



# Perception of parents about the behavior and the vocal features of children

## Percepção dos pais acerca do comportamento e características vocais de crianças

## La percepción de los padres sobre el comportamiento vocal de los niños

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### **Abstract**

**Objective:** Verify the perception of parents about the behavior and vocal characteristics of school children, analyzed by gender. **Methods:** A cross-sectional study, conducted from May to November 2013, with 104 parents of school children, 8-12 years of age, Municipal Public School in southern Brazil, who answered the self-administered questionnaire about their perception of vocal behavior of children. Variables: age, gender, vocal habits, classification and voice changes. Statistical analysis was performed using the nonparametric tests Chi-square of the Pearson and Equal Proportions Two-Test, adopting a significance level of 5%. **Results:** In the perception of parents, students talk a lot (>65%) and high (>49%), watching television at high volume (>40%). The girls sing more (58.2 %), eat more cold drinks (50.9%) and hear more sounds at high volume (27.3%), while boys have more frequent habit

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cough (24.5%) with a significant difference ( $p < 0.05$ ). The voice alteration was observed in about one third of the school, and most of the high intensity of voice ( $>65\%$ ) was on moments of nervousness ( $>42\%$ ). **Conclusion:** We conclude that in the parental perception most school students have normal voice, but have the habit of talking long and loud, and of watching TV at high volume. In case of voice changing, the predominant type was speaking with high intensity, which appears especially in times of nervousness. The girls have more the habit of singing, drinking cold drinks and listening to loud sounds, while the boys cough frequently.

**Keywords:** Child; dysphonia; parents; perception; voice.

## Resumo

**Objetivo:** Verificar a percepção dos pais acerca do comportamento e características vocais dos filhos escolares, analisados por sexo. **Método:** Estudo transversal analítico, realizado de maio a novembro de 2013, com 104 pais de escolares, de 8 a 12 anos de idade, de Escola Pública Municipal do sul do Brasil, que responderam a questionário autoadministrado sobre sua percepção em relação ao comportamento vocal dos filhos. Variáveis: idade, sexo, hábitos vocais, classificação e alterações da voz. Utilizou-se testes não paramétricos Qui-Quadrado de Pearson e Teste entre Duas Proporções, adotando-se o nível de significância de 5%. **Resultados:** Na percepção dos pais, os escolares falam muito ( $>65\%$ ) e alto ( $>49\%$ ), assistem televisão com alto volume ( $>40\%$ ). As meninas cantam mais (58,2%), ingerem mais bebidas geladas (50,9%) e escutam mais sons com alto volume (27,3%), enquanto os meninos apresentam mais o hábito frequente de tosse (24,5%) com diferença significativa ( $p < 0,05$ ). A alteração da voz foi observada em cerca de um terço dos escolares, sendo a mais referida a alta intensidade da voz ( $>65\%$ ) e no momento em que estava nervoso ( $>42\%$ ). **Conclusões:** Conclui-se que na percepção dos pais a maioria dos escolares tem voz normal, mas com hábito de falar muito e alto, além de assistir televisão com alto volume. Na percepção de voz alterada, os pais apontaram como tipo de alteração o “falar com forte intensidade”, que aparece especialmente “quando está nervoso”. As meninas têm mais hábito de cantar, ingerir bebida gelada e escutar som com alto volume, enquanto os meninos, de tossir frequentemente.

**Palavras-chave:** criança; disfonia; pais; percepção; voz.

## Resumen

**Objetivo:** Compruebe la percepción de los padres sobre el comportamiento y las características vocales de niños en edad escolar, analizada por sexo. **Método:** Un estudio transversal, realizado entre mayo y noviembre de 2013, con 104 padres de niños en edad escolar, 8-12 años de edad, la Escuela Pública Municipal en el sur de Brasil, que contestó el cuestionario auto administrado sobre su percepción del comportamiento vocal de los niños. Variables: edad, sexo, hábitos vocales, clasificación y cambios en la voz. Se utilizó la prueba de chi-cuadrado y la prueba no paramétrica entre dos proporciones, la adopción de un nivel de significación del 5%. **Resultados:** En la percepción de los padres, los estudiantes hablan mucho ( $>65\%$ ) y alta ( $>49\%$ ), ver la televisión a un volumen alto ( $>40\%$ ). Las chicas cantan más (58,2%), comer bebidas más frías (50,9%) y escuchar más sonidos a un volumen alto (27,3%), mientras que los niños tienen tos hábito más frecuente (24,5%) con una diferencia significativa ( $p < 0,05$ ). La alteración de la voz se observó en aproximadamente un tercio de la escuela, y la mayor parte de la alta intensidad de dicha voz ( $>65\%$ ) y era momento nervioso ( $>42\%$ ). **Conclusión:** Llegamos a la conclusión de que en la escuela los padres más percepción tiene voz normal, pero con hábito de hablar largo y fuerte, y ver la televisión a un volumen alto. En caso de voz cambió tipo predominante hablar con fuerte intensidad que aparece sobre todo en momentos de nerviosismo. Las niñas tienen más costumbre de cantar, comer bebida fría y escuchar a sonidos altos, mientras que los chicos a menudo tosen.

**Palabras-clave:** Niño; disfonía; padres; percepción; voz.

## Introduction

The voice has undoubtedly an important role in relation to the life of people, including children in school age, once it is the most used feature on communication and interpersonal relationship. The voice of a child presents some peculiarities from the neuromuscular immaturity of the larynx and the variation of the setting of the vocal folds that are not considered pathological<sup>1</sup>.

Voice alterations in childhood interfere negatively in the social performance or even in the affective-emotional development and quality of life of children<sup>2,3</sup>. For example, child dysphonia is a vocal disorder characterized by the alteration of some parameters such as voice quality, pitch and loudness<sup>2,4</sup>. Studies indicate that it affects from 8 to 30% of children, with higher incidence in individuals between five and ten years old<sup>1,3,5-7</sup>. The etiology is varied, including viral infections, disabling injuries and predisposing or aggravating factors, among which stand out the anatomic, emotional, social and environmental ones, as well as the incorrect use of the voice, personality structure and allergic factors<sup>4,6-8</sup>.

The misuse of the voice is frequent in childhood and it is caused by the lack of knowledge of parents and the child himself about the vocal health, living with inadequate vocal models of adults and/or by the own age profile<sup>1,8</sup>. At school, children have many opportunities to commit vocal abuses that lead to laryngeal disorders, among it, the noise exposure that encourages to vocal competition, dust that leads to desiccation of the vocal tract, inadequate pattern of educators which constitutes a negative vocal model, participation in outdoor activities, where the vocal self-control is difficult<sup>9</sup>.

The knowledge of characterization of vocal habits, present in childhood, can contribute to the analysis of possible causes and maintaining factors that may be related to vocal alterations or voice impairment. We believe that the opinions of parents about the vocal behavior of school-age children can anticipate the analysis of possible causes and factors related to voice disorders. This enables early detection of the disease by the signs and symptoms associated to it, besides helping parents and teachers in the referral of the child for professional assessment, trying to reduce the impact of communication during childhood<sup>2,6,7,10</sup>.

Considering the importance of promoting health during childhood and the impairment that vocal alterations can bring to the development and quality of life of children, besides the lack of studies on the vocal behavior in school-age children, it is important to carry out researches in this area and, in particular, under the parental perspective. Based on that, this study aimed to verify the perception of parents about the behavior and vocal features of their school children, analyzed by gender.

## Materials and methods

The research was characterized as transverse analytical; it was approved by the Research Ethics Committee under number 245.208 and carried out in the period between May and November 2013. Initially, some explanations were provided to the responsible of the City Department of Education, who was asked to read and sign the Institutional Authorization Form (IAF). Parents or guardians were also informed and asked to sign the Informed Consent (IC), as recommended by the Resolution No. 466/12 of the National Research Ethics Commission.

The target population of this study was composed by the parents of the students of public schools in the urban area of a city in the interior of Rio Grande do Sul. Among the public schools authorized by the City Department of Education, a school was chosen by drawing of lots. After authorized by the head of school, the children received a written invitation, addressed to parents, to participate in the survey, along with the IC.

Criteria for inclusion were the parents of children between 8 and 12 years of age, of both genders. Exclusion criteria were the information received from parents through the questionnaires, about the presence of neurological, psychiatric and endocrine diseases. There were also excluded the students that in the self-assessment, using the Tanner criteria in drawing, presented stage three or higher of pubertal development in order to avoid interference of the physiological vocal change that occur in this period, in the results.

From a total of 217 questionnaires sent to parents, 115 returned, in a percentage of 53%. Of these, 2 were excluded for reporting neurological diseases and 9 for pubertal development in stage three or higher. Then, the sample was constituted

by parents of 104 children, being 49 of them male and 55 female.

We used a questionnaire as an assessment tool about vocal behavior, self-administered and answered by parents. It contains 12 opened and closed questions, divided into six categories: vocal identity, favorite game, vocal habits and family environment, pathological factor and behavior of parents regarding voice alterations<sup>7</sup>. The questionnaire was adapted by the authors, with the following questions : name, gender, age, vocal habits of the child (speaks loudly, sings, laughs out loud, yells a lot, speaks with effort, whispers, mimics voices, coughs frequently, drinks plenty of water, drinks cold drinks, watches television at high-volume, listens to sounds at high volume and the use of headphones), how would you rate the voice of your son (normal or altered) and if classified as altered, what type of alteration (hoarse, intensive, with low intensity , nasalized, other), and at what time it appears more (when he/she yells, when he/she is nervous, others).

For the data analysis, we constructed frequency tables of qualitative variables and we used the Pearson's chi-square non-parametric test in order to

verify the difference in voice classification between the genders and test between two proportions in the comparison of the vocal behavior and voice alteration perceived by parents between male and female genders. For both tests we adopted the significance level of 5% ( $p < 0.05$ ). The data were typed in Excel and they were analyzed by STATA 10.

## Results

From 104 questionnaires answered by parents, 53% (55) were from female children, being the average age of 9.6 and 9.7 years for girls and boys, respectively. In Table 1, according to the perception of parents, the students talk too much ( $> 65\%$ ) and high ( $> 49\%$ ) and they watch television at high volume ( $> 40\%$ ). The girls sing more (58.2%), drink more cold beverages (50.9%) and listen to more sounds at high volume (27.3%) when compared to boys and with significant statistical difference ( $p < 0.05$ ). On the other hand, boys present more the frequent habit of coughing (24.5%) when compared to girls and also with significant difference ( $p < 0.001$ ).

**Table 1** - perception of parents about the vocal behavior of school-age children according to gender

Habits	Gender		p*
	Male	Female	
	n (%)	n (%)	
	49 (47)	55 (53)	
Speaks Loudly	32 (65,3)	42 (76,4)	0,109
Sings	17 (34,7)	32 (58,2)	0,009**
Laughs	12 (24,5)	14 (25,5)	0,454
Speaks Loudly	25 (51,0)	27 (49,1)	0,419
Yells A Lot	12 (24,5)	18 (32,7)	0,185
Speaks With Effort	0 (0,0)	0 (0,0)	1,000
Whispers	2 (4,1)	2 (3,6)	1,000
Mimics Voices	12 (24,5)	9 (16,4)	0,153
Coughs Frequently	12 (24,5)	2 (3,6)	0,001**
Drinks Plenty Of Water	24 (49,0)	23 (42,0)	0,237

Has Cold Drinks	17(34,7)	28 (50,9)	0,050**
Watches Television At High-Volume	20 (40,8)	26 (47,3)	0,236
Listens To Sound At High Volume	6 (12,2)	15 (27,3)	0,028**
Use Of Headphones	11 (22,5)	8 (14,6)	0,143

\*Teste entre duas proporções; n=number of subjects; %=percentage of subjects.

\*\*p<0,05

Regarding the voice feature, the parents have the perception that the voice of their children is normal (> 60%) and with alteration in about a third of the subjects, of both genders (Table 2). The most referred type of voice alteration mentioned by

parents was the intensity of voice, which occurred in over 65% of cases, and it appeared to be more frequent, both in boys as in girls, when they were nervous (Table 3).

**Table 2** - classification of voice in the perception of parents of school children by gender

Classification of voice	Gender		p*
	Male	Female	
	n (%)	n (%)	
Normal	33 (67,3)	34 (61,8)	<b>0,557</b>
Altered	16 (32,7)	21(38,2)	
<b>TOTAL</b>	49 (100,0)	55 (100,0)	

\*Teste Qui-Quadrado de Pearson; n=number of subjects; %=percentage of subjects.

**Table 3** - features of voice alteration in the perception of parents of students according to the gender

Voice alteration	Gender		p*
	Male	Female	
	n (%)	n (%)	
	<b>16 (100)</b>	<b>21 (100)</b>	
<b>Type</b>			
Hoarse	0 (0,0)	2 (9,5)	0,096
Intensive	11(68,8)	16 (76,2)	0,317
With low intensity	2 (12,5)	1 (4,8)	0,193
Nasalized	3 (18,7)	3 (14,3)	0,341
Other	3 (18,8)	1 (4,8)	0,089
<b>Moment</b>			
When he/she yells	2 (12,5)	5 (23,8)	0,200
When he/she is nervous	9 (56,3)	9 (42,9)	0,217
Others	5 (31,2)	7 (33,3)	0,449

\*Teste entre duas proporções; n=number of subjects; %=percentage of subjects.

## Discussion

The perception of parents about the vocal behavior of their children in school age showed that a percentage of over 60%, regardless of gender, present vocal habits of risk for the development of voice disorders. A study which applied the same questionnaire of vocal behavior to parents of preschool children also found the presence of bad vocal habits, even in the absence of voice alterations, according to the perception of parents<sup>7</sup>, highlighting that, in the observation of parents, the voices of healthy children also presented high occurrence of bad vocal habits<sup>3,7</sup>.

Although the vocal behavior in male and female genders has been shown to be similar, one of the exceptions was the frequent habit of coughing, most reported by the parents of boys. The vocal habit of frequent coughing is often considered a bad and abusive vocal use that can be associated with several factors and is also a risk factor for laryngeal lesions that impair voice quality<sup>5,11-13</sup>. One of the factors that generate cough is infections that affect the respiratory system. A study which investigated the occurrence of acute respiratory infection in 551 children showed higher incidence in the male gender, in a ratio of 1.2: 1, being the upper airway ones considered the most common – nasopharyngitis type. The most common symptoms are runny nose (82.1%) and coughing (80.4%)<sup>12</sup>. Another factor that should be mentioned is mouth breathing, mainly caused by nasal obstructive processes and also common in children. This type of breathing causes dryness of mucosa, edema and irritation of the vocal tract, with coughing and throat clearing the most common reactions<sup>6</sup>. The cough is also one of the main symptoms observed in children with environmental exposure to smoke at home, highlighting the association between secondhand smoke and respiratory morbidity in children<sup>13</sup>.

The habit of talking too much, singing, talking loudly and drinking cold beverages were common in schoolchildren of both genders in this study. These factors may also lead to the misuse of voice. When inadequate habits of voice are frequently practiced, and for a long period, they may generate the beginning of alterations in the vocal folds, and, therefore they are considered of risk. However, when associated with other predisposing factors, the possibility of developing a dysphonia or laryngeal pathology increases<sup>14</sup>.

Even though a high percentage of students, in the perception of parents, present the habit of talking too much and loud, singing, having cold drinks and watching TV at high volume, which are considered at risk for causing voice disorders, they were uncommon, especially when the voice alteration was attributed to hoarse and nasal features. However, the most frequent voice problems reported by school children parents was speaking with strong intensity, which can be partly attributed to the use of sounds at high volume, which leads to increase the tone in an environment with background noise. It is noteworthy that the habit of watching television at high volume was observed in about half of the scholars, and more frequent in girls. This may contribute to the establishment of inadequate vocal habits, once they can lead to incorrect use of the voice, by competition with the environmental noise, which is one of the factors that can lead to voice inadequacy<sup>8,15</sup>.

The characterization of bad vocal habits in childhood by parents or guardians contributes to the analysis of the probable causes and factors that may be interconnected in voice disorders. It is noteworthy that, physiologically, the larynx of boys and girls is similar and that the findings of this study are consistent with several studies presented in the literature<sup>6-8,10,16</sup>. However, in general, the studies claim that boys have higher incidence of dysphonia whose justification would be involved in male personality, to a higher frequency of physical practices and social activities, aggregated to excessive vocal use<sup>5,8,11</sup>; even though this was not found in this study.

The fact that differences have not been observed between the genders, in terms of vocal behavior, can also be attributed to changes in society, which shows that girls also participate in sports activities, in which occur, sometimes, the sound competition, abusive vocal demand and other incorrect vocal uses; and probably that is the reason why some surveys have found no difference in voice disorders by gender<sup>6-8,10,16</sup>.

Parents, who indicated the perception of altered voice, pointed the “speaking with strong intensity” type of alteration and yet, the moment “when he/she is nervous”, which reinforces the hypothesis that emotional and environmental factors are related to the voice<sup>17</sup>. The involvement with stressful situations, with family members or not, can lead to the misuse of voice by the child, manifested

also by yelling a lot. Every time he/she introduces this kind of behavior it may happen to worsen the vocal production. Naturally linked to the emotional factor, the subject's personality is also a factor to be considered, and it is not uncommon, in similar situations, to occur the expression of feelings through the voice.

## Conclusion

The perception of parents about the vocal behavior of their children at school age shows that boys and girls have the habit of talking too much and loudly, as well as watching TV at high volume. Girls have the habit of talking too much, singing, having cold drinks and listening to sounds at high volume, while the boys, the frequent habit of coughing. In addition, according to the perception of parents, regarding the vocal features, most of students has normal voice. In relation to the presence of voice alteration, perceived by parents, the type of speaking with strong intensity and the moments of nervousness were predominant. Faced by these findings, professionals who work with children should be aware of the vocal alterations, especially in guiding parents and school about the importance of listening to sounds at less intense volumes, adjusting also the volume of the spoken voice and, in this way, preserving the voice and maintaining the vocal health of children.

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