cited in Wyatt 2003, p.1). To define pheromones strictly, it is important to say that they are a subclass of semiochemicals, used for communication within the species, meaning that the chemical signals are intraspesific. According to Wyatt (2003), pheromones are grouped regarding their purpose. Firstly, there are sex pheromones whose purpose is to attract the opposite sex in the hopes of mating. There are numerous processes males can go to while trying to appease to a female, on of them being ''scramble competition'' (Wyatt 2003, p. 43). During this process the male has to approach a female before its rivals.

According to Sorensen and Stacey (1999, as cited in Wyatt, 2003) the pheromone-controlled mating system in the male goldfish Carassius auratus provides an example of scramble competition. ''Males are attracted by the pheromone released by a female ready to spawn and then compete to be the one closest to her, trying to push other males away'' (p. 44).

Another group of pheromones in animals are the so-called ‘‘alarm pheromones’’ (Wyatt 2003, p. 9). They trigger the animal’s fight or flight response. They exist because they are a crucial part of protecting one’s kin and the ability for the species to keep reproducing. As Wyatt (2003) explains, an animal’s alarm pheromones will not save it from a predator's deadly grip, but it will nonverbally communicate danger to other members of the species, giving them time to find shelter from the predator:

> When disturbed, black-tailed deer expose the metatarsal gland on the hindleg, releasing a strong garlic-like odour (Müller-Schwarze et al. 1984). Females exposed to the odour from either male or female glands were more likely to show increased alert behaviour, lifting the head and scanning the surroundings, and were more likely to leave, compared with animals exposed to control odours. The recipients of the signal are likely to be kin, as mothers, their female yearlings and fawns tend to associate within larger aggregations (p. 147).

A certain group of pheromones called social organization pheromones (according to Wyatt, 2003) exists in animal species that live in large social groups in order to maintain social hierarchy between the members. The perfect example for this is the beehive. The queen’s pheromones can affect the colony production of reproductives by influencing the behaviour of workers. Also, a queen’s pheromones can cause certain workers not to develop their ovaries. This exists in order to eliminate weaker workers to produce weak kin that are of no use to the beehive.

4.3. Auditory Signals

Håkansson and Westander (2013) explain that auditory signals are most used and most elaborated among birds and mammals. Those sounds vary on a frequency spectrum, volume, duration, repetition, and rhythm. Auditory signals can be deliberately turned on and off. However, using an auditory signal may sometimes be dangerous because sound is spread in all directions, including possible predators receiving them. This signal is mostly used in species that are naturally more spread out, making it difficult to achieve communication via vision. Sheep, for example, keep in contact with their group members by bleating sounds. The vocalizations are used from birth to maintain contact between the ewe and her lambs (Sèbe et al. 2007, as cited in Håkansson and Westander, 2013, p. 27). Some species use auditory signals

to communicate their readiness to mate. Some sounds elephants use to communicate reproductive readiness are at extremely low frequencies which humans are not able to hear. Reptiles also use auditory signals. Håkansson and Westander (2013) explain that the Nile crocodile uses the difference in structure of auditory signals from their young to decide their age and their need and urgency for protection.

4.4. Visual Signals

Visual signals are signals that require two members of the same species to meet face to face at a short distance. Håkansson and Westander (2013) state that visual signals can constist of colour, contrast, ornamets, body postures, or movement. According to Douglas and Kaner (2002), mammals share the same facial expressions, gestures, and body language which convey certain emotions. If the ears are facing sideways and slightly forward, the animal in question is relaxed. If they start facing forward, the animal is alert or is listening to something. If the ears become straight out like airplane wings, that means the animal does not want to bother you or that they are in charge. When an animal is in danger, their eyes become half-closed and they eyebrows turn into a frown. However, when they close them, this indicates that they give up. If their mouths are slightly open, this indicates that the animal is relaxed. When it chooses to open its mouth and show teeth, the animal is ready to attack. However, if the animal opens its mouth but makes sure to cover its teeth with its tongue, it is showing that it is playful and ready to play either with a human (when talking about pets) or any other member of its species. Members of a certain species easily understand when their peer is being playful with them., Goodall (1986, as cited in Liebal et al., 2005) explains how play hitting is an important part of the rough-and-tumble play for chimpanzees. They do a specific arm raise to indicate that they are about to playfully hit someone and initiate the act of play. Movement and position of body are also visual signals:

> When a deer erects its tail, the white markings become visible and this warns other individuals of a danger. Some other visual signals involve rhythmic movements, for example the fiddler crabs waving their claws to attract females, or the dance displays by many birds, for example grouses and cranes'' (Håkansson and Westander 2013, p. 33).

4.5. Tactile Signals

Håkansson and Westander (2013) explain how the tactile signal is the first type of communication between most animal species with newborn infants. Humans as well as chimpanzees kiss, cuddle, and hold their babies while cats, dogs, cows, and sheep lick their newborns. ‘‘Tactile signals often takes place in intimate contexts and is harder to investigate than for example acoustic and visual communication’’ (p. 25). As Tomecek (2009) states, a research has been deducted that proves that after stressful situations they have been exposed to, chimpanzees give each other hugs to comfort each other and this lowers their stress levels significantly. Some species groom as a way of apologizing after making a mistake in order to stay in the group and not become marginalized: ‘‘When two high-ranking European mountain sheep battle over social standing or a potential mate, the loser will often groom the winner, licking his head and shoulders. This is a way of saying, “I’m sorry for challenging you, and now I know my position” (Tomecek 2009, p. 71). Tomecek (2009) explains that in some species, grooming is showing love and appreciation for their mate, and this is more usual in birds and mammals which are monogamous animals. He further explains that pets like to be petted by their human owners because it represents a form of grooming, and allows them to grow a bond between them. In other species, male-to-male grooming is more prominent than female-to-male grooming because for them it is a way of showing respect between each individual. Acording to Tomecek (2009), male-to-male grooming also helps with climbing up the hierarchy ladder. Researchers have observed that in many cases after a younger male grooms a dominant male in the group, the dominant male allows the younger one to mate with a female that would normally be off limits. When approaching each other, animals also have certain gestures they do and follow in order to say hello to one another. It varies between species.

> Giraffes lick and nuzzle each other’s heads, bodies, manes or eyes. With their ears held high and folded, elephants touch trunk tips. They might even put their trunk tips in each other’s mouths. Male plains zebras sniff each other’s noses. Then, with their ears bent forward, they make a chewing motion with their mouths. Like house cats, lions rub their heads and bodies together. (Douglas & Kaner, 2002, p. 18)

A research has been done by Harlow in 1958 and its results illustrate the importance of the tactile signal in non human primates. The researcher wanted to test the importance of touch during the bonding that happens when an infant breastfeeds. Infant monkeys were given an

extremely realistic laboratory constructed mother which was constructed perfectly for the infant's needs, however, it did not lactate. The mother-substitute differed from the live mother because she was always there for her infant, ready to cuddle it whenever it pleased, give him reassurance and warmth, it did not scold him or bite him in anger and it never left its side to go care for its siblings or herself. Despite being hungry and needing to feed, the infant chose to spend more time with the mother-substitute, giving the researcher the conclusion that to an infant the process of bonding with the mother is more important than being fed. This suggested "that the primary function of nursing is that of insuring frequent and intimate body contact of infant with mother" (Harlow 1958, p. 680).

5. Is Nonverbal Communication a Result of Nature or Nurture?

Since humans are in a way a part of the animal kingdom and we share some same traits, scientists have long wondered whether communication with other humans and animals around us is taught or innate, i.e. they were trying to answer the old question of nurture vs. nature. Is the need for nonverbal communication something that is taught to us and other animals since the day we are born or is it something that is innate to all of us? Ekman and Friesen (1969) wrote about this, looking at three outlines of nonverbal behavior; nonverbal behavior as inherited neurological programs, as an experience common to all members of one species, and as an experience that varies with culture, class, family or the individual. It is clear that using a specific language and words to express our feelings, thoughts, and emotions is something that we are taught. If you raise an infant in an environment where no one is speaking and using words to communicate, this will be reflected in its lack of using a language as a way of communication. Human's instincts might make it want to produce sounds and express itself by using words, but it will not know how to do so until it learns the conventions of a specific language. Because of that, we can clearly state that verbal communication is something that is taught from the day we are born. However, is it innate to humans and animals to communicate using nonverbal cues? Is nonverbal communication a behavior that is genetically transmitted and inherited to every member of the human and animal species?

That is a rather difficult question to answer and to try and answer and explain it, Knapp et al. (2013) suggest that the development of nonverbal communication across evolutionary time might be the answer. There are five research perspectives from which they are looking at it in order to try and answer this question.

The first one suggests that ‘‘evidence from sensory deprivation" (Knapp et al., 2013, p. 31) is imporant because blind and/or deaf people can not learn a certain behavior pattern through visual or auditory channels i.e. learning. Research by Meaidi et al. from 2014 has shown that people who were born blind and have never been able to see also have the ability to dream. However, their dreams do not constist of classic images and visual cues, rather other sensory cues like touch, taste, sound and smell. Also, people who lose their ability to see later on in life start to lose their ability to see in their dreams as well. This suggest that dreaming is innate to humans, however, if you have not seen something and processed it through the sense of vision, your brain will not be able to visualise it in your dream. Eibl-Eibesfeldt (1973, 1975, and Pitcairn & Eibl-Eibesfeldt, 1976, as cited in Knapp et al., 2013), conducted a research using several deaf/blind children from the ages two to ten and compared the results with other research on children behavior done on children with the ability to hear and see. Their conclusion was that " the spontaneous expressions of sadness, crying, laughing, smiling, pouting, anger, surprise, and fear are not significantly different in blind/deaf children (Knapp et al., 2013, p. 32). This proves the existence of basic human emotions that are innate and inherited in all of humans, no matter the environment or culture. Since these emotions are nonverbally expressed through facial expressions, it can be said that nonverbal communication, or at least one subcode of it, is innate to all humans. In the same research (Eibl-Eibesfeldt, 1973, 1975 and Pitcairn & Eibl-Eibesfeldt, 1976, as cited in Knapp et al., 2013), kinesics like body and eye movement have also been proven to be innate to humans. Blind children sought contact with others by streching out one or both hands, wanted to be embraced or comforted by other using touch, they would look away if asked something that made them shy, and use the same gestures as sighted children when refusing an offer.

The second perspective worth looking at is evidence from neonates, i.e. looking and observing infant behavior within minutes or hours after birth. Even though human infants are still to weak and fragile to walk, they all have the innate instinct to strech their feet out when being picked up to immitate standing up, and this is one of the standardized tests nurses do to infants after being born to check if they have proper reflexes. According to Grunau and Craig from their research (1990, as cited in Knapp et al., 2013), infants express the feeling of pain in an almost identical way to adults, without visual learning or imitating. The way infants express pain is that they lower their brows, squeeze their eyes shut, open their mouth and cup their tongue along with scrunching their nose until there are vertical wrinkles visible. However, infants also learn and imitate facial expressions they see. Kuhl and Meltzoff (1982, as cited in Knapp et al., 2013)) explain:

> The early integration of cognitive, linguistic, and communicative development is also demonstrated by the infant's ability to process visually the connection between mouth shape and sound; for example, that the "ah" sound comes from a mouth with the lips wide open and the "ee" sound comes from a mouth with corners pulled back (p. 39)

The third perspective is looking at evidence from identical twins reared in different environments. This gives scientists the ability to look at, what they know to be, virtually the exact same genetics that are being raised in different environments, exposed to different circumstances and are taught different things. Knapp et al. (2013) state that different areas of a person's characteristics are influenced by genetics, and that is up to 70 % with general influence, and down to 34 % with social attitudes. When it comes to nonverbal cues, Farber (1981, as cited in Knapp et al., 2013) explained how "some statistical evidence showed striking similarities between twins in vocal pitch, tone, and talkativeness" (p. 42) The same research also showed that similarities between "other mannerisms such as posture, laughter, style of walking, head turning, and wrist flicking were also observed as more alike than any quantifiable trait the observers were able to measure" (Knapp et al. 2013, p. 42). Other research like the one from the University of Minnesota Center for Twin and Adoption Research (Bouchard, 1984, 1987; Segal, 1999, as cited in Knapp et al., 2013) show that twins that were raised apart pose for a picture in a similar way, as well as style their hair and clothes, and often times end up working at similar jobs.

The forth perspective is looking and observing evidence from other animals, especially primates, by "showing an evolutionary continuity of a behavior up to and including our closest relatives, nonhuman primates" (Knapp et al. 2013, p. 32). It is easier to understand human behavior when you compare it to that of other primates, as it similarly contains " mating, grooming, avoiding pain, expressing emotional states, rearing children, cooperating in groups, developing leadership hierarchies, defending, establishing contact, and maintaining relationships" (Knapp et al. 2013, p. 44). If you compare the way humans show teeth when they are angry and agitated, and compare it to an angry chimpanzee which is about to attack its opponent, it becomes clearer that humans once used the same facial expressions for similar purposes. The human smiling face has been compared by researchers with the animal "playful" face of an open mouth, with lips covering its teeth (Knapp et al. 2013, p. 49). The nonverbal cue of apperance also has a connection between human and non human primates as the colour red on a female attracts males and is, in humans, viewed as "sexy". Seeing the colour red on

someone's face in human or non human primates may also represent the readiness to mate and reproduce, for example, some monkey species show their readiness to reproduce by the area around their genitals turning red. (Hill & Barton, 2005; Khan, Levine, Dobson, & Kralik, 2011, as cited in Knapp et al. 2013, p. 51).

The fifth and final perspective is to look at evidence from multicultural studies by exploring "similar behaviors used for similar purposes" (Knapp et al. 2013, p. 32) in different cultures around the world. People living and existing in the same cultural environment naturally share similar genetics and backroungs which influence the way they use nonverbal cues to communicate. Matsumoto (1991, as stated in Knapp et al., 2013) believes that two basic dimensions of a culture will determine the rules and patterns for facial expressions in that particular culture. He looks at power distance, or "the extent to which a culture maintains hierarchical, status, and/or power differences among its members as well as individualism in the culture, or the degree to which a culture encourages individual needs, wishes, desires, and values versus group and collective ones" (Knapp et al. 2013, p. 56). Meaning, if hierarchy represents a big role in a culture, "people will display more emotions in public that preserve status differences" (p. 56), and if individualism is imporant in the culture, people "will manifest greater differences in public emotional displays between ingroups and outgroups than in collective cultures" (p. 56).

According to Janik (2001) behavior that is innate to various species of animals, meaning they will know how to do it despite not seing other members of their species doing it, is bevahior like swimming, climbing, closing their mouth and ears while underwater, walking on four legs, closing their fists and grabbing onto things, as well as sucking on their mother's breast and reflexes that occur if pain is inflicted on the individual. Behavior that is partly innate and partly taught represents exact specifics of a certain action an individual does; i.e. a bee's dance, or the melody a bird sings, and the specific language a person speaks. Meaning, these species have the genetic predispositions to behave this way, however, they need to be taught how to do so. The same goes for humans. Our brains are wired in a way in which we want to use sounds and words to express our feelings, taughts, and emotions, however, we do will not be able to do so until we are taught a specific language growing up. When it comes to purely taught or learned behavior, it is difficult to exactly distinquish it from innate behavior. We may teach a cat that pushing a certain lever will ultimately result in getting food, and so the cat will push that same lever whenever it is feeling hungry. However, the cat's brain still has to be developed and wired in a specific way for it to understand the connection between the lever and

getting food. Thus, even behavior that seems purely learned at first, would not be possible without specific genetic predispositions.

6. Conclusion

Communication is the process of exchanging information between two or more individuals. It may occur verbally, with the use of words of a specific language, or nonverbally. Nonverbal communication is communication that occurs between individuals without the use of words. Moore et al. (2014) separate human nonverbal communication into studies such as haptics (the study of touch), proxemics (personal space, environment, and territory), kinesics (body movement), vocalics (paralanguage), chronemics (time), body alterations and coverings, and the covert subcode of chronemics (time).

Animal nonverbal communication is seperated into signals. According to Håkansson and Westander (2013) pheromones, auditory cues, visual cues, and tactile cues are the most common signals. Some species of fish even recognize electrical signals. Animals communicate to contain their identity, protect their territory and food supply, mate, raise their young and organize group behaviors.

To determine whether a nonverbal behavior is innate to all animal species, including humans, or not, Knapp et al. (2013) suggest that the answer may lie in the development of nonverbal communication across evolutionary time. There are five research perspectives from which they are looking at in order to try and answer this question. Knapp et al. (2013) state that basic emotions and the expressions that follow them are innate to all humans around the world. Following a research with identical twins, Knapp et al. (2013) conclude that different areas of a person's characteristics are influenced by genetics, i.e. a person's general characteristics can be influenced by genetics up to 70 %, whereas society may influence it up to 34%. When it comes to nonverbal cues, Farber (1981, as cited in Knapp et al. 2013) explained how "some statistical evidence showed striking similarities between twins in vocal pitch, tone, and talkativeness" (p. 42). The same research also showed that similarities between "other mannerisms such as posture, laughter, style of walking, head turning, and wrist flicking were also observed as more alike than any quantifiable trait the observers were able to measure" (Knapp et al. 2013, p. 42).

To conclude, this paper tries to define various nonverbal communciation subcodes and observe their usage in humans and animals. It analyzed human nonverbal subcodes as well as animal nonverbal signals used for nonverbal communication between members of the same

species. Trying to establish whether nonverbal communication is a result of innate or learned behavior is difficult and complex. It is safe to state that certain subcodes of nonverbal communication and behavior are genetically transmitted from one individual to another. Other behaviors, like teaching a dog a trick are learned behaviors, however, they do have to have an innate predisposition to be successfully learned.

7. References

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