

SPECIFIC LANGUAGE IMPAIRMENT: THE RELEVANCE OF THE INITIAL DIAGNOSIS

Distúrbio específico de linguagem: a relevância do diagnóstico inicial

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ABSTRACT

The purpose of this work is to relate review researches about speech language impairment in relation to the families' perceptions, clinical categorization, language evolution, genetic and others medical researches, comorbidities, speech and language therapies and prognostic. The data researched was of the seven last years journals of *Medline e Scielo*. Among the findings, the distinguished ones were the families' perception about speech language impairment, the necessity of language pathologist diagnosis and the efficiency of early intervention programs with health agents. Language evolution stages may be known and observed by infancy health professionals for the early detection of speech language impairment. The therapeutic progress, the school and social adaptation may be better if the intervention begins at two years old.

KEYWORDS: Language Development; Language; Diagnosis

■ INTRODUCTION

According to the literature, specific language impairment (SLI) is characterized by great problems, which are configured as delays and persistent changes in language acquisition, in the absence of pathology that triggers such delay or alteration¹. The SLI can present great variability in clinical manifestations, being dependent on the severity of the case, and can be changeable during the development². Some children have difficulties only concerning the expression, other ones in relation to expression and understanding of the language³.

Children with SLI have language maturation, at least, 12 months late in relation to the chronological age, however, they do not present sensory or intellectual deficit, pervasive developmental disorders or even clear brain damage and, besides, they present social and emotional conditions in an adequate way³.

These individuals take a longer time in the recognition, recovery, development and production of words, because of the slowness in processing information, which may be related to failures in semantic representation and cognitive organization¹. Moreover, they can present phonological simplifications, often deviant (non-observed simplifications in the normal process of language acquisition); restricted vocabulary, with overuse of deictics, circumlocutions and representative gestures; simplified grammatical structure and order of words in a non-usual form². In the comprehension, some difficulties in understanding sentences or specific words as spatial or temporal markers, incorrectly linguistic realization of commands, incorrect answers under questioning and difficulty in keeping the conversation topic are observed².

Although there are not epidemiological researchers, especially in the Brazilian population, several

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studies have pointed to a higher prevalence of language impairments in boys^{4,5}.

In a study on this theme, it is mentioned that SLI affects approximately 7% of the population – being boys generally more affected than girls⁶.

The term “specific” refers precisely to this apparently restricted nature of the deficits found in SLI: children do not have sensory, cognitive, neurological, or even socio-emotional problems that could be the reason for their language problems⁷.

It is, therefore, a disorder that requires the knowledge acquisition and language development in order to have accurate diagnosis, because in the SLI language performance of children is not consistent with their non-verbal intellectual capacity⁷. Then, the identification of SLI is still a challenge, even in older children, once, in addition to language deficiencies are not diagnosed early, often, the intervention occurs only when the low school performance and reading difficulties are in evidence, symptoms that are more easily identified. The progress of the language in the operation, however, is limited due to the lower brain plasticity⁸.

Thus, the identification that there is a delay in the beginning of speech (this should start to maximum 18 months), whether it is confirmed only as chronological changes or configure a disorder with pathophysiological signs, has an essential role in therapeutic success with children affected by such disorders. Once the language disorder is an early condition, it is believed that the earlier intervention is initiated, the more favorable the cases evolution will be. Thus, there is a need to implement early stimulation strategies⁹. This early identification can be made by the health professional who accompanies the child monthly or every six months, especially the pediatrician or nurse who works in the childcare of basic health units.

This proposal is in agreement with the studies that support the need for routine assessment of language skills and communication since the first days of life, because the intervention with infants or preschool can have significant impact on child development. For this reason, there is the need to raise awareness of health professionals and parents to this topic. Among these professionals, speech therapists, whose objective is to study the language, should be the first ones to raise this awareness for the early identification¹⁰.

This way, it is believed to be essential to the pediatrician and other health professionals to know this disorder and evolutionary milestones in language, fundamental to the identification of the disorder itself, so being possible to route the children at risk of language to the Speech Therapist for having an evaluation.

Considering these assumptions, the objective of this paper is to present the main results of national and international literature review in the last six years on this thematic, in particular, its characterization concerning the disorder perception presented by the family, clinical forms and their relationship with evolutionary milestones in language, investigating the importance of psychological findings in assistance to the therapeutic work of language. It is also the aim of this study to present researches on the organic bases of SLI, co-morbidities and prognosis, and therapeutic lines adopted in the Brazilian and international realities.

METHOD

To carry out this research it was proposed the term *language*, refined with the words *language impairment*, *diagnostic*, and finally refined to *speech language impairment*, for papers in the investigated databases. The selected data were *Medline* and *Scielo* once they are classified as Qualis A, B and C – international and A – national, in the area which is allocated the Speech, Hearing and Languages Science of the Coordination of Improvement of Higher Education Personnel (CAPES). It was also studied some classic books on the subject, trying to give support to the clinical forms of SLI that are described in this paper.

LITERATURE REVIEW

The result in *Medline* showed 47 papers. Of these ones, some were selected and the classic articles published in the last seven years were prioritized, resulting in a total of 27 papers for analysis in this review. As the research continued, relevant references to the topic were also consulted. In the *Scielo* basis, no papers with specific theme were found.

To expose the results of literature, it was created the following categories: parental perceptions, aspects of diagnosis and comorbidities, therapeutic, education, and prognosis.

Parental Perceptions

Some studies claim that it is necessary to always observe the perspective of the family and caregivers about the adverse conditions that can damage the process of acquisition and language development in children. It is important to give credit to the parents so that they can detect and understand the atypical manifestations in the development of their children. The findings of this study showed that about 80% of complaints that were reported by parents of the

children with different disorders of childhood development refer to the absence or inadequacy of speech, which are viewed as something strange by society¹¹.

In this perspective, researches point that the most common complaint that mobilizes families to look for speech therapy refers to losses in verbal production, such as “talk wrong” or “no talk”¹².

A recent study is in evidence, once it points the importance of considering and listening to the suspicions of the parents about the language of children. This study examined a sample of 55 children, aged between 2 and 12 years, of both genders, as the complaints reported by the family at the beginning of the treatment. In the performance of children whose parents complained about the verbal production (82.6%), it was possible to observe that 55.2% of them also showed deviations in verbal comprehension. The impairment of verbal production occurred in the phonological level (97.3%), semantic (76.3%), grammar (78.9%) and pragmatic (5.2%). The authors concluded that although complaints about damages in verbal production are most often mentioned by the family, the losses in verbal comprehension are also evidenced in children with language disorder. These findings demonstrate the importance of conducting a thorough evaluation based on the investigation of complaints reported by the families¹³.

Another study points out the challenge of the family members to understand the children and their difficulties in language, in order to build strategies that support, in an enunciative way, these individuals. Studies show that the most common is that parents, who look for pedagogy strategies that rather facilitate the functioning of language development in children, strengthen the fault, creating enunciative positions vulnerable to these children¹⁴.

Therefore, it is possible to conclude from this data that parents have doubts about the language development of children and also how they can deal with situations, being important the routing to a specialist in language (speech therapist in the Brazilian reality) to a process of reflection and guidance on their interactions with the child.

Clinical and Diagnostic Methods

In relation to clinical forms, papers make extensive review of them by discussing new ways to face this disorder¹⁵⁻¹⁷.

Classical authors as Rapin and Allen (1988)¹⁵ present the description of subtypes:

- Verbal Dyspraxia: deficits in the motor programming of speech- understanding of the normal language, non-fluent speech or absent.
- Phonological Programming Disorder: normal understanding – fluent speech but unintelligible.

- Receptive-Expressive-Mixed: syntactic-phonological deficits – short sentences and aggramatism, with alteration in fluency and articulation.
- Verbal Agnosia hearing or deafness: alteration in verbal comprehension, short or production of words, changed fluency and articulation semantic-pragmatic deficit: logorric speech, poor understanding, aberrant modes of conversation.
- Lexical-syntactic deficit: pseudostuttering, damaged lexical access and syntactic construction, deficient understanding of complex statements.

Although there is not complete correspondence between them, it is possible to observe subtypes of SLI. In neuropsychological and / or generative language perspectives, require a diagnosis related to testing of the performance and knowledge of specific grammatical components by the child (semantic, syntactic, phonological and morphological) and the use of language in context (pragmatic)^{16,17}. Besides these factors, another important aspect is the auditory processing of sounds in sequence, in particular, auditory sequential memory. In the diagnosis is taken as the reference the value of 1.25 standard deviation as a parameter to indicate changes in tests and measurements of the different components of language¹⁸.

In this aspect, a study suggests the association of SLI to the deficit in auditory processing. Researches provide evidence that the discrimination of brief stimuli would be compromised in children with SLI. This deficit would lead to difficulties in developing phonological skills necessary to map phonemes and decode and encode words and phrases effectively and automatically⁶.

A comparative study of grammatical performance of 35 children with normal language development (control group) and 35 children who were diagnosed with Specific Language Impairment (study group) aged between 3:1 and 6:11 years, from a sample spontaneous speech, found results that the groups differed to the grammatical morphemes and the mean length of utterance in morphemes and in words, that the groups differed in all age groups when analyzed nouns; difference in other classes of words in the individuals aged 5-6 years, and that the groups have significant differences when analyzing the verbal morphology¹⁹.

In terms of pediatric, neurological and children neuropsychological clinics, the complaints of children refer generally to changes in the learning process and / or delay in language acquisition. Children who have these changes should be referred for clinical assessment. Thus, it is necessary to equip health professionals, especially pediatricians, so

they can act in the diagnosis and primary prevention of oral and written language disorders²⁰. The etiology of language difficulties and learning is diverse and may involve organic factors, intellectual/cognitive and emotional (relational familial structure), occurring, most of times, an interrelationship between all these factors. Thus, it is important to recognize the specificity of each case and make the differential diagnosis when necessary, to conduct an effective intervention²⁰.

In the literature review, a study shows the lack of a standard relating to child language skills and assessment tools that can relate the performance of the language abilities of children to existing theories or models that describe the linguistic knowledge of the child, in order to make a diagnosis in a change of language development based on a precise parameter for comparison. For this reason, the criteria for diagnosis of children with SLI have been based on the inclusion and exclusion criteria¹⁹.

The SLI is characterized by significant limitations of the linguistic function that can not be attributed to hearing loss, cognitive impairment or changes in the structure and phonologic function. Then, the identification and diagnosis of SLI are usually made from the exclusion of other pathologies such as autism that also appear in the language disorders. Among these alterations, the understanding and pragmatic are considerate affected, and findings include aberrant prosody, immediate echolalia and / or late and perseveration (inappropriate on the same topic). Other symptoms are also present, distinguishing these children from those ones with speech delay, these symptoms include, particularly, impaired non-verbal communication, stereotyped and persistent behaviors, restricted interests and / or unusual and alterations of the social capacities²⁰.

When it is studied alterations in the acquisition of oral language, such as SLI, often there is the occurrence of posterior learning difficulties in reading and also in writing. Similarly, when it is investigated the factors that predispose to difficulties in reading and in writing, questions about the difficulties of learning the language may appear. Dyslexia is considered a change in learning, characterized by specific difficulties in achieving the reading and writing, as diminished ability to read, alteration in reading and writing skills²⁰.

In autism, echolalia, the distractibility, difficulty in verbal comprehension and socialization deficits occur at a high intensity that differentiates this situation from the other two. In this condition, the non-verbal aspects are predominant compared to the other two diseases in which there is higher prevalence of verbal problems²¹.

A study comparing the narrative performance of children with SLI and children in typical language acquisition showed that children with SLI presented inferior narratives when compared to their chronological pairs with typical language development regardless of the type of story. In addition, children with SLI showed awareness of mental states similar to children with normal development².

Studying 37 children through nine tests including language and memory, researchers describe the central characteristics and neurocognitive markers of children with SLI. These researchers evaluated 17 diagnostic markers, by comparing a control group of individuals aged 5-12 years. The results indicated that 11 markers were maintained as differences between the groups, especially those ones related to attention, coding skills, executive functions and memory. Two markers differentiated 77% of cases, sustained attention and execution of tasks of classification²².

Studies show that school performance, as well as phonological awareness and visual short term memory were shown to be delayed in most individuals who have SLI, with a positive association between: a test of short-term memory and arithmetic test, the evidence of phonological awareness and reading and writing tests¹.

From an interactionist perspective, the authors argue that, in addition to looking over the domain of grammar, it is necessary to analyze the functioning of the dialogue between adult and individual, because this analysis will give the key elements in the therapeutic process. This is evident when the authors show that the stated position of 06 individuals with verbal dyspraxia in interactions with their mothers were totally different, and required a separate therapy, despite the common organic symptomatology of individuals²³.

In terms of medical diagnosis, several genetic and neuroimaging studies show that there are organic bases for SLI like the study that investigated the relationship between mutations affecting the FOXP2 transcription (gene which is associated to the ability to acquire and develop speech and language) and disorders of speech and language. It was found that this mutation has as a common manifestation the specific language impairment. Such genetic factors combine with environmental factors, suggesting a multifactorial pathology¹².

In terms of neuroimaging, a study found cortical alterations that show the presence of specific disorders of language in the spectrum of perisylvian syndrome, being observed clinical manifestation due to injury or bad formation which interferes with the region of Sylvian fissure, being the polymicrogyria the most often found structural alteration. This study

described the language deficits of four members of a family with Perisylvian Syndrome and related them to neuroimaging studies. The MRIs showed perisylvian polymicrogyria location and extent of variants in all individuals. The clinical assessment also showed alterations in oral and written language in all individuals²⁴.

Co-Morbidities

a) Alterations in Auditory Processing

In a randomized controlled trial (RCT) which was evaluated in the language and audio processing from the results attributed to the therapeutic application of the *software* Fast Forward for Languages (FFW-L). The study included two hundred and sixteen children who were subjected to assessment of auditory processing and language before and after treatment, finding a result that this intervention to treat a hypothesis of auditory processing deficit was not significantly effective in improving general language skills general or abilities of temporal and language processing²⁵.

Another study investigated the correlation between temporal processing (the standard test frequency – TPF) and language impairment (language processing). Sixteen children with typical language development and seven children with SLI participated in TPF and Comprehension Tests of Syntactic Complexity (TSCC) for evaluation of language processing. It was observed in the percentage of correct TSCC decreasing with increasing syntactic complexity. In the comparison between the groups, the difference in performance was statistically significant in TSCC. As expected, children with SLI showed FPT performance out of the reference values. Results suggest that the PPT is correlated with skills of syntactic complexity. The low performance of TPF can serve as an additional indication of deficits in complex language processing⁶.

b) Association with Autism, Attention Disorder, and Dyslexia

Authors selected, making use of the functional scale of development of Munich, 35 children diagnosed with ambiguous between autism, mental disorder and SLI from the 667 ones routed to specialized clinics in development. With this, the authors tried to identify specific features of the three syndromes. The results demonstrated that resilience is one of the most important factors to differentiate between these three diseases. They emphasized that the problems of development in cognition and communication related to subjacent perceptual dysfunctions can lead to inappropriate adaptive behavior, which produce similarities between individuals with autism, SLI and mental

disorders, although the three disorders have specific profile of cognitive, social and verbal communication. This study demonstrates the importance of evaluating specific behavior to a more accurate diagnosis, differentiating such evolutionary situations, as it is known that while the SLI is a specific language impairment, mental impairment includes language and cognition, both of which can have a social interaction more appropriate than the autistic individuals, the ones who have alterations in three areas: cognitive, verbal and social. In relation to the social and emotional impairment experienced by these children before their communicative disability, the assessment of the psychologist and subsequent monitoring of the child and family contributes to the differentiation of aspects of importance in defining the diagnoses²⁶.

In a study of 108 children with speech problems, it was found that 23 (9 girls and 14 boys) were SLI and 85 with speech disorder. They also verified that the 23 children with SLI and speech disorder had a higher risk for attention deficit disorder and hyperactivity – Inattentive type²⁷.

A research investigated the presence of alterations of the autistic spectrum in 76 subjects of 14 years with a history of SLI, through interviews with family and specific tools for assessment of autism *Autism Diagnostic Interview-Revised* – ADI-R and *Autism Diagnostic Observation Schedule* – ADOS). It was noticed that the incidence of autism spectrum characteristics of this sample was of 3.9%, ie 10 times more than expected in the general population. They conclude that children and young people with SLI have an increased risk for having features of the autistic spectrum²⁸.

Authors analyzed the correlation between developmental dyslexia and SLI, with rates of anatomical alterations, having in mind that while the first is defined with reading, the second presents problems of language comprehension and / or expressive. The question is investigated by studying how the two disorders are qualitatively different or simply differ quantitatively along a continuum of severity. To answer this question, 14 boys and 8 girls were studied, aged between 11 and 16 years, with reading and language problems, noting that the individuals who had small and symmetrical brain structures (negative risk) had significant changes in understanding and individuals with increased and asymmetric brain structures (positive risk) had good reading in the presence of preserved comprehension. The best performance was of children with anatomical risk close to zero (with normal brain structures). These results indicate the significance of evaluation of language comprehension as important information to distinguish the cases of developmental dyslexia

with SLI, as well as confirm that the rapid automatic naming is not provided by the anatomical risk index, but by anatomical measures derived from the frontal lobe. Children with developmental dyslexia with and without comprehension have anatomical alterations that distinguish them from the children with normal development²⁹.

Therapy, Education and Prognosis

Lots of studies have demonstrated the concern of experts to develop programs for speech therapy interventions in cases of language impairment. From different theoretical orientations, researches are developed to contribute to the effectiveness of the therapy of these disorders, among them the SLI³⁰. Some studies point to the efficiency of direct speech therapy with the individuals with SLI, although they emphasize that evolution is not very extensive in some cases, being responsible for the attribution of reserved prognosis. However, early diagnosis with early intervention is a factor that promotes greater change in the language of 10 individuals with SLI.

Based on the use of a psycholinguistic model, a recent study intended to verify the effectiveness of speech therapy in the phonological development of children with SLI. This study is made of four preschool children with mixed SLI without compromise praxis, of both genders, aged between 48 and 83 months. The intervention was based on previous evaluation in structured sessions and guided by the therapist and also respected the need for each individual, effectively describing the involved issues. At the end of the study, it was found that the use of the Psycholinguistic Model is an effective tool to treat phonological difficulties in children with SLI³⁰.

Another study that describes the treatment of SLI suggests the possibility of semantic compensation for the syntactic processing deficit³¹, but there is also the presentation of therapeutic strategies of syntactic basis and of syntactic-semantic basis, demonstrating that both are effective³². Techniques for teaching verbs through prototypical members of each category are analyzed in their effectiveness³³, demonstrating that individuals with SLI depend a lot on the *input* to be successful in speech production.

In this context, the narrative skills are been used during the therapeutic process, allowing the audiologist to check the language, cognitive and social skills of children with SLI. Another form of therapy is indirect with parents, which is investigated in a study that analyzed 152 children divided into therapy groups – directly and indirectly, and found that, for the early evolution, there is no difference between the direct therapy with the child and the parents. However, there is an evidence of more effective therapy directly to older individuals, being

the therapies of 30-40 minutes three times a week, much more productive than the ones carried out in every 15 days for the improvement of the speech production³⁴.

The effectiveness of different models of therapy in 24 individuals with SLI aged 4 years to 4:6 years is also investigated in a study that was conducted in London, which demonstrated that intensive therapy was effective in the treatment of expression reception and, attention and listening skills, . The study points to the better efficacy of direct therapy in these kinds of cases, comparing them with the indirect therapy³⁵.

Regarding prognosis, there is concrete evidence that SLI can contribute to the appearing of reading problems (especially reading comprehension) and written language¹⁰. This fact supports the need to be aware of this disorder within the first two years of life, to minimize or prevent linguistic injuries, educational and social problems to these children. This requires an interdisciplinary partnership for diagnosis and therapeutic process, which contributes to the organization of expectations, the environment and the frustrations of children and families in relation to their performance. From this implemented review, it is possible to demonstrate the main important factors in the diagnosis and therapy of individuals with SLI, summarized in Figure 1.

■ CONCLUSION

This study identified some key points to be worked in health programs and clinical language disorders in childhood, specifically in the clinic with SLI.

Regarding the diagnosis, it is important to differentiate the autistic individuals with SLI, taking the sociability as an important point, once the last ones present more significant alterations in this aspect. The diagnosis can be made between 18 and 24 months, if provided that they pay attention to parental perceptions about the linguistic evolution of their children. Researches have shown that such perceptions are reliable and that early intervention provides better results and evolutionary predictions.

The researches also show that the action with families can help to minimize the initial damage of language, being essential to the early detection of the disorder with the underprivileged population in which there is greater risk for it. To make this, it is necessary to expand a government investment of groups from the Health Care Family Program, to provide a greater number of members to continuously monitor the families, as well as specialists (pediatrician, speech therapist, psychologist, etc.) to

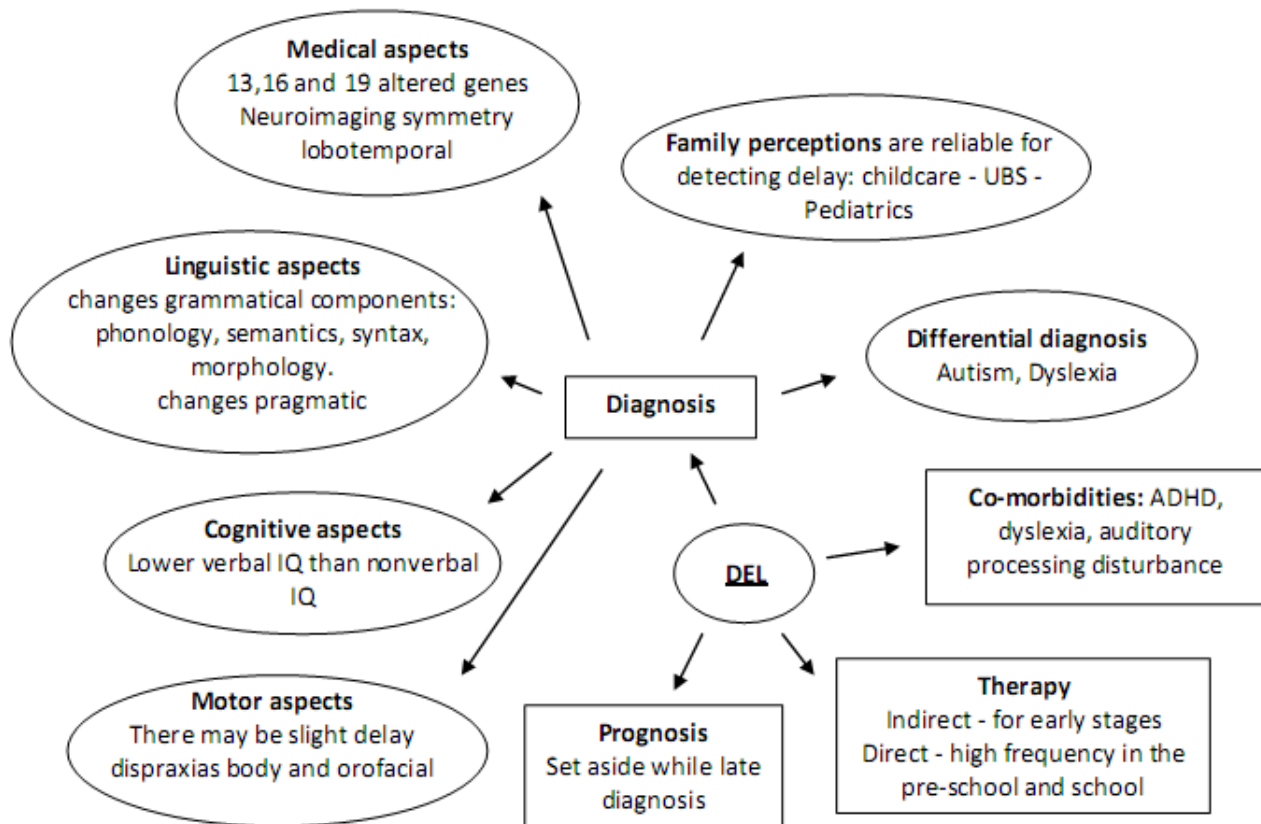


Figure 1 – Summary of the research about SLI.

perform the same health practices that are necessary for early detection and routing.

Considering the etiology, the SLI appears to have multifactorial pattern, ie, there are genetic alterations related to disorder and socio-emotional factors that enhance gene expression.

In terms of therapy, both indirect therapy (via continuing education with parents) and the direct one are effective, but the exclusive indirect only works in early developmental stages of the child. From the two / three years is required direct intervention with the child that maximizes his potential to facilitate non-verbal and / compensate for the altered development of verbal skills. Such compensation seems enough in a way that the individual do not need to attend school / special class, being possible to frequent regular schools. The problems

of school learning should be observed as there is a common association between SLI and attention deficit disorder and hyperactivity, dyslexia and auditory processing problems. The sooner there is a diagnosis, therapeutic intervention and education, the better the prognosis for social adaptation of individuals with SLI is.

Finally, recent studies in the enunciative field, suggest that the processes of evaluation and therapy should be focused on the functioning of language, especially in dialogue with people who are closer to them because these acts can be different and are always unique, despite the similarities in the biological limitations of different individuals. They say, then, that intersubjectivity can not be neglected in speech making, especially in times of psychic and language constitution.

RESUMO

O objetivo deste trabalho é relatar a revisão de estudos sobre o distúrbio específico de linguagem quanto à percepção que a família apresenta deste distúrbio, formas clínicas e sua relação com os marcos evolutivos em linguagem. Pretende-se também analisar aspectos orgânicos e sociais relacionados tal distúrbio, co-morbididades, terapêuticas e prognóstico clínico. A pesquisa proposta teve como fonte de dados artigos dos últimos sete anos encontrados em revistas indexadas no *Medline*. Entre os dados encontrados, destacaram-se as percepções parentais acerca do distúrbio, a necessidade do diagnóstico do especialista de linguagem e a eficiência dos programas de intervenção precoce com agentes comunitários de saúde. Os dados analisados sugerem que marcos evolutivos de linguagem devem ser conhecidos e observados pelos profissionais da saúde que atendem à infância para detecção precoce deste distúrbio. O progresso terapêutico, a aprendizagem escolar e adaptação social podem ser maiores se a intervenção iniciar já ao segundo ano de vida.

DESCRIPTORIOS: Desenvolvimento da Linguagem; Linguagem; Diagnóstico

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