ASSESSMENT OF THE INFLUENCE
OF SPEECH-LANGUAGE INTERVENTION
ON PERCEPTUAL-SENSORY INTEGRATION
IN PERSONS WITH AUTISM SPECTRUM
DISORDER IN THE CONTEXT OF ASSESSING
THE PRAGMATIC LEVEL OF LANGUAGE

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Abstract
Autism spectrum disorder is ranked among the most serious developmental disorders, because it affects multiple areas such as communication, social interactions, establishing and maintaining contacts with the environment, reactions to visual and auditory stimuli and many others. The therapy of these individuals requires multidisciplinary cooperation; therefore, it is currently addressed by many experts. The objective of the paper is to present the possibilities of assessing the influence of speech-language intervention on perceptual-sensory integration in persons with autism spectrum disorder in the context of assessing the pragmatic level of language. This area might be a potential barrier to speech-language intervention; therefore, it should be assessed at the beginning of any intervention.

The measurement tool for the assessment of perceptual-sensory integration was a test battery of the authors’ own design called ‘Assessment of the pragmatic level of language in persons with autism spectrum disorders: potential barriers to speech-language intervention’. The use of the screening material in the context of speech-language intervention is demonstrated on a case study of a boy with suspected autism spectrum disorder diagnosis – children’s autism with a disorder of sensory perception on the body, especially in the orofacial region. The principal methods were observation, analysis of targeted work with the client and interviews with the parents. According to the case report, the speech-language therapy lasted for nine months and focused on the development of the monitored area. The results can be compared on a global scale, including improvement or stagnation in various areas. The targeted therapy resulted in improvement in all monitored areas by at least 1 point (e.g. olfactory and gustatory perception) and by a maximum of 4 points (vestibular system). After initial examination the boy’s disorder was assessed as moderate to severe disorder (effect to negative effect
on the process of learning social interaction). However, based on the results of follow-up examination the boy was in the category of moderate disorder (effect on the process of learning and social interaction).

Keywords: Autism spectrum disorder, perception, sensory integration, screening, speech-language therapy.

Introduction

Autism spectrum disorder (ASD) is one of the most serious developmental disorders, which manifests as an inability to communicate, establish contacts with the environment, restrictive and rigid interests, and repetitive behaviour (Brentani et al., 2013; Pennington, Cullinan, & Southern, 2014). For an individual with ASD it is difficult to express wishes and needs. Autism is accompanied by specific repetitive behavioural patterns, while behaviour can be disrupted in a mild or severe form (Woolfenden, Sarkozy, Ridle, & Williams, 2012). From an educational and social perspective, for persons with ASD it is difficult to share attention with others; they prefer individual game and are not willing to share their toys with others (e.g. Kordi, Memari, Moshayedi, Panahi, Ranjbar, Shafiei, & Ziaee, 2015; Lieberman & Yoder, 2012). It is difficult for them to recognize emotions; they have a disrupted ability to establish and maintain friendships (Petrina, Carter, & Stephenson, 2014). In communication, it is difficult for these persons to understand the other person’s communication, it is difficult to read their gestures, echolalia is present (Kasari, Brady, Lord, & Tager-Flusberg, 2013). If these communication signals are not understood by the environment, fits of anger or aggression might occur (De Giacomo, Craig, Terenzio, Coppola, Campa, & Passeri, 2016). Other specific features include perceptual variations, difficult adaptation to a new and unfamiliar situation, and need for a regular regime. Clear manifestations are observed during food consumption; these individuals search for a specific structure or colour of food. Individuals with ASD are more frequently subject to sensitivity disorders including both hyper- and hyposensitivity (Páta, 2008; Prucha, Walterová, & Mareš, 2003; Whitney & Gibbs, 2014; Autism, 2015). The therapy of these individuals requires multidisciplinary cooperation; therefore, it is currently addressed by many experts. In the context of assessing perceptual peculiarities in persons with ASD, two neurocognitive theories are mentioned, i.e. the weak central coherence theory (WCC model), which causes weakened integration of neural mechanisms reducing the ability of holistic and comprehensive (global) perception, and the enhanced perceptual functioning theory (EPF model) referring to increased activity of the primary visual-perceptual (and also auditory) mechanisms, which paradoxically improves for example visual performance when focusing on a specific detail by suppressing higher cognitive and linguistic meanings of the stimuli presented (Kéïta, Bedoin, Burack, & Lepore, 2014).

The sensory system plays a significant role in the daily routine. All stimuli from the environment activate the process of their integration, the resulting reaction being conditioned by the activity of the sensory system. Every individual should be capable of sensory modulation, discrimination, and subsequent store in the sensory memory (Harvey, 2013; Stevenson, Segers, Ferber, Barense, & Wallace, 2014). A disruption of any of these stages results in impaired sensory perception, i.e. sensory integration dysfunction. This is a neurological disorder resulting from the inability of the brain to integrate information from the basic senses (Fábianová, 2014). Disruption of sensitivity thus results from damaged CNS or reduced sensorimotor experience of the child, caused for example by early birth resulting
in damage to the white matter of the brain, or by longer stay in a neonatal intensive care unit (Bröring et al., 2017). Variations in sensitivity in the orofacial region (cheeks and mouth) may also result from incorrect feeding. The sensory perception disorder is classified into three basic categories – increased sensitivity (hypersensitivity), reduced sensitivity (hyposensitivity) and mixed sensitivity. A hypersensitive child tends to manifest strong reactions to stimuli. Increased sensitivity in the oral cavity may affect the consumption of structured food; the child is able to eat only liquid or finely mixed food. The gag reflex and biting reflex might be accelerated and triggered for example by olfactory stimulation. Increased sensitivity on the body leads to unpleasant perception of touch, and displeasure of dressing. As a result, the child plays less with various structures, and avoids for example sand, dirt, etc. If the child is hyposensitive, the response of the nervous system to stimuli is reduced. The child does not feel touches, does not feel the presence of any objects in the oral cavity, and need not feel pain in case of an injury. Therefore, strong and distinct stimuli are required. If the child has mixed sensitivity, hyper- and hyposensitivity are combined on various parts of the body (Whitney & Gibbs, 2014; Purdy, 2016).

Research has shown that while individuals with ASD suffer from disorders of auditory-visual integration for verbal information, bisensory processing of simple non-verbal stimuli in children with high-functioning ASD is not significantly disrupted, as suggested for example by Stewart et al. (2016). They suffer from disturbed interoception, which might be caused by impaired multisensory connections and their integration at the level of internal afferent pathways in the cortical and subcortical regions of the brain (duBois et al., 2016). This results for example in difficulties in the form of dyspraxia or apraxia of body movements including the orofacial region, and in impaired perception of the body image (Lyons & Fitzgerald, 2013). The exact degree and specific region of atypical interoception are still being investigated, particularly due to the considerable heterogeneity of research conditions. Generally however, research studies suggest a tendency to hyporeactivity in reaction to interoceptive stimuli (duBois et al., 2016).

The peculiarities of sensory perception and integration affect or even specifically determine the development and adoption of language skills, whether at the articulatory, phonological or lexical-semantic level, or the pragmatic level, which is systematically analysed in our research studies (see for example Řihová & Vitásková 2012).

**Research objectives and subject of the research study**

The main objective was to assess the influence of speech-language intervention on perceptual-sensory integration in persons with autism spectrum disorder in the context of assessing the pragmatic level of language. The subject of the research study was a preschool child with autism spectrum disorder. The main assumption of our research strategy is that numerous abilities and practical skills related to the pragmatic level of language might be assessed based on the method of observation, using specifically created material.

**Research methods**

The measurement tool for the assessment of perception of visual diagrams was a test battery of the authors’ own design called ‘Assessment of the pragmatic level of language in persons with autism spectrum disorders: potential barriers to speech-language intervention’, developed under the following grant project GAČR GA 14-31457S. 2014-2016 “Pragmatic language level in persons with autism spectrum disorder. The use of the screening material in the context of speech-language intervention is demonstrated on a case study of a boy with
suspected autism spectrum disorder diagnosis – children’s autism with a disorder of sensory perception on the body, especially in the orofacial area. According to the case report, the speech-language therapy lasted from May 2016 to March 2017. In May 2016 the first data collection was performed by means of observation, targeted work with the client and interviews with the parents. This was followed by nine months of targeted therapy aimed at the development of the monitored areas. The follow-up examination was performed in March 2017, again by means of observation, targeted work with the client and interviews with the parents.

The evaluation material ‘Evaluation of the degree of the pragmatic level of language in persons with autism spectrum disorder: potential barriers to speech-language intervention’ focuses on the assessment of a client based on monitoring and testing. A number of abilities and skills relating to the pragmatic level of language can be evaluated on the basis of monitoring, e.g. observing a child while playing can help us find out whether the child initiates interactions with other children, asks questions, imitates, etc. Monitoring is carried out without submitting tasks, in an environment familiar to the child or in the environment of a speech-language therapy room, which the child is familiar with. It is also convenient to produce a video-recording. 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 the pragmatic level of language in persons with autism spectrum disorder: potential barriers to speech-language intervention’ was created specifically for the needs of speech-language therapists. Each and every diagnostic field is evaluated on the grounds of monitoring; picture material is used to verify the subjective point of view and is presented to ASD clients in order to evaluate distinction of visual schemes.

Basic evaluating fields are as follows:

- Problematic behaviour – in the field of social behaviour in persons with autism spectrum disorder, large attention is paid to psychological testing whereas the pragmatic level of language is often interchanged for social behaviour. Evaluation of problematic behaviour was implemented into the diagnostically applicable material on purpose as problems in social behaviour lead to problems in communication and can have interferential effect in respect of speech-language therapy intervention. However, this covers only one part of evaluation of communication pragmatics which objectifies the subjective point of view of a speech-language therapist or a parent on the social behaviour 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-language therapy intervention. The field of sensory integration is perceived as essential for effective speech-language therapy intervention. This is the reason why an additional material was developed – ‘Screening evaluation of perceptual sensory integration’, which is recommended in cases the 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’ should prompt the speech-language therapist in terms of what needs to be strengthened, and what needs to be avoided (touches, loud or quiet speech, etc.). Each child has a unique individual sensorimotor profile.

- Social interaction and skills – a subtest focusing on greeting and addressing other people, shifting communication roles and communication rules.
• Motor imitation – this subtest does not use visual schemes for the purposes of evaluation but is fundamentally significant in speech-language therapeutic intervention. It assesses the ability of motor imitation of the upper and lower limbs with an object, without an object and oral motor imitation

• Facial expressions – an additional evaluation tool was developed for this field. In this part of evaluation, the speech-language therapist focuses especially on the orofacial area (facial expressions, direction of eye movements, particular motions of the head, body, arms) in various 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.

Regarding the low age of the child, the C Record Sheet was used for the purposes of screening assessment of perceptual-sensory integration in persons with autism spectrum disorder – potential barrier to speech-language intervention. The record sheet was inspired by the Sensory Checklist developed by Biel and Peske in 2005 (Biel & Peske, 2005).

**Description of the research and the results**

1.1. **Description of the participant**

First name: Lukáš

Year of birth: January 2014

Diagnosis: Suspected autism spectrum disorder – children’s autism, specific developmental disorder of motor functions

1.2. **Family history**

At the time of birth, the boy’s mother was 20 year old. She had completed secondary school with a school-leaving certificate. At present, she is on parental leave, she would like to study economics at university. At the time of birth, the boy’s father was 30 year old. He had completed vocational training school. He works as an operator in a production plant. Lukáš has no siblings. The parents are considering having another baby. However, their decision is strongly influenced by the current diagnosis of the boy and the mother’s young age.

None of the parents have any health issues. None of the family members needed speech-language therapy or a different specialized therapy. The economic situation of the family is good; the child is provided with all needs. Both parents are involved in the care of their son. At speech-language therapy sessions, Lukáš is usually accompanied by his mother, sometimes also by his father (works in three-shift operation). Cooperation with both parents is excellent.

1.3. **Personal history**

Lukáš was born as the first planned child in the 41st week of pregnancy. During pregnancy, no medical complications occurred, no further examinations were indicated. Birth was spontaneous in a vertex delivery. After birth, the boy’s crying was loud and strong. Icterus was not present. The boy weighed 3,250g and measured 49cm. The Apgar score expressing the quality of postnatal adaptation was 10-10-10. Postnatal adaptation was normal without any difficulty. Right from birth, Lukáš was fully breastfed. Both the boy and his mother were discharged from the hospital three days after delivery.

As an infant, the boy was quite restless, he cried a lot and did not have a regular rhythm between being asleep and being awake. He used to be awake in the evening and at night. He
was fully breastfed until a year and a half. From the 5th month, the mother tried to provide complementary food – smooth vegetable puree. Lukáš disliked being fed by a spoon and refused the food. Despite all the efforts, Lukáš did not accept food from a spoon until the 12th month. However, the food had to be free from any pieces, had to be smooth and more of a liquid structure. The boy had no difficulty with fluid intake from a bottle. Due to delays in psychomotor development, the paediatrician recommended neurology examination. Here, the mother was recommended rehabilitation of her son using the Bobath concept. Lukáš began to sit at the age of eighth month, and began to walk at the age of 15 months. Instinctive babble started to appear around the 10th month, the first words were pronounced around the 21st month. The active vocabulary of the boy is now around ten to fifteen words. The passive vocabulary prevails over the active one, but is reduced regarding the age average. The boy does not maintain hygiene himself, and still wears a diaper during the day. Potty training is usually refused by Lukáš. During this period, Lukáš did not suffer any serious disease or injury.

Regarding the fact that the paediatrician observed some specifics in the boy’s behaviour, he advised his mother to take a pedopsychiatric examination, the conclusion of which was suspected autism spectrum disorder – children’s autism. This examination is repeated every six months. The last examination suggested a necessity to differentially distinguish between autism spectrum disorder – children’s autism, ADHD and specific language impairment – developmental dysphasia. The boy also underwent a psychological examination, the conclusions of which are not available yet.

The parents had a consultation in an ASD special education centre, where they were offered to include the boy in a special class by means of group integration with an assistant teacher. The boy was included in the 5th (highest) degree of support. The boy will enrol in kindergarten in September 2017.

1.4. Initial speech-language examination

The speech-language therapy was started on the mother’s request, whose primary motivation had been to consult the boy’s eating disorders. Lukáš refused other than liquid food. The boy was recommended speech-language therapy by the paediatrician only after an initial consultation with the speech-language therapist; he had believed that this treatment had not been important regarding the low age of the child. The boy was accepted for speech-language therapy at the age of 2 years and 4 months.

During the first visit the boy cried, was afraid of the unfamiliar environment and did not know what was going to happen. He was very stressed in that situation and held on to his mother. The boy was left to look around in the room and followed his mother to the carpet with various toys. He relaxed slowly and began to look at things around him. The effort of the speech-language therapist to approach the boy resulted in a very negative response. Lukáš began to cry and scream again, when the speech-language therapist retreated the boy calmed down again. He responded to each approach with a scream. After about 10 minutes it was possible to approach the boy. Communication with Lukáš was established using toys; he showed cars and animals. In terms of verbal communication, the boy used vowels – mostly ‘A’. If he disliked something he said ‘ne’. To improve mutual contact, hand puppets were used – girl, boy, teddy bear, dog. The best response was observed in the case of the girl hand puppet, over which it was possible to touch the boy. At first, the hand puppet was moved on the feet, legs, than fingers, palm and up to shoulders (the movement was always from top
to bottom – calming direction). The boy refused to be touched in the face, he reacted very negatively to each attempt. The response to his name was sporadic, the level of his active and passive vocabulary was very small, the boy actively used 4 comprehensible words (táta, ham, ne, bába), and about 3 own words (names for dog, drink, home). His social interaction was very limited, with no interest in communication. If the boy showed interest in communication, he showed strong negativism if the communication intent was not achieved. In speech the boy uses all vocals, bilabial sounds and the sounds T, N, and H. Visual contact was established sporadically; when the boy wanted something, visual contact was established in a matter of seconds. The boy turned in case of an auditory stimulus but was scared in case of a loud sound and tried to hide in his mother’s lap (normal hearing according to BERA examination). The boy reacted to visual stimuli but showed little interest. A noticeable way of walking was observed – the boy walked on tiptoe with his right foot and removed the sock from his left foot and walked on a heavy-duty carpet with a coarse structure. The boy showed interest in pens and markers, and began to draw on a sheet of paper – the right upper extremity was preferred and four-finger grasp used. Lukáš did not show interest in joint activities and showed very short attention – several seconds. He is unable to build a tower of cubes, but likes knocking it down and waits for somebody to build it.

An interview with the mother reveals that the boy walks in the shoes at home and refuses to have them taken off, but when he is out in the playground or sandpit, he often takes the shoes off himself and is barefoot. Lukáš likes taking a bath, plays with water and pours it in various ways. When bathing, he does not mind aromatic soap or bath foam, but dislikes being washed by a washcloth. He can only be washed by hand. Lukáš refuses his face to be washed, shows a negative response to brushing teeth with a traditional or electric toothbrush, as a result of which his teeth decay and he has tartar. Food intake is monotonous, the boy is not interested in tasting new types of food. Mostly he eats food from a bottle – milk or baby formula, occasionally he eats fruit puree. His milk has to contain nutritional substances for proper development. He dislikes when food or fluid remains around his mouth. He likes swinging on a swing, he turns a wheelchair. If he sits on a roundabout or wheelchair and turns, this activity lasts only a short time.

Following the observation and interview with the mother the C Record Sheet was completed for the purposes of screening assessment of perceptual-sensory integration. The boy achieved 59 points of the total of 140. Each item was scored on a scale from 0 to 4 point, where 0 indicated no problem, 4 points indicated a serious disorder (learning and social interaction almost impossible). The number of scored points is shown in Table 1. The most serious difficulties were observed in the area of tactile perception. The boy has difficulty with a specific food texture and food and drink temperature; this item has the maximum number of points. He also has difficulty with washing his hair, face, nail cutting and combing. In these areas the boy scored three points. Two points were awarded for activities such as touching various parts of the body, hugging, wide walking and tiptoe walking. The least disturbing is non-respecting of personal zones, for which one point was awarded. None of the monitored items was without difficulty. The second significantly impaired area was olfactory and gustatory perception. The most serious difficulties were again observed in the area of food – refusing new food and food with strong taste. The boy is noticeable for sniffing unusual odours and smells; the boy refuses to stay in an environment with these smells. Slight or occasional difficulties were observed while smelling perfumes or detergents. Again, none of the monitored areas was without difficulty. The same number of points as in gustation and olfaction was scored
in the area of proprioception. Again, the items with the highest number of points relate to food intake – food texture. Slight or occasional problems were observed in high-risk activities (jumping from higher places, climbing to higher places). No difficulties were observed in the area of covering or closing eyes. The vestibular system and visual perception had the same number of points. In terms of the vestibular system, difficulties were observed in turning (roundabout, spinning toys, turning in a circle); the boy searches for these activities to calm down. The boy does not search for activities requiring balance such as cycling, skiing, etc. Going by car, riding a slide, using an elevator or escalator causes only slight or occasional problems. In the area of visual perception, problems were observed in reading or looking through books for more than a few minutes. The activity is not interesting for the boy, he is unable to look through a book deliberately and has a tendency to throw it away. An immature area is visuomotor coordination – catching a flying or rolling ball. No difficulties were observed in the area of watching glittering moving objects. The fewest difficulties were observed in the area of auditory perception, with some difficulties of the second level during activities with rapidly changing verbal instructions. Difficulties of the first level were obvious during listening to loud sounds and staying in a noisy environment. A completely trouble-free area is sound background during concentration, response to singing, unfamiliar sounds, or foreign languages.

Table 1. Point scores in the measured areas during the initial examination

<table>
<thead>
<tr>
<th>Points</th>
<th>Touch</th>
<th>Proprioception</th>
<th>Vestibular system</th>
<th>Auditory perception</th>
<th>Visual perception</th>
<th>Gustation and olfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>15/24</td>
<td>12/24</td>
<td>8/24</td>
<td>4/24</td>
<td>8/24</td>
<td>12/20</td>
<td></td>
</tr>
</tbody>
</table>

1.5. Speech-language therapy

Speech-language therapy focuses on balancing sensitivity of the whole body with an emphasis on the orofacial region regarding the difficulties with food intake and initial problems with poor development, and also on the development of social interaction, play and speech. The therapy uses elements of orofacial stimulation, therapy aimed at the oral position, Handle approach and DIR/floortime. Aids used during the therapy include hand puppets, finger puppets, puppet socks, cloths and materials of various structures, natural materials (clay, sand, leaves, chestnuts, beans), sensory pressure brushes, vibrating bars, toothette sticks, finger brushes, oral bunny, set of toothbrushes for infants, teethers, etc.

The therapy takes place every two weeks and lasts thirty to forty-five minutes. At the beginning the mother always describes previous home exercises, comments on the boy’s mood and his current health status. After two sessions, the boy was fully adapted to the therapeutic environment and the speech-language therapist. The boy has already found his favourite toys and activities, which he requires. The space is structured into several areas – playing, relaxing and working. In the playing area Lukáš is offered a variety of toys for the development of play and social interaction, in the relaxing zone the boy can lie down, play with various materials and walk on various structures. The whole body is involved; the therapy always starts with the feet, followed by the hands, back, and eventually the face. The mentioned aids are used to balance sensitivity on the body. In the working zone, Lukáš is presented tasks aimed at the development of auditory and visual perception, development of thinking and development of speech. Lukáš reacts very well when looking in the mirror, he likes watching himself and tries
to imitate oromotor movements. If he feels overloaded or the situation is unpleasant, he runs to the wardrobe, where he closes himself. Once he feels better, he comes out and continues in his activities. Sometimes he hides in the wardrobe and peeps out as if he was trying to shout boo. He likes listening to the sound of the flute or pipe, he is starting to blow the pipe himself. At the end of the therapy the mother is recommended home exercises and can borrow adequate aids.

1.6. Follow-up speech-language examination

In March 2017, a follow-up speech-language examination was conducted to assess the current state of auditory and visual perception, speech and language skills, tactile perception and food intake. The C Record Sheet was used again for the purposes of screening assessment of perceptual-sensory integration. In the area of auditory perception, improvement was observed in distinguishing general sounds, and matching a sound with an object. The boy can visually match a picture with an object, match a shadow with a picture, and sort objects by their colour. In terms of language skills, both the active and passive vocabulary of the boy increased. He actively uses 25 words, begins to form a two-word statement in the form of a word and a gesture. The boy’s concentration of attention improved; he can now pursue an activity for 3-4 minutes. His tactile perception generally improved. Walking on tiptoe almost disappeared, the boy now tolerates various clothing materials, and respects other people’s personal zone. In terms of food intake, he now refuses only fruit puree or yogurt, but can eat vegetable soup which is not absolutely smooth, sweet potatoes and chocolate. He tries to put food in his mouth with noticeable caution. An area that remains hypersensitive is the lower dental arch, which the boy covers with the retracted lower lip. An analysis of the record sheet suggested improvement in all monitored areas. In the follow-up examination the boy achieved 47 points. In the area of tactile perception improvement was observed in taking on various clothing materials, respecting personal zones and walking on tiptoe. In this area, three points less were achieved. Proprioception improved by two points in the area of high-risk activities and fine motor activities. Jumping from height or deliberate hitting the wall or radiator completely disappeared. The greatest progress was observed in the area of vestibular perception – by 4 points, i.e. a half of the score. Improvement in the area of turning (this activity sometimes occurs, but the boy has developed other stress coping mechanisms). He has no difficulty riding a slide and using an elevator; he is able to go by car over a longer distance. The area of auditory perception improved by one point. The boy has no difficulty listening to loud sounds. Visual perception also improved by one point. The eye-hand coordination improved, a well-functioning activity in this area was using a bubble blower. Similarly, the area of olfactory and gustatory perception improved by one point – smelling unusual odours and scents. Despite the improvement in food intake, the consumption of new foods and foods with a distinct taste is still seriously impaired. The points scored during the follow-up examination are shown in Table 2.

<table>
<thead>
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<td>3/24</td>
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<td>11/24</td>
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</table>
Discussion

During the nine-month therapy, sensitivity on the feet, back and face has improved. Lukáš does not mind being caressed on the face, he does not mind pieces of food on his face. He starts to produce labiodental sounds, he deliberately moves his lips on the teeth, and brings objects to his face. He takes an electric toothbrush and imitates brushing his teeth. The treatment now focuses on stimulation in the oral cavity. Food intake has improved – he can now eat fruit puree, white yoghurt, fruit milk, cream soup, sweet potatoes, and licks chocolate. The boy’s exhaling has improved by using a bubble blower (blowing bubbles makes him joyful), making bubbles in water by a straw, and using pipe No. 3. He likes using the toothette stick vibrator, which moves around the whole of his body, he tolerates being massaged with a sensory pressure brush. He is able to drink using a straw, takes food (without structure or with fine structure) by a spoon. Eye contact has improved, the boy shows interest in the surrounding objects and social interaction. The active vocabulary has been enriched by two new words. Unfortunately, the response to the boy’s name begins to disappear. The boy’s attention is still very short, cooperation is dependent on his current mood, health and fatigue. A comparison between the point score of the initial speech-language examination (ISLE) and follow-up speech-language examination (FSLE) is shown in Graph 1; improvement has been achieved in all monitored areas, the greatest improvement being in the vestibular system. The overall score has improved by 12 points. On the basis of the average number of points scored during the initial examination the boy’s disorder was assessed as moderate to severe disorder (effect to negative effect on the process of learning social interaction). However, based on the results of follow-up examination the boy was in the category of moderate disorder (effect on the process of learning social interaction).

**Fig. 1.** Comparison of examination point scores

The therapeutic plan is to further improve food intake, develop social interaction, raise interest in play and non-verbal and verbal communication, and thus develop the overall personality of the child. In the next examination, the C Record Sheet will be used again because it is not time consuming and monitors the progress and stagnation in the measured areas.
Conclusions

Based on a global analysis and comparison of the results and observation of progress and stagnation it can be concluded that the targeted therapy resulted in improvement in all monitored areas by at least 1 point (e.g. olfactory and gustatory perception) and by a maximum of 4 points (vestibular system). After initial examination the boy’s disorder was assessed as moderate to severe disorder (with negative effect on the process of learning social interaction). However, based on the results of follow-up examination the boy was in the category of moderate disorder (effect on the process of learning social interaction).

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**Summary**

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The main objective was to assess the influence of speech-language intervention on perceptual-sensory integration in persons with autism spectrum disorder in the context of assessing the pragmatic level of language. The subject of the research study was a preschool child with autism spectrum disorder. The main assumption of our research strategy is that numerous abilities and practical skills related to the pragmatic level of language might be assessed based on the method of observation, using specifically created material.

The use of the screening material in the context of speech-language intervention is demonstrated on a case study of a boy with suspected autism spectrum disorder diagnosis – children’s autism with a disorder of sensory perception on the body, especially in the orofacial region. The principal methods were observation, analysis of targeted work with the client and interviews with the parents. According to the case report, the speech-language therapy lasted for nine months and focused on the development of
the monitored area. The results can be compared on a global scale, including improvement or stagnation in various areas. The targeted therapy resulted in improvement in all monitored areas by at least 1 point (e.g. olfactory and gustatory perception) and by a maximum of 4 points (vestibular system). After initial examination the boy’s disorder was assessed as moderate to severe disorder (effect to negative effect on the process of learning social interaction). However, based on the results of follow-up examination the boy was in the category of moderate disorder (effect on the process of learning and social interaction).

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