Pragmatic Communication Disorder in Socially Disadvantaged First-grade Pupils

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Abstract: The communication skills of first-grade pupils (i.e. of the pupils that start the first compulsory year in Czech primary schools at the age of six) were explored to find possible risks of school underachievement with a focus on early intervention and supportive measures provided to these children to improve their worse communication skills.[1] Items selected from among the current diagnostic tools used in speech and language therapy and special education were used to assess the communication skills of 330 first-grade primary school pupils (N = 330). The data that was acquired was processed, analysed, and statistically evaluated. Concurrently, the study mapped the number of pupils entering their first year of education with symptoms of ADHD, and the influence of different cultural backgrounds or living conditions on the development of the speaking skills of those children. It was found that deficits in the pragmatic language skills correlate to the disadvantageous cultural environment or different living conditions of the first-grade pupils, which was not confirmed for social language skills. The findings presented here suggest that the conception of the Social (Pragmatic) Communication Disorder as listed in DSM-5 is probably too broad.

Keywords: Impaired Communication Skills, Pragmatic Language Level, Socio-cultural Disadvantage, First-Grade Pupil, Social (Pragmatic) Communication Disorder

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Communication and its disruption

Language development is part of the overall cognitive, motor, and social development of the child. The development of language skills is always highly individual and every language has its own specific features, e.g. vocabulary, which can be quantified quite easily. The critical period in language development extends roughly to the age of eight (Pinker, 2009, p. 336–337).

According to Lechta (2002a), impaired communication skills can be defined as deviation from an accustomed (or codified) language norm in a certain language environment or on the basis of the communicative intentions of an individual. The first approach is too tightly bound to the language environment and cannot be applied generally. Therefore, Lechta defines impaired communication skills as follows: *"The communication skills of a human are considered to be impaired if one language level of his/her verbal communication (or several levels simultaneously) interferes with the communication intent."* (2002a, p. 13). According to the current psycholinguistic view, this is the situation where the sender (communicator) transmits a speech signal to the receiver (communicant) and the current manifestation of the impaired communication skill on the part of the communicator interferes with the decoding of the signal on the part of the communicant (Lechta, 2002a; Klenková, 2006).

Language level approach used in Czech special education

Four language levels are distinguished in Czech linguistics, namely the phonetic-phonological, lexical-semantic, morphological-syntactic, and pragmatic language levels. In Czechia, the linguistic concept of language levels has been taken over by the branch of science called *logopedia and impaired communication ability* as a *special education* discipline which deals with speech-language pathology and therapy in all its aspects.

The phonetic-phonological level primarily deals with the acoustic features of a particular language, i.e. the auditory differentiation of the sounds of a mother tongue and their pronunciation (Bendová, 2011). The development of this language level is supposed to be finalised, in terms of sound pronunciation, by the age of five. By then defective pronunciation can be considered physiological. If these problems persist until the age of seven, the condition is described as extended physiological dyslalia (often to be seen in children with ADHD or those at risk of specific learning and behavioural disorders). If the pronunciation cannot be corrected by the seventh year, the speech defect is considered to be genuine

dyslalia (Bendová, 2011). The phonetic-phonological level secondarily concerns phonemic awareness, i.e. the ability to isolate a sound within a word by forming the words from individual sounds and thereby acoustically distinguishing the individual sounds in a word. In this field, the Czech language has specific features, e.g. in hard and soft consonants and sharp and dull sibilants. Phonemic awareness is usually defined as: "conscious ability to discover phonemes in the language and to handle them..., irrespective of the meaning and representation of the phonemes in a written language" (Sodoro et al., 2002, p. 223).

The lexical-semantic level is the second language level. According to Lechta (2003), the main concern in this context is understanding the literal (concrete and abstract) as well as the figurative (idioms, metaphors, proverbs) meanings of words, or comprehension of semantic relationships among certain words (homonyms, synonyms, antonyms, equivocal expressions). The category of vocabulary quality may also include the composition of word classes (verbs, prepositions, reflexive pronouns, etc.) and ability to use word classes properly (Škodová, Jedlička et al., 2007). The terms "ability to use" and "comprehension" indicate that vocabulary itself involves both of its aspects, i.e. productive (active) and receptive (passive). The overall image of the vocabulary use of an individual who is examined includes the evaluation of both its quantity (poor vocabulary, age-adequate, rich vocabulary) and quality. The lexical-semantic level usually starts to develop at the age of 10 months, when infants reach the stage of language understanding and their receptive vocabulary begins to grow. The productive vocabulary can be recognised at the moment the infants start to use their first words, i.e. at about one year of age. The growth of vocabulary accelerates fastest up to the third year of an infant's life. In their first year of life, infants use about six words, while at the age of two the number grows to 200 words, which increases to about 1000 words at the age of three. From then on, the vocabulary increases further, albeit at a slower pace. At the ages of four and six, the vocabulary increases to about 1500 words and 2500–3000 words respectively. In addition to vocabulary, children's ability to orient themselves in the terms they use and to use them in the correct form is assessed within this language level. Without an adequately developed lexical-semantic level, one cannot express one's thoughts correctly and use language to communicate with others. Hence, within the lexical-semantic level the development of the passive and active vocabulary throughout the whole course of a human life is explored (Klenková, 2006).

The structure of words and the rules for linking words into larger units – sentences – are examined in the morpho-

logical-syntactic level of language. This level cannot be explored before the infant starts to use his/her first words (Klenková, 2006). One-word sentences have different intonation, depending on the emotional intention and will (Lechta, 2002a). The first words are not declined; these are typically substantives in the nominative case, interjections, and verbs in the infinitive, in the third person, or in the imperative mood. Between one and a half and two years of age, infants start to form two-word sentences; this is also known as a "telegraphic" or "pivot" style. Between two and two and a half years of age, infants start to decline words and form multi-word sentences. Increased numbers of adjectives and personal pronouns are used between two and three years of age. Problems may persist forming comparative and *superlative adjectives.* The child deliberately adjusts the order of words to put the key-meaning word at the beginning of the sentence. Numbers, prepositions, and conjunctions are the last parts of the language to occur. From approximately three years of age, children start to use plurals and understand the meaning of words. They start to form what are called "higher concepts", complex sentences, initially with coordinate clauses and then also subordinate clauses. Towards the end of the fourth year, grammatical use of language should be free of any major grammatical errors. If the language still exhibits certain deviations from the standard grammatical structure, it may be a sign of disturbed language development (Klenková, 2006).

These three language levels form a framework for the pragmatic use of language as a means of verbal communication.

Pragmatic language level

Interest in various situational aspects of communication increased predominantly in the 1980s. In this period, pragmatics came to the fore. Works by Lahey dominated what was then the cutting-edge research. In the '90s, research in the field of the pragmatic level of language was oriented primarily towards dialogues, storytelling, and descriptions of events (known as the "pragmalinguistic concept in speech therapy"). On the basis of research findings, the focus of interest shifted to the sphere of the diagnostics of people from a bilingual environment, lower social strata, etc. Until that time, communication had always been evaluated on the basis of the standards typical of the majority. The reason for increased interest in pragmatic features of communication correlates with the importance that is nowadays ascribed to social and communicative abilities. The paradigm of speech therapy has also shifted towards a holistic approach.

The pragmatic level of language is one of the language levels. Lechta states that "it is a level of social application, social use of communicative abilities with emphasised social and psychological

aspects of communication" (Lechta, in Klenková, 2000, p.15). A similar definition of the pragmatic level of language in the relationship between signs and their use can be found in Smolík and Málková (2014). They state that "the pragmatic dimension of a language represents the ability to use the language in a way that is appropriate for the particular situation and that leads to the achievement of communicative aims" (Smolík & Málková, 2014). A common sign of both these definitions is the stress on the use of language in social contexts. Successful communication requires the use of language in social contexts (social communication).

In linguistics, pragmatics means "social language". The pragmatic aspect of communication includes "the behaviour of all those involved in a communication, the non-verbal expressions used and the context – "an environment" of every communication. Pragmatics analyses the relationships between the transmitter and the receiver in a particular context, the understanding of the goal, interaction, persuasion, confirmation, acceptance, and denial during the communication, etc." (Lechta et al., 2003, p. 42). At the pragmatic level, two major aspects are observed: the ability to express various communicative intentions (to ask for something, to express one's stance and emotions, to initiate social interaction) and the ability to converse (to maintain conversation, to play the role of the speaker and the listener, or what is termed "turn-taking"). This level also involves the observance of the storytelling and conversation rules – the sequence of narration, message delivery, and appropriate use of non-verbal signs (ibid.)

It is important to realise that the standards of social communication may vary in different cultures. The pragmatic aspect of communication must be assessed within the context of the environment which surrounds the child.

The approach described above implies that a child who has no difficulties with any other language levels (i.e. the child can pronounce all the sounds properly, has an adequately wide vocabulary, uses complex sentences in a grammatical manner, etc.), but does not know how to use the social communication rules, may encounter communication problems that can determine the comprehensibility of the message, its adequacy, and the selection of proper communication styles. Problems at the pragmatic level may, in practice, lead to a lesser ability to use language skills in social interaction and to perform given instructions in a correct order or to follow their sequence.

The pragmatic level represents the application of the communication skills of an individual within social interaction – it is the practical use of language as a means of communication (Klenková, 2006). When a child is born, it uses screams and non-verbal signals to communicate with the person nursing it. The primary intention of its signals is to draw the mother's attention with all

its available resources in order to satisfy its own needs. For this reason, Lechta named the period from birth through the first year of life "the age of pragmatisation" (2002a). Children from two to three years of age are able to grasp their role as a communication partner and to react in this role as necessary in a particular situation. Long before it starts to comprehend the meaning of a word or a sentence, a child can intuitively grasp the whole situation on the basis of the paralinguistic and affective expressions of the speaker. By the end of the third year, there is an evident effort on the part of children to communicate and to establish and maintain short dialogues with the people who surround them. At the age of four, abilities develop to react appropriately to a situation and to control the course of events in the immediate environment. This is the age at which the infant's behaviour can be regulated verbally (Klenková, 2006).

At the pragmatic level, communication is the subject of social assertion, i.e. social aspects of communication come to the fore. The pragmatic level is closely interlinked with the lexical-semantic level, where the state of the vocabulary serves as a good reference scale for the general development of language. Votavová and Smolík (2010, p. 301–302) suggest that *"investigation of one's vocabulary has a relatively high evident validity: there are no considerable doubts that the vocabulary range is a measure of mental development and abilities."* It can be concluded generally that without a sufficient command of vocabulary the language competence is rather low.

Social (Pragmatic) Communication Disorder

The diagnostic status of children with atypical pragmatic and social communication development has long been debated (Brooks & Bowler, 1992). The resolution of the debate is hampered by inconsistencies in terminology and diagnostic criteria, a paucity of reliable, culturally valid assessment tools supported by adequate normative data, and limited comparison of social communication profiles across different neurodevelopmental disorders (Norbury, 2014). Investigators have used terms interchangeably, suggesting that social communication and pragmatic language skills are seen as encompassing the same behaviours. For instance, Rapin and Allen (1983) first described "semantic-pragmatic deficit syndrome" as a constellation of symptoms including verbosity, comprehension deficits for connected language, word-finding deficits, atypical word choices, unimpaired phonology and syntax, inadequate conversation skills, speaking aloud to no one in particular, and poor topic maintenance and answering (Rapin, 1996). Rapin and Allen used this as a descriptive term that was most commonly applied to the communication profiles of children with autism spectrum

disorder (ASD), but they acknowledged that social communication and pragmatic language impairments were also seen in many other developmental disorders. Bishop and Rosenbloom (1987) considered "semantic-pragmatic disorder" as representing a distinct subgroup of children who occupied a diagnostic space between ASD and specific language impairment (SLI).

Social (pragmatic) communication disorder (SPCD) is a new diagnostic category included under Communication Disorders in the Neurodevelopmental Disorders section of the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) (American Psychiatric Association, 2013a). SPCD is defined as a primary deficit in the social use of non-verbal and verbal communication. Individuals with SPCD may be characterised by difficulty in using language for social purposes, appropriately matching communication to the social context, following the rules of the communication context (e.g. the flow back and forth of conversation), understanding non-literal language (e.g. jokes, idioms, metaphors, and proverbs), and integrating language with non-verbal communicative behaviours. Sufficient language skills must be developed before these higher-order pragmatic deficits can be detected, so a diagnosis of SPCD should not be made until children are four or five years of age. Social communication disorder can co-occur with other communication disorders in the DSM-5 (these include language disorder, speech sound disorder, childhood-onset fluency disorder, and unspecified communication disorder), but cannot be diagnosed in the presence of ASD (American Psychiatric Association, 2013b).

SPCD is documented as having the following comorbidities:

a) Autism spectrum disorder. The ASD symptoms are quite diverse and their spectrum is very wide. Individuals with ASD exhibit difficulties with social behaviour and social communication that may develop because of the weak communication abilities of the individual.
b) Reading problems. Children with SPCD often encounter problems with reading, text comprehension, and the interpretation of language nuances.
c) Attention Deficit Hyperactivity Disorder (ADHD) (Understood Team, 2017). There are three elementary signs of the ADHD syndrome: a developmentally inadequate degree of attention (attention disorder), hyperactivity, and impulsiveness. To diagnose the ADHD syndrome it is vital that the symptoms have occurred:
    - before school age;
    - consistently for a period longer than six months;
    - considerably more often than in other children of the same age (Michalová, Pešatová et al., 2015, p. 13).
d) It is worth mentioning that some experts believe SPCD is not a congenital

disorder and does not occur alone. They suggest that difficulties with social (pragmatic) communication are only a symptom produced by other causes (Tager-Flusberg, 2013).

e) The psycholinguistic markers alone cannot reliably discriminate ASD from SLI or from primary pragmatic language impairments (Taylor, 2016). Hence, if psycholinguistic markers are present, possible comorbidity with ASD or SLI should be excluded.

Norbury (2014) argues that social communication and pragmatic language skills are not necessarily one and the same, with the later being closely associated with structural aspects of language. She highlights inherent difficulties in distinguishing between social communication skills and pragmatic language skills and quotes the *Children's Communication Checklist* (CCC-2, Bishop, 2003) as a tool allowing both features to be separated. The CCC-2 is a checklist of 70 items rating structural and pragmatic language on eight scales and social impairments on two scales and is perhaps the most widely used checklist in clinical practice and research.

Therefore it is a question of what other causes may result in SPCD symptoms appearing in the child at the age of entering school and whether cultural and living conditions that offer little incentive can be identified among these causes as well.

Different cultural and living conditions

The language is an important tool in social life, and as such it is also a medium that leads to the categorisation of people into social strata, thereby introducing prejudice against people from a different cultural background, which, in turn, may cause inequality. It is communication that people use to share their viewpoints, cultural values, and experience (McLeod et al., 2014). If a person cannot speak the language of the majority and has different language abilities, his/her communication with the majority is impaired and he/she may not be able to understand a message from another person and thus cannot even react adequately. Sometimes, an inappropriate reaction is interlinked with differences in nonverbal communication, which play a vital role in the communication process. The inability to communicate in an appropriate manner becomes a social stigma for the person who is affected, which may also lead to social isolation (Vágnerová, 2014).

Another cause may be found in the low economic status of a family as a result of long-term unemployment, old age (retirement age, beyond the productivity line), or a limited income resulting from poor education. Poverty is a ubiquitous barrier for a human, and it is particularly dangerous in early childhood; individuals growing up in poverty

usually lack the necessary health care and thus are endangered by infection or disability (UNICEF, 2007). The social isolation factor may also involve other disadvantageous social situations caused by poor health conditions, disability, and addiction to psychoactive substances, as well as bad habits and a lifestyle that leads to conflicts with society (Section 3 of Act No. 108/2006 Coll. on Social Services, as amended).

The different socio-cultural experience of individuals gained in the environment where they grew up and which had, or still has, an influence will have an effect on their patterns of thinking and behaviour (Vágnerová, 2014).

A socio-cultural disadvantage (SCD) results from belonging to a different social group and thus from a related determination of experience which is different or insufficient. This problem is due to the influence of other socio-cultural influences or different socialisation. These people experience disadvantages only in certain social contexts; they are members of a minority which differs from the majority in certain aspects (on the basis of identity, language, lifestyle, etc.). They should adapt to the majority at least partially in order to be able to exist within a society without any major problems (Vágnerová, 2014, p. 600).

SCD may cause the following complications: language and communication problems, an anomaly in non-verbal communication, different values and norms of behaviour, different patterns of thinking, different habits and patterns of behaviour, or different perceptions of social roles (Vágnerová, 2014).

The *Catalogue of Supportive Measures* defines the following criteria applied to identify a pupil with SCD:

a) a pupil living in an environment where they are not sufficiently encouraged, on a long-term basis, in education or in preparing for education (e.g. because of an inadequate material background, unsatisfactory housing, time-consuming commuting, lack of interest on the part of the legal guardian, or conflicts within the family);
b) a pupil whose legal guardians fail to cooperate, on a long-term basis, with the school to the detriment of the pupil's legitimate interests;
c) a pupil living in an environment of social exclusion or an environment threatened with social exclusion;
d) a pupil who is disadvantaged in his/her education as a result of an affiliation with an ethnic or national group or a specific social environment; primarily if the disadvantage relates to an insufficient command of the language that is used in teaching in comparison with other pupils (his/her classmates) as a result of their use of a different language or a specific form of the main language in the domestic environment of such a pupil.

The methodology for the part of the Ca-

talogue dedicated to children from different sociocultural environments includes an extensive *assessment scheme* that is intended primarily for both the teachers to achieve at least an approximate orientation in the issues concerned and the consultants to facilitate the placement of children with the appropriate level of supportive measures based on the current legislation (Michalík et al., 2015).

In the assessment scheme, various symptoms of SCD are described that are divided into five areas: the material conditions of the pupil's education, markers related to the pupil's family and its socio-cultural status, markers related to the pupil's interpersonal characteristics, indicators describing the pupil's intrapersonal and personality characteristics, and his/her readiness for school during the first years of school attendance. The SCD markers are intended for teachers and can be assessed at school, not in the pupil's family. The SCD markers are scaled according to their severity and the optimal state is described (Felcmanová et al., 2015).

During the implementation of the research project, the legislation terminology was changed, including the terms concerning the categorisation of children with SCD. The formerly used term "*a pupil in need of support in education because of socio-cultural disadvantages*" has been replaced in the new legislation (Decree No. 27/2016 Coll. on the Education of Pupils with Special Educational Needs and Gifted Pupils, as amended and effective of 1 September 2017) with the term "*a pupil from a different cultural environment or dwelling in different living conditions*".

Social exclusion and social integration

Under the current legislation (Section 3 of Act No. 108/2006 Coll. on Social Services, as amended), social integration refers to *"a process which ensures that socially excluded people or people threatened with social exclusion have access to opportunities and possibilities which would help them integrate fully into the economic, social, and cultural life of society and live in a manner that is considered usual in society"*. The same provision describes "social exclusion" as *"an exclusion of a person from ordinary social life and an inability to integrate into that sphere because of unfavourable social situations"*.

The difficulty and complexity of the social integration of a child from a different socio-cultural environment to the majority mostly depends not only on the economic background of the family (children from poor families lag behind their peers in language skills and readiness for school, and they tend to need empirically valid and culturally sensitive instructions), but also on the personal qualities and experience of the child and its ability to regulate the linguistic, cognitive, social, and emotional tasks

associated with the acquisition of new language and cultural values (Navarrete & Watson, 2013).

The parents' educational level affects the social and cultural determinants of language and the development of communication in children. Much research demonstrates that children from families with a higher social status (a higher social class) use longer sentences and more sophisticated syntactic constructions than children growing up in families with a lower level of education.

The social determination of language codes for children is summarised in the Bernstein theory of the social determination of children's language codes. This theory distinguishes two types of codes or two variants of the same language. If the code is limited, the speaker uses simple grammatical structures. This is a language of informal communication, characterised by short, grammatically uncomplicated, often incomplete sentences, with a typical overuse of linking words, rare occurrences of subordinate clauses, and limited vocabulary. The limited code is typical of children from families in lower social classes. A developed code, on the other hand, refers to more sophisticated grammatical structures and generally wider vocabulary, typical of school education, public media, science, etc. This code is characterised as follows: generally rich vocabulary, grammatical correctness and appropriate order of words, complicated sentence structures, high frequency of prepositions and conjunctions expressing various semantic relationships, frequent use of "I/me" pronouns, and high frequency of evaluating and specifying adjectives and adverbs (Průcha, 2011).

Method

Current study

The objective of the research was to identify whether the socio-culturally disadvantageous living conditions of children (SCD) will manifest themselves in inferior language abilities. The deterioration primarily involves an impairment of children's language abilities and skills at the pragmatic language level which directly correlates predominantly with their school performance, mainly as a result of the fact that a child has difficulty in understanding the meaning of communication messages. If such a relationship between SCD and SPCD is found and reliably confirmed, it will be possible to include SCD among the SPCD comorbidities.

Research assessment tool

For the first-grade pupils (i.e. pupils that start the first compulsory year of the Czech primary school at the age of six), the authors' own instrument for the assessment of pupils' communication abilities was used. The expected age ranges from five to eight years; it covers not only the six-year-old age group (which is the

most frequent) but also exceptionally gifted pupils in the lower age group, as well as pupils with (possibly repeatedly) deferred admission to school who otherwise belong to the higher age group. The starting point and inspiration for the designing of a new assessment tool were first looking at the other diagnostic tools used in the assessment of the language abilities of children in a given age group and the experience of their practical use.

The instrument contains a total of 50 items covering a common descriptive part of the participant's data (nine items) and assessment of his/her abilities at each language level (a total of 38 items). However, the main focus of this study is the issues related to the pragmatic language level and only items relevant to SPCD and its DSM-5 diagnostic criteria were chosen (16 items). Outside the framework of the evaluation of communicative ability, data on potential comorbidities accompanying the impaired language abilities was acquired, i.e. primarily ADHD and/or other diagnoses affecting the cognitive abilities of the participant. SCD was assessed dichotomically by the evaluators and was based on the pupil's teacher's assessment of the aforementioned criteria set out in the *Catalogue of Supportive Measures* (Michalík et al., 2015) and its *Assessment Scheme* (Felcmanová et al., 2015).

The items in the descriptive part were categorised as nominal variables (e.g. gender, completion of a preparatory class or SCD) or ordinal variables (e.g. the nature or size of the school which the participant attends). The assessment of the participants' language abilities was carried out on a basic three-item scale (done at the first attempt / done correctly, usually at the second attempt / completely failed) or on a more detailed five-item scale which captures differences in the participants' abilities in a more sensitive way.

The evaluation itself was carried out in such a way that the evaluator gradually assigned individual questions to the participant and evaluated his/her reaction in the above manner. The item *Ability to describe a picture or story in a picture*, in which the participant receives a picture with a simple situation, such as a scene with kids playing in the park in the morning and is asked to describe the situation in his/her own words, can serve as an example. The evaluator then makes the assessment on a five-point scale, where the best is "he/she describes independently in the unfolding sentences" and the worst is "he/she does not describe at all". A similar approach was used when making the assessment of a child's ability to understand what is not explicitly stated, e.g. understanding the meaning of proverbs. An example that can serve as an illustration here is the Czech proverb *Bez práce nejsou koláče* (a verbatim translation is "No cakes without work"), usually translated into English as "No pain, no gain", checking if the participant understands the meaning of a proverb,

i.e. it is necessary to suffer or work hard in order to succeed or make progress. A simpler three-point assessment scale was used in this case, where the best is "he/she understands at the first attempt" and the worst is "he/she does not understand at all".

The rating was then converted into an ordinal scale and recorded on a form. The total assessment time per participant was approximately one and a half hours, with approximately one hour of direct work with the participant and half an hour for processing and inputting the data.

An evaluation of communicative abilities was carried out by diploma students in the final year of MA diploma courses in special education, specialising in speech and language therapy and education of people with hearing impairment, who were trained in the use of the diagnostic tool. When performing the assessment of the participants, the students worked under the supervision of the project's qualified experts on speech and language therapy.

The collection of the data from the assessment was carried out through an online form prepared in the *Google Forms* environment, where the assessment was entered in the form of a selection of the correct answer from a multiple-choice menu in order to limit the influence of random errors if just the numerical values were entered.

The assessment tool was run in a pilot study first and the data that had been entered was processed on a preliminary basis. On this basis, adjustment of the tool was performed and the choice of methods and processing tools were optimised.

The results table in the Google form was converted back into a spreadsheet editor (Excel) from the text strings into numerical values and subsequently processed with the statistical extension XLSTAT, a third-party Excel module. The tools that were used for the testing of the hypothesis were relevant to nominal and ordinal variables, namely correlation and association analysis (the χ^2 test of independence, Fisher's exact test, and the Dunn procedure with Bonferroni correction) and non-parametric paired tests (the Wilcoxon test and sign test). The results were evaluated and discussed using the common rules of statistical analysis and reasoning.

Validity and reliability of the research assessment tool

To assess the reliability of the screening, selected methods of the standard theory of reliability were applied, namely the estimation of inter-item reliability using:

- the Cronbach's alpha unstandardised coefficient of internal consistency $\alpha = 0.894$;
- the Cronbach's alpha standardised coefficient of internal consistency $\alpha = 0.895$;

Table 1. Descriptive characteristics of participant sample

	Gender		Preparatory class		Year one repeated			School location			School size			SCD impact		
Frequency of occurrence	Boy	Girl	Yes	No	Yes	No, with deferred admission	No, without deferred admission	Village	Small town	Town/city	Less than 100 pupils	301 – 500 pupils	More than 500 pupils	yes	No	Total
Abs. [n]	172	158	46	284	3	88	239	50	137	143	8	178	144	68	262	330
Rel. [%]	52.1	47.9	13.9	86.1	0.91	26.7	72.4	15.2	41.5	43.3	2.42	53.9	43.6	20.6	79.4	100

- the Guttman split-half coefficient = 0.935.

The aforementioned values indicate good reliability of the data that was assessed. On the basis of Helmstadter's rule, the test reliability should achieve a value of about 0.9 to perform the evaluation of the differences in the group performance for two items and more, which was confirmed by the test that was conducted with acceptable accuracy.

Descriptive data of participants

The aforementioned diagnostic tool was used to examine the communication abilities of a total of 336 participants. The evaluation encompassed two groups; the autumn evaluation took place in October 2016 (approx. one month after the participant's admission to a first-year class); the spring evaluation took place in April 2017 (approx. after one half of the school year). The assessment data of the participants was paired, as the same participants were evaluated repeatedly in two rounds; the period of approx. six months is considered sufficient for the participant to forget items evaluated in the previous round of screening. Between the two testing dates, the participants participated in mainstream education; their parents and teachers received educational instructions to remedy the relevant disorders or impairments (if any). The data of six participants was discarded from the results after the data checking procedure. The data of the remaining 330 participants

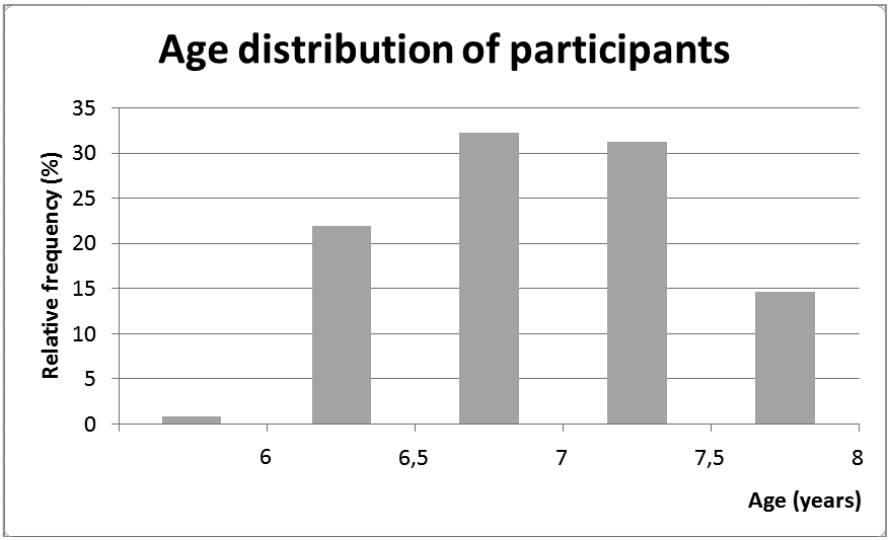

Figure 1. Age distribution of participants—year-one pupils, relative frequency

was further processed and analysed. For basic descriptive characteristics of the participant group, see Table 1.

The data given in Table 1 implies that the gender distribution corresponds to the boy-girl ratio in the general population of first-year pupils, with allowances for statistical error (MŠMT, 2017a). Preparatory classes had been attended by approx. 14% of the participants. About a quarter of the participants were allowed deferred admission to school, which is more than in the entire population of pupils enrolled in the first year (16%, according to MŠMT, 2017b). The pupils typically attended schools in small towns and big cities or schools on housing estates. The vast majority of the schools have a capacity of 300+ pupils; approx. 40% of the participants attended schools with 500+ pupils. SCD (socio-culturally disadvantageous living conditions of children) were reported in a fifth of the participants.

The descriptive data includes the age of the participants; for the age distribution, see Figure 1.

The majority of participants, at the time of the autumn assessment, belong to the six-and-a-half-to-seven age group; the second biggest group were children from seven to seven and a half years of age. In the entire participant group, only one participant was younger than six at the time of the autumn assessment (not clearly visible in the graph scale).

None of the participants was older than eight.

The schools attended by the participants were located in the Czech Republic, specifically in the Central Bohemian Region, the Liberec Region, and the Ústí nad Labem Region.

Disadvantageous influence of the cultural environment or different living conditions

When examining the influence of a disadvantageous cultural environment or different living conditions (SCD) on the impairment of participants at the pragmatic language level, eleven relevant items were evaluated in the participants, as follows:

1) ability to establish natural contact (fine scale);
2) appropriacy of reaction to the communication partner (fine scale);
3) ability to react to questions within an adequate time (fine scale);
4) ability to put questions (basic scale);
5) ability to react to instructions (fine scale);
6) ability to remember and carry out a sequence of instructions (basic scale);
7) ability to communicate in a group (fine scale);
8) verbal production and appetite for speaking (fine scale);
9) vocabulary extension and word recollection (fine scale);
10) ability to cope with a social situation (basic scale);
11) ability to understand and explain proverbs (six items, basic scale).

Referring to the Bishops CCC-2 checklist scales, items Nos. 1, 2, 3, and 7 can more probably be related to social communication skills and the remaining ones to pragmatic language skills.

The hypothesis of the possible relation of SPCD symptoms to SCD was tested in the usual manner, i.e. by testing the null hypotheses of independence. The hypotheses were verified for the data acquired during the diagnostics in two groups, autumn and spring. Because of the potential ADHD comorbidity of the participants' impairment at the pragmatic language level, the participants whose parents, teachers, or consultants indicated signs of ADHD were ruled out of the initial group (a total of 41 participants were discarded).

Hence, the verification of the hypothesis was conducted on a reduced group with a total of 289 participants (N = 289).

Results

On the basis of the statistical calculations and hypothesis testing, the following findings can be concluded:

- In the majority of cases, there is suffi-

cient evidence that the hypothesis of the independence of the item under evaluation from SCD can be rejected at a 95 % level. On the basis of the calculated p-values ($p < 0.0001$), the probability of incorrect rejection of the null hypothesis (known as "error of the first kind") was estimated generally at a level of a single percentage point.

- In the majority of cases, the alternative hypothesis can be accepted, i.e. the participants' impairment at the pragmatic language level depends on the influence of SCD. The analysis of the detected frequencies clearly implies that the influence of SCD manifests itself in inferior abilities and skills of the participants at the pragmatic language level.
- The testing of the hypotheses was carried out through several independent statistical tests with identical results in terms of reliability in items Nos. 3, 4, 5, 6, 8, 9, and 11. Thus, the following abilities and skills of the participants are dependent on SCD:
  - to react in an adequate time,
  - to put questions during communication with a partner,
  - to react to instructions,
  - to remember and carry out a sequence of instructions,
  - verbal production and appetite for speaking,
  - vocabulary extension and word recollection,
  - to understand and explain a proverb.
- After adding the Bonferroni correction of the critical p-value for the simultaneously tested hypotheses by what is known as the "Dunn procedure", independence from SCD could not be unambiguously rejected in the following items:
  - ability to communicate in a group,
  - ability to cope with social situations.
- Independence from SCD was unambiguously confirmed in the following items:
  - ability to establish natural contact,
  - adequacy of reaction.
- The computed values of the following association coefficients:
  - Cramer V (min. = 0.09, max. = 0.55, median = 0.42),
  - Kendall τ (min. = 0.04, max. = 0.47, median = 0.30),
  - Goodman-Kruskal γ (min. = 0.08, max. = 0.85, median = 0.60)

  generally indicate only a slight association rate (low dependence) between SCD and signs of impairment at the pragmatic language level.

The aforementioned results of independent tests were completed with a test of mutual (pair) independence between the autumn and the spring diagnostics in order to identify any potential chan-

ge that could have happened during the approx. half a year between the autumn and the spring diagnostics in the field of the knowledge and skills of pupils at the pragmatic language level. The conclusions based on the results of the hypothesis verification can be summarised as follows:

- Hypotheses about the mutual independence of the observed phenomena were generally rejected at a 95% reliability level, with the exception of hypothesis No. 2 concerning the independence of the appropriacy of reaction.
- In all the cases observed, with the exception of hypothesis No. 2, the alternative hypothesis can be accepted, that the participants' impairment at the pragmatic language level depends on the order of the diagnostics (autumn and spring term). The analysis of the frequencies that were detected clearly implies that the results of the pupils' diagnostics in the spring term are better than those obtained in the autumn term.
- The results of the hypothesis testing were verified by two adequate independent statistical tests with an identical quality of results leading to the rejection of the hypothesis about independence.

Discussion

Analysing the results of the influence of the SCD (socio-culturally disadvantageous living conditions of children) described above on the impairment of participants at the pragmatic language level, it is necessary to exclude other possible causes of the impairments that were detected. On the basis of the specification, the Social (Pragmatic) Communication Disorder has the following comorbidities:

1) Autism spectrum disorder. None of the participants examined within this study had a diagnosed ASD either in the autumn or in the spring term. There was no feedback from evaluators indicating any ASD symptoms in the participants who were examined.
2) Reading problems. This comorbidity could not have been ruled out, as the first-year pupils are only starting to learn to read and any possible impairment would not have manifested itself.
3) Attention Deficit Hyperactivity Disorder (ADHD). To exclude this comorbidity, the participants showing symptoms of ADHD were ruled out of the group on which the hypothesis testing was carried out, as mentioned in Chapter 2.4.

The evaluators themselves were diploma students finishing their master's degree in special education working under the supervision of experienced experts with long-term practice in speech and language therapy, who advised the evaluators in border or unclear cases. The resulting assessment of the diffe-

rent evaluators seems to be reasonably similar, as is indicated by the statistical tests of the differences in their assessments. During the examination of the influence of a disadvantageous cultural environment or different living conditions (SCD) on the impairment of respondents at the pragmatic language level, with potential comorbidities ruled out, it was demonstrated that, for the majority of the items that were evaluated, *the impaired language abilities and skills of children at the pragmatic language level depend on SCD*.

The results also support doubts as to whether the inclusion of both deficits in social communication and pragmatic language skills into one SPCD category of the DSM-5 manual is reliable (Norbury, 2014). As regards the dependence of the ability to communicate in a group and the ability to cope with a social situation, the null hypothesis about independence from SCD cannot be unambiguously rejected. Next to that, as regards the appropriate *reaction*, no change had been proven between the autumn and the spring examination, i.e. this item had not been influenced by half a year's education in the first-year class. In summary, the results indicate that the items related to social communication skills cannot be rejected and, vice versa, the items related to pragmatic language skills were rejected, which supports Norbury's doubts about considering SPCD as an undifferentiated group of symptoms. The doubts about the SPCD comorbidity being confined to ASD, ADHD, and reading problems proved to be well grounded. A set of impairments at the pragmatic language level was identified in this study and these impairments could be assigned to the SPCD symptoms. With a high probability, the group of SPCD comorbidities should be extended to SCD, i.e. *the socio-culturally disadvantageous living conditions of children seem to be another comorbidity of certain impaired competences at the pragmatic language level*.

Conclusions

Significant impairment at the pragmatic language level in first-year pupils at elementary schools was found in this study. Consequently, this language impairment has a negative impact on the degree of speaking competence and a considerable influence on children's school achievement during the early years of their school attendance (Dewart, 1995; Papadimitriou, 2014).

It seems highly probable that some weakening of these language skills at the pragmatic language level depends on the external conditions, specifically on the disadvantageous impact of a different cultural environment and/or different living conditions. The consequences of the weakening at the pragmatic language level hinder individuals from attaining social integration into the group. Pupils get into difficulties with getting involved in the group of their classmates as the

weakening at the pragmatic language level is reflected in their social relations, where social aspects of communication come into the foreground. Problems with the use of language at the pragmatic level are also reflected at the morphological-syntactic language level and the lexical-semantic level.

Limitations that occur during the acquisition of vocabulary at an early age pose a significant risk for the further development of a child. It has become evident that children from a different cultural environment and/or those living in different living conditions often encounter problems in understanding the messages of people from the majority, primarily because they have different social experience, use different communication codes, and follow different rules for communicating, in terms of both the verbal and non-verbal components of the communication. Failure to understand the content of a message may lead to inappropriate reactions by the receiver (communicant) and hence cause a negative response in a certain situation. Another consequence of a limited vocabulary and weakening at the pragmatic language level is the risk of inadequate school performance because the vast majority of information in the first years of school attendance is transmitted verbally. Votavová and Smolík (2010) report that the size of vocabulary is an important indicator of mental development and, to a certain extent, it also functions as a determinant thereof, i.e. deficiencies in the vocabulary have an impact on the acquisition of language as such and concurrently have an indirect impact on cognitive and social development.

Children from a different language environment find it helpful to receive information in a simplified language form, which helps them in understanding and comprehending the context of the information disclosed. Their social integration may be facilitated if they are given opportunities to participate actively in class activities. This method helps to facilitate their easier comprehension of the behavioural norms and habits of their classmates and makes for faster learning of appropriate verbal and non-verbal communication.

In pupils from different cultural environments and/or those living in different living conditions, it is advisable to intentionally develop their pragmatic language level at nursery and primary schools using all reasonable methods and procedures, preferably through the intervention of speech therapy assistants and special pedagogues specialising in speech and language therapy.

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