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## RISK AND PROTECTIVE FACTORS FOR LANGUAGE DEVELOPMENT DELAY<sup>1</sup>

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**ABSTRACT.** The aim of this study was to identify risk and protective factors, according to national and international literature, associated with delays in the development of children's oral language. An integrative review of the literature was developed in the databases Lilacs, PsycINFO and Web of Science. The search resulted in 12 articles that met the selection criteria. Most of the studies identified static risk factors, which are mainly biological variables, or related to the child's life history. A smaller number of researches investigated dynamic risk and protective factors, among which the social support offered to the child was highlighted. Knowing which factors are related to these delays is essential for formulation of proposals that aim an adequate development of the language. Gaps in the literature and the need for new research with more rigorous methodological designs are discussed, considering the importance of this discussion for possible interventions.

**Keywords:** Risk factors; protective factors; language development.

## FATORES DE RISCO E DE PROTEÇÃO PARA ATRASOS NO DESENVOLVIMENTO DA LINGUAGEM

**RESUMO.** O objetivo deste trabalho foi elencar fatores de risco e de proteção que, segundo a literatura nacional e internacional, estão associados com atrasos no desenvolvimento da linguagem oral de crianças. Foi desenvolvida uma revisão integrativa da literatura, nas bases de dados Lilacs, PsycINFO e Web of Science. A busca resultou em 12 artigos que atendiam aos critérios de seleção. A maioria dos trabalhos identificou fatores de risco estáticos, os quais são principalmente variáveis biológicas, ou da história de vida da criança. Um número menor de pesquisas investigou fatores de risco dinâmicos e fatores de proteção, dentre os quais foi ressaltado o suporte social oferecido à criança. Conhecer quais fatores estão relacionados a esses atrasos é imprescindível para a formulação de propostas que objetivem um desenvolvimento adequado da linguagem. São discutidas lacunas na literatura e a necessidade de novas pesquisas que atentem para o rigor metodológico, considerando a importância dessa discussão para eventuais intervenções.

**Palavras-chave:** Fatores de risco; fatores de proteção; desenvolvimento da linguagem.

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## FACTORES DE RIESGO Y DE PROTECCIÓN PARA RETRASOS EN EL DESARROLLO DE LENGUAJE

**RESUMEN.** El objetivo de este estudio fue listar los factores de riesgo y de protección que, según la literatura nacional e internacional, están asociados con retrasos en el desarrollo del lenguaje oral en niños. Se realizó una revisión integrativa en las bases de datos Lilacs, PsycINFO y Web of Science. De la búsqueda se analizaron 12 artículos que cumplieran con los criterios de selección. En la mayoría de los estudios se identificaron factores de riesgo estático, los cuales son principalmente variables biológicas o de la historia de vida del infante. Un número más reducido de estudios investigaron factores de riesgo dinámicos y factores de protección, de estos últimos fue resaltado el soporte social ofrecido al menor. Conocer qué factores están relacionados a esos retrasos es imprescindible para la formulación de propuestas que tengan como fin el desarrollo adecuado del lenguaje. Son discutidas las brechas presentes en la literatura y la necesidad de nuevos estudios que busquen rigor metodológico, considerando la importancia de esta discusión para eventuales intervenciones.

**Palabras clave:** Factores de riesgo; factores de protección; desarrollo de lenguaje.

### Introduction

Typical development of oral language in childhood is recognized as central to child's development of other skills and socialization (Sheridan & Gjems, 2017). Literature emphasizes that language development is a prerequisite for the acquisition of reading and writing skills, which are in turn requirements for satisfactory school performance (França, Wolff, Moojen, & Rotta, 2004). For this reason, many studies aim to evaluate whether and how language learning occurs, both in family context (e.g., Hart & Risley, 2000) and at school (e.g., Oliveira, Braz-Aquino, & Salomão, 2016).

In this context, alterations or delays in language development are viewed with concern by health and education professionals, and by researchers in the field, as they may contribute to subsequent learning difficulties. Thus, the literature points out that is necessary to identify early language impairments (Ferracini, Capovilla, Dias, & Capovilla, 2006; Schirmer, Fontoura, & Nunes, 2004) and to propose ways of dealing with possible delays or gaps in children's vocabulary acquisition (Hindman, Wasik, & Snell, 2016).

The term 'alterations in language development' involves a very heterogeneous set of cases (Korpilahti, Kaljonen, & Jansson-Verkasalo, 2016). According to Schirmer et al. (2004), these problems may have different classifications. A language delay is identified when language acquisition occurs in the correct sequence, but child's level of development falls short of what is expected for child's age group. It is considered a deviation when there is a qualitatively different development, such as language alterations in autism or specific alterations. Dissociation, in turn, occurs when there is, for an individual, discrepancies between the development of language and the development of other areas.

Oral language involves rules that allow a speaker to encode the meanings in sounds (expressive vocabulary) and a listener, in turn, to 'decode' meanings from sounds (receptive vocabulary). The receptive vocabulary is related to the words the child is able to understand, while expressive vocabulary involves the words the child can speak (Araújo, Marteleto, & Schoen-Ferreira, 2010; Ferracini et al., 2006). Language development delays may occur in

relation to children's expressive or receptive vocabulary, or both. Children with delays in the development of expressive vocabulary are also called late talkers (Everitt, Hannaford, & Conti-Ramsden, 2013).

As the literature has pointed out, early identification is essential, as is the prevention of delays in language development. To do this, it is necessary for health and education professionals to know what factors may be related to these delays. According to Soufre and Rutter (1984), from the perspective of developmental psychopathology, problems develop in the complex interaction of the individual with the environment, involving changes in patterns of adaptation and maladaptation over time. In the midst of this complex interaction, throughout life the individual may be exposed to risk factors and protective factors for the development of a problem. Risk factors are variables that, if present for a given individual, increase the likelihood that it will develop a particular problem or, if reduced or eliminated, reduce the probability of occurrence. Protective factors, on the other hand, moderate the effects of risk factors. These protective factors may involve personal resources, in relation to the context of the individual, or social resources (Sapienza & Pedromônico, 2005).

Delays in language development therefore depend on a complex interaction between risk and protective factors. Knowing which factors are involved in this delay is essential for the formulation of proposals aimed at an adequate language development. As mentioned, the literature has emphasized the importance of paying attention to this area of development, in order to avoid delays getting worse, or that their effects influence academic and socialization skills (e.g., Ferracini et al., 2006; Schirmer et al., 2004).

Considering the mentioned aspects, this study aimed to review the literature to identify: a) risk factors that, according to the national and international literature, are associated with delays in the development of children's oral language; b) and protective factors that could moderate the effects of risk factors associated with oral language delays.

## Method

In order to meet the proposed objective, the integrative literature review method was used (Mendes, Silveira, & Galvão, 2008). The databases Lilacs, PsycINFO and Web of Science were consulted with the following combinations of keywords: language delay and risk factor, language delay and protective factor, protection and language delay, language development and risk factor, language development and protective factor.

The papers resulting from the search in the databases were selected in three steps. At first, the papers were selected by titles and abstracts. Data from selected publications were crossed to exclude replicates. Next, papers were read in their entirety. This procedure was based on the following inclusion criteria: a) period of publication: papers published in the period between 2013 and 2017 (five years) were included to access the most recent publications; b) type of study: only published articles reporting literature review or empirical research were selected, and other forms of research report, such as thesis, dissertations and book chapters, were excluded; c) language of publication: we selected articles in Portuguese and English; d) themes: papers whose themes related delays in the development of language with risk factors and/or protective factors were included, excluding researches that dealt with these topics separately or in a secondary way, or studies that addressed other alterations in language, different from delays; e) population studied: we selected studies that discussed language delay in relation to children were selected, excluding other age groups.

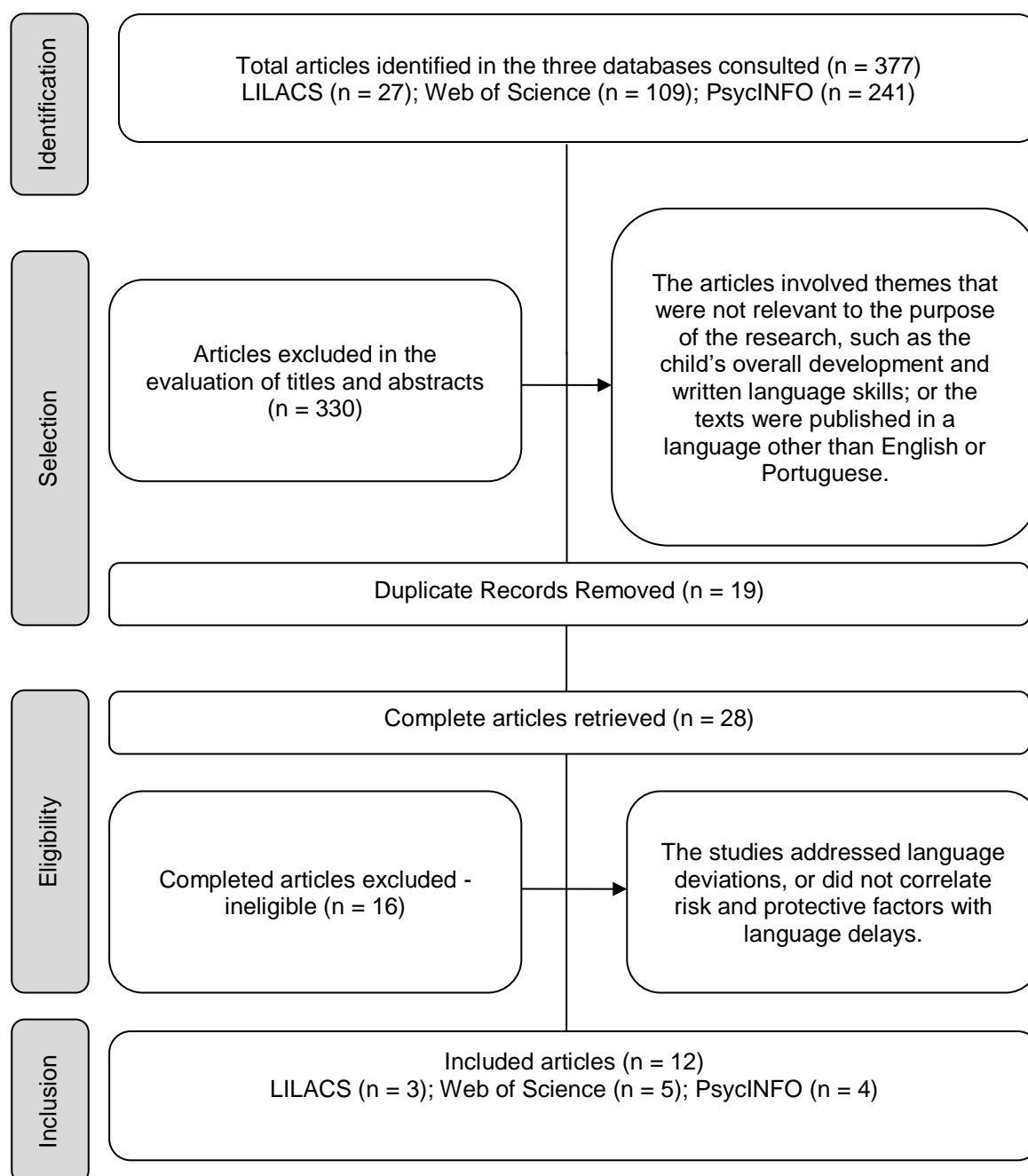
After selecting the articles, the main information was transferred to a table, containing: authors, title, year of publication, journal in which the study was published, main objectives, method and results. This systematization served as a basis for describing similarities and differences between the studies and, especially, listing the risk and protective factors mentioned in each of them. The results were then divided into three categories: i) static risk factors; ii) dynamic risk factors; iii) protective factors.

Risk factors were variables that, according to the articles reviewed, increase the probability that the exposed child will present delays in the language. Among these, those that can hardly be modified by means of interventions were classified as static risk factors. Dynamic risk factors were those that are susceptible to the effects of interventions, or that may change spontaneously over time (Dib, Bazon, & Silva, 2012). The classification in the third category was for the variables that the articles identified as protective factors and that exposure to them, in some way, exerts a moderating effect on the risk factors.

## Results

The search for the keywords in the databases resulted initially in 377 papers, 27 in the Lilacs database, 109 in the Web of Science and 241 in PsycINFO. The selection of articles, considering the inclusion criteria, led to a final number of 12 articles, three of them from the Lilacs database, five from the Web of Science and four from PsycINFO. A detailed description of the results at each stage of the review can be seen in Figure 1.

The largest number of publications selected was from 2014 ( $n = 5$ ), while the other included publications were more evenly distributed throughout the remaining years of the analyzed period: 2013 ( $n = 2$ ), 2015 ( $n = 2$ ), 2016 ( $n = 2$ ) and 2017 ( $n = 1$ ). The studies varied as to the countries where they were developed, involving eight different sites: Finland ( $n = 1$ ), Ireland ( $n = 1$ ); Brazil ( $n = 3$ ), Canada ( $n = 2$ ), Australia ( $n = 2$ ), Norway ( $n = 1$ ), Scotland ( $n = 1$ ) and United States  $n = 1$ . Although three studies were developed in Brazil, two of them were literature reviews. National studies were published in Portuguese ( $n = 3$ ) and the rest were published in English ( $n = 9$ ), in journals related to different areas of knowledge: Psychology ( $n = 2$ ); Medicine ( $n = 3$ ); Speech therapy ( $n = 4$ ); interdisciplinary ( $n = 1$ ); and interdisciplinary, but with an emphasis on child development ( $n = 2$ ).

**Figure 1** - Flowchart of the selection process and inclusion of the reviewed articles.

Source: The authors.

Among the 12 articles analyzed, two are systematic literature reviews (the Brazilian articles, as mentioned); the others describe studies that used epidemiological models, in two modalities: cohort study, longitudinal (n = 8) and cross-sectional study (n = 2). To evaluate children's language, the 10 empirical studies used instruments that varied in form and method of application. These can be grouped into three categories, in relation to the vocabulary measures used: standardized instruments applied with the parents of the

children ( $n = 4$ ); non-standardized instrument applied with the parents of the children ( $n = 1$ ); standardized instruments applied directly to children ( $n = 5$ ).

Despite the similarities and differences between the selected studies, they all covered relationships between language development delays and risk and/or protective factors. The 12 articles discussed risk factors involving biological (e.g., Collisson et al., 2016; Korpilahti et al., 2016) and environmental (e.g., McNally & Quigley, 2014) aspects, some of which may be modified by means of intervention and others do not.

In disagreement with the number of publications that related risk factors with delays in language development, only six papers identified protective factors. These factors were mainly related to environmental characteristics. The variables mentioned in the studies, as well as the number of papers that discuss each category of factors, are described in Table 1. Given the specificities of each of these factors, the research results will be discussed in sections corresponding to the categorization.

**Table 1** - Key Risk and Protective Factors Associated with Language Delays and Number of Articles Analyzed by Each Category

Categories of analysis	Factors	Number of articles
I) Static risk factors	Male gender, low birth weight, preterm birth, low parental schooling, low socioeconomic status, having four or more children living in the same household, family history of language delay, father working outside the house all day, difficult temperament, intracranial hemorrhage, brain injury and persistent otitis media.	11
II) Dynamic risk factors	Poor quality of communication with the mother, family dynamics, the family does not read to the child at home and problems with the mother's mental health.	4
III) Protective factors	Higher parental schooling, caregiver frequently talk to child, be single child, higher family income, maternal responsiveness, sociable temperament, good maternal mental health, cognitive nonverbal abilities in early childhood, read to the child daily, caregiver offer daily opportunities for informal play, having as primary care centers for children.	6

Source: The authors.

## I) Static risk factors

The articles selected in the review present some static risk factors, some of them biological and others classified by the authors as being environmental. Korpilahti et al. (2016) explored both biological and social risk factors related to delayed language

acquisition. The study analyzed a sample of 226 children (120 boys and 106 girls), who were evaluated in relation to expressive and receptive vocabulary, from 13 to 36 months. Of the children evaluated, 8.8% had delays in language development. The risk factors identified were: male gender, low educational level of parents and father working outside the home all day. According to the authors, environmental factors had a higher predictive value for language development than biological factors. The cohort study by McNally and Quigley (2014) with 11,134 children also identified that environmental factors seem to exert a greater influence on language development than genetic characteristics.

The biological characteristic most emphasized in the studies as a risk factor was belonging to the male gender (e.g., Collisson et al., 2016; Korpilahti et al., 2016; McNally & Quigley, 2014). However, one paper (Wilson, McQuaige, Thompson, & McConnachie, 2013) questioned the utility of the variable 'male gender' as a risk factor in itself. According to the authors, this factor needs to be weighed, since the researches that identified this risk factor had younger children as participants, up to three years of age. Short, Eadie, Descallar and Kemp (2017), on the other hand, described factors related to the receptive vocabulary of Australian Aboriginal children at age three and the association of these factors with vocabulary development up to the age of eight. The authors conducted a cohort study of 165 children, which found that girls performed better on language than boys at the earliest ages, but this did not remain the same over time.

Other biological risk factors were cited by a few studies, such as intracranial hemorrhage (Caldas, Takano, Mello, Souza, & Zavala, 2014), brain injury in children with neuropsychological deficits, and persistent otitis media (Gurgel, Vidor, Joly, & Reppold, 2014). These factors possibly contribute to language delays as they impact the maturation of the nervous system and the development of auditory abilities in the first years of life, which are essential for language development (Gurgel et al., 2014).

In addition to biological factors, other factors related to the individual's life history were frequently mentioned in the researches: low birth weight (McNally & Quigley, 2014; Taylor, Christensen, Lawrence, Mitrou, & Zubrick, 2013) and preterm birth (Madigan, Wade, Plamondon, Browne, & Jenkins, 2015; Zerbeto, Cortelo, & Carvalho Filho, 2014). Zerbeto et al. (2014) performed a systematic review from 13 studies published between 2003 and 2012 and found that there is more delay in language development of preterm infants compared to full-term children. This delay was verified, above all, in expressive language. The authors suggest that these delays may be related to neonatal complications and central nervous system immaturity. Regarding the variable 'birth weight', the authors identified that, according to three studies, the lower the weight, the worse the indicators regarding expressive language, number of words and children's sentence length.

The variables 'birth weight' and 'preterm birth' were also focused by a Brazilian cross-sectional study that analyzed the language skills of 77 children, two to three years old, born preterm and with low weight, in Cuiabá. The research found that 32.5% of the results were different from expected, and it was found that the children studied, born premature and with low weight, presented a delay in language development, with a greater impairment of expressive ability (Caldas et al., 2014).

Besides the variables presented, others that are part of the child's life history were also pointed out in some studies: low parental schooling, low socioeconomic status of the family and cohabiting with four or more children in the same house. Regarding the first two factors, there was little consensus in the literature.

The study by Korpilahti et al. (2016) found that low parental schooling and low socioeconomic status have a negative impact on children's language development. Taylor



et al. (2013) investigated the development of the receptive vocabulary of 4,332 children between the ages of 4 and 8 years in Australia in 2004 (Longitudinal Study of Australian Children), analyzing 28 possible infant, maternal and family predictors of these trajectories. Among the identified risk factors, they came to the same conclusion reiterated by the study by Korpilahti et al. (2016), that low parental schooling and low socioeconomic status are risk factors for language delays. The authors also found that the only factor related to a lower vocabulary growth rate from four to eight years was the disadvantage of the socioeconomic area. At eight years of age, there was a gap between the vocabularies of children with and without socioeconomic disadvantages equivalent to eight months of receptive vocabulary growth.

Contrary to the data of Korpilahti et al. (2016) and Taylor et al. (2013), the Brazilian study developed by Caldas et al. (2014) found no significant relationships between parental schooling, family income and delays in language development. According to the authors, a possible explanation for the lack of relationship with these socioeconomic and educational characteristics is that the sample studied was very homogeneous in relation to these aspects, preventing the analysis of the influence of different levels of these variables on language.

Some studies have also pointed out that living in the same house with four or more children may be a risk factor for the problem studied (Short et al., 2017; Taylor et al., 2013). One possible explanation for this influence is that, since interactions between parents and children are essential for language development, in homes with many children this interaction is divided. It should be noted, however, that one of the studies found that children living with many others in their homes presented a rapid development at the time they entered school (e.g., Short et al., 2017). Taylor et al. (2013) also identified that this factor was associated with delayed language development only up to four years, but was not related to a lower vocabulary growth rate from four to eight years.

In addition to the variables cited, 'difficult temperament' (McNally & Quigley, 2014, Taylor et al., 2013) and 'family history of language delay' were also mentioned in some studies (Colisson et al., 2016; Zambrana, Pons, Eadie, & Ystrom, 2014). The variable 'difficult temperament' was not defined conceptually by the researches that studied it and no hypotheses were raised for the possible relationship between this variable and language delays. Regarding the influence of family history, Zambrana et al. (2014) analyzed whether an integrative model of risk factors could predict the occurrence of persistent or late onset trajectories of language delays from three to five years. This study was based on a cohort survey conducted in Norway, with a total of 10,587 children. It was found that 3% of the children had persistent language delay, 5% had transient delay and 6.5% presented late-onset of language delay. The integrated risk model proposed by the authors predicted the three trajectories of language delay in different ways. Among the findings of the study, it was verified that the probability of persistent delay was doubled for boys and for children with low comprehension of language at one and half years of age, and was tripled with the family history of language delay. The probability of late-onset of language delay was increased, mainly due to family risks for writing and reading difficulties.

## II) Dynamic risk factors

In the reviewed studies, the main risk factors that fall into this category are related to the family context of the child. Gurgel et al. (2014) developed a research aimed at

systematically reviewing randomized controlled clinical trials that studied risk factors for adequate language development in children. Nine articles that met the selection criteria were selected, in which the main risk factor mentioned was family dynamics. Other factors cited were interaction with parents and the stimulation of the child in the first years of life, and the immediate social environment. These familial aspects were identified as fundamental, so that, although they have also observed, as in other studies, that preterm birth may negatively interfere with language development, they emphasize that gestational age alone does not necessarily impair development of language, and the interaction with familiar factors should be considered.

In agreement with the data of Gurgel et al. (2014), McNally and Quigley (2014), the evaluated children were more likely to have poor communication performance at nine months old if there was, among other factors, low frequency of communication between mother and child. The authors analyzed the amount of language stimuli children received through a question to the mother, and found that the less frequent the communication, the more the child's language was impaired. In this same direction, Taylor et al. (2013) pointed out that children who do not have someone reading to them at home are more likely of receptive vocabulary delays at four years of age.

One factor suggested by the literature as a potential causer of harm in the relationships established between the mother and the child is the mental health of the mother. Cycyk, Bitetti and Hammer (2015) developed a survey, which included 83 Puerto Rican mothers and their children, with an average age of three years and seven months. The growth of the receptive vocabulary in the primary language of these children (Spanish) was affected by the depressive symptomatology of the mothers; however, in general, the effect over time was minimal. The authors argue that an effect on children's language is more likely to occur if the mother's depressive symptomatology overlaps with other risk factors. The study did not verify the influence of the factors studied on English, which may be related to other variables not evaluated by the researchers, such as the fact that the children were learning English in the Head Start program in which they used to participate, and did not use that language to communicate at home. Children's oral comprehension was also not affected by the symptoms of the mothers. Additionally, there was no significant relationship between the performance of the children and the social support received by the mothers.

The validity of risk factors cited by the literature as associated with delays in language development is questioned by Wilson et al. (2013). The authors conducted a study with a sample of 315 children to test the claim that known risk factors could be used by nurses who take care of children's health to predict language delays. The study concluded that it is impossible to identify language delays in 30-month-old children, with some accuracy, based on pre-existing risk factors.

### **III) Protective factors**

The papers included in the review mention two protective factors for language development delays that relate to child's personal resources: having non-verbal cognitive skills in early childhood (Short et al., 2017) and sociable temperament (Gurgel et al., 2014). The other protective factors concern, above all, the social support offered to the child.

Madigan et al. (2015) recognize that some brain regions may be particularly vulnerable to perinatal factors, such as birth weight. In spite of this, they assert that

researches have pointed out that responsive parental care can moderate the effects of biological factors on the development of their children. The authors conducted a study on multiparous women who gave birth to children in Toronto and Hamilton, Canada, between 2006 and 2008. Initially, 501 mothers and their children volunteered but with selection from the above criteria, the sample was reduced to 467. The research was conducted when the children were newborns (Time 1 - T1) and, in the sequence, at 18 months (Time 2 - T2) and 3 years (Time 3 - T3).

Correlation between birth weight and receptive language at 36 months was found, but an association between maternal responsiveness in T2 and language of children in T2 and T3 was also identified. The authors reported that the effect of birth weight on receptive language at three years was contingent on parental responsiveness. Thus, the study found no correlation between birth weight and language in T3 for children who received high levels of maternal responsiveness. Although these data refer to children with variations in normal birth weight, the authors pointed out that associations found between birth weight and maternal responsiveness suggest that children in a biological risk situation, who present low birth weight, can reach levels as high as children born with normal weight if they are exposed to high levels of parental responsiveness (Madigan et al., 2015).

In another study (McNally & Quigley, 2014), some factors related to family support were associated with a greater likelihood that children would pass the language tests at nine months. These variables referred to a family context that fostered child's attention and interaction, which included being an only child, being cared for and having a caregiver who talked frequently with the child.

Collison et al. (2016) conducted a research that was based on a prospective cohort study in a community in Calgary, Canada. Participants were 1,023 mothers and their young children. The following were identified as protective factors for language delays: reading books with children on a daily basis, offering informal play opportunities, and having child care centers as primary care. The authors considered that these protective factors are aspects of the environment that can be intervened, emphasizing that the child's exposure to language stimuli is essential for learning vocabulary.

Other protective factors mentioned are related to parents' characteristics, such as schooling level (Short et al., 2017; Zerbeto et al., 2014), good maternal mental health (Gurgel et al., 2014) and higher socioeconomic level (Zerbeto et al., 2014). All these factors were presented by the papers as being conditions that favor a quality interaction between the parents and their children. Short et al. (2017), for example, point out that a protective factor for delays in vocabulary development at the age of three was that the mother had a higher educational level. The authors' hypothesis about this factor is that it is related to the mother's own linguistic skill, assuming that the higher the educational level, the more able she would be to use different words and language structures.

## Discussion

The presentation of the factors as separate variables is only didactic, since there is no agent causing the problem, but multiple factors that relate and interact with each other. In this perspective, health and disease patterns, or rather, healthy and dysfunctional development, can be explained by a complex relationship between risk factors and protective factors (Sapienza & Pedromônico, 2005). The study on the development of a

given problem must therefore cover the different factors involved, as well as the way in which they relate.

In the literature review, the search for risk factors and protective factors associated with delays in language development resulted in a preponderance of studies on risk factors. Among these, a greater reference to static risk factors is observed, compared to dynamic factors. One possible explanation for this difference is that there is a greater facility in measuring static factors. This refers, among other aspects, to the method for obtaining the data. In the studies reviewed (e.g. Caldas et al., 2014; McNally & Quigley, 2014; Short et al., 2017), information on variables such as gender, parental schooling level, father's work and birth weight were obtained through initial interviews with parents, which often demanded only one meeting. They have a characteristic of relative constancy over time, in the sense that they are little susceptible to changes from environmental variations, which facilitates the establishment of correlations with the development of the child. Perhaps these variables should be better considered as risk 'indicators', since they alone inform little about why they negatively influence language development (the mechanisms by which they impact development).

Dynamic risk factors have the characteristic of being more flexible and, as such, are quite susceptible to environmental changes. Because of this inconstancy, it is likely that to gauge them is not enough just one meeting, as can be seen in the study that performed a temporal monitoring of maternal mental health (e.g. Cycyk et al., 2015). In the same direction, the protective factors identified in the studies as being associated to the development of language refer, above all, to the social support offered to children, also susceptible to the changes that occur in the environment where the child is inserted. For example, according to Cycyk et al. (2015) have verified, any problems with the mother mental health can destabilize the relationship established with the child.

Although the studies reviewed have identified factors associated with language delays that could be useful to prevent the occurrence of this problem, one of them questioned the validity of these factors for prevention (e.g., Wilson et al., 2013). The results found in the study by Wilson et al. (2013), however, need to be weighed. Two gaps can be identified in this paper, one of which is conceptual and another methodological. As for the conceptual aspect, the authors' argument seems to be based on an inadequate conception about 'risk factor', understanding it as something definitive and causal for the development of the subject, disregarding the interaction with other factors, such as protective factors. Thus, the authors disregard the probabilistic nature inherent in the concept of 'risk factor' (e.g., Sapienza & Pedromônico, 2005).

As for the methodological aspect, the development measure used by Wilson et al. (2013) was indirect and non-standardized, based on two questions made to parents, which can be considered a bias. Indirect vocabulary measures were also employed in half of the reviewed studies using epidemiological models (e.g., Colisson et al., 2016; McNally & Quigley, 2014; Korpilahti et al., 2016). It is necessary to consider that vocabulary evaluation methods based on the caregiver's report have limitations, since the assessment of the quality of the child's vocabulary will depend on factors such as memory and the value that the caregiver attributes to some words that the child pronounces (Schmidt, Costa, Norberto,

& Voss, 2014). In this sense, evaluation results may not be representative of children's language skills.

Anyway, the reviewed studies together offer important clues about aspects that can be considered in future research, with more sophisticated designs, in order to test the validity of the identified risk and protective factors. In this perspective, intervention research can encompass this type of data and advance in the supply of information, which is important in programs aimed at preventing problems related to delays in language development.

## Final Considerations

The learning of oral language is an essential part of human development, as reiterated by the papers mentioned throughout the present study. Interventions that aim to prevent any delays in language require research that determines what factors are associated with this problem. However, the review shows that there is not only a single factor capable of producing delays in language, but many variables that are related in complex and still little-known ways.

Identifying the factors associated with the problem does not guarantee, however, that future interventions will be able to manipulate them. As identified in the literature review, there are variables that can be altered, such as dynamic risk factors and some protective factors, while others remain static. In spite of this, there is a greater number of researches that deal with static risk factors, associated with delays in oral language.

The issues discussed point to existing gaps in the literature on risk and protective factors for language delays. It is suggested, therefore, that future researches investigate more dynamic risk factors and protective factors on the problem. In addition to identifying, it is also important to better understand how these factors relate, both to each other and to the static risk factors, to culminate in language delays. In studying these questions, researchers need to consider the method of measuring children's vocabulary, recognizing possible limitations linked to indirect measures of language.

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