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## The Course of Speech Development in Children with SLI-PE and LB. A Comparative Analysis

### SUMMARY

This article presents the section of widespread research devoted to children with a severe delay in speech development; the delay which cannot be linked to any reachable etiological factors – as in case of late bloomers (LB) or children with specific language impairment (SLI). Making an accurate diagnosis, namely distinguishing late bloomers from late talkers before reaching the age of three is currently impossible because of the lack of research reports on LB. Late blooming is the borderline phenomenon of developmental norm, thus it is not in the subject of clinicians' interest. However, after careful familiarising with the history of research on SLI and numerous reservations about its methodology – our attention was concentrated on late bloomers as a group that is much closer, in terms of development profile (not only linguistic), to SLI-PE (expressive form of this disorder) than younger, properly developing children, who constitute the main comparative group at most research carried out in the world. The study of detailed developmental profile of late bloomers and children with SLI may contribute to the refinement of methods and research tools which are at our disposal and to earlier diagnosis of SLI in the future.

**Key words:** SLI, LB, delay in speech development, language expression

### INTRODUCTION

In case of the children with a severe delay of speech development with etiology that is difficult to determine by accessible tools, the recognition of the phenomenon character, if it is pathological or developmental, is possible only after reaching the age of three. In the instance of LB, at the end of their third year of life,

the rapid acceleration of development occurs (numbers of progressive changes within language area). That is atypical for most children of the same age and leads to fast equalisation of language skills in comparison to their peers. Late blooming phenomenon, which in Polish literature corresponds to fragmentary delay in speech development, that was already described by B. Sawa (1990), proves that severe deviations from the developmental norm may not always have a clinically relevant origin. This research is expected to capture the alterities (differences) in the process of speech development, and to develop the criteria that will make the distinction between these two groups of phenomena, what could contribute to earlier diagnosis and earlier therapeutic intervention in the case of these children in the future.

SLI is classified as *developmental language disorders* (DLD), which accompany the developmental process from the very beginning. On the other hand, late blooming is the phenomenon qualified as disruptions of development, what means that in the case of these children speech development proceeds differently than in their peers, though, occurring abnormalities cannot be associated with any reachable pathogenetic factor. Taking into account the current knowledge, this phenomenon may be only attributed to slower maturation of a nervous system. In ICD-10 classification, “delayed speech initiation”, here interchangeably called “late blooming” (LB), is classified as “normal variants of development”, i.e. marginal variants of proper development (in Polish translation of ICD-10 classification by J. Pużyński and S. Wciórka, qualified to “normal variants of development”). However, this name was not accepted in Polish logopaedic literature and it was replaced by ‘marginal variants of proper development’ while SLI is qualified to the category of the specific speech disorders and language development (marked in ICB-10 with symbol F.80).

“Disruptions” as distinct from “disorders” are not of big clinical significance, as in pre-school period child achieves the proper level of language skills and earlier delay resolves spontaneously without much consequences for further development (*Międzynarodowa Statystyczna...*, Pużyński, Wciórka 1997).

The common feature of the children with SLI and LB is statistically meaningful delay of linguistic development (commonly called delay in speech development) and disorders in development dynamics, which are not found among younger, properly developing children. Delayed speech initiation (sustained lack of progressive changes) and disharmony of development are the one of the most important and the earliest observed symptoms of abnormalities in course of psychomotor development of these children.

G. Jastrzębowska (2003) distinguishes the three groups of children with delay in speech and language development:

(I) children with disruptions in the speech development (LB). The delay applies only to linguistic expression, while the development of understanding pro-

ceeds without any disruptions. The poor dictionary is characteristic for this form of delay, in the second year of life these children use only 50 words or have a richer range of active vocabulary but are not able to create two-word phrases. In the third year of life, the rapid acceleration of language development is observed and in the end of this period, the children achieve the level of speech development appropriate to their age group;

(II) children with speech development disorder which is ectypal, as it is the consequence of other developmental deficits;

(III) the third group – speech development disorders falling into DLD category; these are so-called “late talkers”. This group embraces children with specific language impairment – SLI. The level of sensory abilities and the quotient of wordless intelligence in case of these children are within expected norms but despite apparently typical development in other areas, they demonstrate a visible delay in language acquisition. At the age of 2, they have a poor range of vocabulary, less than 50 words and, despite the fact that over the time their lexical resources increases and achieves normal level, the delays are still visible at other levels of language use, for example: phonology, syntax or narrative abilities. Unlike children from group I, before reaching school age most of these children achieve much worse results in terms of language development than their peers.

Children from group III constitute the specific subject of research of scholars as, because of the dynamic character of this disorder, it is a non-homogeneous, difficult to categorise, group. The diversity of language development disorder symptoms, the level of disorder that changes within the time of life (the influence of the environment and progressive changes that happen as the nervous system matures are very significant) are the reasons that make it one of the most interesting developmental disorders. The difficulties with indicating the phenotype and multitude of forms but also the fluent transferring from one SLI subgroup to another (connected with the age) make researchers continue searching and explaining the core of this phenomenon. In terms of dynamics, the profile of speech development of LB resembles the speech development of the children with SLI, and thus these phenomena (especially the expressive form of SLI, that is SLI-PE and LB) are so difficult to diagnose until the child gets 2.6 and even 3<sup>rd</sup> year of life (Jastrzębowska, in print).

In order to differentiate the marginal variants of proper language development from clinically significant disorders – including SLI, in ICD-10 classifications the four diagnostic criteria, similar to those assumed by L.B. Leonard (2000), are offered. The first criterion is the depth – those delays in language acquirement which exceed two standard deviations are considered to be abnormal. The second criterion is the process of delay – in most cases of language development disorders with the high degree of intensity there occur also other associated problems. The depth of language deficit is of lower diagnostic significance as far

as older children are concerned, because they have a natural tendency to improve it. If, during the examination, a light level of language disorder was stated and the data about more serious disorders in the past exists, it is highly possible that these disorders are clinically meaningful and this is not the marginal variant of the appropriate development. Next, the third criterion, are speech patterns and language functioning. If the speech pattern of the child is incorrect or the speech and language of the child contain qualitatively incorrect features, then it is highly probable that there are clinically meaningful disorders. The last criterion are accompanying problems, namely if the delay in development of some language areas is accompanied by difficulties in learning, for instance: specific difficulties in reading and sound-letter analysis, disorders in interpersonal relations, emotional and behavioural disorders, then, there is low probability that the delay in language acquisition is the variation of the norm (Jastrzębowska 2005, 392).

In 1988, I. Rapin and D.A. Allen (as cited in: Rapin 1996) distinguished three clinical categories of developmental language disorders (DLD), including SLI:

1. mixed receptive-expressive disorders (groups);
2. expressive disorders;
3. higher order processing disorders.

Above disorders may evince abnormalities on one or more levels of language. They may concern phonology, syntax, semantics as well as pragmatics. In each of classified categories Rapin and Allen (as cited in: Rapin 1996) distinguish two subtypes of DLD. In the first one, there are verbal-auditory agnosia and phonologic-syntactic deficit. In the second – verbal dyspraxia and speech programming deficit. And in the third, there are lexical deficit and semantics-pragmatics deficit. Children with SLI are most frequently touched by phonologic-syntactic deficit, verbal dyspraxia and speech programming deficit (see Jastrzębowska 2000).

SLI is characterized by diversity and big variation of symptoms of language development. Some children display only disorders in speech, others in both speaking and understanding utterances of other people. Western clinicians, including D.V.M. Bishop, I. Rapin (as cited in: Jastrzębowska 2000) propose to distinguish six subtypes of SLI, which may be classified to one of three groups of DLD described above, that is: 1) expressive, 2) mixed, receptive-expressive and 3) higher order processing disorders. Detailed classification was performed on the basis of evaluation of spontaneous and direct utterances, taking into account the results of language analysis: phonological, morphosyntactic, semantic-lexical and pragmatic.

According to above arrangement, the subtypes of SLI include:

- speech programming deficit – understanding is correct. The child speaks fluently, using quite long sentences, but it is difficult to understand its utterances;

- verbal dyspraxia – understanding is correct, but speech is limited, with disorders in production of speech sounds and short utterances. The beginning of speech is much delayed;
- phonologic-syntactic deficit. Utterances are short and grammatically incorrect. Problems with searching for words are frequent. Difficulties in understanding of complex utterances and abstract concepts may appear. The beginning of speech is very delayed;
- verbal-auditory agnosia. Complete lack of understanding or quite dysfunctional understanding of other people's utterances;
- lexical-semantic deficit. Children have problems with searching for words and difficulties in producing utterances. Understanding of complex sentences is limited. In general, the beginning of speech is delayed;
- semantic-pragmatic deficit. From formal perspective, the child speaks fluently and correctly, however, the contents of utterances may be strange, unclear. The child does not maintain the topic of conversation (Jastrzębowska 2000).

Considering such numerous symptoms of language development disorders – in practice SLI is confused not only with late blooming but also with language disorders connected with such developmental deficits as: intellectual disability, autism or hypoacusis.

Amongst mentioned forms of SLI, as much as three are ranked as expressive disorders and higher order processing disorders, i.e. phonologic programming deficit, verbal dyspraxia and semantic-pragmatic deficit.

As it was mentioned, children with specific language impairment do not constitute a homogeneous group as far as symptoms are concerned. The background of this disorder is not known. There are a few theories explaining the reasons for this deficit in language acquisition. Currently, there is no doubt that SLI is the disorder with heterogeneous etiology (Leonard 2000).

Prenatal and neonatal complication were – for a long time – considered to be the source of specific language impairment. The role of prenatal risk was emphasised (overuse of alcohol by pregnant women, or disorders of mother's hormonal economy – mainly testosterone). However, this idea did not receive sufficient empirical proofs. While searching for neurological background of delay in language development with particular reference to people with diverse forms of SLI, D.V.M. Bishop and M.J. Snowling pointed to more frequent occurrence, than in health children populace, of atypically large surroundings of Sylvian fissure. That, according to many scholars, is connected with polymicrogyria. Polymicrogyria is an anomaly in the development of cerebral cortex in which neurons from deeper layers of encephalon achieve the level of the cortex but are incorrectly accommodated, which results in numerous, minor bends in cortex (Pačalska et al. 2007).

Further research showed that different incorrect cerebral formations appear in children with specific language impairments. Using MRI exam, E. Plante discovered atopic symmetry of Sylvian fissure in eight examined children with SLI. Other researchers found anomalies in normal, standard hemispheric asymmetry, mainly in parietal-occipital and parietal-temporal areas. In recent years, the correlation between the existence of polymicrogyria in the area of Sylvian fissure and the presence of language specific impairment has been demonstrated.

Research in which the brain imaging (MRI) was used, confirmed that polymicrogyria in the area of Sylvian fissure is connected with the array of symptoms and clinical signs (including epilepsy, pseudobulbar symptoms, i.e. dysarthria with rhinolalia), cognitive deficit and developmental language disorders (DLD), including SLI (Pačalska et al. 2007).

The subject area of specific language impairment has been attracting researchers' attention for many years, which has been observed in both Polish and global literature. According to a study conducted by I. Rapin, D.V.M. Bishop and L. Leonard, SLI is the phenomenon that accounts for about 7% of the population of younger children at school age.

Arguably, the same situation is in Poland, where it is not yet commonly recognized that this disorder affects children who are significantly worse off linguistically than their peers, thus results in weaker learning outcomes (Jastrzębowska 2003). Theoretical frameworks of SLI are significant, as well as the empirical data on which they are based. The work of interpreting research results devoted to children with SLI is, therefore, a source of valuable diagnostic guidance and information, as they help them with better language acquisition and social functioning.

Children with SLI in Poland constitute a group that is unquestionably an educational problem. Most frequently, these children go to mass schools without recognized language deficit which is very unfavourable for them, as in most cases their special educational needs are not taken into account. Because of the low level of language skills the children are perceived by teachers as lazy, impudent, unskilful, and this label adheres to them throughout the whole learning period. Apparently, these children seem to be no different from their peers. They are motorically and cognitively skilful. In kindergarten, the low level of linguistic competence did not attract the attention of pedagogues. There is no visible rationale for postponing their school duty and, in consequence, they are directed to mass schools without any indication for individual approach in education. Problems with native language acquisition are the only important issue that these children have and the teacher often does not have the information that these are children with SLI. The widely-propagated action of KBE (Educational Research Committee) and researchers who are actively cooperating with it, will undoubtedly contribute to promote the knowledge about this developmental disorder.

The following article is the report from pilot research whose goal was to determine if there exist any presumptions to believe that the early distinction of the pathological phenomenon such as SLI-PE from developmental phenomenon of late blooming is possible.

## RESEARCH METHODOLOGY

The research, whose results are presented in the article, was carried out on a study sample of 30 children with delay in language acquisition – delay that cannot be linked with any affliction, developmental deficit or environmental deprivation. The accompanying difficulties such as disorder of attention, memory or behaviour, could not be serious enough to cause severe linguistic deficit. The interview with children's mothers was the method of obtaining information about the speech development process of examined children.

Data on development of perception and linguistic expression was obtained and there were made attempts to formulate language development profile of children with delay in acquisition of linguistic competence with etiology that is difficult to determine (with specific language impairment, expressive form – SLI-PE) and late bloomers. Then both groups were compared. All discussed issues were embedded in the positivist trend in the quantitative strategy. Statistical calculations were performed using the SPSS computer program.

In order to gather the empirical material, in the research were used: the interview questionnaire with child's mother that was formulated by Jastrzębowska and also the device used by French paediatricians – the records of the communicative development IFDC (*Inventaires français du développement communicatif*) which was translated by A. Woś for the use of this research. The French device for examining the communicative development IFDC was developed on the basis of the communicative development inventories: MacArthur-Bates<sup>1</sup>. The results of this research will soon be published.

The study was conducted in 4 nurseries and kindergartens located in the Opole Voivodeship.

Out of the group of 56 children, after rejection of children having delay with known etiology and with correct language development (speech<sup>2</sup>), 30 children

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<sup>1</sup> MacArthur Communicative Development Inventory is a device to examine the language competence (in Polish version it was developed by M. Smoczyńska and entitled Speech Development and Communication Inventory) which is commonly used in the USA.

<sup>2</sup> In the first phase, 56 children, aged from 2 years and 10 months to 3 years, were qualified to the research. These were children who, according to teachers of nurseries and kindergartens, evinced much lower level of language development than their peers. Incorrect language development and correct development of remaining developmental functions was the condition for qualification to further research. After detailed interviews with mothers (including questions about the course of

were qualified to the appropriate research, including children with SLI (n=13) and LB (n=17). At the time of proceeding to the appropriate research (interview with mothers) all children had already reached 3 years, which allowed them to be classified into one of two groups: SLI or LB. Among the group of 30 children with delay in language acquisition, 30% were boys (n=9), 70% were girls (n=21). In terms of place of living 16.7% (n=5) were residents of the village while 83.3% (n=25) – urban dwellers.

## THE RESULTS

Presented data concerns the development of language expression, that is the time when the particular stages of development occur, the type of difficulty and other information obtained during the interview with mothers. Firstly, it was indicated when the children of SLI-PE and LB experienced the following stages of speech development, that is the month in which the child began to crow, say first words, simple and complex sentences, and on the basis of this data the profile of their language development was created.

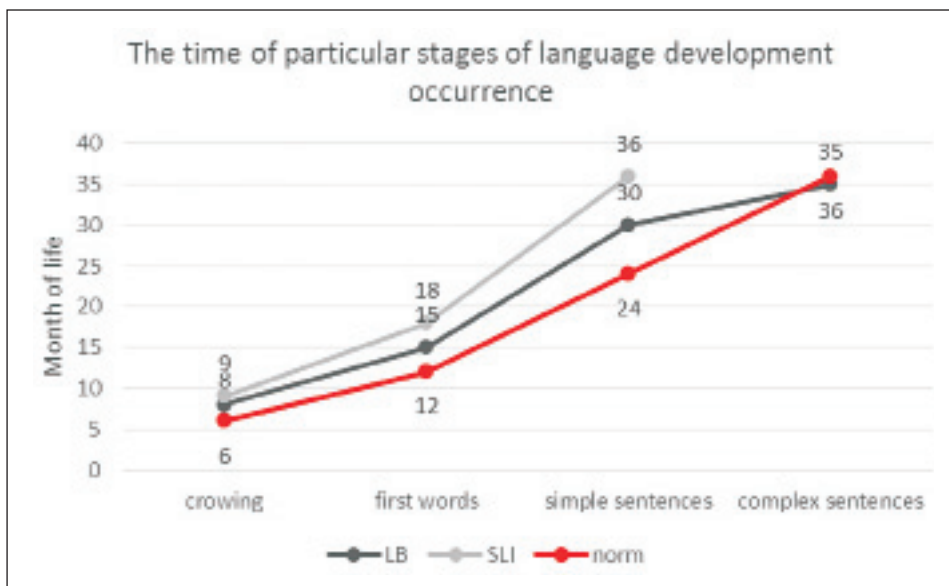


Chart 1. Averages referring to the time when the particular stages of speech development occurred

development with particular reference to language development) children with delay in speech development with known etiology and with correct speech development were rejected. Thus, in total, there were 30 children with SLI and LB who were examined.



On average, late bloomers started to crow in 8<sup>th</sup> month, that is 2 months later than is expected by developmental norm. As mothers of late bloomers have evaluated, the first words occurred at the age of about 15 months. First simple sentences appeared at the age of 30 months, while complex sentences – in 35<sup>th</sup> month. As mothers of children with SLI have evaluated, crowing occurred on average in 9<sup>th</sup> month, the first words – in 18<sup>th</sup> month, simple sentences – in 36<sup>th</sup> month, while complex sentences had not been recorded, as depicted in Chart 1.

The next stage was the analysis of data on language development dynamics of examined children. There are a few models of language development process: A – the child had not spoken for a long time and then started to speak correctly immediately; B – the child had not spoken for a long time and spoke incorrectly for quite a long time, and variant C – the child started to speak in the appropriate time but incorrectly for a long time. As literature indicates, children with SLI are numbered among the second group (variant B), that is “the child had not spoken for a long time and spoke incorrectly for quite a long time”. For LB variant A is characteristic: long-lasting lack of speech development and after that, in the second half of the 3<sup>rd</sup> year of life, follows the rapid development of speech.

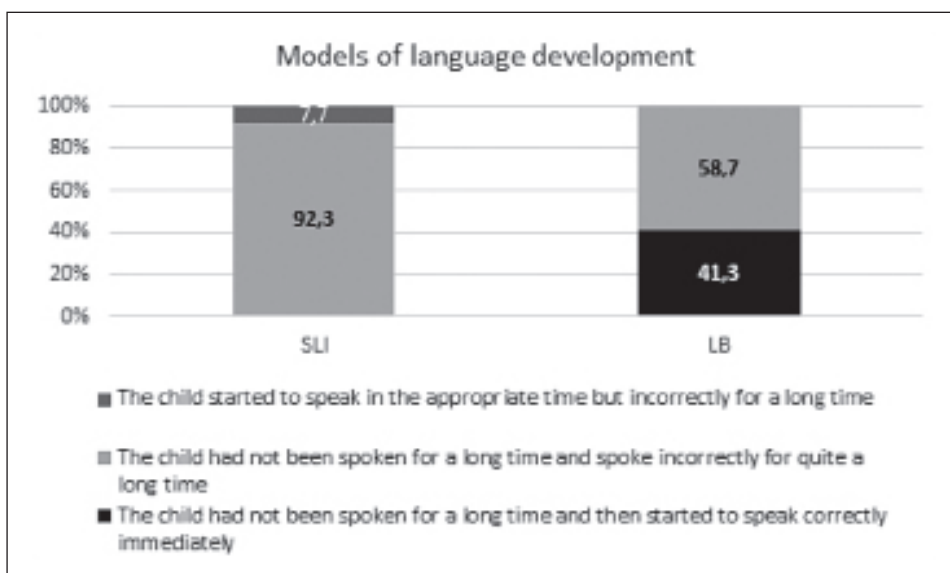


Chart 2. Models of speech development in case of children with SLI and LB (0–3 years old)

Results presented in Chart 2 indicate that: variant B, which signifies that the child had not spoken for a long time and spoke incorrectly for quite a long time, was chosen by large majority – as much as 92.3% of mothers of children with SLI, on the other hand, variant C, which indicated the other model of language acquisition – atypical for the group of children with SLI – was declared by 7.7%

of mothers. In the group of late bloomers, the most common was variant A and was indicated by more than half, that is 58.7% of interviewed mothers, while pattern B, more frequently ascribed to children with SLI, was declared by 41.3% of respondents.

Subsequently, it was analysed which language areas were the most problematic for examined children. In the interview with mothers there was made an attempt to determine how these children's process of language competence acquisition proceeded.

Table 1. Language skills, the mastery of which was the main difficulty to the examined children with delay in language acquisition

	SLI	LB
Formation of complex sentences	97.4%	18.8%
Linking words into simple sentences	75.4%	15.9%
Referring to features of objects	23.1%	11.8%
Articulation of phones	23.1%	23.6%
Articulation of difficult consonant groups	23.1%	47.2%
Referring to activities	15.4%	0.0%
Referring to objects	7.7%	5.9%

The percentages do not sum up to 100% as there was the possibility to choose more than one answer.

The correct articulation of phones causes problems for as much as 23.1% of children with SLI-PE (hereafter referred to as "children with SLI") and 23.6% of LB. The articulation of difficult groups of consonants causes problems for 23.1% of children with SLI and 47.2% of LB. 7.7% of children with SLI indicate problem with referring to objects, while in case of LB it is 5.9%. When asked about ability to refer to features of objects, 23.1% of mothers of children with SLI and 11.8% of mothers of LB reported that their children do have difficulties. The subsequent question concerned the child's ability to refer to activities. The results show that 15.4% of children with SLI and none of examined LB have problems with aforementioned. Linking words into simple sentences is problematic for 75.4% of examined children with SLI and 15.9% of LB. The next asked question was connected with the ability to construct complex sentences. As it was predicted, as much as 97.4% of children with SLI in the age of 3 years cannot construct elaborated utterances, whilst it is 18.8% in the group of LB.

The next analysis concerns using nonverbal means of communication (for example, gestures, facial expression) as the primary method of child's communication with the environment (for example, in order to express its needs, the child pointed at something with the finger or head without saying anything).

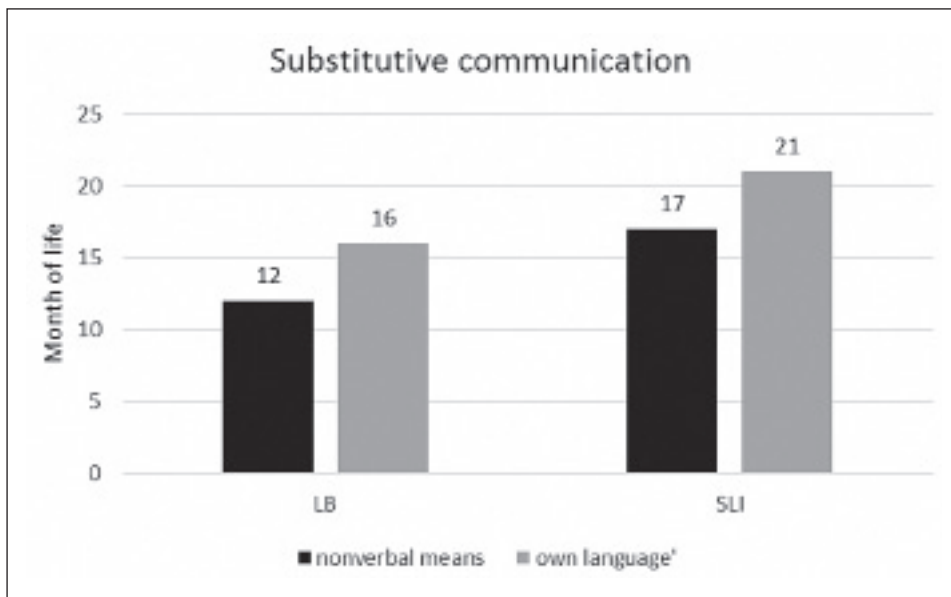


Chart 3. The month, to which the child had communicated by the use nonverbal means of communication and used the so-called “own language”

As can be seen from Chart 3, nonverbal means of communication (gestures, facial expression) were the primary method of communication until 17 months of age in case of children with SLI, and 12 months in case of LB. On the basis of authors' own studies, it was also found that the “own language” was used as the primary means of communication till 21 months of age in case of children with SLI, and 16 months in case of late bloomers.

The outcomes presented in Table 2 indicate that, at the age of 3, the various intensity of the language behaviour, characteristic for children speech, is much more frequent for children with SLI than in case of LB. The most frequently indicated are: problems with eliding (elisions) of phones (53.9% of children with SLI and 11.6% of LB), substituting, that is replacing one phone with other sounds, appeared in speech of 38.5% of children with SLI and 64.7% of LB. As much as 30.8% of children with SLI and only 11.6% of LB demonstrated the tendency to distort phones. The next phenomenon is changing the place of phones or syllables in a word (*portmanteau* word) which was observed in 23.1% of children with

Table 2. Characteristic speech features of children with SLI-PE and LB

	SLI	LB
Elides phones	53.9%	11.6%
Simplifies difficult groups of consonants	46.2%	17.5%
Substitutes one phone with others	38.5%	64.7%
Distorts phones	30.8%	11.6%
Transposes phones or syllables in words	23.1%	23.4%
Does not speak fluently	15.4%	5.8%
Uses words created by him/herself	0.0%	17.5%

The percentages do not sum up to 100% as there was the possibility to choose more than one answer.

SLI and 23.4% of LB. The subsequent, mentioned in the questionnaire, difficulty is simplifying difficult groups of consonants (SLI – 46.2%; LB – 17.5%), or not fluent speaking (15.4% – SLI and 5.8% – LB). The analysis of results concerning making up peculiar words (neologisms) by children proved that they are created only by late bloomers.

## DISCUSSION

For over 30 years, researchers have been trying to define the phenotype of SLI and determine if the model of language acquisition by these children should be subsumed within category of “delay” or “deviation”. Detailed information on this subject may be found in works by L.B. Leonard (2006), or G. Jastrzębowska (2005, 2013). The problem is that the concepts of delay or deviation do not show how the children with SLI may differ from younger, correctly developing children and from LB. Following Leonard (2000), at the age of 2, both children with SLI and LB cannot pronounce more than 50 words or create two-word expressions. Then, their common feature is: slower – than in case of their peers – pace of acquiring language competence, and, in consequence, the delay in speech development. In the flagship work, devoted to research on SLI, the author proves that despite the similarities of language acquisition models in children with delayed speech initiation, late bloomers, and late talkers, such as late initiation and prolonged process of speech development, it is hard to assume that the speech development in children with SLI will be only delayed because, unlike LB, these children never achieve the proficient command of language. The level of language

skills of children with SLI who will be qualified to mass school will always be low, unlike in the case of late bloomers.

As it is pointed by Leonard (2000), in research reports, the authors seldom remark that in speech of children with SLI there appear language phenomena which are not observed in younger, properly developing children. However, it is reported that, in terms of quantity and quality of “errors”, these children’s speech is much more different than their peers’ speech, which enforces treating SLI in terms of latency. On the other hand, in normally developing children, at any stage of their development, the intensity of these phenomena is not as big as in the case of children with SLI, which reinforces the reasoning in favour of recognising this model of language acquisition as a deviation (Leonard 2000). The language development profiles of children with SLI and LB up to 2.6 year of life do not vary significantly. Initially, the lack of linguistic expression is observed (the child uses only onomatopoeia supported by gestures). Later, these children crow and use simple words for a long time. Statements, usually in the form of simple sentence constructions or sentence equivalents, are constructed by them only at the end of 3<sup>rd</sup> year of life. Above this age limit, the language proficiency profiles start to contrast widely, as shown in Chart 4. Authors’ own study, pursuant to research carried out by other researchers, shows that children with SLI are more likely to acquire some language skills and less as far as other skills are concerned. As a result, it means that the control of particular areas of the language is disproportionate (Jastrzębowska, in print).

In Chart 4 the differences in language development profiles between children with SLI, late bloomers and properly developing children are presented. In case of children with SLI, the speech initiation occurs later (similarly to LB) but the process of intense development lasts definitely longer and, before some areas of language are mastered, the development turns into the so-called **plateau stage** (stoppage), which means that the child has achieved the upper limit of its capabilities and will never achieve even average level of language skills. The stoppage of development is a characteristic feature of this development deficit, and it differentiates it from the inhibition, regress, progressive decrementing of level (observed in children with various cognitive deficits and complete disorders).

Despite the fact that delay in speech development is the feature of all developmental disorders, the models of language acquisition by children with SLI and other disorders from DLD category differ in terms of such parameters as: the process of speech development within the time, the process of language acquisition, differences of language development profiles, more frequent occurrence of linguistic mistakes and differences of qualities of these mistakes, which is accordant with results of other authors’ research (Leonard 2000; *Międzynarodowa...*; Jastrzębowska 2003).

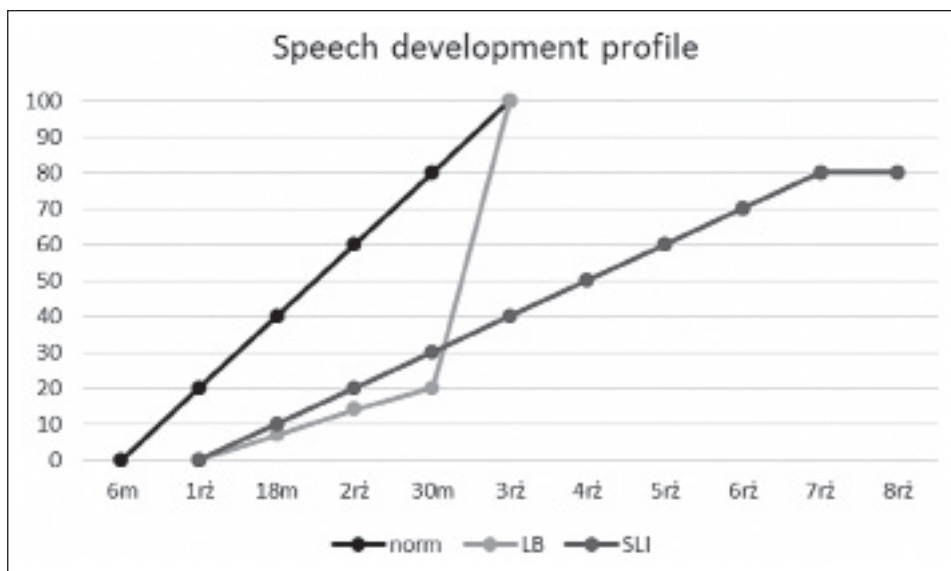


Chart 4. Language development profiles/models of children with SLI-PE and late bloomers with regard to developmental norm

Source: Authors' own study based on Leonard (2000) and own research.

The research results carried out by Jastrzębowska from 2002 and 2010 (together with the team) make it possible to compare and complete some crucial information on the process of language development of late-speaking children (depending on the degree of disorder).

The analysis of the process of language development in children with SLI proves that in the case of these children it should be described as both deviation and delay in development, as the considerable part of children with severe disorders in language development, even at the age of 10, demonstrate the level of language development which is different, in quantitative and qualitative terms, from normally developing children at the age of 3 (Jastrzębowska 2002).

The research carried out in 2002, embracing children with severe degree of SLI (mixed form, receptive-expressive – SLI-PR-E) in comparison to children with light degree (expressive form – SLI-PE), indicates that these children:

1. Started saying first words with a great delay – between the ages of 2 and 3 years, and sometimes even later. (Contrary to this information, children with SLI-PE proved to be much better because children examined by the authors spoke their first, simple words at the age of 18 months).

The degree of speech delay was significant; the dynamics of speech development remained much dysfunctional. 34.6% of examined children at the age of 4–9 indicated the level of speech development characteristic for

the 1<sup>st</sup> quarter of 2 years of age, 26.9% – for the 2<sup>nd</sup> quarter of 2 years of age, and 19.2% for the 4<sup>th</sup> quarter of 2 years of age. The level of speech development of children at the age of 2–3 was evaluated as corresponding to the level of 1-year-old child, while at the age of 6–9, it was adequate to the level of 2–3-year-old children. This data evidences that from the moment when the first words had occurred, the process of language competence acquisition proceeded very slowly and, on average, over the course of 5 years progressed at a rate that a healthy child overcomes within 0.4 to 1 year.

2. At the age of 6–10 – children with SLI-PR-E still too often used the so-called own peculiar language, understandable mainly for themselves. Thus, the main symptom of delay in speech development of examined children were long lasting expressions stemming from childhood language and the method of speaking that is specific for earlier developmental stages, such as numerous onomatopoeic terms and language behaviours typical for these phases such as: elisions, metathesis, substitutions and assimilations. (By comparison, in lighter forms of SLI-PE this method of communication, according to research from 2010 year, dominated within first 21 months of a child's life).
3. The range of vocabulary (within Polish language system) was very poor – it was constituted in particular by onomatopoeic words and words with simple phonetic construction. The most frequently, examined children did not construct sentences. However, if they occurred, they were simple sentences or nominal ones. (In case of children with SLI-PE it occurs in 36<sup>th</sup> month of life).
4. Understanding of speech was good or impaired. Most likely, good understanding concerned children with expressive disorders. On the other hand, disability of understanding (characteristic for mixed receptive-expressive groups) related to complex instructions but also (in some instances) to simple utterances.
5. Non-verbal factors were crucial in the communication process of these children. In numerous instances, SLI was accompanied by difficulties in reading and writing.
6. The next indication of language expression disorder was dysfunction of speech pace and rhythm (Jastrzębowska 2002, 183).

The analysis of research results, carried out after examined children's therapy, indicated that despite intense speech therapy, pedagogical and psychological impact, the speech development of children was still delayed to disparate, often severe, degree. The main deviations were observed in the development of lexical range and grammar, while the minor – in the phonetic-phonological and semantic areas. The utterances of the majority of children were restricted to single words,

onomatopoeic words, and sometimes to simple sentences. The children who were able to construct longer utterances had serious problems with the use of correct grammatical forms (Jastrzębowska 2002, 183).

As already mentioned, the pilot research from 2010, whose results on language expression are presented in this paper, was carried out in the group of late-speaking children (SLI-PE) and late blooming children (LB). The control group consisted of children with proper speech development. The obtained data allowed the authors to perform a comparative analysis and provided additional knowledge on language development of not only children with SLI but also LB. On its basis, an empirically confirmed model of these children's speech development was formulated and the language development profiles of children with SLI-PE and LB were compared. As a result of carried out research it was determined that:

- The characteristic feature of the phenomenon designated as late blooming is the proper development of understanding, which differentiates it from children with specific language impairment (SLI), as, even in its expressive forms, is always even slightly delayed. According to studies conducted by Leonard (2000) and reports of Polish researchers (Kordyl 1968; Bogdanowicz 1997; Pačalska 1999; Pačalska et al. 2007), these children have selective, often minor deficits in some perceptual functions (decoding, processing information and also updating of auditory traces and auditory memory) or concentrating attention. Each of them is particularly significant for the process of language acquisition and applying of this knowledge. The research on the influence of these factors on the formation of SLI, which poses a significant language deficit, is in progress.
- Children whose speech development was very delayed, often over 12<sup>th</sup> month of life communicate with the environment with non-verbal factors such as facial expression, gestures or body movements. Authors' research results on this method of communication within the children with SLI (Chart 3) is consistent with other authors' reports (Leonard, Kordyl) who found that non-verbal communication, characteristic for early stage of speech development continues much longer in children with SLI than in properly developing children. A crucial element enriching the knowledge of speech development in children with a major delay in language acquisition is to determine that in this respect late bloomers are barely different from children with SLI-PE. Studies show that, on average, LBs consider gestures in the first 12 months of their life as the dominant method of communicating their needs, later, however, they try to say the first words, which is consensual with the developmental norm. In case of children with SLI-PE this is the period of first 18 months, thus, 6 months longer.
- The process of speech development in children with SLI-PE was evaluated on the basis of criterion of the time when the successive stages of



speech development occurred and the reference of obtained data to developmental norm. It was found that in children with lighter, expressive form of SLI, the process of acquiring language competence slightly, albeit still, differs from the language development model of late bloomers and is radically different in comparison with their peers. As shown in Chart 1 – the next stages of speech formation in children with SLI-PE occur a bit later than in children with LB (crowing establishes the difference of 1 month, the first words – 3 months, simple sentences – 6 months), which means that the development pace of children with SLI is slower than in case of those with LB. This is an argument that speaks in favour of treating SLI-PE in terms of latency. Over the time, the difference between children with SLI and LB is also becoming more and more apparent, and the increasing delay in acquiring further areas and language subsystems is the indicative of this distinction. On the other hand, it stems from Chart 4 (developed on the basis of own literature and studies) that in terms of quantity (the number of used words, sentences – much below the results of properly developing children) and the dynamics of development, children with SLI and LB are far different from a control group. In the light of obtained data, till 24<sup>th</sup> month of life, children from both groups (with developmental disruptions and disabilities) cannot be distinguished because they use only a few simple words or nominal sentences.

- In the third year of life, when the acceleration of development finally begins, the number and quality of “mistakes” speak in favour of “deviation” from developmental norm (see Table 2) since these children’s speech (with SLI and LB) differs in this regard from younger, properly developing children’s speech. Not only quantitative but also qualitative aspects determine the evaluation of dynamics and the level of linguistic development. As it was established, the occurrence of various types of delay in active speech development, characteristic for younger, properly developing children is often. Thus, for instance, 38.5% of children with SLI and as much as 64.7% of LB substitute one sound with others. Substitutions are the most common phenomenon in children during the course of the first 3 years of life, so the level of this indicator is not surprising. It is interesting, however, that it is the most frequent kind of “mistakes” in the case of LB. The situation is different in case of elision because as much as 53.9% of children with SLI and only 11.6% of LB elide phones. These results should become a trigger to further linguistic analysis. Why are elisions the more commonly chosen method of dealing with restrictions of articulation organs’ motor skills by late bloomers, and substitutions – by children with SLI-PE?

30.8% of children with SLI and 11.6% of LB deform phones (randomly, on *ad hoc* basis without any tendency to consolidate such articulation), create phones similar to given speech sound, such as ‘r’ characteristic for French articulation, or ‘s’, ‘z’, ‘c’ pronounced with the tongue inserted between teeth. At this age, looking for substitutive articulation is common, as phonemic hearing is already formed. The level of performance is, however, too low to pronounce these, as they are the most difficult phones in Polish language, as far as articulation is concerned. 17.5% of LB and 46.2% of children with SLI reduce tough consonant groups, 23.1% of children with SLI and 23.4% of LB transpose phones or syllables in the word (vocal and syllable metathesis) and, what is interesting, only LB create neologisms.

- Chart 2 presents development models of children with SLI and LB. In the majority of children with SLI-PE (92.3%), speech development proceed according to the following pattern: the child had not spoken for a long time and spoke incorrectly for quite a long time (variant B). This model of development was characteristic for an approximately half of LB (41.3% of examined people). Variant A – the child had not spoken for a long time and then immediately started to speak correctly (58.7%) – is the pattern of language development that is the most frequently quoted in literature. This model was not found in case of children with SLI-PE. And surprisingly, as much as 8.3% of mothers of children with SLI indicated variant C, not occurring in children with this speech deficit, assuming that the child started to speak in the appropriate time but spoke incorrectly for a long time (7.7%). Perhaps, this group of mothers misunderstood the descriptions of how the particular variants of language development proceed. Data on development models proves that within LB nearly half of them, that is as much as 41.3%, develop according to the same pattern as children with SLI. That makes them similar, in terms of language development, to SLI. What sets them apart is, atypical for any other group of children, process of speech development (namely the rapid acceleration of language development just before attaining the age of 3). This atypical model of language acquisition by late blooming children has been confirmed in the process of authors’ own research.

The foregoing research results should contribute to the development of detailed diagnostic criteria for LB and SLI-PE and, thus, for the creation of more and more excellent tools of neurodevelopmental disorders diagnosis.

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