

Communication in students with severe cerebral palsy

(scientific paper)

Jiří Kantor, Eva Urbanovská

Abstract: *This paper deals with the communication process in students with severe cerebral palsy in whom there is a combination of severe mental, communicational and physical disability. It defines the basic terminology, some core concepts and describes selected findings of a qualitative study based on open, axial and selective coding. This paper describes the main categories and subcategories of the study regarding communication reactions of students, communicational topics and some of the factors that enhance good interpretation of the communication process. It also incorporates a visual diagram of a model for communication processes between teacher and student and discusses various aspects of this model, suggestions for special education practice and for further research.*

Key words: *cerebral palsy, communication, open-axis coding, axial coding, teacher's authenticity*

1 Introduction to the Issue

Cerebral palsy (CP) is a complex functional disorder that impacts many important daily activities. In the field of rehabilitation the aspects of functional health are increasingly being emphasised in defining CP while clinical characteristics of the disorder move to the background. For example Ashwal defines CP as “a group of non-progressive non-communicable neurologic conditions causing physical and cognitive disabilities during the development of an individual and disrupting functional performance, participation, mobility, muscle strength, postural functions, muscle tonus, feelings, visual functions, perception, communication and behaviour” (Ashwal, in Phipps, Roberts, 2012, pp. 422).

In this study we will address the communication process in students with severe cerebral palsy. Some conclusions of a research undertaken in students with severe limitations of movement, mental functions and communication will be presented. These students are not able to use verbal speech to communicate. According to empirical findings from pedagogic practice there is also a very little possibility to use standardised systems of alternative and augmentative communication (AAC) in these cases. Therefore a question arises: "How do teachers communicate with these students in the course of an educational process?" Communication processes in these students are still insufficiently explored. We will attempt in this study to provide at least a partial answer to the above stated question.

In research of communication between the teacher and the student with severe CP focus must be directed at communication as a complex social activity that has multiple purposes for social interaction. It must be remembered that, because of their congenital disorder, these students never experience natural communication with others and therefore cannot build on normal developmental experiences. A wholesome view of the communication process does not focus solely on the form of verbal speech substitute but also on the context of communication, communication needs of the individual, the process of interaction itself as well as its course, cognitive processes of both parties in communication or the possibility of interdisciplinary cooperation in creation of appropriate means of AAC. Because of the broadness of the problem, in this paper, we can only touch upon the themes. Some of the themes are mentioned in discussion as suggestions for further research in the field.

2 Basic terminology

Various scholarly sources use different terminology in the context of communication. We will offer definitions of the terminology used in the paper for analysing the communication process.

Communication partners

By communication partners are meant the teacher and the student with severe CP. Each one is characteristic for having previous experiences that are being brought into the interaction, as well as personality traits, needs, interests, motivation, beliefs, current emotional state, social roles and status, age, gender or a position of superiority that may be used in the interaction, to name just a few characteristics.

The issue of communication needs of a student with severe CP needs to be addressed in more detail. It is because assumptions about communication content in these students cannot be made from the communication subjects of healthy peers. Some contributions on functional communication of students introduce useful tech-

niques stimulating thoughts on the identification of relevant communication content (Bigge, Best, Heller, 2010). These techniques are especially useful in students with higher functional level of mental abilities or in students with disability that occurred in a later age. Thorova (2006) mentions communication content in relation to the communication of students with autism spectrum disorders. She considers as relevant subjects for example the expression of agreement and disagreement, request for food, drink, favourite object, using the toilet or getting help, expression of “more” and “enough”, calling for attention, signalling an object or activity, commenting an activity, expression of feelings, acquiring information or polite phrases in social communication (Thorova, 2006). The specificity of the functional state in early brain lesions, however, does not allow for drawing comparisons between communication needs in students with CP and students with autism spectrum disorders although there may be certain similarities.

Communication Environment

Communication environment is the physical surroundings in which the interaction takes place and includes for example lighting, the order of objects in the room, the presence of other people, odours, sounds, etc. Communication environment co-creates a particular atmosphere that influences the communication partners. In analyses about communication **the psychosocial element of educational setting** needs to be examined. Scholarly sources differentiate between the school climate, classroom climate and classroom atmosphere. We may also find the term social climate (Allodi, 2008). The classroom atmosphere especially influences existing communication. In practice we may observe situations when teacher’s lack of concentration causes a rising anxiety in the student. As a result the student may become close and lose motivation to enter into communication.

The influence of the school environment on the specifics of communication needs must also be considered. Some teachers say that given the regular and sufficient food intake during the day it is of little functional use for the students to be able to ask for food or drink. This need, however, is in the specific training methodologies of AAC classified as the most frequently used antecedents for increasing the student’s motivation to communicate (Knapcová, 2009, Richman, 1999). It is evident that the communication needs of students in the school environment may differ from the needs in the home or other environment. It is necessary to examine them separately, in close relation to educational and social situations during the class. In this area we also lack relevant data.

Context of Interaction

The context of interaction is the overall framework in which the interaction takes place. It includes connection to previous and following events to the interaction time, the way of achieving mutual understanding, the social roles of communication partners, etc. The context is very important to the communication partners of the students in terms of understanding communication intentions because teachers interpret a large section of non-verbal signals of students on the basis of the context in which these signals happens. Majority of publications and research about the communication processes in students with CP have until present focused on one of the specific issues. Context is very difficult to study because it involves a great variety of different contextual situations. Its analysis, however, is crucial for a comprehensive understanding of the communication process.

Communication Channel

The communication channel is a means for transmitting information between the subjects, a means of mutual communication. In-person communication includes verbal and non-verbal means of communication. In this connection there exist many standardised as well as non-standardised **systems of alternative communication**. International Society for Augmentative and Alternative Communication (ISAAC) defines AAC as: "A set of tools and strategies that an individual uses to solve everyday communicative challenges. Communication can take many forms such as: speech, a shared glance, text, gestures, facial expressions, touch, sign language, symbols, pictures, speech-generating devices, etc. Everyone uses multiple forms of communication, based upon the context and our communication partner. Effective communication occurs when the intent and meaning of one individual is understood by another person. The form is less important than the successful understanding of the message." (Burkhart, cit. 20. 3. 2013)

The conclusions of some research projects (Jelinkova, 2013) that analysed communication means in students with severe multiple disabilities show that the most frequently used means do not correlate with information about the usability of the AAC systems in domestic and foreign scholarly literature. To state one example the communication system Bliss or the Dosa method is frequently cited in scholarly literature. Neither of these systems is being used in practice although both are interesting contributions to the AAC issue. Other communication systems on the other hand are not adequately described yet because they emerged from modern innovations in electronics (for example the possibilities of using tablets).

Students with the most severe functional limitations in all of these three areas—communication, movement and mental functions—pose the biggest problem for the

creation of an adequate communication system. In research to be presented below, we have divided this group of students into two groups:

- Students that are able to communicate at the level of expressing the communication intent (at least in the form of expressing yes and no) – in these students the common system AAC is more likely to be successful (ETRAN, referential objects, pictures etc).
- Students that spontaneously express likes and dislikes which is the base for teacher's understanding – here the spontaneous non-verbal reactions of the student are the basic communication means.

Non-verbal communication may be divided according to the usage of body, time and space means. Commonly, these types are recognised in healthy persons: facial expression, gestures, haptics, proxemics and communication by action (Vybiral, Roubal et al., 2010). In students with severe CP we lack the description of relevant non-verbal signals that the teachers use for interpreting the communication intents of the students.

Feedback

Feedback is the response of the communication partner or feedback to what we communicate through what we say, hear, see, feel, etc. When interpreting feedback many errors may occur since a variety of communication noises interferes in communication between a teacher and a student with severe multiple disabilities and these noises disrupt the interaction process. De Vito (2008) distinguishes noise physical, physiological, psychological and semantic. Examples from teaching experience show that new teachers often tend to underestimate the ability of the student to perceive stimuli and activity around. Because of lack of communication responses these teachers conclude a lower level of sensory-cognitive processes which can have serious consequences for the student manifested for example as the elimination of teacher's attempts for interaction.

In the following chapters we will offer a description of the research undertaken as part of dissertation work called "Educational outputs in the area of social abilities in children with cerebral palsy" and which was further elaborated on in a specialised research of IGA. We will summarise the most important findings concerning communication and offer conclusions that can be used for further examination of the described problematic areas.

3 Research Aims and Research Sample

The research aims concerned these areas:

- An examination of communication channels in students with severe CP who communicate on the level of spontaneous expression of likes and dislikes.
- An understanding of communication needs of these students.
- Understanding factors that help teachers interpret the communication signals of students.
- Relation between communication and other categories of the education process.

A qualitative methodology was used to answer these aims. Extensive data was collected about various aspects of the education process in students with severe CP from 45 semi-structured interviews with teachers, an analysis of pedagogic documentation (30 verbal assessments and 30 individual educational plans) and observations of the educational process of four students. Teachers were included in the research sample based on these criteria:

- The teacher has got a minimum of Bachelor Degree in Special Pedagogy.
- The teacher has got experience with education of students with severe CP for minimum of 2 years (2 years is, in our opinion, considered as an adequate time to create a firm relationship between teacher and the student and to get a deeper knowledge of the personality of the student).
- The teacher is willing to offer the interview or to give the student's documentation for viewing.
- The teacher is able to reflect on his work.

The following criteria were used to include students to the research sample: the student is diagnosed with CP, and has got a severe physical disability (inability of independent movement, severe limitation in self-care) and severe impairment of communication abilities (verbal communication only at the level of sounds or few words) and severe or profound intellectual disability and the student does not suffer from deaf-blindness. The data was categorised by various sources, converted into text and prepared for qualitative analysis.

4 Conclusions Based on Open-Axis Coding

Data analysis was done using open axial and selective coding based on the procedure described by Straus and Corbin (1999). Using open coding basic categories and subcategories relating to the educational process were created and divided into several groups:

- The purpose of education and educational needs of the student.
- The facilitators of interaction between teacher and student.
- The tools supporting understanding of the student.
- The specifics of communication between teacher and student.
- The statements about the student's personality.
- Procedural and methodological aspects of the educational process.
- The benefits and difficulties of teachers.
- Within the group concerning the specifics of communication between the teacher and the student the following categories were distinguished:
- Communication reactions of students.
- Interpretation of communication reactions of students.
- Communication subjects of the students.

Communication Reactions of Students

Communication reactions of students derived from the likes were designated as positive communication reactions and those derived from the dislikes as negative communication reactions. Furthermore, we divided the communication reactions according to the means of expression that was used into locomotive, facial, vocal, vegetative, other, unspecified reactions and reactions with a concrete communication intent (only in the last category it is possible to accurately interpret specific communication intent of the student). These reactions are described in Fig. 1.

Some communication reactions such as agitation or vegetative symptoms may have its source in both likes and dislikes which can usually only be recognised based on the context of the situation and other non-verbal signals of the student, such as facial expressions. Further examination is necessary in these cases based on the context of the situation.

When describing specific vocal expressions we realised an adequate terminology has not been created, a terminology that would enable a description of subtle differences between various vocal expressions of the students. To state just one example, Krejčířová and Langmeier (1998) describe the different types of cry in newborns. There is evidence that mothers very quickly learn to recognise the different types of cry – the cry expressing pain, hunger, the cry that aims to call the attention of an adult, etc. However, specific terms for these different types of cry have not yet been created. The situation is even more difficult in students with severe CP. We think that the range of vocal expressions could be even wider because the personality of students is more complex and they are older than in the case of newborns or infants.

Communication Reactions:	Examples:
Negative Locomotive Reactions:	Motor agitation, touching the abdomen, forward bending, fidgeting, attempting to beat the teacher, banging one's head, turning away, pushing something away, unusual movements, slouching, etc.
Positive Locomotive Reactions:	Rocking, tilting the body, waving arms, clapping, fidgeting, turning around, flapping arms, etc.
Negative Facial Reactions:	Frowning, grimacing and stiffening of the face.
Negative Vocal Reactions:	Snarling, growling, whooping, whining, or braying.
Positive Vocal Reactions:	Humming, munching, repeating a word, for example "hello", and crowing.
Vegetative Symptoms:	Changes of sweating, changes of breathing, of temperature, of salivation, narrowing or widening of pupils, etc.
Other Communication Reactions:	The pupil becomes more alert, pupil is silent and calm expressing agreement or does not react which expresses disagreement.
Unspecified Communication Reactions:	All reactions to which teachers are not able to ascribe any particular communication meaning at that moment.
Reactions with a Concrete Communication Intent:	Pointing at a desired object, making a choice by a look and "ear rubbing" to express the desire to sleep.

Fig. 1: Communication Reactions of Students

When analysing the data in this category we encountered a new way of communication which was independently reported by several teachers. We called this type of communication the Sight Communication. It must be distinguished from the methods of making choices based on the look or blink of students which is commonly described in scholarly literature (Bigge, Best, Heller 2010, Jedlička, Škodová, 2003). During the sight communication teachers visually recognise emotions currently experienced by students from the look in their eyes. One of the teachers stated that she could see glimpses of fear or joy in the look of the student. We are convinced that this form of communication requires a high level of sensitivity, intuition and an ability to connect on the part of the teachers. It remains unclear whether this is only a one-way communication (from student to teacher), or the student reacts in some way (even if only subconsciously) to the connection established with the teacher during their interaction.

Interpretation of Communication Reactions of Students

Another category explores the possibilities of interpretation of communication reactions of students. The data collected in this category is rather scarce. According to the experience of the teachers the ability to interpret non-verbal signals is enhanced through:

- intuition and sensitivity of the teacher;
- good observation skills;
- focus on para-verbal components of student's voice (intonation, emotional tone of voice, etc.);
- ability to differentiate between muscle spasm and deliberate resistance of movement;
- conversations with parents and using their experience; and
- observations of communication between the student and his or her parents.

The teachers emphasised that it is only possible to interpret communication expressions, especially the locomotive and facial expressions, based on good knowledge of the student.

Communication Subjects of the Students

In the third category we explored the communication subjects of the students. These are the most frequent subjects:

- expressing likes and dislikes and statements like "I want" or "I don't want" or "Yes" and "No";
- sharing experiences;
- choosing a meal;
- expressing physiologic needs like changing one's position;
- describing what is happening or what will be happening;
- communication about family, shopping, sports, travel or a pet of the student;
- expressing a desire for interaction or a desire to say something;
- expressing that the person should leave or that the presence of the person is welcome;
- student insists on something;
- expressing a desire to share feelings or that something is troubling him or her;
- expressing a desire to go out, play or listen to music; and
- a female student expressing that she likes a boy.

Ideas from Other Groups of Data and Categories

From among other groups of data that concerned various aspects of the educational process these categories and subcategories were stimulating in regards to communication:

- In the group the **Purpose of education and educational needs of the student** the teachers considered communication to be very important (22 statements were about communication). Respective subcategories included expression of communicational needs, training for using the AAC system, training eye contact and

other communicational skills, initiation of communication, motivation for communication and so forth.

- In the group **Facilitators of interaction between teacher and student** we obtained data regarding favourite stimuli of students. A separate category was identified, called 'Speech and stimuli connected with verbal communication created a separate category' (30 statements were in this category). In the subcategories there were speech and talking between teacher and student, voice and its paraverbal expressions, appreciation and praise, nursery rhymes and word rhythmisation, reading and story-telling.
- In the group **Procedural and methodological aspects of the educational process** subcategory called 'commenting as specific educational strategy' was created. We will address the issue of commenting in regards to the communication process later in the paper.

5 Conclusions Based on Axial and Selective Coding

In the next phase of qualitative analysis, we categorized the set categories and subcategories into four groups – input determinants, the process itself, outputs and the context of the educational process. 12 lines of special educational intervention were identified by observing the relationship between these categories across the inputs, the process and the outputs of education and by searching for hypothetical links between them, while one of the lines concerned communication. In further analysis of the collected data we selected, for each line, the main categories and created models of the respective lines. These models were then subjected to a critical view of colleagues in the workplace and several teachers from practice. There is a visual diagram of the final model concerning communication (Fig. 2).

This model shows communication in relation to important categories of the educational process. It attempts to portray the communication process between a teacher and a student as various social activities that are influenced by a variety of factors. We shall address some of the aspects and connections in this model in the following text.

6 Interpretation and Discussion

When interpreting the findings relating to the communication process we focused primarily on factors that help facilitate communication between teacher and student. We believe these factors offer inspiring conclusions for special educational theory and practice. When looking at the communication process diagram it must be remembered that it is a hypothetical model. We expect that its further study and critical reflection by practicing teachers will enable its further elaboration. At this

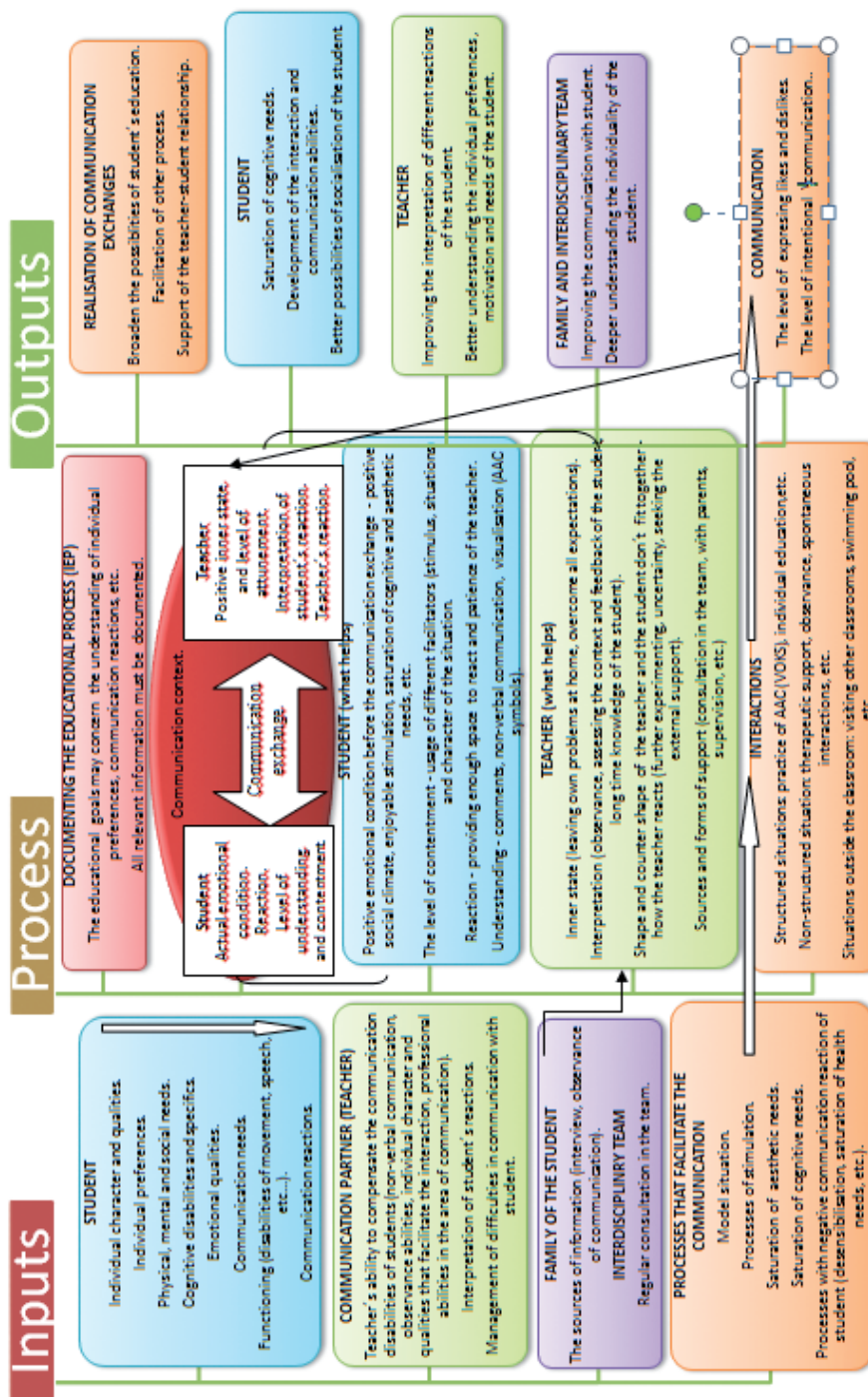


Fig. 2: Communication process

time when this model has no other alternative we offer it as a temporary theoretical construct with possible applications in the educational process. Below we will discuss some elements in the categories.

Communication Reactions in Students

When interpreting the findings in Fig. 1 we encountered several fundamental problems: a more extensive set of data would be required to describe and classify communication reactions of students as well as more intensive work on video recordings, while these would need to capture more concrete communication reactions. As already stated, for the description of subtle differences between vocal reactions of the students it would be useful to create specific terminology. In the previous chapter we described also some specific ways of communication between teacher and student, such as sight communication. This type of communication leads to a number of other questions regarding many specific aspects of the process of synchrony in interaction between teacher and student, the process of creating a connection with the student and the question of physiologic and mental parameters based on which teachers interpret the inner mental state of the student. Further studies will no doubt offer more extensive data than the current few case studies. If these collected data find confirmation within a larger sample it would be beneficial to design a neuropsychological research using imaging techniques in this area.

Observation of Interactions between Student and Primary Care-Giver

Based on the statements of teachers it seems that each student enters the educational process with pre-formed skills for at least some form of basic communication. Several teachers stated that in the beginning it is important to observe the interaction between the primary care-giver—most often the mother—and her child, since every mother is able to interpret certain communication signals of her child and respond adequately, although on a subconscious level. The possibility of observing the interactions between the student and his or her primary care-giver is, from our experience, not given sufficient attention in special education practice. We believe that observation of these interactions could be a common part of the first special education diagnostics because of its value in students with severe CP.

Synchrony in Interactions between Teacher and Student

Research concerning the synchrony between communication partners during their interaction uses terms such as 'rhythmic' or 'interactive dance' to describe such interactions (Condon, in Moreno, 2005). It is apparent that aspects of rhythm and tempo play an important role in communication. Communication of students with severe CP often has a very slow tempo and a specific rhythm. The teacher must also

leave enough space for the reaction of the student. The reactive time of students is extremely long compared to common tempo in interactions and this requires great patience on the part of the teacher.

It seems that it is the teacher's adjustment to the slow tempo and the synchronisation with non-verbal reactions of the student is a very important ability for the realisation of effective communication. There is no doubt that the synchrony occurs on multiple levels simultaneously: physiological, energy level, motor, emotional, etc. Further research in this area could focus on determining whether the conscious focus of teachers and intentional synchronisation with the tempo and rhythm of motor manifestations of the student can improve synchrony in interaction, increase the level of mutual harmony and make the communication process more efficient.

Communication Subjects and the Students' Psychosocial Needs

The conclusions regarding the communicational needs of students will also have to be supported by further research. Analysis of communication subjects of the students and observations of the communication process shows that communication needs of the students are often closely related to the saturation of their physical, mental and social needs. Also, analysis of the facilitators of social interaction between teacher and student supports that the presence of the teacher is a sufficient motivation for students to make attempts for initiation of communication or respond to the stimuli coming from the teacher, especially when the teacher appreciates the student or show positive attitude towards him or her. The teachers' statements suggest that students with severe CP are highly likely to develop mental or social deprivation. On the other hand, however, the frustration of these students caused by insufficient saturation of psychosocial needs may be used in a positive way. In the educational process these may become a significant motivating factor for the realisation of communication and interaction. The students' achievements in the field of communication were highest in those educational situations in this research that were based on a long-term, safe and emotionally warm relationship between the teacher and the student.

Using Enjoyable Stimuli

For initiation of communication teachers mostly use those stimuli and situations that the student considers enjoyable. These stimuli are often applied within aesthetic and stimulating processes for example as part of music education, basal stimulation, in Multi-Sensory Room, etc. However, the analysis of other communication processes shows that many activities that the student considers extremely unpleasant also initiate communicational reactions as is the case in desensitisation to unpleasant stimuli (noise, unknown persons). These stimuli may initiate communication reactions very fast. They are connected with stress, though, and frequent occurrence contains the

risk of negatively influencing the development of relationship between teacher and student.

Inner State of Communication Partners and Teacher's Authenticity

Several important recommendations for effective communication emerged from the analysis of an inner state of both teacher and student. Both communication partners are significantly affected by classroom climate. Teachers who work with students with severe multiple disabilities often report that their basic strategy in education is to create a positive climate in the group (Kantor, 2013). Positive emotional climate is continuously maintained and intentionally encouraged whenever difficulties occur. According to Allodi (2008) positive emotional experience is the most important requirement for teaching students with severe multiple disabilities. Some teachers in our study reported that they seek those situations for interaction with students in which the teachers feel comfortable. Those are for example situations during music therapy, basal stimulation, Snoezelen and other therapeutic and stimulating activities.

An important role of communication between teacher and student is sharing positive emotional content. This can only occur on a non-verbal level, without the need for verbal expression of the content. Teachers often expressed in interviews that in this type of communication with students they feel comfortable. However, there are certain obstacles for the teacher for achieving the necessary inner state for this type of interaction. Teachers believe that when they let themselves be stressed by their own problems they are not able to fully participate in the communication process and their emotional state has a negative influence. A similar situation occurs when the teacher is unable to accept the student, finds him or her repulsive or is not interested in him or her.

During the course of the research, however, a different perspective on the subject of inner state of communication partners started to emerge from the experience of the teachers. One respondent mentioned a situation where a female student exhibited self-inflicting behaviour whenever the teacher tried to mask her own depressed, anxious or troubled emotional state by smiling. The conflict between the non-verbal communication of the teacher and his or her emotional state can cause anxiety in students caused by the ambiguity of non-verbal signals of the communication partner and the inability to interpret the partner's emotions. Although this is an isolated experience, in the course of the research many teachers mentioned great emotional sensitivity of the students to the emotions of their communication partners. Therefore, we believe that in communication with students with severe CP the authenticity of the teacher is of great importance. The cognitive deficits of the students do not justify the assumption that it is ethical to lie to students. On the contrary, empirical experience has shown that authentic behaviour is a good start for building a rela-

tionship based on trust and mutual respect. Explanation of one's emotional state, including situations where the teacher does not feel good, may help many students to create clear and meaningful communication situations.

Communication and Shape – Counter Shape Theory

We tried to apply shape – counter shape theory by an American psychotherapist A. Pesso to the communication situations (in Pesso, Boyden-Pesso, Vrtbovská, 2009). Pesso likens communicational intents and reactions to **the interaction of shape and counter shape**. Shape and counter shape in social interaction may fit together to a certain degree just as the is shown on the diagram below (A and B).



Fig. 3: Shape and counter shape in interactive situations

For analysis of the interaction it is important whether it is possible to interpret the social interaction as a whole in terms of respective communication partners. Type A situation represents a situation when the shape and counter shape meet during the interaction and type B is a situation when these shapes do not meet. The student and the teacher may interpret the social interaction the same way, either as A or as B type. Paradoxical situations may occur when teacher considers the interaction to be of type A while the student as type B or vice versa. In extreme cases the teacher may be certain that the interaction had a positive effect on the student while the student may find it unpleasant or even traumatic. On the other hand we may also talk about situations when the interaction is beneficial to the student but the teacher interprets it in the opposite way for example because of his or her own insecurity. From this point of view, there are many ethically questionable themes in communication between teacher and student with severe CP.

In the beginning of this article we mentioned the considerable difficulty in interpreting communication situations in students with severe CP. In health care due to the risk that these situations can have on the relationship between communication partners we often meet with requirements for supervision of the entire process. In the Czech educational system supervision is rather rare but in many cases there is a need for external support of the teachers. We consider it essential to gradually increase teachers' awareness of the potential risks of interaction situations and encourage them

to seek available forms of professional support. It is necessary to promote this topic within an undergraduate training of special education pedagogues within programs of higher education. It is also possible to seek alternative forms of support especially for beginning teachers. There is the possibility for example of support from more experienced colleagues, counselling centres, support groups, etc.

Teacher as a Compensating Element

During the course of the research we have repeatedly encountered the importance of communication partner of the student, in this case the teacher, for the communication as such. We have observed on the video recordings that the teacher compensates for the communicational deficits on the part of the student, by his or her behaviour, especially by continuous commenting of the ongoing activity. In those situations teachers often expressed what they thought the student may be experiencing, what he wants and what he doesn't want.

Based on an analysis of interviews and observations of the educational process we found that commenting can perform these functions: commenting helps student be oriented and promotes his or her sense of security, helps put situations into context of time, replace verbal activity of the student (teacher comments from the position of the student), stimulate cognitive processes (by naming objects, activities, events, etc.), has preventive function (e.g. prepares the student for an upcoming stimulus), maintains attention of the student and the connection established in interaction.

In analysing the communication process it is of most importance to observe the specific behaviour of the teacher who is trying to create such communication counter shapes that the student can react to despite his or her limitations in functional abilities. The whole effect of the communication process is dependent on the ability to create these counter shapes. It is also worth noting that in the absence of communication reactions of the student the teacher creates those interactive shapes that fit into the already created counter shapes. Each communication situation leads to a meaningful ending. If the student is not able to respond to communication offers at the time the teacher verbally or non-verbally communicates for the student and completes the interactive shape.

Evaluation of the Outcomes of the Communication Process

In the field of special educational theory we do not as yet have a sufficient number of relevant conclusions for the creation of methodology that would enable a comprehensive evaluation of outcomes of communication processes between teacher and student with severe CP. We can give only partial experience that was gained in this field.

The processes of interaction and communication were during the synthesis of the obtained data placed in the context of other processes of intervention. Establishing

interaction with the student is a basic process from which all the processes of intervention derive. During the analysis of the case studies we found that the development of interactive situations has led to an increase in opportunities for communication in several students, namely from the level of spontaneous expression of likes and dislikes to the level of expressing concrete communication intentions, for example in the form of 'yes' and 'no'. This constitutes a significant change in the educational process especially since communication with a concrete intention may enhance some cognitive processes of the students. The student may then achieve higher functional level in the area of many other relevant activities. We may, therefore, emphasise a direct line of processes that facilitate communication, interactive situations, various levels of communication and that a widening range of opportunities for education by facilitation of other processes of intervention.

The models offered here regarding communication cannot, of course, take into account the unlimited range of various communication situations that may occur between teacher and student. We have pointed out the difference between situations in which teachers enter into the communication process with a concrete aim and situations where they let themselves be led by the student and in which the teachers' behaviour is much less controlling. Each of these types of communication situations may assume many different forms.

The risk in studying communication in students with severe CP is the reduction of the communication process to several observed facts that are emphasised at the expense of other. Communication is a complex social activity that requires establishment of a good quality relationship with the teacher on the part of the student with severe CP. Other processes of intervention constitute an important extension the possibilities of which unfold with time and in connection with the quality of communication.

7 Summary

In this paper, we examined the communication processes in students with severe CP. We introduced basic terminology and conclusions of a qualitative study based on open-axis, axial and selective coding. At the level of open-axis coding basic categories were set that led to an overview of communication reactions of the students, the communication subjects and some factors that enhance interpretation of the communication processes. At the level of axial coding we searched for hypothetical connections for a better description of the communication processes and we have chosen the most essential to visualise in a diagram. In the following discussion we offered some thoughts on various aspects of the created communication model and gave suggestions for special education practice and further research.

Literature

- [1] ALLODI, M. 2008. Goals and values in school: a model developer for describing, evaluating and changing the social climate of learning environments. In *Social Psychology of Education*. New York: Springer. Roč. 13, s. 207–235. ISSN 1381-2890.
- [2] BIGGE, J. – BEST, J., S. – HELLER, K. 2010. *W. Teaching Individuals with Physical or Multiple Disabilities*. 3. vyd. New York: Macmillan Publishing Copany. 541 s. ISBN 0-675-21017-8.
- [3] BURKHART, L. 2013. *What Is Alternative and Augmentative Communication?* On-line. Toronto: International Society for Alternative and Augmentative Association. Citováno 20. 3. 2013. Dostupné na: <https://www.isaac-online.org/english/what-is-aac/>
- [4] JELÍNKOVÁ, P. 2013. *Alternativní komunikace z pohledu klienta s těžkým kombinovaným postižením a jeho okolí*. Olomouc. Diplomová práce (Mgr.). UP v Olomouci, PDF.
- [5] KANTOR, J. 2013. *Výstupy edukačního procesu v oblasti sociálních kompetencí žáků s dětskou mozkovou obrnou*. Olomouc, disertační práce (Ph.D.). Univerzita Palackého v Olomouci. Pedagogická fakulta, 333 s.
- [6] KNAPCOVÁ, M. 2009. *Výměnný obrázkový komunikační systém – VOKS*. 1. vyd. Praha: IPPP ČR. ISBN 978-80-86856-14-3.
- [7] KREJČÍŘOVÁ, D.; LANGMEIER, J. 1998. *Vývojová psychologie*. 3. vyd. Praha: Grada. 344 s. ISBN 80-7169-195-X.
- [8] MAJEROVÁ, R. 2010. Maturační teorie a suspektně jazyková porucha vývojová anartrie. In: *Studie z aplikované lingvistiky*. Praha: UK, č. 2. 180 s. ISSN 1804-3240.
- [9] MORENO, J. 2005. *Rozehrát svou vnitřní hudbu*. 1. vyd. Praha: Portál. 128 s. ISBN 80-7178-980-1.
- [10] PESSO, A. – PESSO-BOYDEN, D. – VRTBOVSKÁ, D. 2009. *Úvod do Pessu Boyden System Psychomotor*. 1. vyd. Praha: Scan. 210 s. ISBN 978-80-866-2015-2.
- [11] PHIPPS, S. – ROBERTS, P. 2012. Predicting the Effects of Cerebral Palsy Severity on Self-Care, Mobility, and Social Function. In *The American Journal of Occupational Therapy*. Bethesda: American Occupational Therapy Association. Roč. 66, č. 4, červenec–srpen, s. 422–429. ISSN 0272-9490.
- [12] RICHMAN, S. 2008. *Aplikovaná behaviorální analýza*. 1. vyd. Praha: Grada. 122 s. ISBN 978-80-736-7424-3.
- [13] STRAUSS, A. – CORBINOVÁ, J. 1999. *Základy kvalitativního výzkumu: postupy a techniky metody zakotvené teorie*. 1. vyd. Boskovic: Albert. 196 s. ISBN 80-85834-60-X.
- [14] THOROVÁ, K. 2006. *Poruchy autistického spektra*. 1. vyd. Praha: Portál, 453 s. ISBN 80-7367-091-7.
- [15] VYBÍRAL, Z. – ROUBAL, J. 2010. *Současná psychoterapie*. 1. vyd. Praha: Portál. 743 s. ISBN 978-80-736-7682-7.

(reviewed twice)

Mgr. Jiří Kantor, Ph.D.
Institute of Special Education Studies
Faculty of Education
Palacky University
Žižkovo nám. 5
Olomouc
774 00, Czech Republic
e-mail: jirik.kantor@centrum.cz

Mgr. Eva Urbanovská, Ph.D.
Institute of Special Education Studies
Faculty of Education
Palacky University
Žižkovo nám. 5
Olomouc
774 00, Czech Republic
e-mail: evaurb@atlas.cz