

PHONOLOGICAL AWARENESS AND PHONOLOGICAL DEVELOPMENT IN CHILDREN OF PUBLIC AND PRIVATE SCHOOLS

Consciência fonológica e o desenvolvimento do sistema fonológico em crianças de escolas públicas e particulares

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ABSTRACT

Purpose: to investigate the relationship between phonological awareness and phonological development in children of public and private schools. **Method:** the study included 120 children, of both sexes, aged from two to six years and eleven months old, in 60 private schools and 60 public schools in the Metropolitan Area of Recife. It was used as assessment tools the Proof of Phonological Evaluation and the Test of Phonological Awareness. The children's caretakers also answered a psychosocial questionnaire. The phonological assessment data were transcribed according to IPA International Phonetic Alphabet and analyzed according to the theory of phonological processes. **Results:** initial analysis did not reveal significant differences between students in public and private schools, as well as between genders. Phonological processes frequently were: simplification of consonant cluster, simplifying of net and simplifying final consonant. A difference was observed between the ages of eliminating some processes in relation to the description of the literature, which possibly reflects the influence of linguistic variety. Regarding phonological awareness, was verified a development because of the advance in age. It was observed a negative correlation between some phonological process and metalinguistic skills. **Conclusion:** the type of schooling, singly, was not a variable that has influenced the development of metalinguistic skills and phonological system. These skills were developed in parallel and they are related to phonological development. It is necessary that further studies be conducted to better understand the relationship between metalinguistic skills and oral language development.

KEYWORDS: Language Development; Child Language; Child, Preschool

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Source of aid: CNPq

Conflict of interest: non-existent

■ INTRODUCTION

The language appears as the first form of child socialization, allowing access to values, beliefs and rules. This field of socialization extends primarily when the child comes to school and has more opportunity to interact with other children¹. The phonological acquisition is a complex biopsychosocial process, because it is dependent on social relationships, experiences and child communicative interactions. Therefore, it can be observed that the

neurodevelopmental is conditioned to individual, educational and social aspects, not being considered as a pattern^{2,3}.

For some authors, the establishment of age range to complete phonological acquisition is quite discussed: with virtually complete development at five years⁴ to some authors, for others⁵ this period may extend up to seven years. As pointed out by one study⁶, the phase of further expansion of the phonological system is between 1:6 and 4:0 years, when there is increase in the phonetic inventory of children, enabling the production of polysyllabic words and more complex syllabic structures. However, this period is characterized by substitutions and omissions of sounds.

To assess the phonological development, it is essential to analyze the child's speech depending on the adult's phonological system. A widely used model in the literature is that of phonological processes, as regards the simplification of phonological rules. Most of them are part of the typical development of speech, being phased out over the years. If a child has phonological processes beyond the expected age, it is regarded as having phonological disorder⁷⁻¹⁰.

Phonological processes can be divided into three categories: syllable structure, substitution and assimilation. The processes of syllabic structure describe sound changes that affect the syllabic structure in the production of an adult word, the child's target. They are: syllable reduction, consonant cluster simplification, simplification of final consonant and simplification of net. The substitution processes involve changes between sound classes in which one class replaces another, including: plosivation, fronting, deafening and sound. Finally, the process of assimilation or sound harmony are processes in which a sound is totally or partly adapted to the next in syllable^{5,9}.

Phonological awareness, in contrast, involves the ability to reflect explicitly on the word structure, understanding it as a sequence of phonemes and/or syllables^{11, 12}. Studies show the importance of phonological awareness for learning written language, since for the child learning to read and write in the alphabetic writing system. The child must perceive the graphophonemic relationship. To do so, the skills of identification, analysis, synthesis and manipulation of phonological components in phonemic and syllabic levels that comprise the phonological awareness are fundamental¹³⁻¹⁵.

The relationship between phonological awareness and acquisition of written language is well documented in the scientific production^{16,17}, since the higher the child's attention on the phonological structure of words the greater his success in

reading and writing. However, it is observed that few studies have explored this relationship in children before the formal period of literacy, directing the relevance of these skills to the development of the child's speech.

Phonological awareness has been used as a support of one of the therapy methods for cases of phonological disorders, which advocates the importance of working on the metaphonological reflection to overcome the difficulties in children speech¹⁸. However, it has not been investigated from the perspective of verifying its relationship with phonological development, most likely due to the difficulty in assessing the phonological awareness in very young children. It is noteworthy that the phonological awareness benefits the children with and without phonological disorder, but also for those having difficulty in reading development, since phonological sensitivity favors the literacy¹⁹.

Therefore, the aim of this study was to investigate the relationship between phonological awareness and phonological development in children from public and private schools, trying to analyze the phonological acquisition according to the theory of phonological processes and identify some evolutionary aspects relating to different levels of phonological awareness; as well as analyzing the phonological acquisition and development of these skills by age, sex and type of education.

■ METHOD

This study was approved by the Ethics Committee in Research Involving Human Beings at the Center for Health Sciences (CCS), Federal University of Pernambuco CEP/CCS UFPE, under protocol No. 115/09 of the National Health Council

The methodology used in this research prioritized the quantitative analysis, and the study was descriptive, correlational and cross sectional.

The research was conducted in three private schools and two public schools, selected randomly and located in the metropolitan area of Recife. The study included 120 children aged two (2:0) to six years and eleven months (6:11) of both sexes, 60 private schools and 60 public schools, enrolled in kindergarten, subdivided into ten age groups with intervals of 06 to 06 months: G1 (2:0-2:5); G2 (2:6-2:11); G3 (3:0-3:5); G4 (3:6-3:11); G5 (4:0-4:5); G6 (4:6-4:11); G7 (5:0-5:5); G8 (5:6-5:11); G9 (6:0-6:5); G10 (6:0-6:11). This subdivision group is justified by the important linguistic acquisitions of the child at this stage of development, as observed by Queiroga et al. (2009)²⁰. Thus, larger ranges in the age could cover up quantitative leaps in the language development of children.

The exclusion criteria for sampling were: children who, according to the analysis of the teachers, had problems of communication, learning or special educational needs; children who at the time of assessment were identified with a frame of speech disorders or other language problems, and children with a history of hearing and neurological problems or any other evident aspect that could interfere with the language development.

Data were collected from August 2009 to July 2011. Initially, individual data were obtained from the student identification sheet in the school. Subsequently, additional information was obtained through a psychosocial questionnaire applied to parents or guardians through interviews. The purpose of the questionnaire was to characterize the sample and know the reality in which children were inserted. Parents or guardians were given an information letter, containing the study objectives and ensuring confidentiality. Those who agreed to participate had signed the Statement of Consent – Informed Consent.

Initially, children were evaluated by a clinical examination of orofacial motility based on the MBGR PROTOCOL²¹ by observing mobility and tone of the oral myofunctional structures, being registered in its proper protocol. The purpose of this assessment was to identify and delete from the sample children who possess phonetic disorders.

Further, the assessment of phonological acquisition was conducted through the Proof of Phonological Assessment (PAFon)²⁰. This test seeks the appointment of 215 target words selected in order to include the phonemes of the Portuguese by controlling some linguistic variables, such as syllable structure and tone. The instrument is divided into six categories: AF1-Animals, AF2-Food, AF3-Body and personal items, AF4- things from home, AF5-Child Things, AF6-Nature and transport. When the child did not spontaneously name the figures, it is asked to repeat the target word, from model offered by the examiner. The registry considers whether appointment or repetition was performed.

The phonological awareness skills were assessed using the Sequential Test of Phonological Awareness (CONFIAS)²². This test is divided into two parts where the first corresponds to the syllable level composed of nine items: synthesis, segmentation, initial syllable identification, rhyme identification, production of a word with a given syllable, medial syllable identification, rhyme production, deletion and transposition. The second part involves the phonemic level, arranged in seven items: production of a word that begins with a given sound, initial phoneme identification, final phoneme

identification, exclusion, synthesis, segmentation and transposition.

The test has sequential characteristics, namely, the tasks must be carried out respecting an order of complexity. Each task is accompanied by an explanatory table in which the commands and examples of how to apply it are shown. To make sure that the children understood the task, two initial examples are always proposed and they never count towards the score. The test score should be performed in the Answers Protocol. The correct answers value 1 point and that incorrect value zero. The maximum score is 40 hits in the syllabic level and 30 hits in the phonemic level, totaling 70 points, corresponding to 100% correct. Importantly, the test is indicated by the authors to be applied to children as young as four years, but in this study, with the intention of verifying a higher or lower phonological “sensitivity” in younger children, it was applied from the age two years and in this case, when the child roamed all subitems of a level, the test was stopped.

After completion of data collection, the results were coded in numeric variables to build a database by using the SPSS 13.0 software, which consented to perform descriptive and analytical statistical analysis. Means between groups were compared through the analytical statistics by using the T-test and correlation test of Pearson *r* to analyze the relationship between phonological acquisition and metaphonological abilities of syllabic and phonemic awareness.

Studies on phonological acquisition have considered an 80% standard production as indication that the child has mastered the acquisition of a phonological segment²³. Likewise, in this study when there was 80% reduction in the occurrence of age group, it was considered as a framework for the elimination of processes.

■ RESULTS

When analyzing the responses of a psychosocial questionnaire, it was observed that the income of the vast majority (90%) of families of private schools was less than four minimum wages; a significant part of the parents/caregivers had levels of education between elementary school 1 and high school (90%) and only half of them (50%) read frequently to their children. Similar results were observed among families from public schools, where the majority showed income of up to two minimum wages (90%), education levels between elementary school 1 and 2 (80%) and almost half (48.93%) reported reading frequently to their children.

In order to check for differences between the results presented by children from public and private

schools regarding the phonological processes and phonological awareness skills, a T-test was performed by comparing the performance of both groups. The analysis revealed no statistically significant differences, i.e. the children from public and private schools had very similar levels of phonological and metaphonological development and, therefore, data were pooled for further analyses, considering the total number of children ($n = 120$) in the Tables below.

Table 1 shows the mean and standard deviation for phonological processes and their relationship to each age group (group). The most frequent phonological processes in all age groups were: consonant cluster simplification, liquid simplification, simplification and of final consonant and syllable reduction.

Table 2 shows the means and standard deviations for performance on phonological awareness test (syllabic level, phonemic level and total) for each age group (group).

Table 3 shows the relationship between metaphonological abilities of syllabic awareness, phonemic awareness and total phonological awareness with phonological processes. Comparing the occurrence of phonological processes by sex (Table 4), there were no statistically significant differences.

By comparing the occurrence of phonological processes by sex (Table 4), there were no statistically significant differences.

Table 5 shows no statistical significance between the evidence of phonological awareness (phonemic and syllabic levels) depending on the variable gender.

Table 1 – Distribution of results for the assessment of phonological processes (means and standard deviations) by age group in preschool children, Recife, 2012

GROUP	Phonological processes													
	RS	HC	PF	SV	PV	PP	FV	FP	SL	SEC	SCF	EP	EF	
1	18,50 (5,19)	4,00 (2,98)	,80 (1,62)	9,90 (8,13)	,00 (,00)	,30 (,67)	,00 (,00)	,30 (,95)	23,20 (11,60)	38,70 (9,91)	17,30 (12,70)	,00 (,00)	,00 (,00)	
2	14,15 (8,45)	1,23 (1,54)	,85 (1,34)	2,15 (3,31)	,007 (,28)	1,23 (4,15)	,15 (,38)	,23 (,83)	18,23 (11,98)	31,46 (16,63)	14,00 (11,36)	,31 (,75)	,23 (,44)	
3	9,50 (12,82)	,25 (,46)	,50 (,93)	,75 (1,49)	,00 (,00)	,00 (,00)	5,00 (10,04)	,00 (,00)	8,88 (7,04)	26,88 (20,41)	12,75 (8,31)	,13 (,35)	,00 (,00)	
4	7,27 (7,36)	,36 (,67)	,45 (,69)	3,82 (4,69)	,00 (,00)	,27 (,47)	,18 (,40)	,009 (,30)	7,36 (5,26)	26,91 (14,21)	14,18 (11,65)	,18 (,40)	,00 (,00)	
5	9,71 (7,33)	,50 (1,87)	1,21 (3,42)	1,00 (2,45)	,007 (,27)	,71 (2,40)	,00 (,00)	,14 (,36)	10,00 (9,19)	19,50 (13,94)	9,79 (5,77)	,79 (1,81)	,64 (2,13)	
6	4,86 (3,23)	,21 (,43)	7,71 (19,45)	,50 (1,)	,00 (,00)	,21 (,43)	,36 (1,08)	1,07 (3,47)	8,43 (14,77)	16,50 (14,35)	8,71 (6,78)	,29 (,61)	,21 (,58)	
7	3,20 (1,62)	,001 (,32)	,001 (,32)	,00 (,00)	,00 (,00)	,00 (,00)	,00 (,00)	,20 (,42)	4,00 (5,60)	14,20 (13,60)	4,70 (3,74)	,00 (,00)	,001 (,32)	
8	1,60 (4,06)	,00 (,00)	,00 (,00)	,40 (,84)	,00 (,00)	,00 (,00)	,00 (,00)	,001 (,32)	3,40 (3,13)	8,20 (4,44)	3,50 (2,80)	,00 (,00)	,00 (,00)	
9	1,92 (2,27)	,008 (,29)	,008 (,29)	,00 (,00)	,00 (,00)	,00 (,00)	,008 (,29)	,17 (,39)	4,33 (11,15)	5,33 (2,57)	4,08 (3,94)	,00 (,00)	,00 (,00)	
10	2,38 (3,57)	,00 (,00)	,00 (,00)	,00 (,00)	,00 (,00)	,23 (,83)	,00 (,00)	,007 (,28)	3,54 (9,24)	4,69 (6,94)	3,31 (5,14)	,00 (,00)	,15 (,55)	

Note: shaded area corresponding to the overrun of the phonological process by 80%.

Legend: RS- syllable reduction; HC- consonant Harmony; PF- Plosivation of fricative; SV-simplification to velar, PV-backing for velar; PP- backing for palatal; FV-Fronting of velars; FP-Fronting of palate, SL – Liquid Simplification SEC-Simplification of consonant cluster; SCF- final consonant simplification, EP-Devoicing of plosive, EF-Devoicing of fricative

Table 2 – Distribution of results for the phonological awareness tests (means and standard deviations) by age group in preschool children, Recife, 2012

GROUP	Syllabic awareness	Phonemic awareness	Total Phonological Awareness
1	,50 (1,58)	,00 (,00)	,50 (1,58)
2	,92 (1,38)	,00 (,00)	,92 (1,38)
3	3,11 (3,82)	,88 (2,47)	3,89 (5,67)
4	2,67 (1,72)	,00 (,00)	2,67 (1,72)
5	2,54 (2,11)	,00 (,00)	2,42 (2,11)
6	4,43 (5,26)	,00 (,00)	4,43 (5,26)
7	6,00 (4,47)	,63 (,52)	6,50 (4,40)
8	12,40 (9,00)	3,71 (4,07)	15,00 (12,27)
9	15,69 (6,17)	3,88 (1,36)	18,85 (8,05)
10	21,00 (10,42)	9,78 (3,60)	28,33 (15,46)

Note: Standard deviation in parentheses

Table 3 – Distribution of the results of the correlation between phonological processes (means and standard deviations) and results on tests of phonological awareness in preschool children, Recife, 2012

Metaphonological skills	Phonological processes												
	RS	HC	PF	SV	PV	PP	FV	FP	SL	SEC	SCF	EP	EF
syllabic awareness	-,440** (,0)	-,256** (,005)	-,079 (,401)	-,287** (,002)	-,045 (,637)	-,091 (,334)	-,009 (,925)	-,081 (,388)	-,360 (,0)	-,508** (,0)	-,406** (,0)	-,122 (,194)	-,052 (,584)
Phonemic awareness	-,399** (,0)	-,230* (,040)	-,146 (,195)	-,250* (,025)	0 (0)	-,136 (,229)	,150 (,184)	-,108 (,342)	-,374 (,001)	-,476** (,0)	-,363** (,001)	-,135 (,234)	-,136 (,229)
Total Phonological Awareness	-,431** (,0)	-,242** (,010)	-,080 (,400)	-,268** (,004)	-,045 (,632)	-,092 (,330)	,028 (,766)	-,087 (,358)	-,361 (,000)	-,500** (,0)	-,383** (,0)	-,124 (,187)	-,061 (,516)

** correlation significant at $p > 0,01$

*** correlation significant at $p > 0,05$

Legend: RS- syllable reduction; HC- consonant Harmony; PF- Plosivation of fricative; SV-simplification to velar, PV-backing for velar; PP- backing for palatal; FV-Fronting of velars; FP-Fronting of palate, SL – Liquid Simplification SEC-Simplification of consonant cluster; SCF- final consonant simplification, EP-Devoicing of plosive, EF-Devoicing of fricative.

Pearson correlation test (r)

Table 4 – Distribution of phonological processes (mean and standard deviation) for gender in preschool children, Recife, 2012

GENDER	Phonological processes												
	RS	HC	PF	SV	PV	PP	FV	FP	SL	SEC	SCF	EP	EF
Male	7,05 (7,08)	,56 (1,48)	2,11 (9,56)	1,67 (4,27)	3,17E- 02 (,18)	,51 (2,21)	,11 (,54)	,38 (1,70)	9,54 (11,57)	18,40 (15,44)	9,41 (8,62)	,21 (,77)	,24 (1,07)
Female	7,18 (8,80)	1,48 (1,76)	,40 (,91)	1,75 (3,90)	,00 (,00)	,11 (,37)	,78 (4,03)	,11 (,46)	8,40 (10,89)	18,67 (17,13)	8,44 (9,27)	,16 (,71)	,005 (,23)

Note: Standard deviation in parentheses

Legend: RS- syllable reduction; HC- consonant Harmony; PF- Plosivation of fricative; SV-simplification to velar, PV-backing for velar; PP- backing for palatal; FV-Fronting of velars; FP-Fronting of palate, SL – Liquid Simplification SEC-Simplification of consonant cluster; SCF- final consonant simplification, EP-Devoicing of plosive, EF-Devoicing of fricative.

Table 5 – Distribution of results for the phonological awareness tests (means and standard deviations) for gender in preschool children, Recife, 2012

Gender	Syllabic awareness	Phonemic awareness	Total Phonological Awareness
Male	7,20 (8,44)	2,00 (3,67)	8,67 (11,39)
Female	6,79 (8,59)	1,83 (3,67)	8,21 (11,39)

Note: Standard deviation in parentheses

■ DISCUSSION

Regarding the type of school (public or private), there were no statistical differences between groups, which leads to the inference that this variable itself did not assure a better language development of children, from the point of view of development of the phonological system or phonological awareness. Apparently, both public and private schools met the clientele whose psychosocial profiles were similar.

The literature suggests that psychosocial factors are crucial for development, such as reading habits, family income, education level of parents and caregivers, among others. However, the results of this survey are insufficient to support studies that indicate that children's language development is influenced by these variables. Among them: the highest level of maternal education²⁴, as well as a greater variety of stimulation directly contributes to better child development²⁵. Maternal education also will determine the child's mental development, i.e. the higher the education, the greater the child development²⁶.

According to Table 1, the phonological processes more common in all age groups were: consonant cluster simplification, liquid simplification, final consonant simplification and syllable reduction.

The results show a delay in the elimination of the most operant phonological processes when compared with ages described in other studies^{27,28}. In the aforementioned literature, the processes of syllable reduction and plosivation of fricative are eliminated at around 2:6 years, however, this study found that these processes were overcome only in the G6, i.e. children aged between 4:6 and 4 :11 years.

The results show that the process of backing for velar, backing for palatal, fronting of velar and palatal fronting showed a very low mean to be considered as typical processes of phonological development²⁹. The author argues that these processes are eliminated at age 4:6 years³⁰. Other authors³ investigated phonological acquisition in children with a history of malnutrition and stated that the fronting and backing are processes that disappear around age 4. In this

study, in view of the very low incidence of these processes, it was not possible to observe these characteristics. It is noteworthy that the instrument used to phonological assessment (PAFon) has target words selected so as to cover all phonemes of Portuguese, considering the position in the syllable and tone, thus there being the possibility of such processes.

Thus, it is observed that the occurrence of these processes behaved very similar to those that are not of development, being similar to the processes of plosives and fricative devoicing. These are commonly found in children with phonological disorders⁹, and when evaluated in studies of other regions of the country⁶ they were not operant in typical development of children studied.

With regard to the liquid simplification process, the results of this investigation differ from the literature^{27,28}, which indicates the age of acquisition of the liquid simplification process as being 3:6 years; however, this process operated by the G6 in children aged between 4:6 and 4:11 years in this study. The simplification process was surpassed by around 4:0 to 4:5 years old and in studies conducted in other regions of the country, this process must be overcome at 3:6 years^{27,28}.

Regarding the simplification of consonant cluster, the data obtained in this study show that children up to 6:5 years exceeded this process. According to the literature, this is the most durable process and can appear up to five years³¹ or up to 7 years²⁸. Importantly, the acquisition of consonant cluster is strongly influenced by socio-cultural environment, since it is often the inappropriate model of this meeting in the lower social level, with phonological productions such as: [fror] instead of /flor/, [peda] instead of /pedra/, [pranta] instead of /planta/.

Referring to final consonant simplification, it is observed that this was not exceeded in any of the age groups studied. Some studies²⁷ report that this process disappears about 7 years of age. The same can be seen in the following phonological productions in this study: [dirigi] instead of [dirigir], [escova] instead of /escovar/, [abri] instead of /abrir/. Note that this process is commonly operative only in the

final syllable of words, suggesting the influence of linguistic variety spoken in the city of Recife, and this variety must be considered in the assessment of phonological development.

These results point to the importance of knowledge of normal phonological development in populations with sociocultural specificities, especially in different linguistic varieties of the same language to avoid mistakes in diagnosis of deviant speech. Thus, it is fundamental investigations aiming at determining the influence of linguistic variety spoken in the Metropolitan Region of Recife on the issues discussed.

With respect to phonological awareness test, Table 2 shows that with increasing age of the child, there is also improvement in phonological awareness. These results were also observed in studies conducted in other regions of the country in diverse sociolinguistic contexts^{32,33}. Study suggests that this result can be justified by knowledge acquired by older children and the influence of written language. Since the older kids raise their greater contact with the concepts of grapheme and phoneme consequently would have greater phonological awareness³³.

It was observed that the participants had a lot of difficulty in performing tasks. In a way, this difficulty was expected because the test used (CONFIAS) is recommended for children from 4 years by the difficulty in assessing phonological awareness in children aged 2 and 3 years²². Even so, the test was selected and applied in order to verify whether it could indicate greater Phonological "sensitivity" by the younger children and there was greater sensitivity to the ability of syllabic awareness.

Even with sensitivity to the ability of syllabic awareness, the average of results found in all age groups is far below what the author recommends. Regarding such skill, the author proposes that the minimum of hits of children who are in the development phase of the pre-syllabic writing is equal to 18 points and reaching maximum equals to 29 points. In this study, children aged 4:0 years achieved average of 2.54 hits and those aged 6:11 years had average of 21 hits. Not being possible to observe a high score on the performance of the children studied, even those in later levels of writing development.

Although the children performance has been very low in the CONFIAS test, it was possible to see a correlation between metalinguistic skills and development of the phonological system, as shown in Table 3. There is a negative correlation between phonological processes of syllabic reduction, consonant harmony, velar simplification, final consonant simplification with syllabic and phonemic

awareness, with significance levels of $p < 0.01$. That is, the better the performance in phonological awareness test, the lower the number of occurrence of such phonological processes.

These data contradict the literature that shows no connection between the phonological acquisition and metalinguistic skills. Since, using the language in oral mode does not need a conscious reflection on the sounds of the language (phonological awareness). And the metalinguistic skills would develop later, being result of more explicit learning and often school-context-dependent³⁴.

Thus, the concern with the acquisition of the phonological system in orality, following standards expected for age groups, needs to be understood as important for linguistic development because the oral communication process precedes other developmental stages, such as the relationship between phonological awareness and learning of reading and writing.

Regarding the variable gender, there was no statistically significant difference in any of the analyses performed in this study, as shown in Tables 4 and 5. Therefore, sex does not correlate with phonological processes, supporting the national literature⁶. Also, it was not associated with phonological awareness in agreement with other studies^{13,35} in which there were no distinctions in performance of metalinguistic skills and this variable.

However, these data are not consistent with studies^{13,36} which observed that female children had better performance in tasks of phonological awareness, especially at phonemic level, i.e. they have better performance in smaller sound units of speech, which was not observed in this study.

■ CONCLUSION

Given the information above, it was observed that the type of education does not seem to be a variable that ensures the language development when in isolation. Other variables, such as socioeconomic status of the family, educational level of parents/careers, reading habits (storytelling) to children, the cultural environment in which the children is inserted among others, are crucial to their language development. This brings as reflection that not always the condition of private education determines the learning quality, observing that the levels of phonological acquisition and phonological awareness are similar between the two types of education. It is suggested that further studies must be conducted in more traditional private schools, with families of higher socioeconomic status, so therefore it will be possible to show illuminating data in this regard.

Phonological processes most commonly used by children were: consonant cluster simplification, liquid simplification, final consonant simplification and syllable reduction. Delays were observed in the elimination of some phonological processes in the population studied, even when considering authors whose studies indicated lower ages of overcoming processes. Further investigations are necessary in order to verify the influence of linguistic variety spoken in the Metropolitan Region of Recife on the issues discussed.

With regard to gender, there were no differences in means of occurrence of phonological processes or performance of phonological awareness skills, thus requiring further research to investigate this aspect, since there is no consensus on in the literature.

Referring to phonological awareness, this occurs parallel to phonological development, there being a significant negative correlation, since with increasing age increases the phonological awareness and phonological processes gradually decrease.

A key aspect of this study is the existence of a conscious and deliberate reflection on the sounds of language (phonological awareness) by children who are in the early development phase, i.e. at ages outside the literacy process. That is, phonological awareness for learning oral language is influenced by the social context, not being restricted only to formal schooling.

This aspect needs to be further investigated, since, traditionally, studies have focused on the relationship between phonological awareness and learning of reading and writing, there being few studies exploring the analogy of this metalinguistic skill with oral language development, specifically in concerned to the acquisition of the phonological system. Therefore, longitudinal studies and phonological intervention are needed to verify whether, in fact, there is a specific causal relationship between the development of metalinguistic skills and phonological acquisition.

RESUMO

Objetivo: investigar a relação entre consciência fonológica e o desenvolvimento do sistema fonológico em crianças de escolas públicas e particulares. **Método:** participaram do estudo 120 crianças, de ambos os sexos, na faixa etária de dois a seis anos e onze meses, sendo 60 de escolas particulares e 60 de escolas públicas da Região Metropolitana do Recife. Utilizou-se como instrumentos de avaliação a Prova de Avaliação Fonológica e o Teste de Consciência Fonológica. Os responsáveis pelas crianças também responderam a um questionário psicossocial. Os dados da avaliação fonológica foram transcritos conforme o Alfabeto Fonético Internacional e analisados segundo a teoria dos processos fonológicos. **Resultados:** análises iniciais não revelaram diferenças significantes entre os alunos das escolas públicas e particulares, assim como entre os sexos. Os processos fonológicos mais frequentes foram: simplificação de encontro consonantal, simplificação de líquida e simplificação de consoante final. Observou-se a diferença entre as idades de eliminação de alguns processos, em relação à descrição da literatura, o que possivelmente reflete a influência da variedade linguística. Em relação à consciência fonológica, foi verificada uma evolução em função do avanço na idade. Foi observada uma correlação negativa entre alguns processos fonológicos e as habilidades metafonológicas. **Conclusão:** o tipo de escolaridade, isoladamente, não foi uma variável que estava influenciando o desenvolvimento das habilidades metafonológicas e do sistema fonológico. Tais habilidades se desenvolvem paralelamente e estão relacionadas ao desenvolvimento fonológico. É necessário que novos estudos sejam realizados buscando conhecer melhor a relação entre habilidades metalinguísticas e o desenvolvimento da linguagem oral.

DESCRITORES: Desenvolvimento da Linguagem; Linguagem Infantil; Pré-Escolar

■ REFERENCES

1. Lorandi A, Cruz CR, Scherer APR. Aquisição da linguagem. *Verba Volant*, v. 2, nº 1. Pelotas: Editora e Gráfica Universitária da UFPel, 2011.
2. Escarce AG, Camargos TV, Souza VC, Mourão MP, Lemos SMA. Escolaridade materna e desenvolvimento da linguagem em crianças de 2 meses à 2 anos. *Rev. CEFAC [periódico na Internet]*. 2011 [acesso em 05 de agosto de 2011]; 14(6):[3 p.]. Disponível em: <http://dx.doi.org/10.1590/S1516-18462011005000144>.
3. Lima LM, Queiroga BAM. Aquisição fonológica em crianças com antecedentes de desnutrição. *Rev. CEFAC*. 2007;9(1):13-20.
4. Keske-Soares M, Pagliarin KC, Ceron MI. Terapia fonológica considerando as variáveis linguísticas. *Rev. Soc. Bras. Fonoaudiol.* 2009;14(2):261-6.
5. Wertzner HF, Consorti, T. Processos fonológicos detectados em crianças de sete a oito anos. *Pró-Fono R. Atual. Cient.* 2004;16(3):275-82.
6. Ferrante C, Van Borsel J, Pereira MMB. Análise dos processos fonológicos em crianças com desenvolvimento fonológico normal. *Rev. Soc. Bras. Fonoaudiol.* 2009;14(1):36-40.
7. Mota MMEP, Mansur-Lisboa SF, Calzavara A, Annibal L, Lima AS, Costa J et al. O papel das habilidades metalinguísticas na alfabetização. *Revista Eletrônica do ICHL/UFJF [periódico na Internet]*. 2006 [acesso em 17 de março de 2011];4:1-8. Disponível em: <http://www.smec.salvador.ba.gov.br/site/documentos/espaco-virtual/espaco>.
8. Vítor RM, Cardoso-Martins C. Desenvolvimento fonológico de crianças pré-escolares da Região Noroeste de Belo Horizonte. *Psicol Rev.* 2007;13(2):383-98.
9. Wertzner HF, Pagan LO, Galea DES, Papp ACCS. Características fonológicas de crianças com transtorno fonológico com e sem histórico de otite média. *Rev. Soc. Bras. Fonoaudiol.* 2007;12(1):41-7.
10. Wiethan FM, Mota HB. Propostas terapêuticas para os desvios fonológicos: diferentes soluções para o mesmo problema. *Rev. CEFAC*. 2011;13(3):541-51.
11. Mota HB, Melo Filha MGC. Habilidades em consciência fonológica de sujeitos após realização de terapia fonológica. *Pró-Fono R. Atual. Cient.* 2009;21(2):119-24.
12. Cavalheiro LG, Santos MS, Martinez PC. Influência da consciência fonológica na aquisição de leitura. *Rev. CEFAC*. 2010;12(6):1009-16. Epub Junho 25, 2010.
13. Andreatza-Balestrin C, Cielo CA, Lazzarotto C. Relação entre desempenho em consciência fonológica e a variável sexo: um estudo com crianças pré-escolares. *Rev. Soc. Bras. Fonoaudiol.* 2008;13(2):154-60.
14. Suehiro ACB. Roteiro de avaliação da consciência fonológica (RACF). *Act.Colom.Psicol.* 2011;14(1):147-54.
15. Moura SRS, Cielo CA, Mezzomo CL. Consciência fonêmica em meninos e meninas. *Rev. Soc. Bras. Fonoaudiol.* 2009;14(2): 205-11.
16. Aaron PG, Joshi RM, Quatroche D. *Becoming a professional reading teacher*. Baltimore: Paul H. Brookes, 2008.
17. Nunes C, Frota S, Mousinho R. Consciência fonológica e o processo de aprendizagem de leitura e escrita: implicações teóricas para o embasamento da prática fonoaudiológica. *Rev. CEFAC*. 2009;11(2):207-12.
18. Wiethan FM, Mota HB. Propostas terapêuticas para os desvios fonológicos: diferentes soluções para o mesmo problema. *Rev. CEFAC*. 2011;13(3):541-51.
19. Rizzon GF, Chiechelski P, Gomes E. Relação entre consciência fonológica e desvio fonológico em crianças da 1ª série do ensino fundamental. *Rev. CEFAC*. 2009;11(2):201-7.
20. Queiroga BAM, Montenegro ACA, Cordeiro AAA, Asfora R, Telles S. Aquisição da fonologia do Português na região metropolitana do Recife. *Relatório Técnico de Pesquisa. CNPq*, 2009.
21. Marchesan IQ, Genaro KF, Berretin-Felix G, Rehder MIBC. Avaliação miofuncional orofacial – protocolo MBGR. *Rev. CEFAC*. 2009;11(2):237-55.
22. Moojen S, Lamprecht R, Santos RM, Freitas GM, Brodacz R, Siqueira M et al. *CONFIAS: Consciência Fonológica: Instrumento de Avaliação Sequencial*. Ed. Rev. São Paulo: Casa do Psicólogo, 2003. 38p.
23. Queiroga BAM, Alves JM, Cordeiro AAA, Montenegro ACA, Asfora R. Aquisição dos encontros consonantais por crianças falantes do português não padrão da região metropolitana do Recife. *Rev. CEFAC*. 2011;13(2):214-26.
24. Ribas AFP, Moura MLS. Responsividade materna: aspectos biológicos e variações culturais. *Psicol. Reflex. Crit. [periódico na Internet]*. 2007 [acesso em 10 de maio de 2011];20(3):368-75. Disponível em: <http://dx.doi.org/10.1590/S0102-79722007000300004>.
25. Gahyva DLC, Crenitte PAP, Caldana ML, Hage SRV. Caracterização das alterações de linguagem em crianças com histórico de intoxicação por chumbo. *Pró-Fono R. Atual. Cient.* 2008;20(1):55-60.
26. Fraga DA, Linhares MBM, Carvalho AEV, Martinez FE. Desenvolvimento de bebês prematuros relacionado às variáveis neonatais e maternas. *Psicologia em Estudo. [periódico na Internet]* 2008 [acesso em 25 de março de

2012];13(2):335-44. Disponível em: <http://dx.doi.org/10.1590/S1413-73722008000200016>.

27. Patah LK, Takiuchi N. Prevalência das alterações fonológicas e us o dos process os fonológicos em escolares aos 7 anos. *Rev CEFAC*. 2008;10(2):158-67.

28. Wertzner HF. Fonologia. In: Andrade CR, Befi-lobes DM, Fernandes FDM, Wertzner HF. ABFW. Teste de linguagem infantil nas áreas de fonologia, vocabulário, fluência e pragmática. São Paulo: Pró-fono, 2000.

29. Wertzner HF. Distúrbio fonológico. In: Andrade CMF, Marcondes E. Fonoaudiologia em pediatria. São Paulo: Sarvier; 2003.

30. Wertzner HF. Estudo da aquisição do sistema fonológico: o uso de processos fonológicos em crianças de três a sete anos. *Pró-Fono R. Atual. Cient*. 1995;7(1):21-6.

31. Yavas M. Padrões de aquisição da fonologia do português. *Letras Hoje*; 1988. p. 7-30.

32. Dias RF, Melo RM, Mezzomo CL, Mota HB. Variáveis extralinguísticas, sexo e idade, na

consciência do próprio desvio de fala. *Pró-Fono R. Atual. Cient*. 2010;22(4):439-44.

33. Kaminski TI, Moura HB, Cielo CA. Vocabulário expressivo e consciência fonológica: correlações destas variáveis em crianças com desvio fonológico. *Rev. Soc. Bras. Fonoaudiol*. 2011;16(2):174-81.

34. Gombert JE. Atividades metalinguísticas e aprendizagem da leitura. In: Maluf MR. Metalinguagem e aquisição da escrita: contribuições da pesquisa para a prática da alfabetização. São Paulo: Casa do Psicólogo; 2003. p. 19-64.

35. Souza APR, Pagliarin KC, Ceron MI, Deuschle VP, Keske-Soares M. Desempenho por tarefa em consciência fonológica: gênero, idade e gravidade do desvio fonológico. *Rev. CEFAC*. 2009;11(2):213-22.

36. Lasch SS, Mota HB, Cielo CA. Consciência fonológica: O desempenho de meninos e meninas bilíngues e monolíngues. *Rev. CEFAC*. 2009;12(2):202-9.

Received on: September 03, 2012

Accepted on: April 01, 2013

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