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Micro-expressions as a form of interpersonal communication

Mikroekspresje jako forma komunikacji interpersonalnej

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Abstract: Many different definitions are assigned to interpersonal communication. Regardless of their multiplicity interpersonal communication can be divided into verbal and non-verbal. In the first type, words play the most important role (both spoken and written) while in the second - body language which includes gesticulation, eye contact, touch, physical distance, sounds (paralanguage), way of speaking, body position and facial expressions. Some sort of facial expressions are micro-expressions which lasts fractions of a second. To better understand this phenomenon, they the subject of basic emotions that occur naturally in all cultures is touched on. Micro-expressions are so short that it is very difficult to register consciously. For this reason, the Facial Action Coding System (FACS) is used to have a second look on them. Micro-expressions may be useful in clinical, political and broadly understood security.
Key words: interpersonal communication, verbal communication, non-verbal communication, micro-expressions, basic emotions.

Abstrakt: Komunikacji interpersonalnej przypisuje się wiele różnych definicji. Niezależnie od ich mnogości, komunikację interpersonalną można podzielić na werbalną i niewerbalną. W pierwszym rodzaju najważniejszą rolę odgrywają słowa (zarówno mówione jak i pisane), natomiast w drugim – szeroko pojęta mowa ciała, do której zalicza się gesty, kontakt wzrokowy, dotyk, dystans fizyczny, wydawane dźwięki, sposób mówienia, pozycję ciała oraz mimikę. Pewnym rodzajem ekspresji mimicznych są mikroekspresje, trwające ułamki sekund. Aby lepiej zrozumieć to zjawisko, zagłębiono się w tematykę emocji podstawowych, które występują naturalnie we wszystkich kulturach. Mikroekspresje trwają tak krótko, że bardzo trudno jest je zarejestrować świadomie. Z tego powodu, by dokładniej im się przyjrzeć, wykorzystuje się system FACS (ang. Facial Action Coding System). Mikroekspresje mogą okazać się użyteczne w obszarach klinicznych, politycznych oraz szeroko pojętego bezpieczeństwa.
Słowa kluczowe: komunikacja interpersonalna, komunikacja werbalna, komunikacja niewerbalna, mikroekspresje, emocje podstawowe.

Introduction

Non-verbal communication plays a very important role in communication (Dolińska, 2013). Facial expressions can provide a lot of information about the sender. The type of this phenomenon are micro-expressions which last less than a second. They are the "leak" of the speaker's real emotions. Their presence is believed to be one of the indicators of lie (Ekman, Friesen, 1969).

The purpose of this article is to introduce the subject of micro-expression and an attempt to indicate their significance in communication. To better understand this subjebt

such issues as the definition of interpersonal communication, types of communication, history of micro-expression, characteristics of basic emotions and the importance of micro-expression in social life were raised.

1. Definition of communication

It is difficult to clearly define the term of communication (Kulczycki, 2012). It is such a broad appellation that it is impossible to indicate one universal definition. According to Clevenger (1991), this difficulty results from the excessive universality of the verb "communicate" (Ibidem).

Okoń (1998) proposed one of the definitions which is present in the Polish source literature. In this sense interpersonal communication is the exchange of messages (information) between the sender and the recipient via a channel (Chodkowski, 2017). Nęcka, Orzechowski and Szymura (2006) claimed that interpersonal communication is the exchange of verbal, vocal and non-verbal signals. However, to make that happen, four elements must be present: sender (person coding information), recipient (person decoding information), code (the way information is transmitted) and channel (path whereby information pours). In turn, the definition proposed by Augustynek (2008) describes interpersonal communication as a process that determines the transmission of verbal signals, i.e. speech and non-verbal signals, including pantomimic, facial expression or tone of voice (Chmielowska - Marmucka, Górska, 2015).

2. Types of communication

Communication is most often divided into verbal and non-verbal (Chmielowska-Marmucka, Górska, 2015). The first mentioned type is understood as a communication through the use of words. These words can be transmitted in both speech and writing (Ibidem). It is reasonable to indicate the difference between language and speech. The language is described as a coding system of meanings by means of a finite set of symbols - these include script characters and speech sounds. Operating these symbols is determined by grammar rules characteristic of specific natural or artificial language (Nęcka, Orzechowski, Szymura, 2006). In contrast, speech is the ability to give and receive language messages through vocal expressions or writing characters (Ibidem, p. 590). Language is used to provide information, express thoughts and feelings - but it only makes sense if it is understood by the sender and recipient (Frączek, 2012). Considering verbal communication, certain speaker and listener skills are important. As far as the speaker is concerned the ability to express itself and communicate in detail is significant. On the other hand, the listener

should pay attention to confirm that the information was understandable or ask for its possible explanation (Zięba, 2008).

Non – verbal communication is defined by Kozak (2005) as non-verbal signals received from various senses which come from the features of the human body. Dolińska (2013) lists the following elements of this type of communication:

- gesticulation - all kinds of head, limb and torso movements;
- eye contact - looking in the eyes with different duration and frequency, avoiding looking during the conversation is also an eye contact;
- physical distance - the distance between the interlocutors. There is an intimate distance (0 - 45 cm) - it is reserved for close ones. The appearance of a stranger at this distance causes discomfort, personal distance (45 - 120 cm) - for every day, neutral contacts, social distance (120 - 360 cm) - is reserved for official contacts, public distance - present at public meetings;
- touch - is expressed, for example, by handshake;
- sounds (so-called paralanguage) - all kinds of sighs, grunts, wheezing, etc .;
- way of speaking - the tone of the interlocutors' voice and the speed at which they speak;
- body position - it is a way of arranging the interlocutor's while standing, sitting or walking;
- facial expressions - movements in which facial muscles are involved. These movements result, among others, in a smile or a frown. The kind of facial expressions are micro-expressions. They are characterized by a very short duration - it is less than a second. They reveal the real emotional state of the interlocutors especially when they want to mask their true feelings (Ibidem).

3. History of micro-expressions

To be able to talk about micro-expressions, at first the subject of basic emotions should be touched on (Pfister, Zhao, Li, Pietikäinen, 2011). It is assumed that basic emotions include: joy, anger, fear, sadness, disgust and surprise (Łosiak, 2015). Paul Ekman added contempt to this list (Ibidem). These emotions arose in the process of evolution and had an adaptive function there (Ibidem). Interestingly, numerous Ekman research done in the second half of the last century confirmed that people who belong to different, independent of each other cultures recognize basic emotions with similar - high - relevance (Lewczuk, 2007). However, more modern studies show some cultural differences in facial expressions of emotions (Ibidem). Elfenbein's and Ambady's research (2002) prove that it is easier to recognize emotions expressed mimically in people who belong to the same culture. For example, the inhabitants of the United States and Europe recognized the emotions of

Americans more accurately (75-83%) than the Japanese (65%) and Africans (50%) (Ibidem, p. 13).

It can be said that Darwin (1872) was the precursor of research on micro-expressions (Matsumoto, Hwang, 2018). He created the theory of braking, which says that it is impossible to control the movements of the face - when we want to hide our real sensations involuntary movements appear. It has a neuroanatomical background. There is an area in the brain responsible for controlling voluntary movements and an area responsible for controlling involuntary movements. When a person experiences emotions that they want to hide these two areas "fight" with each other. During this fight, there is a very short leakage of real emotion, which is called micro-expression (Ibidem).

Today, one of the most well-known micro-expression researchers is Paul Ekman. He and Friesen discovered that micro-expressions are an indicator of lies. In 1969, they watched the video several times in slow motion while developing these indicators. It presented the conversation of a patient struggling with depression with a doctor. The researchers registered that while the patient convinced the doctor that she was feeling well and was not going to commit suicide, behind the apparent smile was the emotion of sadness lasting very short - less than a second (Ekman, Friesen, 1969).

Micro-expressions appear unknowingly. They are caused by the movements of the facial muscles which are really difficult to trigger intentionally. They usually occur when someone tries to mask their real emotions. Thus, they provide a lot of important information but due to the very short duration they are difficult to see in real situations and often are received without awareness (Matsumoto, Hwang, 2018).

4. Characteristic of basic emotions

As mentioned in the previous section, micro-expressions are very short, lasting less than a second, "leaks" of truly felt emotion, visible on the face (Ekman, 1997). For this reason the description of the expression of basic emotions seems to be reasonable.

Figure 1. Joy; https://medium.com/datadriveninvestor/3-most-widespread-myths-about-emotions-in-affective-computing-7ae67f427d96

What is characteristic of joy is Duchenne smile (Barrett, Adolphs, Marsella, Martinez, Pollak, 2019). This smile engages facial muscles, more precisely zygomatic and orbicularis oculi (Frank, Ekman, 1996). The first type is responsible for raising the corners of the lips while the second - for stretching the skin under and above eyes (Ibidem). The tension of orbicularis oculi causes characteristic wrinkles around the eyes which are called crow's

feet wrinkles (Williams, David, Senior, Loughland, 2001). The name of this type of smile comes from the French anatomist Duchenne de Boulogne who discovered what distinguishes a real smile is the activity of muscles in the eye area (Mehu, Dunbar, Little, 2007).

Figure 2. Sadness; https://medium.com/datadriveninvestor/3-most-widespread-myths-about-emotions-in-affective-computing-7ae67f427d96

The main signs of sadness are sagging lip corners (Barrett, Adolphs, Marsella, Martinez, Pollak, 2019). What is more, eyes may be slightly squinted (Ibidem). The position of eyebrows is also important. They are wrinkled and their inner parts are elevated (Schmidt, Cohn, 2001).

Figure 3. Anger; https://medium.com/datadriveninvestor/3-most-widespread-myths-about-emotions-in-affective-computing-7ae67f427d96

When someone feels anger his eyes are wide open, the skin of his eyelids is stretched and his eyebrows are furrowed (Barrett, Adolphs, Marsella, Martinez, Pollak, 2019). Eyes and eyebrows are arranged in the shape of the letter "V". Moreover, lips are usually thinned (Jenkins, 2007).

Figure 4. Fear; https://medium.com/datadriveninvestor/3-most-widespread-myths-about-emotions-in-affective-computing-7ae67f427d96

A very characteristic sign of fear is the tension of the lower eyelids, while the upper ones are very raised. Eyebrows also rise slightly and are drawn together. It is meaningful that the eye whites are visible. When it comes to the lower part of the face, lips extend towards ears and the chin is withdrawn (Ekman, 2012).

Figure 5. Disgust; https://medium.com/datadriveninvestor/3-most-widespread-myths-about-emotions-in-affective-computing-7ae67f427d96

The lower part of the face plays an essential role in disgust expression. The upper lip is raised to the limit, while the lower lip is slightly raised and pushed forward. Nostrils are also raised and wrinkles are visible on the nose (Ekman, 2012).

Figure 6. Contempt; https://medium.com/datadriveninvestor/3-most-widespread-myths-about-emotions-in-affective-computing-7ae67f427d96

Face expression of contempt is in a sense similar to disgust. The upper lip is also raised but slightly. One corner of the mouth is raised and accompanied by tension. Also the chin can be raised (Ekman, 2012).

Figure 7. Surprise; https://medium.com/datadriveninvestor/3-most-widespread-myths-about-emotions-in-affective-computing-7ae67f427d96

Characteristic mark of surprise expression is jibber lower jaw. The upper eyelids are heavily raised, similarly to emotion of fear. The eyebrows are raised, but at the same time the tension is not so visible (Ekman, 2012).

5. Importance of micro-expressions in society

It is considered that micro-expressions are a sign of a lie (Ekman, Friesen, 1969). However, it should be remembered that there are a number of configurations verifying sincerity – micro-expressions are only one of them. For this reason their interpretation should be taken with caution and mindfulness (see: Ekman, 1997).

Micro-expressions find application in the clinical area (Yan, Chen, Wu, Liang, Fu, 2013). They show the patient's true emotions which can be helpful, for example, in the therapy process (Ibidem, p. 221). This is essential, among others, in the case of suicidal patients – micro-expressions reveal their true intentions (Lu, 2018).

Knowledge of micro-expression is also significant in the broadly understood area of security (Lu, 2018). Therefore, in the United States Screening Passengers by Observation Technique was created. It is based on Ekman's micro-expression research. The purpose of this program is to identify people who could potentially pose a threat to aircraft passengers (Ibidem).

Micro-expressions also play an important role in politics (Steward, Waller and Schubert, 2009). Steward, Waller and Schubert (2009) research showed that even very brief facial expressions presented in presidential speeches affected society's emotions. It turned out that those candidates whose speech, thanks to the presence of micro-expression, evoked an emotional response in recipients received more support (Ibidem).

A widely used tool for micro-expressions analysis is The Facial Action Coding System (FACS) (Vich, Waller, Parr, Smith Pasqualini, Bard, 2007). Thanks to the description of facial

muscle movement it is allowed to objectively describe facial expression in great detail. This tool divides facial expressions into Action Units. They include any small change in facial expressions such as eyebrow raising. Action Units are the result of a specific facial muscle movement. FACS allows to visualize each area of face and combines anatomy with a detailed analysis of changes in the appearance of face which makes this tool very valuable for scientists (Ibidem).

Summary

Communication should be considered in many dimensions. Source literature provides information which allows to conclude that this is a complex phenomenon. Addressing issues related to this area the first thoughts that comes to mind are words and writing. This is a fairly erroneous observation because, as it turns out, other nonverbal signals – micro-expressions, i.e. signals coming from the human body are also included in the communication. Specialists postulate that these signals are done out of consciousness. We should also make our reflect on the rank of these "words" in the social environment. It turns out that people don't need words to communicate with each other. You can read a lot from face as evidenced by theoretical premises saying that micro-expressions provide more information than words.

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