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# Analysis of shyness on vocal handicap perceived in school teachers

## *Análise da timidez na desvantagem vocal percebida em professores*

### Keywords

Self-assessment  
Faculty  
Occupational Health  
Shyness  
Voice

### Descritores

Autoavaliação  
Docente  
Saúde do Trabalhador  
Timidez  
Voz

### ABSTRACT

**Purpose:** To verify the relation between the self-reported shyness and perceived vocal handicap in teachers from Early childhood and Primary education (elementary and middle school). **Methods:** 200 teachers (mean age 41.8 years old) without vocal complaint answered to personal identification protocol, work characterization information, the Vocal Handicap Index and the Shyness Scale. **Results:** From the total sample, 142 (71%) teachers had no vocal disadvantage, 42% (n = 59) were shy and 58% (n = 83) were non-shy. Among the 58 (29%) teachers with vocal disadvantage, most of them were shy (64%) instead of non-shy (26%). Considering the shy teachers, most of them worked in Early Childhood Education, were aged between 20-30 years old, had from 1 to 10 years of teaching experience and were working in a noisy classroom. The presence of upper airway affections was more frequent in shy teachers without vocal disadvantage and this was the only aspect that differentiated shy and non-shy teachers. **Conclusion:** Shy teachers showed higher frequency of vocal disadvantage when compared to non-shy teachers. Teachers between 20 and 30 years old, with up to 10 years of teaching experience and who teach in Early Childhood Education reported shyness, but there was no relation with vocal disadvantage.

### RESUMO

**Objetivo:** Verificar a relação entre a timidez autorreferida e a desvantagem vocal percebida em professores da Educação Infantil e Fundamental I e II. **Método:** 200 professores (média de 41,8 anos), sem queixa vocal atual, preencheram 3 protocolos: uma ficha de identificação pessoal e caracterização do trabalho, composta por 11 questões, elaborada pelo Programa de Saúde Vocal do SinproSP; o Índice de Desvantagem Vocal, instrumento de autoavaliação que investiga a autopercepção do impacto de um problema vocal; e a Escala de Timidez, com 14 itens sobre sentimentos e comportamentos comunicativos relacionados ao cotidiano organizacional. **Resultados:** Do total da amostra, 142 (71%) professores não apresentaram desvantagem vocal, sendo 42% (n=59) professores tímidos e 58% (n=83) não tímidos. Para os 58 (29%) professores que apresentaram desvantagem vocal, houve um maior número de tímidos (64%) do que não tímidos (26%). Entre o total de professores tímidos, houve uma proporção maior destes entre os professores que atuam exclusivamente na Educação Infantil, com faixa etária entre 20-30 anos, formados em até 10 anos e com queixa da presença de ruído na sala de aula. A presença de afecções de vias aéreas superiores foi o único aspecto que diferenciou tímidos com e sem desvantagem vocal, sendo mais frequente nos professores tímidos sem desvantagem vocal. **Conclusão:** Professores tímidos percebem mais desvantagem vocal quando comparados aos não tímidos. Os docentes com faixa etária entre 20 e 30 anos, com até 10 anos de formados e que lecionam para Educação Infantil relatam timidez, porém sem associação com a desvantagem vocal.

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## INTRODUCTION

Teachers represent 1.65% of the workers in Brazil, and, as also observed in other countries, this profession has high risk of developing vocal disorders<sup>(1)</sup>. Extrinsic factors such as, teaching for long period of time, noisy classroom situation and excessive numbers of students per classroom are aspects commonly described to favor vocal loading. However, little is known about this population intrinsic factors, such as, personality traits, psychosocial aspects and coping strategies related to vocal performance<sup>(2,3)</sup>.

The earliest studies related to voice and personality disorders are quite old; recently, the interest in this field has increased and recent studies present higher methodological complexity. Personality related studies have been gaining more and more importance in the scientific field. Personality traits discriminate one individual from the other; however, these traits are stable in each person and can summarize, predict and explain how each one acts<sup>(4,5)</sup>. Individuals with functional dysphonia are described as introverted, anxious, and may have laryngeal tension. On the other hand, individuals with vocal nodules are usually extroverted, impulsive and seem to be more communicative<sup>(6)</sup>.

Shyness is a different concept than introversion<sup>(7)</sup>. Shyness is an anxious preoccupation of the self, that emerges from certain contexts of interaction that can be real or imagined, and it is associated with the individual's high capacity of self-assessment. Introversion is a trait of innate personality, and it is independent of the exposure to a communication situation. The introvert may appear to be shy because of his low social interaction. However, the introverted is not concerned about what others will think about himself<sup>(8)</sup>. On the other hand, the shy individual presents uncomfortable feelings, mainly in social environments, with greater propensity to depression, anxiety and social phobia. Some studies argue that children with shyness have late prefrontal lobe maturation which leads to emotional, behavioral, and self-regulation difficulties<sup>(9,10)</sup>. Shyness reflects a difficulty of communication that is associated to feeling of low performance and negative social judgment of speech. Usually, it is difficult for the shy person to be heard and understood, to begin and to structure a conversation; also, they talk less, are less relaxed and less competent in communication<sup>(11)</sup>.

A study involving 755 students in pedagogy showed that individuals with less social interaction and more negative emotions have higher VHI (Voice Handicap Index) scores compared to non-shy individuals. Similar outcomes were also observed for the general population and for individuals without vocal complaint; the presence of shyness was accompanied by higher perception of vocal disadvantage<sup>(12,13)</sup>.

Some aspects of shyness such as, low vocal loudness, stuttering, monotone speech and not talking a lot, are describe as vocal behavior of some teachers<sup>(14,15)</sup>. However, extroverted teachers make more use of verbal and nonverbal communication cues than introverted teachers. The use of these resourced guarantees richer communication and better interaction with the students. Extroverted teachers speak more, faster, with higher loudness and repeat more the verbal instructions. In addition, they do more visual and physical contact, smile and use more gesture, therefore, provide a positive environment for learning<sup>(16-18)</sup>.

The teachers' work has different challenges, demands and rewards according to the school, the level of education and the students age range<sup>(19-21)</sup>. Early Childhood teachers, who teach to children from two to five years old, and Elementary School teachers, who teach to children from six to ten years old, have different vocal demands related to their different attributions. The Early Childhood includes activities like, storytelling, puppet theater, songs and conversations in which the most common means of communication is speech. The Elementary School teacher needs to provide dialogues and reflections. The arguments used by the teacher and the students are intense, which may lead to vocal abuse and therefore, vocal and emotional distress<sup>(22)</sup>.

The literature presents data of muscular tension and communication difficulties experienced by the shy individuals. Considering that speech is the prime means of communication for teachers, it is highly important to investigate any relation between shyness and presence of vocal disadvantage that these professionals may experience. These data will provide scientific evidence to better understand the vocal profile of this population, regarding the professional vocal use in addition to physical, mental and social well-being. Therefore, the aim of the present study was to verify the relation between the self-reported shyness and vocal handicap perceived in teachers of Early childhood and Primary education (elementary and middle school).

## METHODS

This is a cross-sectional, observational and quantitative study. It was accepted by the Committee for Ethics in Research of the *Faculdade São Leopoldo Mandic Campinas/SP* under the protocol number 1.963.878.

The participants' recruitment was performed online using the Survey Monkey platform or personally in public or private schools of *Campinas* and *São Paulo* cities, both in the state of *São Paulo*. The individuals agreed to participate and signed an informed consent form on the answer sheet of the questionnaire.

This study counted with teachers of both genders, aged between 20 and 60 years old, without vocal complaint. They were teaching in the Early childhood and Primary education (elementary and middle school) either from public or private schools in *Campinas* and *São Paulo* cities, in the state of *São Paulo*.

The participants answered to an 11 questions questionnaire previously elaborated by SinproSP "Vocal Health Program" (*Programa de Saúde Vocal do SinproSP*). The questionnaire was presented personally in an answer sheet that was respond at the teachers' workplace, or sent via Survey Monkey link to be answered online. The school chose for the online or in person questionnaire response.

The data investigated with the personal identification protocol was: gender, age, level of education taught (Early childhood, Primary education - elementary and middle school), years of teaching experience, number of students per classroom, daily

**Table 1.** Personal identification and work characteristics frequency and percentage

Variables and categories	n	%	p-value
<b>Gender</b>			
Female	194	97.00	<0.001*
Male	6	3.00	
<b>Age range</b>			
20-30	23	11.50	0.031*
30-40	60	30.00	0.527
40-50	71	35.50	Ref.
50-60	46	23.00	0.170
<b>Level of education</b>			
Early childhood	63	31.50	0.001*
Primary education	115	57.50	Ref.
Early childhood and primary education	22	11.00	<0.001*
<b>Years of teaching experience</b>			
01-10	54	27.00	0.479
10-20	58	29.00	0.675
20-30	65	32.50	Ref.
30-40	23	11.50	0.051
<b>Work load</b>			
01 period	114	57.00	Ref.
02 periods	84	42.00	0.485
03 periods	2	1.00	0.116
<b>Students per classroom</b>			
01-10	9	4.50	0.018*
10-20	56	29.50	0.055
20-30	91	45.50	Ref.
30-40	39	19.50	0.005*
40-50	2	1.00	0.209
<b>Presence of noise in the classroom</b>			
Yes	85	42.50	0.037*
No	115	57.50	
<b>Voice care</b>			
Yes	78	39.00	0.002*
No	122	61.00	
<b>Vocal use in activities not related to work</b>			
Yes	109	54.00	0.259
No	92	46.00	
<b>Presence of upper airway infection</b>			
Yes	124	62.00	0.001*
No	76	38.00	
<b>Previous speech language pathology therapy</b>			
Yes	43	21.50	<0.001*
No	157	78.50	

\*p&lt;0.05 – Two-Proportions Test

**Caption:** n=number of individuals; %=percentage of individuals

hours lecture/work load, presence of noise in the classroom, search for previous medical and/or speech language pathologist assessment due to voice problems, vocal use in activities not related to their work, smoking, alcoholism, presence of airway

infection, hearing difficulties and family history. These data were also used to characterize the sample. The questionnaires were answered only by individuals without vocal complaint; teachers with vocal complaint were not included in this research analysis.

A total of 200 teachers (194 women and six men) participated in this study. Their mean age was 41.8 years old, they did not have vocal complaint and they were teaching in Early childhood and Primary education (elementary and middle school).

The majority of the sample was female (97%), with mean age of 41.8 years old. Most teachers were working in the Primary education (57%), teaching for a mean of 22 years, mostly for one period per day and with 17 students per classroom. Regarding vocal aspects, 61% of the teachers had no voice care, 62% reported upper airway infection and 78% had never had speech language pathology therapy. Table 1 presents data regarding the personal identification protocol and the work characterization.

The participants also answer to the Cheek and Buss Shyness Scale<sup>(23)</sup> and the Vocal Handicap Index – VHI-10<sup>(24)</sup>.

The Cheek and Buss Shyness Scale is used worldwide. It was translated to the Brazilian Portuguese by Vasconcellos (2005), however, it was not validated. The scale presents 13 items regarding feelings and communication behaviors in common situations. The scale answering sheet is presented in a 5 point numerical scale, where one is very uncharacteristic or untrue, strongly disagree, and five is very characteristic or true, strongly agree<sup>(23)</sup>. Shy individuals present a score above 34 points; the analysis of this scale was performed by a simple sum of the answers.

The VHI-10 is a self-assessment tool that has been translated and validated to the Brazilian Portuguese. It has 10 statements to investigate the self-perception of vocal disadvantage. The answers are given using a five-point numerical scale where zero represents never and four represents always. The total score is a simple sum of the answers; zero indicates no vocal disadvantage and 40 indicates maximum vocal disadvantage. For screening proposes, the VHI-10 considers a threshold of 7.5 points; scores above 7 points suggest that the individual must be referred to complete vocal evaluation.

The data were tabulated and submitted to statistical analysis. Contingency analysis was performed with Chi-squared and Two proportions tests. For all statistical analysis the level of significance was set at 5% (p<0.05). The JMP/SAS 13.1 software was used.

## RESULTS

Table 2 shows that most shy individuals had between 20 to 30 years old (p=0.003), were teaching in the Early childhood (p=0.002), had from 1 to 10 years of teaching experience (p=0.001) and worked in a noisy classroom (p<0.001). It is noteworthy the high presence of young and shy teachers.

Among the 58 (29%) teachers with vocal disadvantage, most of them were shy (64%, n=37) instead of non-shy (26%, n= 21; p=0.042). Among the 142 individuals (71%) with no vocal disadvantage, 42% (n=59) were shy and 58% (n=83)

were non-shy ( $p=0.047$ ). This data is presented in Figure 1. It is noteworthy there were more shy teachers with vocal disadvantage.

**Table 2.** Personal identification and work characteristics frequency and percentage according to shyness

Variables and categories	Non-shy		Shy		p-value
	n	%	n	%	
<b>Gender</b>					
Male	4	66.67	2	33.33	0.465
Female	100	51.55	94	48.45	
<b>Age range</b>					
20-30	4	17.39	19	82.61	0.003*
30-40	31	51.67	29	48.33	
40-50	41	57.75	30	42.25	
50-60	28	60.87	18	39.13	
<b>Level of education</b>					
Early childhood	23	36.51	40	63.49	0.002*
Primary education	68	59.13	47	40.87	
Early childhood and primary education	13	59.09	9	40.91	
<b>Students per classroom</b>					
01-10	4	44.44	5	55.56	0.177
10-20	20	33.90	39	66.10	
20-30	56	61.54	35	38.46	
30-40	23	58.97	16	41.03	
40-50	1	50.00	1	50.00	
<b>Years of teaching experience</b>					
01-10	18	33.33	36	66.67	0.001*
10-20	31	53.45	27	46.55	
20-30	42	64.62	23	35.38	
30-40	13	56.52	10	43.48	
<b>Presence of noise in the classroom</b>					
Yes	25	29.41	60	70.59	<0.001*
No	79	68.70	36	31.30	
<b>Previous speech language pathology therapy</b>					
Yes	20	46.51	23	53.49	0.416
No	84	53.50	73	46.50	
<b>Voice care</b>					
Yes	44	56.41	34	43.59	0.318
No	60	49.18	62	50.82	
<b>Vocal use in activities not related to work</b>					
Yes	59	54.63	49	45.37	0.419
No	45	48.91	47	51.09	
<b>Presence of upper airway infection</b>					
Yes	65	52.42	59	47.58	0.879
No	39	51.32	37	48.68	
<b>Work load</b>					
01 period	55	48.25	59	51.75	0.221
02 periods	47	55.95	37	44.05	
03 periods	2	100.00	0	0.00	

\* $p<0.05$  – Chi-square Test

**Caption:** n=number of individuals; %=percentage of individuals

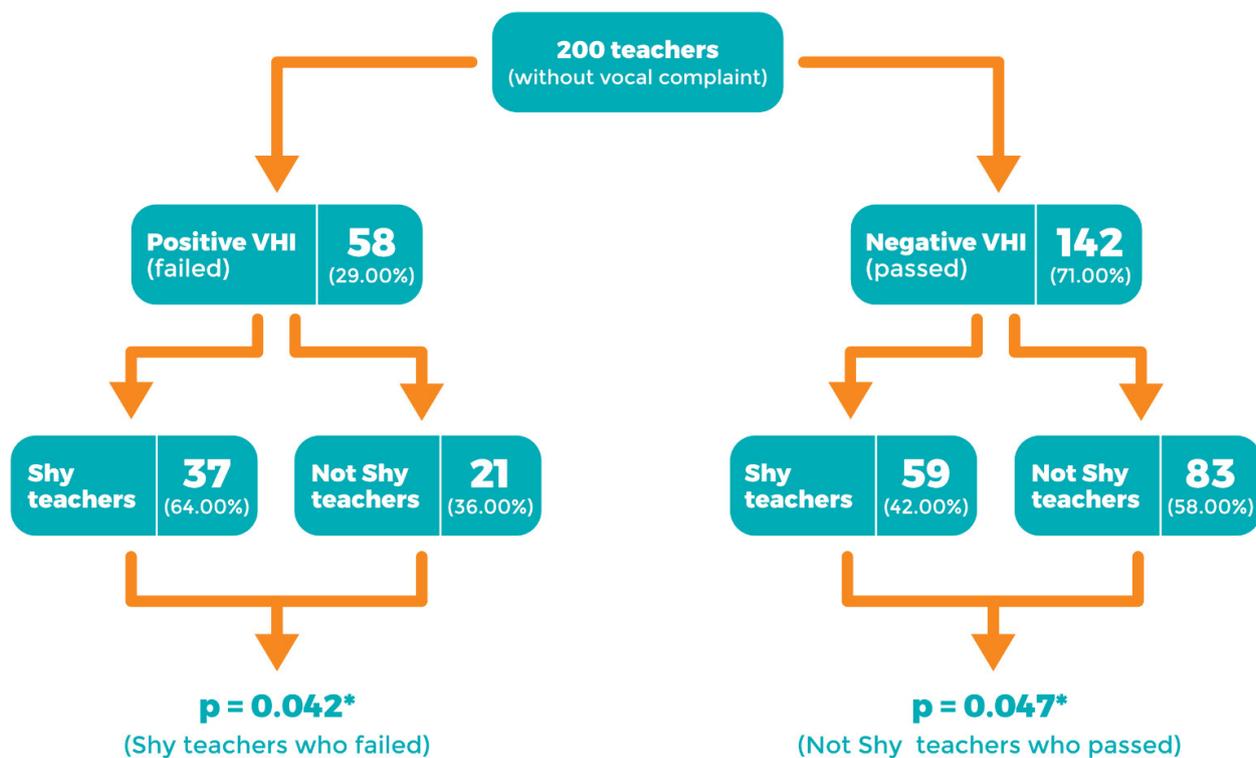
Table 3 presents the vocal disadvantage of shy teachers according to personal identification data and work characterization. There was higher frequency of shy teachers without vocal disadvantage with upper airway infection ( $p=0.006$ ). The work characterization of the shy teachers was not related to presence of vocal disadvantage.

**Table 3.** Personal identification and work characteristics frequency and percentage according vocal disadvantage in shy teachers

Variables and categories	With Disadvantage		Without Disadvantage		p-value
	n	%	n	%	
<b>Gender</b>					
Male	0	0.00%	2	5.41%	0.071
Female	59	100.00%	35	94.59%	
<b>Age range</b>					
20-30	11	18.64%	8	21.62%	0.768
30-40	16	27.12%	13	35.14%	
40-50	20	33.90%	10	27.03%	
50-60	12	20.34%	6	16.22%	
<b>Level of education</b>					
Early childhood	20	33.90%	20	54.05%	0.146
Primary education	33	55.93%	14	37.84%	
Early childhood and primary education	6	10.17%	3	8.11%	
<b>Students per classroom</b>					
1-10	4	6.78%	1	2.70%	0.242
10-20	27	45.76%	12	32.43%	
20-30	21	35.59%	14	37.84%	
30-40	7	11.86%	9	24.32%	
40-50	0	0.00%	1	2.70%	
<b>Years of teaching experience</b>					
1-10	19	32.20%	17	45.95%	0.266
10-20	16	27.12%	11	29.73%	
20-30	18	30.51%	5	13.51%	
30-40	6	10.17%	4	10.81%	
<b>Presence of noise in the classroom</b>					
Yes	38	64.41%	22	59.46%	0.626
No	21	35.59%	15	40.54%	
<b>Previous speech language pathology therapy</b>					
Yes	13	22.03%	10	27.03%	0.576
No	46	77.97%	27	72.97%	
<b>Voice care</b>					
Yes	23	38.98%	11	29.73%	0.356
No	36	61.02%	26	70.27%	
<b>Vocal use in activities not related to work</b>					
Yes	31	52.54%	18	48.65%	0.710
No	28	47.46%	19	51.35%	
<b>Presence of upper airway infection</b>					
Yes	30	50.85%	29	78.38%	0.006*
No	29	49.15%	8	21.62%	
<b>Work load</b>					
01 period	39	66.10%	20	54.05%	0.237
02 periods	20	33.90%	17	45.95%	
03 periods	0	0.00%	0	0.00%	

\* $p<0.05$  – Chi-square Test

**Caption:** n=number of individuals; %=percentage of individuals



\*p<0.05 – Two-Proportions Test

**Caption:** n=number of individuals; %=percentage of individuals

**Figure 1.** Numerical and percentage distribution of teachers according to vocal disadvantage and shyness

## DISCUSSION

Frequently, teachers are professionals with high risk of developing vocal disorders due to extrinsic factors related to their profession<sup>(2,25)</sup>. These factors are consensus in the literature, however, intrinsic factors related to personality traits, such as shyness, is not highly studied in this population<sup>(2,3,26)</sup>.

Generally, teachers perceive vocal signs and symptoms only when they become relevant and frequent; also, they do not always associate them with their professional vocal use and consider them as part of their assignments. The self-perception of vocal problems can be an important tool used by teachers to seek voice care and have a better self-care<sup>(2,3,27)</sup>.

The classroom noise was not significant for all individuals; however, it was significant for shy teachers. Individuals with more predisposition to experience negative emotions, anxiety and vulnerability to stress are more likely to evaluate noise negatively and have higher noise sensitivity and intolerance<sup>(28)</sup>.

The Early childhood education counted with more shy teachers between 20 to 30 years old and with up to 10 years of teaching experience (Table 2). Although for this group of young teachers the vocal disadvantage was not significant, the present study outcomes show that teachers with vocal disadvantage are usually shy (Table 3 and Figure 1). Previous studies that correlated vocal disadvantages and shyness in young teachers were not found. However, different studies state that vocal complaints are more common in the first 4 years

of teaching<sup>(29)</sup>; also, young teachers frequently report social inhibition<sup>(15)</sup>. The characteristic behaviors of a shy teacher, low vocal loudness, limited nonverbal communication, monotone voice, added to a noisy environment, can cause discomfort and demand more flexibility and communicative competence<sup>(17)</sup>. Therefore, these teachers, especially the youngsters, must be better advised regarding the vocal demands of their profession, considering the personal and emotional characteristics of each one<sup>(15)</sup>.

It is not always easy to establish a relation between vocal disadvantage and teacher's shyness<sup>(6)</sup>. The literature attempts to explain this relation by stating that shyness is associated with negative feelings<sup>(26)</sup>. Hence, shyness can lead to increase of the muscular tension, especially in the laryngeal and extralaryngeal muscles leading to vocal fatigue and discomfort<sup>(16)</sup>.

The shy teachers with vocal disadvantage had more complaint regarding presence of upper airway infection, hence, vocal disadvantage is a contributory factor (Table 3). According to published study, from a systems point of view, shyness represents a behavioral hyperreactivity to the environment and also somatic hyperreactivity in the autonomic nervous system and in the immune system. Shy individuals have an hyperresponsive limbic nervous system pathways which may accentuate allergic immune responses; this could partially justify the presence of upper airway infection in shy teachers, regardless of vocal use<sup>(30)</sup>.

In order to better understand the initial findings of this study, longitudinal studies must be carried out with the population of shy teachers. The present study showed there is a relation between being shy and vocal disadvantage in teachers. One of the study limitations is that the Cheek and Buss Shyness Scale was not validated to the Brazilian Portuguese. However, the relation between the vocal handicap index and the shyness scale prove this relation exists. Personal identification data and work characterization were more related to shyness than to vocal disadvantage. Therefore, longitudinal studies with a bigger sample size may reveal this correlation more deeply. Is shyness related to how the individual reacts to the environment and this be the factor that generate higher risk of developing vocal disorders? Is the late prefrontal lobe maturation in shy individuals that leads to self-regulation difficulties when there are changes in the environment and voice care measures? What are the risk parameters to identify this in shy teachers? Could the teacher become more communicative, less shy and less worried exposing himself to the environment, and thus acquire better coping strategies when compared to the non-shy teachers? These types of questions should lead further researchers in this field.

## CONCLUSION

Shy teachers showed higher frequency of vocal disadvantage when compared to non-shy teachers. Teachers between 20 and 30 years old, with up to 10 years of teaching experience and who teach in Early childhood education report shyness, but there was no relation with vocal handicap.

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### **Authors contributions**

*SRMLG, study delimitation, data collection, data analysis, writing of the manuscript; GM, study delimitation, writing and revision of the manuscript; FZ, study delimitation, writing and revision of the manuscript; MB, study delimitation, data analysis, writing and revision of the manuscript.*