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The Variable Professional Perception in Assessment of Pragmatic Language Level in Autism Spectrum Disorders and Related Developmental Difficulties

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Abstract

Problem statement: The pragmatic language level (PLL) is probably one of the most important components of not only communication, but also the emotional and social performance within the Autism Spectrum Disorders (ASD). Nevertheless, the symptoms of possible PLL variances or even abnormalities may be perceived very differently by variable professionals involved in the process of an assessment of ASD and related developmental difficulties. The purpose of study: We created a specific evaluation tool for an assessment of PLL in ASD from the speech and language therapy (SLT) view. We also discuss PLL performance determination and consequences. Methods: Based on the previous quantitative research and analysis of variable diagnostic tools we have created and used an evaluation material for assessment of specific components of PLL in children with ASD, in the purpose of the comparison of the measured values with the children of developmental specific language impairment (SLI) and intellectual/cognitive disabilities. Findings: There is a difference in perceiving of specific components of PLL from the professional point of view (eg. SLTs, psychologists, occupational therapists). The results differ within the groups. Conclusions: During our preliminary research we found specific differences in perceived performance in children when evaluating PLL with our adapted assessment material. We discuss the possible use the new material and the importance of careful analysis of the findings with respect to different professional views.

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Keywords: Autism Spectrum Disorder; Speech and Language Therapy; Assessment; Pragmatic Langauge Level; Specific Language Impairment

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1. Introduction

Modern speech and language therapy (SLT) emphasize the importance of communication in a social context. It is taking into consideration the significance of nonverbal components of communication ability. Regarding a holistic approach, the pragmatic view on speech and language therapy is related to the theory of speech activity taking into account all elements affecting the communication act, including biological, physical, psychological, social, and other factors.

The act of communication is carried out by an interaction between language, cognitive and sensorimotor processes, which are ongoing, in all individuals (Perkins 2005; Hwa-Froelich 2015). All of these processes can be seen differently by various specialists involved into the assessment and therapy of individuals with communication disorders, especially if the difficulties are connected to some primary impairment or disorders, e.g. in language disorders related to autism spectrum disorder (ASD). What one perceive as a result of inner emotional status, other may consider to be the unavoidable neuromuscular activity. For example, when an individual frowns, a specialist, e.g. psychologist, may take this behavior as a logical consequence of the emotion expressing disagreement or dislike, anger. But from the speech and language therapist´s (SLT) point of view, the same motor activity can be perceived as a try to move a particular part of the face, even imprecisely. The same act of communication behavior, but absent or inhibit, could be incorrectly viewed as a result of a neglect, negativism, etc.

Such differences in diagnostic explanation of communication expressions may lead to misunderstandings in assessment of pragmatic language skills and functional language, with the influence on judging on emotional status or social proximity and other components of the individual personality, especially in individuals with such severe difficulties in language development like those with ASD.

We believe that speech and language therapists are those who should actively participate on assessing the pragmatic language level, and thoroughly, using specific professional SLT view and particular tests, differentiate between various orofacial movements and oral imitation activities, as well as sensory perception influence on communication behavior and their origin. Nevertheless, despite the fact that we repeatedly found out that speech and language therapists agree with the prior importance of pragmatic language level assessment and therapy in children with autism spectrum disorders, we also found out that they often neglect or ignore the real assessment of this language level because of the lack of relevant evaluation tools acceptable specifically for speech and language therapists (see e.g. Norbury & Sparks, 2013; Vitásková & Říhová, 2015). Therefore we have decided to concentrate on the evaluation of pragmatic language level in children with ASD and create a new assessment tool for speech and language therapists in order to use it in a comparing pragmatic language level in children with different developmental language disorder and children without any specific language delay or disorder.

2. The variable professional perception in the perception of pragmatics – speech and language therapist view

Deficits in the pragmatic language level are one of the most important characteristic of the diagnostic category of the ASD in all types (Ramberg et al. 1996). Specifics are evident at a child's early age and manifest themselves in the use of gestures and in the full range of nonverbal communication. These determine the verbal component and have an influence on the application of AAC options (Bondy & Frost, 2007; Boyd, 2011).

SLT insights can differ from this generalized interpretation presuming that general determinants, which should necessarily be taken into consideration in a contemporary diagnosis of ASD, are primarily connected to social relations and social communication with respect to anatomical and kinesiological factors. Facial expressions and gesture, e.g., are traditionally perceived as being mostly emotionally based. E.g. facial expressions can be viewed as an external behavioral manifestation of orofacial movements, which are connected to neuromuscular activity, orofacial praxis, gnosis, or imitation of motorics. Gesticulation, as the example of other pragmatic skills area, involves praxis, gnosis, and imitation of motorics. All the abilities and activities are closely related to alternative and augmentative communication. Continuously studied area of the pragmatic level of communication is communication by eye contact. As speech and language therapists, we can evaluate eye movements, measure focused/direct attention to articulators and pictures (e.g. when using PECS - or VOKS systems in Czech), gestures (that means movement), or detect apparent "inattention" or other connections to nonverbal learning disorders. (E.g. Miller et al., 2014; Vitásková & Říhová 2013;

Vitásková & Říhová 2014). Also prosody aspects of pragmatics should not be neglected, because it is, in fact, produced by the processes of phonation, acoustic gnosis or it is influenced by its disorders (dysgnosia, agnosia).

3. The methodology of the preliminary partial verification of the evaluation material for pragmatic language level

Based on a gradual analysis of published diagnostic materials (domestic and foreign) and on partial results of published research works and their discussion, we created the assessment material for evaluating the basic areas of pragmatic language level in children with ASD. We divided the material into specific subparts. We incorporated originally graphically created items demonstrating communication-facilitating patterns in the form of visual schemes. The material had before undergone the phases of proposing, verification and subsequent adaptation up to the form which will be used in evaluation three groups of children – children with autism spectrum disorders, with specific language impairment (in terms of developmental dysphasia) and with intellectual disorder.

Based on our preliminary verification of the material and presented findings we included complementary tasks for assessing praxia of orofacial area. In our opinion, the activities of the areas could be retaled to potential determination of facial expressions part of pragmatic communicative behavior, regarding the neglected possibilities of assessing orofacial praxia (oromotorics). We are also about to experimentally assess the area of oral sensitivity. Such perceptual quality is determined rather by complicated tactile sensitivity of orofacial area and sensory integration in persons with ASD.

For the purpose of this paper we would like to introduce some partial results of our preliminary study and introduce the structure and the main principle of our evaluation tool.

4. The objective and the background of the study and partial results

The objective of the research is to create an applicable assessment material for evaluating the degree of pragmatic language level in children with autism spectrum disorder (ASD), specific language impairment and language disorders related to intellectual disability, for the purpose of further application and implementation of the tool in speech and language therapy practice. This research aims at filling a gap in Czech professional literature and published assessment materials where no standardized and compact diagnostic material of this focus exists. This study follows from national and international sources covering this issue rather marginally and prevailingly from a psychological point of view. There is a list of materials which inspired our assessment tool: “Australian scale of Asperger´s syndrome” (Attwood, 2005); DACH – Dětské autistické chování” (Infant Autistic Behaviour) (Thorová, 2012, p. 274-276); “Diagnostika dítěte předškolního věku” (Diagnostics of a Pre-school Child) (Bednářová & Šmardová, 2007); “Dotazník funkcionální komunikace” (Questionnaire of Functional Communication) (Košťálová, Klenková, & Bednařík, 2013), “Heidelberský test vývoje řeči” (Heidelberg Test of Speech Development)(Grimmová, Schöler, & Mikulajová, 1997) “Pragmatická lingvistika” (Pragmatic linguistics) (Švehlová, 2001, p. 70-135); “Social Language Use Pragmatics” (American Speech Language Hearing Association ASHA©, 1997-2014) ; “The Verbal Behavior Milestones Assessment and Placement Program (VB-MAPP©)” (Sundberg, 2008); “Sensory Checklist: Raising a Sensory Smart Child” (Biel & Peske, 2005) “Postupy efektívneho učenia a učenie motorickej imitácie u ranných študentov” (Processes of effective learning and motoric imitation in young students) (AB/VB workshop, 2016 - Zuzana Maštenová – Behaviorálne Intervencie SK).

4.1. The assessment tool and its administration

The diagnostically applicable material “Evaluation of the degree of pragmatic language level in people with autistic spectrum disorder: potential barriers for speech therapeutic intervention” focuses on assessing a client based on the methods of observation and testing. A number of abilities and skills relating to pragmatic language level can be evaluated on the basis of observation, e.g. observing a child while playing can help us find out whether the child initiates interactions with other children, asks questions, imitates something or someone, etc. Monitoring is carried out without submitting tasks, in surroundings natural to the child or in the environment of a speech and language

therapy room which the child is familiar with. It is also convenient to produce a video-record. The objective of formal testing is to capture, in an objective way, whether the child faces problems in the evaluated area, whether a certain skill is omitted, carried out inadequately or in a different way, etc.

The material "Evaluation of the degree of pragmatic language level in people with autistic spectrum disorder: potential barriers for speech therapeutic intervention" was created specifically for the needs of speech and language therapists. Each and every diagnostic field is evaluated on the grounds of observation; picture material is used to verify the subjective point of view and is presented to ASD clients in order to evaluate discrimination of visual schemes.

Basic fields of evaluation are as follows:

- Problematic behavior – in the field of social behavior in people with autistic spectrum disorder, large attention is paid to psychological testing whereas pragmatic linguistic level is often interchanged for social behavior. Evaluation of problematic behavior was implemented into the diagnostically applicable material on purpose as problems in social behavior lead to problems in communication and can have interferential effect in respect of speech and language therapy intervention. This covers, however, only one part of evaluation of communication pragmatics which objectifies the subjective point of view of a speech therapist or a parent on the social behavior of an ASD client.
- Visual contact.
- Sensory integration – this part relates to individual differences, particularities of each individual child which need to be taken into account within the speech and language therapy intervention. The field of sensory integration is perceived as essential for effective speech and language therapy intervention. This is the reason why we created an additional material „Screening evaluation of perceptual sensory integration", which is recommended in cases when a child shows symptoms of difficulties in the sensory system. This involves evaluation of the sensory system (auditory, visual, tactile, gustatory and olfactory perception, proprioceptive system and vestibular system). „Screening evaluation of perceptual sensory integration" ought to prompt the speech and language therapist terms of what needs to be strengthened, what needs to be avoided (touches, loud or quiet speech, etc.). Each child has a unique individual sensorimotor profile.
- Social interaction and skills – subtest focusing on greeting and addressing other people, shifting communication roles and communication rules.
- Motor imitation – this subtest is not possible to evaluate on the basis of visual schemes but it has fundamental significance for speech therapeutic intervention. It assesses the ability of motoric imitation of upper and lower limbs with an object, without an object and oral motor imitation.
- Facial expressions – an additional evaluation was also created for this field. In this part of evaluation, the speech and language therapist focuses, especially, on the orofacial area (facial expressions, direction of eye movements, particular motions of the head, body, arms) in varied situations: a) expressing interest in an activity, shared attention; b) expressing negation, unwillingness to cooperate; c) expressing joy, positive excitement; d) expressing stimulation overload, necessity to relax.

Picture material contains two pictures to identify the propriate visual scheme. The child is prompted to decide which of the presented pictures is correct and better represent the specific pragamtic expression of the situation. There have been conceived ten picture pairs relating to the above mentioned categories of evaluation.

- Visual contact.
- Greeting.
- Saying goodbye.
- Request for a favor ("to want something").
- Proxemics in communication.
- Expressing displeasure.
- Waiting in communication.
- Alternation in a dialogue.
- Behavior in a shop.
- Reaction to a loss/failure.

Administration of the test is simple and easy to follow. The evaluation should be carried out three times and each performance of the child is distinguished in the table by a different color. The extent of the problem significance is evaluated using set scale: 0 = no problem or symptoms; 1 = mild/occasional disorder, differs from other children; 2 = moderate disorder (effecting learning processes and social interactions); 3 = serious disorder (negative impact on learning processes and social interactions); 4 = severe disorder (learning and social interactions almost impossible). The more points a client achieves, the more severe problem he/she suffers from. Distinction of visual schemes, which are an integral part of the formal testing, are evaluated on a scale 0 = correct response, 1 = incorrect response.

The created material "Evaluation of the degree of pragmatic language level in people with autistic spectrum disorder: potential barriers for speech therapeutic intervention" brings completely new insight into the issue of pragmatic linguistic level in ASD not only in context of the social behavior performance of children. Apart from providing thus far missing SLT diagnostics of pragmatic level of communication, the material also supports more effective speech and language therapy intervention as it helps SLT professionals indicate the direction which speech and language therapy of ASD clients might take, what individual particularities should be taken into consideration and what potential barriers might distort the SLT intervention.

Prior to the beginning of the testing or observation, it is important to respect certain recommendations. Complex personal and family case-history is essential, including also information on the child´s interests, favorite activities, songs, movies, food, pets, family members, etc. It is also necessary to make contact with the client, based on trust. The speech and language therapist should become thoroughly familiar with the testing material, questions and evaluation scales, prepare all required tools and check functionality of the audio/visual technique in advance. In the course of the evaluation, adequate facial expressions and verbal approval should be used. Activities should be adjusted to the age of the child and the child should be continuously motivated. It is convenient to repeat the question two or three times and to wait for the response for 3 to 5 seconds.

4.2. Pilot testing phase and picture verification, partial results

For the pilot verification of the evaluation tool we assessed 5 children with and without developmental language disorders, 3 children with sound of speech disorder (articulation disorder which is not related or based on language impairment or disorder, only with phonological difficulties - dg. F80.0 – based on ICD 10. WHO classification criteria). The other group were children with diagnosis R62.0 (delayed development of speech, but only in terms chronological delay with no relation to neurological or other impairments) –2 children have been assessed.

Children with articulation disorder F 80. 0 – scored 0 points, therefore we may state that they had no difficulties in pragmatic features of communication behavior. Children with delayed development of speech varieties in evaluation are to be found. For the better insight into the children performance and practical material verification we briefly introduce the cases.

- Case 1– suspected F80.1 diagnose (expressive subtype of specific language impairment) – the child does not understand the presented visual schemes ´correct x false´, it is necessary to apply a smiling or sad face icon instead, but even with these prompts, the client often only relies on guessing. The client determines the correctness of the picture exclusively on the basis of the facial expression of the adult person; in case the expression is missing, the rate of mistakes increases.
- Case 2 – boy; diagnosis R62.0 following a mental deprivation (developmental speech delay), the boy is evaluated on the basis of monitoring, in a first subtest during his evaluation problematic behavior occurred (2 points = moderate disorder) – such symptoms occur often, he does not cooperate, is weepy, and cannot keep concentration, problems are remarkable in memory and learning, probably as a result of problematic behavior. In a subtest of social interaction (changing communication roles) scores (1 point) – there occur deviations from other children – he must always start as the first one, if not, he gets weepy, he prefers playing alone to playing with other contemporaries. In formal testing – distinction of visual schemes – he judged on all model pictures correctly. If we focus on the subtest of facial expressions, we find out that when expressing his interest in a certain activity, negation and his overload, he applies more muscle activity performed by musculus frontalis (in the forehead area). When expressing negation and overload, there appears a particular motoric pattern, bending down his head, lying

on the table. Analyzing the direction of his eye movements, he is looking down and to the right for focusing concentration to problem solving.

A child with a suspected autistic spectrum disorder (F 84.0; infant autism) – distinction of visual schemes cannot be evaluated as the child does not understand the presented visual schemes and instruction. Based on monitoring, there occur deviations in all fields of diagnostics. Significant problems are obvious in the area of sensory system (hypersensitivity to tactile and auditory stimuli). Direction of eye motions is in all situations down and to the right. Musculus frontalis is applied more often than it is usual and expected. During oral speaking, the child shows signs of echolalia (repetitions of someone´s speech, specific words, or phrases), addresses somebody only after being prompted, does not change communication roles, responses to a question with delay, initiates eye contact in a different way, often only after being prompted. Stereotype fluttering movements of arms occur. Social interaction is disturbed by problematic behavior (2 points, verbal aggression, fists of rage). It was discovered, based on the diagnostic material, that it is necessary to initiate speech and language therapeutic intervention by reducing hypersensitivity to tactile and auditory stimuli.

In all evaluated children, the same direction of eye movement was detected as an expression of negation or overload – down to the right side, laterality of all children is right-hand-sidedness. M. frontalis is applied more often than usual. Only in one girl with diagnosis F80.0, various applications of musculus frontalis and orbicularis oris (responsible for round upper and lower lip and bilabial closure) was observed.

When evaluating the distinction of visual schemes, children often pay attention to facial expressions of persons in the picture and mark the picture as false if the face is sad, they also notice other details of the picture (the picture is false if the door is closed, if the other boy does not answer – the answer tag at his mount is missing; attention is not paid to the fact that the picture should evaluate proxemics). Children do not understand that the clock above the head of a person (Pict. 7 and 8 – changing in communication and waiting for communication) means that the boy in the picture is waiting. Repeatedly, the facial expression of adult-like.

5. Discussion and conclusion

We introduce the main structure of the new evaluation material created by us for the assessment of specific features of pragmatic language level in children with specific language disorder. During our preliminary research we found specific differences in perceived performance in children when evaluating PLL with this adapted assessment material. On the basis of the analysis of the partial results and subtests scores, supplemented by qualitative observation we can summarize that in all children with language development disorder, the same direction of eye movement was detected as an expression of negation or overload – down to the right side, while the lateral preference of all children was right-hand-sidedness. As to the orofacial movements analysis, the part of the forehead innervated by musculus frontalis was involved in the facial expression movements more often than it was expected comparing the usual facial expression behavior.

We agree with vanDall (2015) that from a differential diagnosis point of view, this is needed to distinguishably differentiate between ASD and e.g. Pragmatic Language Impairment (PLI) (or Social Communication Disorder - S(P)CD, in the terminology of the diagnostic classification of DSM V - SCD; American Psychiatric Association 2013) as the. However, the repetitive behavior, which seems to be similar, but not quite as the ASD criteria is under criticism and may be compared to the same uncertainty that can be found in the assessment of specific learning disorders. Also, we must be aware of the fact that social/communication and pragmatic skills cannot primarily be necessarily inter-connected, because one skill does not automatically presuppose another. For example, a lot of people who are successful in pragmatic/linguistic tasks can hardly manage social communication in everyday life (e.g. cf. Norbury & Sparks 2013; Gillespie-Lynch et al. 2015). We suggest that oral motor and gestures imitation, as well as the specific use of motorics and praxia in pragmatic communication behavior, should be also particularly assessed by speech and language therapists to confront the individual performance with the sensory perception and other possible variables of communication and language expressive and receptive skills. However, for this purpose we need to have some specific assessment material which help the speech and language therapist to detect and analytically describe and discuss the potential barriers in speech and language intervention, regarding the fact that diagnostics of ASD is a

longitudinal and a very sensible process with a lot possible misunderstandings and communication and interaction obstacles.

At this phase, we are continuing in the verification of the created assessment material with the engagement of children with developmental language disorders, including children with autism spectrum disorders. By this example we wanted to show how important is to look at the assessment of pragmatic language level not only from traditional point of view, and do not follow only the emotionally-based explanation of the facial expression background and motivation. We created an assessment tool synthetizing the selected main subareas of pragmatic communication evaluation, and after further verification we would like to introduce more results.

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