Expressive vocabulary in children born full-term and small for gestational age: a comparative study

Vocabulário expressivo em crianças nascidas a termo e pequenas para a idade gestacional: um estudo comparativo

Vocabulario expresivo en niños nacidos a término y pequeños para edad gestacional: un estudio comparativo

Noemi Vieira de Freitas Rios[1]
Luciene da Cruz Fernandes[2]
Caio Leônidas Oliviera de Andrade[1]
Emily de Jesus Ferreira[1]
Ana Cecília Santiago[1]
Crésio de Aragão Dantas Alves[2]

Abstract

Introduction: Birth weight and gestational age influence children's quality of life and must be taken into account when evaluating aspects of development. **Purpose**: verify the performance in evaluating the expressive vocabulary in children, born full-term and small for gestational age (SGA) and compare it with children born at term and with appropriate weight for gestational age(AGA). **Method**: cross-sectional study, typified as analytical, with convenience sampling, unpaired and nested to a cohort. A total of 36

[1] Universidade Estadual da Bahia – UNEB, Salvador, Bahia, Brazil.
[2] Universidade Federal da Bahia - UFBA, Salvador, Bahia, Brazil.

ARTICLES

Noemi V. de Freitas Rios, Luciene da Cruz Fernandes, Caio L. Oliviera de Andrade, Emily de Jesus Ferreira, Ana Cecília Santiago, Crésio de A. Dantas Alves

children were evaluated, between four and seven years, 24 (66.7%) of whom were classified as SGA; and 12 (33%) as AGA. Expressive vocabulary was evaluated using the ABFW children's language test. The results were evaluated by means of descriptive and analytical analysis, using unpaired t test, Pearson's chi-square test and Fisher's exact test, with a significance level set at $p<0.05$. **Results:** the average of designation of the usual word was lower in all semantic fields, except in the conceptual field of clothing. Differences were also observed for transport facilities ($p=0.002$) and shapes and colors ($p=0.011$). The average of non-designation was above or equal in all conceptual fields, with a significant difference for food ($p=0.019$), furniture and utensils ($p=0.020$) and places ($p=0.049$). The averages of the substitution process were higher in most semantic fields, with a difference only for transport facilities ($p=0.002$). **Conclusion:** SGA children born full-term performed less than expected in expressive vocabulary tests when compared to AGA children.

Keywords: Vocabulary; Child Language; Language Tests; Infant, Small for Gestational Age; Low Birth Weight.

Resumo

Introdução: O peso ao nascer e a idade gestacional influenciam a qualidade de vida das crianças e devem ser levados em consideração na avaliação de aspectos do desenvolvimento. **Objetivo**: verificar o desempenho em avaliação do vocabulário expressivo de crianças nascidas a termo e pequenas para a idade gestacional e compará-lo com crianças nascidas a termo e com peso adequado para a idade gestacional. **Método**: estudo transversal, do tipo analítico, com amostras por conveniência, não-pareada, aninhada a uma coorte. Avaliaram-se 36 crianças, entre quatro e sete anos, sendo 24 (66,7%) classificadas como pequenas para a idade gestacional e 12 (33%) adequadas para a idade gestacional. O vocabulário expressivo foi avaliado pelo teste de linguagem infantil ABFW. Os resultados foram avaliados por análise descritiva e analítica, utilizando o teste t não pareado, o teste qui-quadrado de Pearson e o teste exato de Fisher, com nível de significância $p<0,05$. **Resultados**: a média de designação do vocábulo usual foi inferior em todos os campos semânticos, exceto no campo conceitual vestuário. Identificaram-se, ainda, diferenças para meio de transporte ($p=0,002$) e formas/cores ($p=0,011$). A média de não designação foi acima ou igual em todos os campos conceituais, observando-se diferença significativa para alimentos ($p= 0,019$), móveis/ utensílios ($p=0,020$) e locais ($p= 0,049$). As médias do processo de substituição foram mais elevadas, na maioria dos campos semânticos, com diferença apenas para meio de transporte ($p= 0,002$). **Conclusão**: crianças pequenas para a idade gestacional nascidas a termo apresentaram desempenho abaixo do esperado nas provas de vocabulário expressivo quando comparadas com as crianças adequadas para a idade gestacional a termo.

Palavras-chave: Vocabulário; Linguagem Infantil; Teste de Linguagem; Recém-Nascido Pequeno para a idade Gestacional; Baixo Peso.

Resumen

Introducción: El peso al nacer y la edad gestacional influyen en la calidad de vida de los niños y deben tenerse en cuenta a la hora de evaluar aspectos del desarrollo. **Objetivo**: verificar el desempeño em la evaluación del vocabulario expresivo de niños nacidos a término y pequeños para la edad gestacional y compararlo con niños nacidos a término y con peso adecuado para la edad gestacional. **Método**: estudio transversal, analítico, por conveniencia, muestras no apareadas, anidadas dentro de una cohorte. Se evaluaron 36 niños, entre cuatro y siete años, 24 (66,7%) clasificados como pequeños para la edad gestacional y 12 (33%) apropiados para la edad gestacional. El vocabulario expresivo se evaluó mediante la prueba de lenguaje infantil ABFW. Los resultados fueron evaluados mediante análisis descriptivo y analítico. **Resultados:** la designación media de la palabra habitual fue inferior en todos los campos semánticos, excepto en el campo conceptual ropa. También se identificaron diferencias para el medio de transporte ($p=0,002$) y formas/colores ($p=0,011$). El promedio de no designaciones fue superior o igual en todos los campos conceptuales, observándose una diferencia significativa para alimentos ($p= 0,019$), muebles/utensilios ($p=0,020$) y lugares ($p= 0,049$). Las medias del proceso de sustitución fueron

mayores en la mayoría de los campos semánticos, con diferencia sólo para los medios de transporte (p= 0,002). **Conclusión**: los niños nacidos a término que eran pequeños para la edad gestacional obtuvieron resultados inferiores a las expectativas en las pruebas de vocabulario expresivo en comparación con los niños aptos para la edad gestacional a término.

Palabras clave: Vocabulario; Lenguaje infantil; Prueba de idioma; Recién Nacido Pequeño para la Edad Gestacional; Bajo peso.

Introduction

Factors related to pre, peri and postnatal life contribute to the adequate development of the individual. Birth weight and gestational age (GA) are considered a prerequisite for favoring this development, which added to other biological and environmental factors directly influence the quality of life of children[1,2].

Prematurity and low weight (LW) are considered risk factors for learning disorders and global development, including language and speech disorders[2,3]. However, most studies focus their analyses on prematurity and factors related to LW in children classified as small for gestational age (SGA), especially those born at term, are little explored[4–6].

Small for gestational age children may present unfavorable conditions that affect development, in addition to constituting an important risk group due to higher morbidity and mortality[5]. These children have lower than expected birth weight for their GA, that is, weight below the 10th percentile, based on the intrauterine growth curve[7,8], which may be associated with intrauterine growth restriction (IUGR)[5]. Those born from the 37th week of gestation are considered at term and, when the weight is less than 2500g, in addition to SGA, they are classified as LW[9].

Given the possibility of SGA children presenting alterations in the development of oral language, it is important to highlight that language comprises the linguistic subsystems pragmatic, phonological, morphosyntactic and semantic-lexical, which intertwine giving shape, content and effective use to the communication process. Its development maintains an intimate relationship with multiple factors and determines the communicative, academic, social and emotional success of the child. Language content, which is established by expressive and receptive vocabulary, for example, intrinsically depends on cognitive abilities, such as attention and memory, which will provide the lexical magnification necessary to achieve oral language proficiency[2,10].

Taking into account the complex process of oral language development, influenced and dependent on several factors, such as the environmental, individual and family characteristics, interactional and sociocultural aspects, in addition to the cognitive, it is understood that SGA children, who have undergone some type of intrauterine growth retardation IUGR[5], may present alterations that affect the central processing mechanisms involved in the linguistic formulation and directly influence the receptive and expressive vocabulary, generating possible language disorders[4,11].

The literature shows evidence of lower performance in the tests of expressive vocabulary in children born SGA when compared to those born at term[3,4,12]. These studies analyzed language in the early age groups, using child development scales from the Denver II and Bayley Development Screening Test (BSID-III) and vocabulary-specific tests, such as the MacArthur-Bates communicative development inventory and the Pea-body[4,13,14]. However, there is a lack of research covering the development and performance of children between four and seven years of age.

Thus, it is important to investigate the semantic aspects in the age group of four to seven years, especially the expressive vocabulary, in order to identify early changes that directly interfere with the quality of life and communicative, social and school performance of SGA children, ensuring the best prognosis and improvement of language skills essential for development.

Given these considerations, the present study aimed to verify the performance in evaluating the expressive vocabulary of full-term SGA children and compare it with children born at term and with appropriate weight for gestational age (AGA).

Noemi V. de Freitas Rios, Luciene da Cruz Fernandes, Caio L. Oliviera de Andrade, Emily de Jesus Ferreira, Ana Cecília Santiago, Crésio de A. Dantas Alves

Method

This is a cross-sectional, analytical study, with samples for convenience, unpaired, nested in a cohort, approved by the Ethics Committee of the participating institution, with opinion 2.174.110, and funded by the Bahia Research Support Foundation (FAPESB). All guardians of the children signed the Informed Consent Form (ICF).

Participants were classified using the Intergrowth curve[8], *by* sex and GA at birth, in SGA, when birth weight was less than or equal to the 10th percentile for the referred GA, and in AGA, when born between the 11th and 90th percentiles. Gestational age was defined according to the weeks of GA.

Participants and procedures

The sample consisted of children born at term, cared for and followed up in the follow-up outpatient clinics of SGA newborns (NB), high-risk NB and breastfeeding in public hospitals in the city of Salvador-BA, Brazil, born in the same clinical maternities, during the same period.

These children were recruited from a cohort that monitored children born SGA by a multidisciplinary team with the objective of evaluating the questions of weight and height growth, body composition, hormonal, laboratory and neurodevelopmental evaluation, as well as investigating the relationships of these possible changes in school age with the initial picture.

Exclusion criteria were children with genetic syndrome, malformations, metabolic diseases, hearing alterations, congenital infections (toxoplasmosis, rubella, cytomegalovirus, syphilis, HIV, hepatitis B and C, HTLV), concentration deficit and difficulties to understand verbal commands. Children whose parents and/or guardians did not want to participate or when there was no possibility of telephone contact for scheduling and children who did not attend the evaluation were also excluded.

Contact was made with family members/guardians of 55 full-term SGA and AGA children, of both sexes, who were part of the sample composition of the 2015 study[15]. The children were again summoned, between four and seven years of age, for pediatric, ophthalmological, nutritional, psychological and speech-language evaluation, the latter consisting of interview, auditory evaluation, evaluation of aspects related to speech and language.

Before the application of the tests, the parents or guardians of the children underwent an individual interview in which data on gestational history, pre, peri and/or postnatal complications, neuropsychomotor and language development, socio-emotional aspects, education and routine of the child were collected.

The children were evaluated individually, in an appropriate environment, with no competitive stimuli that could compromise the quality of the evaluation, which in turn was recorded and filmed, using a camcorder and digital recorder (Sony®, model ICD PX333), being performed by a speech therapist with experience in children's language disorders.

The children were submitted to speech-language screening, which included the evaluation of speech and language. Initially, the functional profile of communication was evaluated through the pragmatic evaluation, in which the subjects' communication skills and effective participation in dialogic activities were observed with the evaluator; then, the phonological evaluation was performed, in which the presence or absence of phonological disorders was verified; then, the children were submitted to the vocabulary test of the ABFW child language test, protocol indicated for individuals aged two to 12 years, entirely directed to the Portuguese spoken in Brazil[16]. The present study specifically verified expressive vocabulary.

The ABFW evaluates expressive vocabulary in nine conceptual fields: clothing; animals; food; means of transport; furniture and utensils; professions; places; shapes and colors; toys and musical instruments. Each field consists of a diverse number of words, totaling 118 words. The rules proposed in the instruction manual for the application of the test and analysis of the answers were strictly followed. The answers were categorized into: (i) designation by usual words (DUW), when the child correctly recognizes and names the figure; (ii) non-designation (ND), when he does not recognize the figure; and (iii) substitution processes (SP), also called semantic deviations, when he names the target figure replacing it with another word or attribute, which can be classified according to 17 typologies[16].

The criteria and parameters suggested by the test were used in the organization of the data, which

were analyzed by two speech therapist judges. In all cases there was a minimum agreement of 90% among speech therapists. The performance of each child was calculated according to the possibilities in each semantic field and compared to the reference values adopted in the Brazilian population, according to the age group proposed by the test. It was classified as adequate when performance was equal to or higher than the reference value and below the expected when it was lower than the reference value. Specifically for the vocabulary test, the reference standard is up to the age of 6. For children aged 7 years, adequate performance was considered when the result was greater than or equal to that expected for 6 years. Subsequently, the means of the DUW, ND and SP in each semantic field were obtained and compared between the groups.

The socioeconomic classification was performed using the Brazilian economic classification criteria (BECC) of the Brazilian Association of Companies and Research (BACR)[17]. The classes are defined by the BECC, based on the score of the instrument, in A, B1, B2, C1, C2 and D-E. The authors simplified the classifications by grouping them into four classes due to the sample size. Thus, classes A, B, C and D-E were considered. This classification was used in order to observe the predominant class between the groups.

Data Analysis

For the statistical analysis, the Statistical Package for Social Sciences (SPSS, version 21.0) was used. The results were submitted to descriptive analysis through measures of central tendency, measures of variance, minimum and maximum values, and dispersion for continuous and discrete variables, as well as the distribution of absolute and relative frequencies and percentage values for nominal and ordinal variables.

To compare the parametric data, the unpaired t-test was used. For the bivariate analysis, Pearson's chi-square test was used for samples composed of more than twenty products whose expected values present 20% of the cells with less than 5%. Qualitative data, when they did not meet this requirement, were analyzed using Fisher's exact test. A significance level of 5% (p ≤ 0.05) was adopted in order to reject the null hypothesis with confidence intervals constructed with 95% statistical confidence.

Characterization of the case series

Thirty-six children were evaluated, of the 55 who were part of the initial cohort sample, 24 (66.7%) classified as SGA and 12(33%) as AGA. The age of the children ranged from four to seven years, with a predominance of the age of five years, 10 (42%) in the SGA group ($\bar{x}$=5.6, SD±0.9), and seven years, 6(50%) in the AGA group ($\bar{x}$=6.4, SD±0.7). Regarding sex, 13 (54%) of SGA children and six (50%) of the AGA group were male. There was no statistical difference in the distribution of sex (p= 0.816).

The GA ranged from 260 to 298 days for the SGA group ($\bar{x}$=274, SD±8.4) and, in the AGA group, from 265 to 288 days ($\bar{x}$=278, SD±8.4). The result showed equivalence between the two groups because they were term births, from the 37th gestational week. Regarding birth weight, SGA children ranged from 1685 to 2740 g ($\bar{x}$=2357, SD±248.2). In the AGA group, range 2684 to 3825g ($\bar{x}$=3265, SD±175.4).

It was found that most of the two groups belong to class C (SGA-75% and AGA-91.7%), and there was no statistical difference between the groups (p=0.291). Regarding the presence of complaints during the development of speech and language reported by the mothers in the interview, five (21%) children in the SGA group presented some type of complaint, compared to three (25%) in the AGA group, and this difference was not statistically significant between the groups (p= 0.078). Regarding the phonological alteration, eight (33.3%) of the SGA group and four (33.3%) of the AGA group presented this alteration, a result that was not statistically significant between the groups.

Through the spontaneous speech sample, it was verified that the evaluated children presented adequate communicative functional profile, actively participating in the proposed activities, discarding changes in pragmatic ability.

Results

In relation to the occurrence of DUW, it was found that the SGA group presented, on mean, lower scores (SGA: $\bar{x}$= 76.0, SD±12.9 and AGA: $\bar{x}$ =79.4, SD±13.7) in all semantic fields, except in the conceptual field clothing, this difference being significant in the categories means of transport (p= 0.002) and shapes/colors (p= 0.011). This finding revealed that SGA children usually named fewer words than AGA children in most conceptual fields.

Noemi V. de Freitas Rios, Luciene da Cruz Fernandes, Caio L. Oliviera de Andrade, Emily de Jesus Ferreira, Ana Cecília Santiago, Crésio de A. Dantas Alves

Table 1. Comparison of the distribution of the mean, minimum and maximum values of vocabulary performance in the different groups of the sample in designation by usual word

Semantic field	SGA				AGA				p-value
	Minimum	Mean	Maximum	SD	Minimum	Mean	Maximum	SD	
CLOTH	30.0	71.3	90.0	14.5	40.0	68.3	90.0	15.3	0.733
ANIM	46.7	88.0	100.0	13.5	86.0	95.5	100.0	5.3	0,086
FOOD	46.7	80.8	100.0	14.0	73.0	83.3	93,3	7.8	0.138
MT	73.0	87.9	90.9	5.1	82.0	90.2	91.0	2.6	0.002*
FU	45.8	78.2	92.0	10.3	70.8	83.0	100.0	7.5	0.304
PROF	20.0	56.3	90.0	18.4	40.0	60.0	90.0	16.5	0,778
LOC	0,0	54.2	100.0	26.3	34.0	59.2	92.0	19.7	0.246
SHAC	40.0	87.1	100.0	18.8	80.0	92.5	100.0	7.5	0.011*
TMI	36.4	80.3	100.0	19.6	63.6	82.7	100.0	13.1	0.232

Source: The author.
Legend: SGA: small for gestational age; AGA: Adequate for gestational age; SD: standard deviation; CLOTH: clothing; ANIM: animals; MT: means of transport; FU: furniture and utensils; PROF: professions; LOC: locations; SHAC: shapes and colors; TMI: toys and musical instruments.
Test t/ * p<0.005

With regard to ND, it was observed that the performance of the SGA group was lower in all semantic fields, with mean above or equal to (SGA: $\bar{x}$= 2.9, SD±1.8 and AGA: $\bar{x}$=1.3, SD±1.7), this difference being significant in the semantic fields food (p= 0.019), furniture/utensils (p= 0.020) and locations (p= 0.049).

Table 2. Comparison of the distribution of the mean, minimum and maximum values of vocabulary performance in the different groups of the sample in non-designation

Semantic field	SGA				AGA				p-value
	Minimum	Mean	Maximum	SD	Minimum	Mean	Maximum	SD	
CLOTH	0,0	0.4	10.0	2.0	0,0	0.0	0.0	0.0	0.151
ANIM	0,0	2.2	33.3	7.8	0,0	0.6	7.0	2.0	0.131
FOOD	0,0	3,3	40.0	8.6	0,0	0.0	0.0	0.0	0.019*
MT	0,0	0.0	0.0	0.0	0,0	0.0	0.0	0.0	-
FU	0,0	2.9	20.8	4.8	0,0	0.3	4.0	1.2	0.020*
PROF	0,0	4.2	40.0	8.8	0,0	1.7	10.0	3.9	0.116
LOC	0,0	4.5	33.3	8.5	0,0	2.0	8.3	3.7	0.049 *
SHAC	0,0	2.9	40.0	8.6	0,0	1.7	10.0	3.9	0.329
TMI	0,0	5.7	36.4	9.9	0,0	5.3	27.3	9.0	0,615

Source: The author.
Legend: SGA: small for gestational age; AGA: Adequate for gestational age; SD: standard deviation; CLOTH: clothing; ANIM: animals; MT: means of transport; FU: furniture and utensils; PROF: professions; LOC: locations; SHAC: shapes and colors; TMI: toys and musical instruments.
Test t/ * p<0.005

Regarding the amount of SP when naming the target figure, the performance of the SGA group presented higher means in most semantic fields (SGA: x̄ = 21.1, SD±12.4 and AGA: x̄=19.3, SD±13.6). A difference was observed only in the conceptual field means of transport (p= 0.002).

Table 3. Comparison of the distribution of the mean, minimum and maximum values of vocabulary performance in the different groups of the sample in the substitution process

Semantic field	SGA				AGA				p-value
	Minimum	Mean	Maximum	SD	Minimum	Mean	Maximum	SD	
CLOTH	10.0	28.3	70.0	14.3	10.0	31.7	60.0	15.3	0,635
ANIM	0,0	9.7	40.0	9.2	0,0	3.9	13.0	4.5	0.110
FOOD	0,0	15.8	46.7	10.2	6.7	16.7	27.0	7.8	0.684
MT	9.1	12.1	27.0	5.1	9.0	9.8	18.0	2.6	0.002*
FU	8.0	18.9	33.3	7.3	0,0	16.6	29.2	7.6	0.604
PROF	10.0	39.6	80.0	16.3	10.0	38.3	60.0	16.4	0.678
LOC	0,0	41.3	91.7	23.7	8.0	38.8	58.3	17.5	0.268
SHAC	0,0	10.0	60.0	15.6	0,0	5.8	20.0	6.7	0.133
TMI	0,0	14.0	63.6	15.1	0,0	12.0	27.3	8.0	0,053

Source: The author.
Legend: SGA: small for gestational age; AGA: Adequate for gestational age; SD: standard deviation; CLOTH: clothing; ANIM: animals; MT: means of transport; FU: furniture and utensils; PROF: professions; LOC: locations; SHAC: shapes and colors; TMI: toys and musical instruments.
Test t/ * p<0.005

Regarding the comparison between the groups of the total number of SP performed distributed according to the typologies, it was observed that the most used by SGA children were, respectively, replacement by close co-hyponym, replacement by hyperonym, replacement by function designations, replacement by distant co-hyponym and replacement by cultural paraphrases.

In the comparison between the groups, no association was observed between the expected and obtained vocabulary performance regarding gender and social class. With regard to SGA children who presented phonological alterations, there was a statistically significant result below the expected in the ND of the conceptual field furniture/utensils (p= 0.037) and in the SP of the conceptual field toys (p=0.037).

SGA children who presented language complaints obtained statistically significant results below the expected for DUW in the semantic fields clothing (p= 0.013), animals (p=0.046), furniture/utensils (p=0.046) and professions (p= 0.037). Regarding ND, the results were statistically significant below expectations, in the semantic fields, furniture/utensils (p=0.004), professions (p=0.046) and toys (p= 0.042). In the SP, a statistically significant result was observed only for the conceptual field clothing (p=0.005).

Discussion

SGA children born at term presented lower performance than expected in the expressive vocabulary tests, in most of the conceptual fields surveyed, with statistically significant differences in the means of occurrence of DUW, in the semantic fields means of transport and shapes/colors, ND of the fields food, furniture/utensils and places and SP of the conceptual field means of transport.

These data suggest that differences in expressive vocabulary performance between the SGA and AGA groups may be justified by pathophysiological issues in the population studied, that even with term birth there is a possibility of having suffered some type of restriction during the intrauterine period and affected cognitive skills essential for language development. Regardless of the theoretical approach or conception related to the linguistic development process, cognition and language can be considered interdependent. A systematic review describes that SGA children, who had IUGR, presented alterations in cognitive development when compared to AGA children[5].

Children with extremely low birth weight are more likely to show damage to specific regions of the brain in the perinatal period[18]. In infants who had IUGR associated or not with prematurity,

Noemi V. de Freitas Rios, Luciene da Cruz Fernandes, Caio L. Oliviera de Andrade, Emily de Jesus Ferreira, Ana Cecília Santiago, Crésio de A. Dantas Alves

structural and functional brain changes are commonly observed, which potentially underscores the emergence of altered neurological and cognitive processes that can interfere with language development and performance[19,20]. Authors reported that damage to the periventricular region, for example, is associated with later deficiencies in working memory, difficulty understanding sentences, reduced responsiveness of vocabulary, and naming difficulties[18].

In addition to cognitive aspects, it is understood that other factors directly interfere with lexical performance, for example, the stimuli received from the sociocultural environment[21,22]. Adequate semantic skills can be influenced by the environment and stimulation that the child receives throughout his childhood. The interaction between family members and access to diversified vocabulary, through contact with reading, for example, are one of the paths that enable the expansion of the lexicon[23].

Children who are deprived for some reason, be it social, economic, or educational, tend to perform less than expected in the tests that evaluate the semantic aspect. In this study, the groups were not paired in relation to social class, but both presented similar exposure to socioeconomic and cultural aspects, considered important risk factors, which influence the development of aspects related to language[24–26]. In addition, there was no association between the performance of the expected and obtained vocabulary and this variable.

Regarding the local conceptual fields and professions, lower means were identified in both groups, corroborating other studies[4,21,25,27]. The data seem to indicate that these would be conceptual fields little explored in the linguistic experiences to which children are exposed.

In this study, the ND means in the SGA group were higher, especially in the local conceptual fields, professions, food, furniture and utensils. This datum reveals that the children did not recognize certain target figures. It is possible that this result occurred due to factors related to impairments in cognitive abilities, resulting from an alleged IUGR[1,5] or sociocultural and environmental factors, which imply the absence of control over the items of such semantic fields[21,25,26,28].

There was a high number of SP with a predominance of substitution by hyponyms, co-hyponyms and hyperonyms, similar to other studies[25,28,29]. It is also worth noting that regional variations were observed in the denomination of the words, when the child replaced the target word with synonyms or cultural paraphrases, as in the following examples: "car" by "police car"; "coat" by "hood"; "private" by "vase"; "telephone" by "cell phone"; "bus" by "buzu"; "stadium" by "Fonte Nova"; among others.

These findings seem to highlight the sociolinguistic reality of this population, as well as reflect the importance of considering the regional singularities in the tests that evaluate language, as they can influence lexical performance, especially considering Brazil, a country with great geographical and cultural extension, as referenced in other studies[25,28].

Regarding the influence of sex on vocabulary performance, it is noteworthy that the groups were not paired, but similar distributions were observed. There was no association between the performance of the expected and obtained vocabulary and this variable. This datum corroborates another study[28] and one conducted in speakers of European Portuguese, in which boys and girls had similar overall performance[30]. Only specific differences were described, such as girls who demonstrated greater domain in the semantic field clothing at the ages of five and six years and, at the age of five years, showed greater domain in the semantic field furniture and utensils. On the other hand, six-year-old boys showed greater domain in the semantic field means of transportation[30].

Regarding the performance in the vocabulary tests of SGA children, who presented phonological alterations, a more expressive association was expected due to the evidence of a close relationship between phonology and lexicon, revealed in a study, which showed lower performance of children with phonological disorders in the specific vocabulary test[27]. In this research, it was found only a statistically significant result below the expected, in the ND of the conceptual field furniture/utensils and in the SP of the conceptual field toys.

When we analyzed the association between the complaint of possible alterations in the children's speech and language and the expected and obtained vocabulary performance between the groups, statistically significant results were found for some conceptual fields, in DUW, ND and SP. It is important to emphasize that only the isolated evaluation of an aspect of language is not enough to define the presence of possible disorders. It is

emphasized the need to perceive the linguistic functioning as a whole to arrive at some kind of speech-language diagnosis. However, this data seems to show that families are aware of the presence of possible unsatisfactory results, being able to play active roles in the process of stimulation and expansion of their children's lexicon, through guidance from professionals in the area, especially the speech therapist.

It is considered that this study contributes to clinical practice, as it emphasizes the importance of investigation in term SGA children as a risk factor for the development of oral language. The importance of assessing oral language in these children is highlighted, aiming at the prevention, identification, early intervention of disorders, in order to help them to structure themselves linguistically, before reaching school age and presenting complications with the acquisition of reading and writing. Greater attention to communication health in early childhood is also essential, with the implementation of public policies that include this population, avoiding future losses in areas that affect cognitive, linguistic, psychological and social development.

As a limitation, the authors consider that, because it is a cross-sectional study, conducted with punctual evaluation of each child, other factors on language development could not be widely explored, in addition to the sample size being compromised due to the low adherence of the guardians and the high rate of absences in the scheduled evaluations. Another factor is the difficulty faced in Brazil to reach the diagnosis, whether due to absence or delay in accessing specific exams, in addition to the experience of professionals qualified for this purpose.

Conclusion

SGA children born at term presented a more restricted performance in the vocabulary test when compared to AGA children. In the SGA group, the mean DUW was lower, except in the conceptual field of clothing, and there was a statistically significant difference in the categories means of transport and shapes/colors. The mean ND was above or equal in all conceptual fields. Regarding the amount of SP, the means were higher in most semantic fields, and a difference was identified only in the conceptual field means of transport.

References

1. Neumann D, Herbert SE, Peterson ER, Underwood L, Morton SMB, Waldie KE. A longitudinal study of antenatal and perinatal risk factors in early childhood cognition: Evidence from Growing Up in New Zealand. Early Hum Dev [Internet]. 2019 May; 132(April): 45–51. Available from: https://doi.org/10.1016/j.earlhumdev.2019.04.001

2. Pérez-Pereira M, Martínez-López Z, Maneiro L. Longitudinal Relationships Between Reading Abilities, Phonological Awareness, Language Abilities and Executive Functions: Comparison of Low Risk Preterm and Full-Term Children. Front Psychol [Internet]. 2020 Mar 17;11(March):1–11. Available from: https://www.frontiersin.org/article/10.3389/fpsyg.2020.00468/full

3. Souza ACF de S e, Silva LLC, Sena EP de. Análise comparativa do vocabulário expressivo de crianças nascidas prétermo e a termo. Audiol - Commun Res [Internet]. 2020; 25: 1–6. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2317-64312020000100316&tlng=pt

4. Lamônica DAC, Becaro CK, Borba AC, Maximino L de P, Costa ARA da, Ribeiro C da C. Communicative performance and vocabulary domain in preschool preterm infants. J Appl Oral Sci [Internet]. 2018 Jul 16; 26: e20170186. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1678-77572018000100482&lng=en&tlng=em

5. Sacchi C, Marino C, Nosarti C, Vieno A, Visentin S, Simonelli A. Association of Intrauterine Growth Restriction and Small for Gestational Age Status With Childhood Cognitive Outcomes. JAMA Pediatr [Internet]. 2020 Aug 1; 174(8): 772. Available from: https://jamanetwork.com/journals/jamapediatrics/fullarticle/2766460

6. Verreschi MQ, Cáceres-Assenço AM, Krebs VLJ, Carvalho WB de, Befi-Lopes DM. Pré-escolares nascidos prematuros apresentam desempenho adequado em vocabulário expressivo e memória de curto prazo verbal? CoDAS [Internet]. 2020; 32(2): e20180107. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2317-17822020000200304&tlng=pt

7. Arcangeli T, Thilaganathan B, Hooper R, Khan KS, Bhide A. Neurodevelopmental delay in small babies at term: a systematic review. Ultrasound Obstet Gynecol [Internet]. 2012 Sep; 40(3): 267–75. Available from: http://doi.wiley.com/10.1002/uog.11112

8. Villar J, Ismail LC, Victora CG, Ohuma EO, Bertino E, Altman DG, et al. International standards for newborn weight, length, and head circumference by gestational age and sex: the Newborn Cross-Sectional Study of the INTERGROWTH-21st Project. Lancet [Internet]. 2014 Sep; 384(9946): 857–68. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0140673614609326

9. World Health Organization. Home-based maternal records. Guidelines for development, adaptation and evaluation.pdf. Geneva; 1994.

10. Mousinho R, Alves LM, Luiza NA, Salgado-Azoni CA, Celeste LC, Capelini SA, et al. Leitura, Escrita e Matematica: do desenvolvimento aos transtornos específicos da aprendizagem. Instituto ABCD; 2020. 154 p.

ARTICLES

Noemi V. de Freitas Rios, Luciene da Cruz Fernandes, Caio L. Oliviera de Andrade, Emily de Jesus Ferreira, Ana Cecília Santiago, Crésio de A. Dantas Alves

11. Ribeiro C da C, Pachelli MR de O, Amaral NC de O, Lamônica DAC. Habilidades do desenvolvimento de crianças prematuras de baixo peso e muito baixo peso. CoDAS [Internet]. 2017; 29(1): 1–6. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2317-17822017000100300&lng=pt&tlng=pt

12. Gouveia AS de, Oliveira MM de F, Goulart AL, Azevedo MF de, Perissinoto J. Desenvolvimento de linguagem e das habilidades auditivas em prematuros adequados e pequenos para a idade gestacional: idade cronológica entre 18 e 36 meses. CoDAS [Internet]. 2020; 32(4): e20180275. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2317-17822020000400301&tlng=pt

13. Tulviste T, Toome L, Männamaa M, Varendi H. Language skills at corrected age 2;0 are poorer in extremely and very preterm boys but not girls compared with their full-term peers. Early Hum Dev [Internet]. 2020 Dec;151(August):105164. Available from: https://doi.org/10.1016/j.earlhumdev.2020.105164

14. Castro JRC, González CC, González NLG, Reyes BM, González DB, Jiménez AS, et al. Assessment of neonatal EEG background and neurodevelopment in full-term small for their gestational age infants. Pediatr Res [Internet]. 2019 Dec 10;(May). Available from: http://dx.doi.org/10.1038/s41390-019-0693-0

15. Santos LA. Evolução ponderal de crianças pequenas para idade gestacional à termo no primeiro ano de vida [Internet]. 2015. Available from: https://repositorio.ufba.br/ri/bitstream/ri/19065/1/Dissertação_Nut_ Lissandra Amorim Santos.pdf

16. Andrade CRF de, Béfi-lopes DM, Fernandes FDM, Wertzner HF. ABFW - Teste de Linguagem Infantil nas áreas de Fonologia, Vocabulário , Fluência e Pragmática. 2004. 98 p.

17. ABEP - Associação Brasileira de Empresas de Pesquisa. Critério Brasil 2015 e atualização da distribuição de classes para 2016. Critério Classif econômica Bras. 2016;1–6.

18. Schults A, Tulviste T, Haan E. Early vocabulary in full term and preterm Estonian children. Early Hum Dev [Internet]. 2013 Sep; 89(9): 721–6. Available from: http://dx.doi.org/10.1016/j.earlhumdev.2013.05.004

19. Malhotra A, Allison BJ, Castillo-Melendez M, Jenkin G, Polglase GR, Miller SL. Neonatal Morbidities of Fetal Growth Restriction: Pathophysiology and Impact. Front Endocrinol (Lausanne) [Internet]. 2019 Feb 7;10(FEB). Available from: https://www.frontiersin.org/article/10.3389/fendo.2019.00055/full

20. Goto MMF, Gonçalves VMG, Netto AA, Morcillo AM, Moura-Ribeiro MVL de. Neurodesenvolvimento de lactentes nascidos a termo pequenos para a idade gestacional no segundo mês de vida. Arq Neuropsiquiatr [Internet]. 2005 Mar; 63(1): 75–82. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0004-282X2005000100014&lng=pt&tlng=pt

21. Misquiatti ARN, Nakaguma PG, Brito MC, Olivati AG. Desempenho de vocabulário em crianças pré-escolares institucionalizadas. Rev CEFAC [Internet]. 2015 Jun;17(3): 783–91. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-18462015000300783&lng=pt&tlng=pt

22. Moretti TC da F, Kuroishi RCS, Mandrá PP. Vocabulário de pré-escolares com desenvolvimento típico de linguagem e variáveis socioeducacionais. CoDAS [Internet]. 2017; 29(1): 1–4. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2317-17822017000100501&lng=pt&tlng=pt

23. Scopel RR, Souza VC, Lemos SMA. A influência do ambiente familiar e escolar na aquisição e no desenvolvimento da linguagem: revisão de literatura. Rev CEFAC [Internet]. 2011 Dec 13; 14(4): 732–41. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-18462012000400018&lng=pt&tlng=pt

24. Ceron MI, Gubiani MB, Oliveira CR de, Keske-Soares M. Factors Influencing Consonant Acquisition in Brazilian Portuguese–Speaking Children. J Speech, Lang Hear Res [Internet]. 2017 Apr 14; 60(4): 759–71. Available from: http://pubs.asha.org/doi/10.1044/2016_JSLHR-S-15-0208

25. Brancalioni AR, Zauza A, Karlinski CD, Quitaiski LF, Thomaz M de FO. Desempenho do vocabulário expressivo de pré-escolares de 4 a 5 anos da rede pública e particular de ensino. Audiol - Commun Res [Internet]. 2018 Feb 19; 23(0): 1–9. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2317-64312018000100300&lng=pt&tlng=pt

26. Colombo RC, Cárnio MS. Compreensão de leitura e vocabulário receptivo em escolares típicos do ensino fundamental I. CoDAS [Internet]. 2018 Jul 23; 30(4): 1–8. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2317-17822018000400306&lng=pt&tlng=pt

27. Brancalioni AR, Marini C, Cavalheiro LG, Keske-Soares M. Desempenho em prova de vocabulário de crianças com desvio fonológico e com desenvolvimento fonológico normal. Rev CEFAC [Internet]. 2010 Apr 2;13(3): 428–36. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-18462011000300005&lng=pt&tlng=pt

28. Medeiros VP de, Valença RKL, Guimarães JATL, Costa RCC. Vocabulário expressivo e variáveis regionais em uma amostra de escolares de Maceió. Audiol - Commun Res [Internet]. 2013 Jun; 18(2): 71–7. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2317-64312013000200004&lng=pt&tlng=pt

29. Ferreira SCA, Cruz-Santos A. Processos de designação e substituição semântica usados por crianças falantes de Português Europeu numa prova de vocabulário. Audiol - Commun Res [Internet]. 2018 Dec 3; 23(0):1–6. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2317-64312018000100334&lng=pt&tlng=pt

30. Cáceres-Assenço AM, Ferreira SCA, Santos AC, Befi-Lopes DM. Aplicação de uma prova brasileira de vocabulário expressivo em crianças falantes do Português Europeu. CoDAS [Internet]. 2018 May 17; 30(2): 2–7. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2317-17822018000200304&lng=pt&tlng=pt