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**Stefan Frydrychowicz**

https://orcid.org/0000-0001-8318-6880
Uniwersytet Ignatianum w Krakowie, Polska
Ignatianum University in Cracow, Poland
stefan.frydrychowicz@ignatianum.edu.pl
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# *Building a Common Plane of Understanding (CPU) in the Process of Interpersonal Communication*
# *Budowanie wspólnej płaszczyzny porozumienia w procesie komunikacji interpersonalnej*

## ABSTRACT

**RESEARCH OBJECTIVE:** This study aims to demonstrate the role of a common plane of understanding (CPU) in interpersonal communication. It analyzes the distribution of communication dimensions (CD) – information (CDI), energy-emotion (CDEE), collaboration and common activity (CDCC), and relation (CDR) – in the process of building CPU. Additionally, it examines the relationship between CPU and effective communication (EC).

**THE RESEARCH PROBLEM AND METHODS:** Two theses were formulated: 1. There is a connection between the structuring of the communication process and building CPU; 2. There is a connection between CPU and EC. A systemic, structural, and constructivist approach was applied to analyze these relationships.

**THE PROCESS OF ARGUMENTATION:** CPU is a shared platform for understanding, which encompasses the regulation and coordination of the forms of variability in the communication process (FVCP), including CD. CPU is indispensable for communication, as it enables the sender (S) and receiver (R) to exchange information and establish meaning. The communication process unfolds across four dimensions: DCI, DCEE, DCCC, and DCR. Each of these dimensions contributes uniquely to the formation of CPU.

**RESEARCH RESULTS:** Proper regulation and coordination of FVCP, including CD, correspond to the development of CPU. The research presented in this article substantiates the interdependence of communication dimensions and CPU. In casual conversation, the dimensions that contribute most significantly to CPU, in order of impact, are DCCC, DCR, DCEE, and DCI.

**CONCLUSIONS, RECOMMENDATIONS, AND APPLICABLE VALUE OF RESEARCH:** The influence of CD on CPU suggests that the transmission of information through the informational dimension must be preceded by the appropriate regulation of the other dimensions. Expanding one's knowledge, skills, and competencies in each CD is a valuable endeavor: it strengthens not only CPU buildingt but also communication effectiveness. CPU is a vital element

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of interpersonal communication, as it facilitates mutual understanding and meaningful interaction between interlocutors.

→ **KEYWORDS:** **INTERPERSONAL COMMUNICATION, COMMON PLANE OF UNDERSTANDING, COMMUNICATION DIMENSIONS, EFFECTIVE COMMUNICATION, REGULATION & COORDINATION**

## STRESZCZENIE

**CEL NAUKOWY:** Ukazanie roli, jaką odgrywa wspólna płaszczyzna porozumienia (WPP) w procesie komunikacji interpersonalnej. Analiza udziału wymiarów komunikacji (WK): informacyjnego (WKI), energetyczno-emocjonalnego (WKEE), współdziałania, wspólnego wykonywania czegoś (WKWW) i relacyjnego (WKR) w budowaniu WPP. Pokazanie związku między WPP a efektywnym komunikowaniem się (EK).

**PROBLEM I METODY BADAWCZE:** Sformułowano dwie tezy: 1. Istnieje związek między ustrukturowaniem procesu komunikacji (PK) a budowaniem WPP. 2. Istnieje związek między WPP a EK. Do analizy treści opisujących związki wymienione w tezach zastosowano podejście systemowe, strukturalne i konstruktywistyczne.

**PROCES WYWODU:** W ramach WPP dokonuje się regulacja i koordynacja form zmienności procesu komunikacji (FZPK), w tym WK. WPP jest funkcjonalnie niezbędna dla PK, ponieważ umożliwia N(adawcy) i O(dbiorcy) wymianę informacji i ustalanie ich znaczenia. PK rozgrywa się na czterech wymiarach: WKI, WKEE, WKWW i WKR. Każdy z nich wnosi swój specyficzny wkład w budowanie WPP.

**WYNIKI ANALIZY NAUKOWEJ:** Odpowiednia regulacja i koordynacja FZPK, w tym WK ma związek z budowaniem WPP. Badania własne przytoczone w artykule wskazują, że istnieje zależność między WK a WPP. Największy wpływ na budowanie WPP w trakcie swobodnej rozmowy mają w kolejności wymiary: WKWW, WKR, WKEE i WKI.

**WNIOSKI, REKOMENDACJE I APLIKACYJNE ZNACZENIE WPŁYWU BADAŃ:** Wpływ WK na budowanie WPP wskazuje, że przekazywanie informacji w WKI powinno być poprzedzone odpowiednią regulacją pozostałych wymiarów. Warto poszerzać swoją wiedzę, umiejętności i kompetencje w każdym z WK, gdyż przyczynia się to nie tylko do sprawniejszego budowania WPP, ale również do efektywniejszej komunikacji. Budowanie WPP jest istotnym elementem procesu komunikacji interpersonalnej, ponieważ umożliwia uwspólnienie znaczenia między interlokutorami i nawiazanie między nimi kontaktu.

→ **SŁOWA KLUCZOWE:** **KOMUNIKACJA INTERPERSONALNA, WSPÓLNA PŁASZCZYZNA POROZUMIENIA, WYMIARY KOMUNIKACJI, EFEKTYWNA KOMUNIKACJA, REGULACJA I KOORDYNACJA**

## Introduction

Interpersonal communication is one of many processes that are essential to human functioning. However, compared to cognitive processes such as perception, attention, memory, and thinking, it has several distinct characteristics. First, it involves at least two individuals – a sender (S) and a receiver (R) – who alternate roles throughout the interaction. Second, both interlocutors actively contribute to the communication process (CP), co-constructing it, though not always to the same degree. Third, this makes communication both an individual and a social phenomenon. This dual nature is also tied to the use of a shared code, mainly linguistic and symbolic, by both the sender and the receiver (Philips, 2007; Sztompka, 2016; Turner, 2002).

Heath and Bryant (2000) define communication as "a process or set of actions by which people share symbols as they create meaning through interaction" (p. 1). More broadly, a process can be understood as a series of steps or stages connected by relationships that work toward a specific goal or final outcome (Frydrychowicz, 2021). In the case of interpersonal communication, this goal is for the sender and receiver to construct a message, mutually agree on its meaning, and ultimately reach an understanding.

## Theoretical Approaches to the Communication Process

This article applies three theoretical perspectives to the study of interpersonal communication: the structural approach (Bertalanffy, 1984), the systems approach (Heath & Bryant, 2000), and the constructivist approach (Piaget, 1981). Additionally, it is worth mentioning findings from neuroscience which suggest that mirror neurons play a key role in shaping interpersonal communication between S and R (Rizzolatti & Craighero, 2004; Rostowski & Rostowska, 2014). Similarly, synchronization between individuals engaged in shared activities has been identified as an important factor in communication (Condon, 1984; Takamizawa & Kawasaki, 2019). However, due to space limitations, these two topics will not be discussed in detail in this article.

A systems meta-theoretical perspective (systems meta-theory) assumes the following principles:

1. Communication systems are self-regulating, characterized by goal orientation, regulation, adaptation, and feedback mechanisms.
2. A change in one part of the system triggers changes in all other parts.
3. "Relationships among people are complex, interdependent, dynamic, self-adjusting, and goal oriented" (Heath & Bryant, 2000, p. 32).

This dynamic systems approach to communication allows for an analysis of both the structure of the communication process – its components and their interconnections – as well as the mechanisms of regulation and coordination that determine these interconnections. In contrast, the constructivist approach posits that the elements of communication and their relationships do not arise randomly but are actively constructed,

both consciously and unconsciously, by interlocutors. In this paradigm, regulation and coordination act as mechanisms responsible for structuring communication. A key example of constructivist behavior in communication is the development of a common plane of understanding (CPU), which enables interlocutors to collaboratively construct messages, establish a shared understanding of conveyed meanings, and build meaningful connections.

Building on these theoretical foundations, this study addresses two research questions:

1. Is there a relationship between the structure and dimensions of the communication process and the development of CPU?
2. Is there a relationship between CPU and EC?

The significance of these research questions lies in their focus on the core components of interpersonal communication. They look at how different communication dimensions shape CPU and how CPU, in turn, helps people communicate more effectively. Understanding these relationships is vital for analyzing the dynamics of the communication process and enhancing communication effectiveness among interlocutors.

## Structuring the Communication Process and Building a Common Plane of Understanding

A preliminary analysis of the communication process (CP) reveals fundamental elements that can be described as forms of variability – the building blocks of communication. These include communication dimensions (CD) (explored in detail below), spoken utterances and their components (words, sentences, and sequences of speech), and nonverbal elements such as facial expressions, gaze, gestures, posture, and appearance. Additionally, the forms of variability in the communication process (FVCP) encompass paralinguistic features – such as voice volume, intonation, timbre, speech rate, and pauses – alongside other elements that shape communication (Frydrychowicz, 2021).

These forms of variability are used by interlocutors to construct messages in a dynamic process, which relies on two key mechanisms: regulation and coordination. Regulation refers to the adjustment of intensity within various forms of variability. This process can be understood as “calibrating” different communication elements to control their impact. For example, a speaker may raise or lower their voice (Bręński, 2015; Frydrychowicz, 1999) or modify their facial expressions and gestures to convey emotions with greater or lesser intensity. Coordination, on the other hand, involves the integration, synchronization, and alignment of these forms of variability, both within an individual’s own communication and between interlocutors. This ensures that both S and R can effectively construct their messages while maintaining the natural flow of interaction. Coordination is particularly important for mutual understanding as it allows interlocutors to accurately interpret messages, take turns in conversation, and establish a shared comprehension of meaning.

## Defining CPU

CPU is a cognitive and interactive space that enables the coordination of forms of variability in the communication process between interlocutors. Within this framework, a shared understanding of meaning is established, which allows both the sender and receiver to align their interpretation of the messages being exchanged. Because achieving mutual understanding in communication relies on agreeing on the meaning of messages, CPU is functionally indispensable to the communication process. This functional necessity means that the CPU must be present for communication to be truly effective. However, it is not a physical or material structure; rather, it is a mentally co-constructed space, shaped by both S and R, where such coordination and meaning alignment become possible.

Research suggests that executive functions – such as working memory, planning, inhibition, cognitive flexibility, and task monitoring (Diamond, 2013; Putko, 2008; Peterson & Welsh, 2014) – play a role in shaping and maintaining CPU. From this perspective, CPU can be understood as a set of dynamically evolving memory traces related to the forms of variability in communication, as well as the content of messages being exchanged. These memory traces persist in working memory throughout the interaction, allowing for continuous adaptation and refinement of meaning. Importantly, CPU is not limited to a single moment in communication – it extends beyond the immediate "here and now." Once initiated, CPU can evolve, expand, or diminish over the course of successive interactions between interlocutors. In this way, CPU contributes not only to momentary understanding but also to the long-term development of interpersonal relationships.

## Dimensions of Communication and Their Role in Constructing CPU

The dimensions of interpersonal communication are key components of the communication process. As forms of variability of the communication process (FVCP), they are actively utilized by both S and R to construct messages. Although communication is often seen as just a transmission of information, it involves much more. In interpersonal interactions, people also express their emotions, share their feelings toward each other and the topics being discussed, and exchange experiences, skills, and knowledge. This process requires coordination and interaction. Additionally, communication plays a crucial role in defining and shaping relationships between individuals.

Based on this understanding, we distinguish four fundamental dimensions of communication (DC):

1. Informational (DCI) – focused on the clear and effective transmission of content.
2. Emotional-Energetic (DCEE) – related to the expression of emotions and generating mental energy.
3. Collaborative and common activities (DCC) – encompassing cooperation and joint activities.
4. Relational (DCR) – defining and managing interpersonal relationships.

Early research within the pragmatic approach to communication, particularly the work of the Palo Alto School, identified two key dimensions of interpersonal communication: the informational and relational aspects (Watzlawick et al., 1972). Efforts to identify the fundamental components of communication are also reflected in Schulz von Thun's (2005) interpersonal communication model, which differentiates four key levels of communication:

1. Factual content – ensuring clarity and comprehensibility in message delivery.
2. Interpersonal relationship – addressing how the interaction is established and perceived.
3. Self-revelation – conveying personal information.
4. Appeal – influencing others to achieve communication goals.

## Informational Dimension of Communication and Its Role in Building CPU

DCI refers to the content conveyed in a message (Watzlawick et al., 1972). It relates to facts, things that have happened, occurred, and can be perceived and interpreted. The essence of information transfer is to acquire new knowledge that expands one's skills, competencies, and understanding, which can potentially lead to changes in thinking and actions in the area relevant to the message. In cybernetic terms, information is a measure of the predictability of signals, determined by the number of choices that the sender can make (Fiske, 1999). A message with high predictability is considered redundant and provides little new information. For example, phrases such as: "I would like to add something," "I was just thinking," or "I won't get involved with this" are predictable and contain minimal new content. On the other hand, a high-entropy message, such as "You require comprehensive treatment" (spoken by a doctor to a patient), presents valuable, unpredictable information.

DCI is effectively regulated from the perspective of EC and its contribution to building CPU when both interlocutors (S and R) possess the same information and share its meaning. As a result, they become members of an "information community" (Domachowski, 1993, p. 125). It might seem that the more information people exchange, the better the communication. However, Wu and Keysar (2007) argue that when people communicate a large amount of information that was previously known only to them, it actually reduces EC. The transmission of relevant information (cf. Grice, 1980) – that both S and R share in meaning – is the most important contribution of the DCI to building CPU. Relevant information is crucial for S and R, as it directly pertains to the subject matter of the conversation or communication. It represents the heart of the problem, discussion, or exchange of ideas. In this regard, the proper implementation of DCI requires minimizing or eliminating unnecessary information that does little to contribute to building CPU, while exposing relevant details that directly address the heart of the issue at hand.

The Emotional-Energetic Dimension (DCEE) is key to expressing emotions and generating the mental energy that supports the effective flow of the communication process. In this dimension, the emotional stance of S towards both the message and R is communicated. The concept of energy is also tied to the level of involvement of both interlocutors in the communication process and their ability to sustain it. This engagement is possible when the interlocutors are attentive and fully present during the communication (Manusov, 2020). Motivation to communicate also plays a significant role here (Morreale et al., 2015).

Within this dimension, S and R "provide" each other with mental energy, which regulates their communication behavior. As Matczak (2008) notes, the energizing function pertains to the role of emotions in mobilizing resources and prompting action. For DCEE to function effectively, the interlocutors must exhibit behaviors that are genuine and sincere. An attitude of openness, expressed through open, "warm" communication, facilitates this process (Nęcki, 1996). From the perspective of building a positive relationship, it is important to balance emotional expression and the energy invested in communication, by adjusting them to the interlocutor, the situation, the topic of conversation, and the desired goal. Authenticity in communication builds mutual trust, which is a crucial component of a positive working relationship. Trust between S and R, in turn, is key to EC.

The third dimension of communication, Collaboration and Common Activities, focuses on S and R engaging in activities that bring them together instead of creating divisions. This dimension entails reducing psychological distance to foster closer connections and better cooperation in the joint construction of the communication process. This is facilitated by behaviors directed towards the other person. It is important for S to actively participate in R's experiences, and vice versa. A key aspect of this dimension is the active interaction between S and R during the exchange of information and the co-creation of meaning. The sum of shared knowledge, beliefs, and assumptions – known as the common plane of understanding – is a prerequisite for meaningful interaction and joint activity (Clark, 1996).

DCCC is also strongly supported by developmental foundations. Tomasello (2005) notes that around 9–12 months of age, a child develops the ability to decode and understand communicative intentions during interactions with adults, as well as the ability to jointly focus attention on an observed object. This occurs within a "shared scene," which refers to situations of collaboration and joint attention (Tomasello, 2002; Medeiros, 2021). As development progresses, it becomes increasingly possible to share perspectives on perception and understanding of reality, which is an important element in building a positive relationship (CPU).

Schaffer (2006) identifies reciprocity and intentionality as key factors for social exchange, which is also significant in establishing CPU. Reciprocity refers to the belief that interaction should be built through the active participation of both interlocutors, with their roles being coordinated and interchangeable. Intentionality, on the other hand, relates to the setting of communication goals and the planning of behaviors necessary to achieve these goals. The co-creation of the communication process by both S and R is the most important contribution of this dimension to building CPU.

The fourth dimension of communication involves the relationship between S and R. Communication requires the involvement of both interlocutors, leading to the formation of a unique relationship between them (Watzlawick et al., 1972). A relationship is defined as the way one person positions themselves in relation to another (Morreale et al., 2015). Watzlawick et al. (1972) distinguish between two types of relationships: symmetrical and complementary. A symmetrical relationship is characterized by equality and mutual reflection of behaviors, such as in the relationship between friends. In contrast, in a complementary relationship, one person's behavior is complemented by the other's; one person is necessary for the functioning of the complementary system. An example of this is the relationship between a doctor and a patient.

It is important to note that symmetrical and complementary relationships do not always arise from social roles or status, but can also stem from specific behaviors. For instance, a boss's lack of assertiveness in a situation that calls for it could undermine their authority and shift the relationship dynamic. However, it is worth emphasizing that rigidly adhering to a complementary relationship, especially when elements of a symmetrical relationship could be introduced, may not always be beneficial. A symmetrical relationship appears to better support the proportional contribution of S and R to the communication process and promotes the development of CPU.

In a study conducted by the author (2021), examining the relationship between DC and CPU, 60 participants (8 men and 52 women) were selected at random from a group of 126 individuals. The participants' ages ranged from 20 to 41 years, with an average age of 23.3 years and a standard deviation of 4.53 (median = 21 years). Verbal and non-verbal behaviors of the participants were recorded during a casual conversation using two cameras (one focused on S and the other on R), high-definition microphones, and a digital sound recorder.

To operationalize the explanatory variable – DC intensity – and measure it, six indicators for DCI, two indicators for DCEE, five indicators for DCC, and five indicators for DCR were used. For the explained variable, CPU, one composite indicator was employed (a detailed list of indicators and their descriptions can be found in the author, 2021, pp. 77–80). The duration of the communication process under analysis ranged from about 3 to 7 minutes. A second-by-second coding of the intensity of each of the 19 indicators for CD and CPU was applied (on a scale of 3-2-1-0). For example, in a 3-minute conversation, there were 19 indicators × 180 seconds = 3420 raw entries, multiplied by 2 (for the two participants), resulting in 6,840 records for each pair of participants. The results were calculated for 30 pairs of participants.

To determine the strength of the relationship between the time distribution of CD intensity differences between S and R and the intensity of CPU, the Furr profile correlation coefficient (2008) was used. The strongest positive correlations were found between: DCC and CPU ($r = .535$, $p > .05$), DCR and CPU ($r = .464$, $p > .05$), DCEE and CPU ($r = .446$, $p > .05$), and finally, DCI and CPU ($r = .0250$, $p > .05$). The study (Frydrychowicz, 2021) on the relationship between DC, EC, and the building of CPU showed that in the context of a casual conversation, DCC plays the largest role in constructing

CPU, followed by DCEE, DCR, and finally, DCI. These results are somewhat surprising, as one might have expected DCI to dominate the creation of CPU. However, it turns out that agreeing upon and sharing the meaning of the information between S and R requires prior regulation of other dimensions, particularly DCC. Only after this regulation does DCI gain its appropriate significance in building CPU.

Effective communication between S and R occurs when they are able to achieve their intentions and related goals. Communication is effective when:

1. it is efficient, which means that both S and R use their knowledge, skills, communication abilities, and other social competencies; and
2. it is successful, which means that S and R reach the goal for which the communication takes place.

Domachowski (2020) argues that a behavioral indicator of effective communication is whether "the recipient of the message behaves according to the sender's expectations, based on the appropriate message conveyed to them" (p. 33). Because communication is built together by S and R, and each person may perceive the interaction differently, they need a common plane of understanding. This shared space for co-creation – CPU – is what makes effective communication possible. Thanks to CPU, S and R can align their understanding of the conveyed information, determine what is significant, and define the core subject of the communication. In this sense, CPU is a prerequisite for effective communication. Therefore, achieving CPU can motivate S and R to take action based on their shared understanding and agreements about the issues discussed. In this context, CPU can be seen as an indicator of effective communication.

## Conclusion

In response to the first research question – whether there is a relationship between the structure of communication (specifically DC) and CPU – the answer is yes. CPU is a rapidly changing platform, a component of communication, where the regulation and coordination of the communication process occur, including DC. By utilizing DC, interlocutors construct a message, agree on its meaning through CPU, and pursue the intentions that brought them to the communication process. The findings from the study on the relationship between DC intensity, EC and CPU suggest that DCCC has the largest impact on building CPU, followed by DCR, DCEE, and DCI. It is important to note that each of these dimensions conveys specific types of information. DCI conveys information in a literal sense, DCEE provides information on emotions and mental energy involved in the communication process, DCCC conveys information about the collaboration between the interlocutors, and DCR offers information about the relationship between S and R during communication. A competent communicator is able to identify essential information in each of these dimensions. They can also interpret the information received from R and use it as feedback to guide the ongoing communication process. Schramm (1971) stressed the role of feedback as a key element in communication in his seminal article *The Nature of*

*Communication between Humans*. The issue of feedback and its role in communication is also discussed in the context of teacher-student relationships (see Bąk, 2015, 2017).

In response to the second research question – whether there is a relationship between CPU and EC – it is important to emphasize that CPU can be interpreted in two ways:

1. as a platform for understanding that is continuously constructed and co-created by S and R during their communication. In this sense, CPU is seen as a process of creation; and
2. as the outcome of CP in which S and R participate, reaching a final agreement on the meaning of the message. In this interpretation, CPU is the final result or state of CP.

When examining the process of creating CPU during communication between S and R, the following stages can be identified:

1. Mutual sharing of information, knowledge, and experiences related to the topic of conversation.
2. Striving for full understanding of what the other person is saying and communicating.
3. Achieving shared meaning of the conveyed content, which results from the effort to jointly understand what is being said and communicated by the other person. (Stages 1–3 represent the active process of building CPU.)
4. Reaching a common conclusion between S and R regarding the topic of the conversation, determining the core of the issue being discussed.
5. Finalizing the creation of CPU by establishing contact. It is important to note that contact can and should be initiated from the very beginning of the process of building CPU , but Stage 5 represents its finalization.

The process of creating CPU leads to EC and facilitates establishing rapport with the interlocutor. Establishing contact – an outcome of EC – signals that the communicative goal, initially shaped by intent, has been successfully reached. As outlined in this article, CPU plays a crucial integrative role in bridging different perspectives and helping interlocutors align their interpretations and understanding of reality. CPU can be considered a “game-changer” for the quality and effectiveness of communication. Without it, interactions risk being one-sided or minimally reciprocal. With CPU, however, communication transforms into a truly interactive process–one where meaning is co-constructed, engagement deepens, and authentic connections are formed.

## References

Bąk, O. (2015). Informacje zwrotne w szkole. Perspektywa nauczycieli i uczniów [Feedback in school: The perspective of teachers and students]. *Teraźniejszość – Człowiek – Edukacja*, *18*(3), 85–100.

Bąk, O. (2017). Styl wychowania a informacje zwrotne w komunikacji rodziców z adolescentami [Parenting style and feedback in parent-adolescent communication]. *Psychologia Rozwojowa*, *22*(1), 47–58. https://doi.org/10.4467/20843879PR.17.003.6417

Bertalanffy von, L. (1984). *Ogólna teoria systemów* [General systems theory] (E. Wojdyłło-Woźniak, Trans.). Państwowe Wydawnictwo Naukowe.

Bręński, S. (2015). Wpływ prawdopodobieństwa fonotaktycznego na przetwarzanie języka [The influence of phonotactic probability on language processing]. *Psychologia Rozwojowa*, *20*(1), 23–37. https://doi.org/10.4467/20843879PR.15.005.3477

Clark, H.H. (1996). *Using language*. Cambridge University Press.

Condon, W.S. (1984). Une analyse de l'organisation comportementale. In J. Cosnier & A. Brossard (Eds.), *La communication non verbale* (pp. 31–70). Delachaux & Niestlé.

Diamond, A. (2013). Executive functions. *Annual Review of Psychology*, *64*, 135–168. https://doi.org/10.1146/annurev-psych-113011-143750

Domachowski, W. (1993). *Psychologia społeczna komunikacji niewerbalnej* [Social psychology of nonverbal communication]. Wydawnictwo Edytor.

Domachowski, W. (2020). Efektywność komunikowania a efektywność porozumiewania się [Effectiveness of communication and effectiveness of understanding]. *Człowiek i Społeczeństwo*, *50*, 31–46. https://doi.org/10.14746/cis.2020.50.3

Fiske, J. (1999). *Wprowadzenie do badań nad komunikowaniem* [Introduction to communication studies] (A. Gierczak, Trans.). Wydawnictwo Astrum.

Frydrychowicz, S. (1999). *Proces mówienia* [The process of speaking]. Wydawnictwo Naukowe UAM.

Frydrychowicz, S. (2021). *Wymiary komunikacji. Klucz dostępu do efektywnej komunikacji interpersonalnej* [Dimensions of communication: The key to effective interpersonal communication]. Wydawnictwo Naukowe Akademii Ignatianum w Krakowie.

Furr, R.M. (2008). A framework for profile similarity: Integrating similarity, normativeness, and distinctiveness. *Journal of Personality*, *75*(5), 1267–1316.

Grice, H.P. (1980). Logika a konwersacja [Logic and conversation] (B. Stanosz, Trans.). In B. Stanosz (Ed.), *Język w świetle nauki* [Language in the light of science] (pp. 91–114). Czytelnik.

Heath, R.L., & Bryant, J. (2000). *Human communication: Theory and research*. Lawrence Erlbaum Associates Publishers.

Manusov, V. (2020). Foreword to special issue on enhancing interpersonal engagement: Concepts for optimal communication. *Atlantic Journal of Communication*, *28*(1), 1–4. https://doi.org/10.1080/15456870.2020.1684292.

Matczak, A. (2008). Do czego może być potrzebne pojęcie inteligencji emocjonalnej [What is the concept of emotional intelligence needed for?]. In J. Orzechowski & M. Śmieja (Eds.), *Inteligencja emocjonalna. Fakty, mity, kontrowersje* [Emotional intelligence: Facts, myths, controversies] (pp. 46–61). Wydawnictwo Naukowe PWN.

Medeiros, C.A. (2021). Joint attentional scenes, stone tools, language, and event simulation. *Language and Communication*, *80*, 39–55. https://doi.org/10.1016/j.langcom.2021.05.004

Morreale, S.P., Spitzberg, B.H., & Barge, J.K. (2015). *Komunikacja między ludźmi. Motywacja, wiedza, umiejętności* [Communication between people] (P. Izdebska & D. Kobylińska, Trans.). Wydawnictwo Naukowe PWN.

Nęcki, Z. (1996). *Komunikacja międzyludzka* [Interpersonal communication]. Wydawnictwo Profesjonalnej Szkoły Biznesu.

Peterson, E., & Welsh, M.C. (2014). The development of hot and cool executive functions in childhood and adolescence: Are we getting warmer? In S. Goldstein & J.A. Naglieri (Eds.), *Handbook of executive functioning* (pp. 45–65). Springer Science + Business Media. https://doi.org/10.1007/978-1-4614-8106-5-4

Philips, S.U. (2007). Participant structure and communicative competence: Warm Springs children in community and classroom. In L. Monaghan & J.E. Goodman (Eds.), *A cultural approach to interpersonal communication* (pp. 378–395). Blackwell Publishing.

Piaget, J. (1981). *Równoważenie struktur poznawczych* [The equilibration of cognitive structures] (Z. Zakrzewska, Trans.). Państwowe Wydawnictwo Naukowe.

Putko, A. (2008). *Dziecięca 'teoria umysłu' w fazie jawnej i utajonej a funkcje wykonawcze* [Children's 'theory of mind' in explicit and implicit phases and executive functions]. Wydawnictwo Naukowe UAM.

Rizzolatti, G., & Craighero, L. (2004). The mirror-neuron system. *Annual Review of Neuroscience*, *27*, 169–192. https://doi.org/10.1146/annurev.neuro.27.070203.144230

Rostowski, J., & Rostowska, T. (2014). Rola systemu lustrzanych neuronów w rozwoju języka i komunikacji interpersonalnej [The role of the mirror neuron system in language development and interpersonal communication]. *Psychologia Rozwojowa*, *19*(2), 49–65. https://doi.org/10.4467/20843879PR.14.011.2289

Schaffer, R.H. (2006). *Rozwój społeczny. Dzieciństwo i młodość* [Social development: Childhood and adolescence] (M. Białecka-Pikul & K. Sikora, Trans.). Wydawnictwo Uniwersytetu Jagiellońskiego.

Schramm, W. (1971). The nature of communication between humans. In W. Schramm & D.R. Roberts (Eds.), *The process and effects of mass communication* (pp. 3–53). University of Illinois Press.

Schultz von Thun, F. (2005). *Sztuka rozmawiania. Analiza zaburzeń* [The art of conversation: Analysis of disorders] (P. Włodyga, Trans.). Vol. 1. Wydawnictwo WAM.

Sztompka, P. (2016). *Kapitał społeczny. Teoria przestrzeni międzyludzkiej* [Social capital: The theory of interpersonal space]. Wydawnictwo Znak.

Takamizawa, K. & Kawasaki, M. (2019). Transfer entropy for synchronized behavior estimation of interpersonal relationships in human communication: Identifying leaders or followers. *Scientific Reports*, *9*, 10960. https://doi.org/10.1038/s41598-019-47525-6

Tomasello, M. (2002). *Kulturowe źródła ludzkiego poznawania* [The cultural origins of human cognition] (J. Rączaszek, Trans.). Państwowy Instytut Wydawniczy.

Tomasello, M. (2005). *Constructing a language*. Harvard University Press.

Turner, J.H. (2002). *Face to face: Toward a sociological theory of interpersonal behavior*. Stanford University Press.

Watzlawick, P., Helmick Beavin, J., & Jackson, D.D. (1972). *Une logique de la communication*. Édition du Seuil.

Wu, S., & Keysar, B. (2007). The effect of information overlap on communication effectiveness. *Cognitive Science*, *31*(1), 169–181. https://doi.org/10.1207/s15516709cog3101_7



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