

Talkativeness and vocal loudness in call center operators during labor and extra-labor situations

Grau de quantidade de fala e intensidade vocal de teleoperadores em ambiente laboral e extralaboral

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ABSTRACT

Purpose: To investigate self-perceived talkativeness and vocal loudness in call center operators during labor and extra-labor situations and compare it with vocal self-assessment and perceptual analysis. **Methods:** Participants were 299 male and female call center operators working in an inbound and outbound mode. Their average age was 27.1 years. The procedures were as follows: Talkativeness and Vocal Loudness Test in two situations of communication – work and extra-work; vocal self-assessment and perceptual analysis. **Results:** There are more women than men working in telemarketing. Regarding gender, women talk more in the work situation when compared to men. By comparing talkativeness and vocal loudness in work and extra-work situations, increased talkativeness and vocal loudness were observed in the work environment. **Conclusions:** The call center operator is a voice professional that reports speaking more and more loudly in work situations. Women talk more than men in any of the situations evaluated. There was no significant correlation between talkativeness, vocal loudness and self-assessment of voice.

Keywords: Voice; Speech; Evaluation studies; Protocols; Professional practice; Occupational exposure

INTRODUCTION

Telemarketing is understood as each and every activity developed by means of telematic systems and multiple media, with the purpose of standardizing and constant marketing actions^(1,2); it is the integrated application of technology of telecommunication and human resources, with the aim of optimizing direct gain of businesses and the maintenance of clients satisfaction⁽³⁾. In Brazil, this activity had its beginning during the 1980's with the support of multinational company branches, credit card companies, publishing houses and telecommunication companies. However, its dissemination took place in the next decade with the implementation of the call centers, the expansion and privatization of telecommunication companies, the development of data processing and the launching of the "Consumer Protection Code"^(1,4). According

to the Brazilian Association of Teleservices – BAT, the growth of this category is major, with an increase of 235% in the last years, which made it become one of the greatest employer in the country⁽⁵⁾. This growth strengthened the category and made governmental authorities and key companies draw their attention to it, ending up with the establishment of regulatory laws. The Appendix II of the Regulatory Norm 17, published in April of 2007, states that this profession must have a workload of six hours/day, with at least one day off per week, two 10-minute breaks, as well as a mandatory break determined by the CLT (Consolidation of Labor Laws). In addition, the workplaces must have adequate acoustic conditions, with a noise level up to 65 decibels⁽⁶⁾.

Telemarketing services or teleservices are segmented in outbound and inbound calls. While in the first type of service the operator has go after the client, in the second is just the opposite, the operator gets telephone calls^(1,3,7,8). Initially, telemarketing was characterized as being a temporary occupation, with short duration and great turnover and done essentially by young women⁽⁷⁾. However, it became an established profession and nowadays, it is a growing activity that has been progressively recognized by the corporate world, since it is considered that a successfully customer service between companies and clients depend great part on an efficient communication⁽⁸⁻¹²⁾.

Verbal communication is made by means of appropriate

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language and good vocal performance. The recommended voice for this type of professional activity is with a comfortable volume, adequate projection, balanced intonation and speech rate, clear articulation, and preferably a vocal quality without any specific markers or hoarseness. Nevertheless, several factors can affect voice production, for instance, lack of necessary vocal health care, required productivity with intense voice use, as well as environmental aspects, such as dust, background noise, air conditioning, lack of hydration and so on^(3,8,13).

In 2005, approximately 5% of the US population worked in call centers, compared to 2% in the United Kingdom and 1.5% in Sweden, with a tendency of progression. It is even estimated that 1-2% of the European workforce is employed by this job category, with an impressive growth in some centers, such as 40% per year in India⁽¹⁴⁾. In the United Kingdom, approximately 860,000 people work in call centers and despite of it, they have no information about the voice problems that they can come to have⁽¹⁵⁾. The British government estimates that voice loss in this job category generates expenses of approximately 200 million pounds a year⁽¹⁵⁾. On the other hand, in Brazil according to the 3rd National Consensus about Professional Voice in 2004, diseases related to the vocal tract, which are job induced, produce effects on social, economic, professional and personal levels. Besides, they represent an estimate loss greater than 200 million Reais a year⁽¹³⁾.

It is important to highlight that two aspects are directly related to voice use and reflect personal characteristics: talkativeness and vocal loudness. Usually people that talk little and softly, are introvert and choose careers that do not require much social interaction, whilst those that talk much and loud are extrovert and socialize innately, such as call center agents⁽¹⁶⁾. High talkativeness and vocal loudness degree correlate, according to the literature, with benign vocal fold lesions like nodules, polyps, ecstasias and hemorrhage, which affect essentially professional voice users^(10,16).

Some basic care can be implemented in order to decrease the risks of a voice loss, such as regular five-minute or longer breaks per hour in workplaces where there is a demand for moderate vocal loudness or repetitive activity; easy access to water, simple scripts and reduction of background noise to avoid the need of increasing vocal loudness^(10,15).

The amount of talking required for this work may be substantial; however it varies according to the nature of the service offered; on the other hand, there is no need to speak loud given that communication is performed via telephone with the use of headsets. It is important to emphasize that there should be a difference between the daily voice use and professional voice use, especially as far as talkativeness and vocal loudness are concerned. Due to the association between talkativeness and vocal loudness and the variation of the individual nature regarding habitual talkativeness and loudness, it is important to understand how these aspects relate to each other and express themselves during daily and professional voice use.

Taking into consideration the demand of some teleservice companies regarding voice use, the purpose of this study was to investigate the self-report of talkativeness and vocal loudness

degree of call center operators in and out of work conditions and to compare vocal self-assessment and perceptual analysis.

METHODS

The project of this study was approved by the Research Ethics Committee of Centro de Estudos da Voz (report number 1716/08). All participants signed the Consent Term according to the demands of the 196/96 act (BRAZIL. Act MS/CNS/CNEP number 196/96 of October 10th 1996).

The population consisted of 299 call center operators, employees of the same company of teleservices located in Sao Paulo State, 241 (80.6%) of them were female and 58 (19.4%) were male, with mean age of 27.66 and 26.55 respectively. Data collection was carried out during the season of the periodical examination and for the purpose of this study.

For data collection the following procedures were performed: administration of the "Talkativeness and Vocal Loudness Test" in two situations of communication: use of voice at work and innate use of voice, vocal self-assessment and perceptual analysis.

The questionnaire used was an adaptation of the "Self-rating Talkativeness and Vocal Loudness Scale" originally developed in English⁽¹⁶⁾ and translated into Brazilian Portuguese⁽¹⁷⁾, which assesses the individual's perception about his/her ongoing tendency to talk and voice volume need (Appendix 1). This instrument of self-assessment consists of two items, talkativeness and vocal loudness. The items are answered by means of a seven-point scale, namely: 1. quiet untalkative person and very low volume; 4. averagely talkative person and moderate volume and 7. extremely talkative person and very loud volume. The 2, 3, 5 and 6 points are intermediate options of the scale. In addition the administration of this instrument, participants rated their vocal quality using a four-point scale, classifying their voices into "very good, good, fair and poor". Perceptual analysis of voice was performed by the speech pathologist of the company during the examination, by observing the degree of overall voice deviation of spontaneous speech, classifying it in adapted, mild, moderate or severe deviation.

For the statistical analysis, the SPSS V16, the Minitab 15 and the Excel Office 2007 softwares were used. The tests utilized were Mann-Whitney, Wilcoxon and Spearman Correlation. The level of significance used was 5% (0.05).

RESULTS

Results show that women have higher talkativeness degree at work when compared to men, with significant difference. There was no relationship between gender, innate degree of talkativeness and vocal loudness, and vocal loudness at work (Table 1).

By studying the relationship between innate degree of talkativeness and degree of talkativeness at work, it was observed that there is a higher degree of talkativeness at work when compared to the innate talkativeness, and louder vocal loudness at work than the innate loudness, with a significant correlation for both variables (Table 2).

When investigating the relationship among all variables in

Table 1. Talkativeness and vocal loudness according to gender

Gender	Talkativeness extra-labor		Talkativeness labor		Vocal loudness extra-labor		Vocal loudness labor	
	F	M	F	M	F	M	F	M
Mean	4.98	4.90	5.80	5.43	4.33	4.38	4.51	4.72
SD	1.24	1.05	1.24	1.20	1.05	0.93	1.13	0.83
n	241	58	241	58	241	58	241	58
p-value	0.609		0.028*		0.571		0.097	

* Significant values ($p \leq 0.05$) – Mann-Whitney test**Note:** F = female; M = male; SD = standard deviation**Table 2.** Talkativeness and vocal loudness according to groups

	Talkativeness		Vocal loudness	
	Extra-labor	Labor	Extra-labor	Labor
Mean	4.96	5.73	4.43	4.55
SD	1.20	1.24	1.03	1.08
N	299	299	299	299
p-value	<0.001*		<0.001*	

* Significant values ($p \leq 0.05$) – Wilcoxon Test**Note:** SD = standard deviation

the two different situations, at work and innate voice use, it was observed that there are both positive and negative correlations, while the remaining variables presented positive correlation. The correlations between the innate degree of talkativeness and vocal loudness, and degree of talkativeness and vocal loudness at work showed moderate degree of strength; whilst innate degree of talkativeness and degree of talkativeness at work, innate degree of talkativeness and vocal loudness at work, age and vocal loudness at work, degree of talkativeness at work and innate vocal loudness, age and voice deviation, innate degree of talkativeness and voice deviation presented a weak degree of strength. Vocal self-rating did not present significant correlation with any other variable (Table 3).

DISCUSSION

Teleservices are an expanding segment and has become one of the biggest employers in Brazil⁽⁵⁾, consolidating itself as a professional career⁽⁸⁻¹²⁾. Recently, it became one of the most studied job categories in scientific researches⁽¹⁸⁾.

The characterization of the present study's population as far as gender and age are concerned is similar to the one found in the literature. It was observed that there is a greater number of women and a mean age of 27.1 years, without significant difference of age between male and female participants^(2,7,10,11,19,20).

Female call center agents reported a higher degree of talkativeness at work when compared to men (Table 1). According to the literature, the females have a higher a risk factor for developing voice disorders than males, given that the laryngeal proportion of this gender and the vocal folds vibration dosage associated with vocal load can lead to a laryngeal hyperfunction and consequently development of lesions⁽²¹⁻²⁴⁾.

When degree of talkativeness and vocal loudness are compared in the two situations studied, innate and at work, it is observed a greater degree of talkativeness and vocal loudness at work (Table 2). Call center operators present the following risk factors: background noise, poor environmental acoustics, poor air quality, inadequate body posture, as well as symptoms

Table 3. Correlation among variables

Group		Age	T-EL	T-L	VL-EL	VL-L	Self-assessment
T-EL	Corr	-10.1%					
	p-value	0.082					
T-L	Corr	-3.5%	27.4%				
	p-value	0.545	<0.001*				
VL-EL	Corr	-2.8%	40.7%	13.8%			
	p-value	0.634	<0.001*	0.017*			
VL-L	Corr	-13.1%	16.7%	30.8%	45.3%		
	p-value	0.024*	0.004*	<0.001*	<0.001*		
Self-assessment	Corr	-5.0%	-3.0%	11.0%	-2.6%	5.2%	
	p-value	0.392	0.606	0.058	0.649	0.374	
Vocal deviation	Corr	24.8%	12.4%	6.4%	11.2%	0.8%	7.8%
	p-value	<0.001*	0.032*	0.270	0.052	0.893	0.177

* Significant values ($p \leq 0.05$) – Spearman Correlation

Strength of correlation: >0.7 = strong; 0.3 to 0.69 = moderate; <0.29 = weak

Note: T-EL = talkativeness extra-labor; T-L = talkativeness labor; VL-EL = vocal loudness extra-labor; VL-L = vocal loudness labor; Corr = percentage value of the correlation

of vocal fatigue, dysphonia, vocal effort, throat pain, throat tightness, dry throat, pain in the back of the neck and in the neck, hoarseness, voice breaks, loss of volume, burning sensation and throat clearing^(19,23,25,26). According to the literature, the increase of voice problems in call center operators ultimately affects their productivity, as well as, their interaction with their family and friends^(10,19,26).

The increase of voice problems in call center agents may cause the development of lesions by means of vibratory stress on the vocal folds mucosa, such as hemorrhage, and afterwards a nodular or polypoid reaction, since the high degree of talkativeness and vocal loudness are related to vocal fold lesions. Therefore, the longer and the louder a person talks, the greater the vocal effort and demand will be, which eventually can lead to the development of lesions such as nodules, polyps, ecstasias and hemorrhage^(16,23,27). Usually, talkative and loud people have an extrovert personality; they are called overdoers and have a potential risk of having voice deviations. When this type of patient looks for speech pathology help, the clinician should favor changes in vocal behavior during therapy, otherwise there may be recurrence of the lesion, since professional voice users with vocal complaints tend to be louder and more talkative than those without vocal complaints^(12,16).

Regarding the degree of vocal deviation (Table 3), there was a significant positive correlation; however it was a weak correlation (24.8%, $p < 0.001$) when the vocal deviation was correlated with age, which means that older people have a greater degree of voice deviation; the majority of the participants (91%) has adapted voices, pre-requisite for working in this position.

In the vocal self-assessment, 11% of the call center agents

reported having a very good voice and 70% a good voice, which shows that they have a positive self-perception regarding their voices⁽²⁵⁾.

Regarding the degree of talkativeness and vocal loudness (Table 3), it is observed that independently on the situation, innate or at work, the greater the degree of talkativeness, the greater the vocal loudness is. It was still observed that the call center operators that reported having an innate tendency of talking louder present the same characteristic at work, and the greater the innate degree of vocal loudness, the greater the vocal loudness at work is. This aspect can lead to an increase of voice problems, since for this professional category, the high demand of talkativeness and the innate degree of vocal loudness are intrinsic characteristics of these professional.

CONCLUSION

The call center operator is a voice professional that reports speaking more and more loudly in work situations. Women talk more than men in any of the situations evaluated. There was no significant correlation between talkativeness, vocal loudness and self-assessment of voice.

There was a moderate correlation between talkativeness and vocal loudness at work, as well as, between innate and at work degree of vocal loudness. On the other hand, the correlation between innate and at work degree of talkativeness, innate degree of talkativeness and vocal loudness at work and degree of talkativeness at work and innate vocal loudness was weak.

Most call center operators rated their voices as good and the degree of voice deviation is greater for older professionals, with a weak correlation.

RESUMO

Objetivo: Investigar a autopercepção do grau de quantidade de fala e intensidade vocal de teleoperadores em ambiente laboral e extralaboral e comparar com autoavaliação vocal e análise perceptivo-auditiva da voz. **Métodos:** Participaram 299 teleoperadores ativos e receptivos, de ambos os gêneros, com média de idade de 27,1 anos. Foi aplicado o “Teste de grau de quantidade de fala e grau de intensidade vocal” em duas situações de comunicação: voz laboral e extralaboral, além da realização de autoavaliação vocal e análise perceptivo-auditiva. **Resultados:** No setor de telesserviços há um maior número de mulheres em relação ao número de homens, com média de idade de 27,1 anos. Em relação ao gênero, mulheres falam mais em ambiente laboral quando comparadas aos homens. Ao comparar quantidade de fala e intensidade de voz dentro e fora do trabalho, é observado maior uso e intensidade vocal no ambiente laboral. **Conclusão:** O teleoperador é um profissional da voz que relata falar mais e falar mais alto em situações de trabalho. Mulheres dessa categoria profissional falam mais que homens em qualquer uma das situações avaliadas. Não se observou correlação entre quantidade de fala, intensidade de voz e autoavaliação da voz.

Descritores: Voz; Fala; Estudos de avaliação; Protocolos; Prática profissional; Exposição ocupacional

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Appendix 1. Talkativeness and vocal loudness^(16,17)

Sex: Female () Male () Age: _____ Date: ____/____/____

Self-assessment:

Very good voice () Good voice () Fair voice () Poor voice ()

Speech Therapist assessment:

Adapted voice () Mild deviation () Moderate deviation () Intense deviation () Extreme deviation ()

You will answer two questions about the use of voice in two different situations: your natural necessity and your voice at work.

- First situation: think about your natural necessity (talkativeness) and natural volume of your voice (vocal loudness) and circle the option that best fits you.

- Second situation: You will answer the same questions, however, regarding the use of voice in their work in the Call Center.

Check only one option for each question in different situations, using a scale of 1 to 7 below. There are no right or wrong answers for this evaluation.

Situation 1 . Habitual voice

Talkativeness		Vocal loudness	
Quiet untalkative person	1	Very low volume speech person	1
	2		2
	3		3
Averagely talkative person	4	Moderate volume speech person	4
	5		5
	6		6
Extremely talkative person	7	Very loud volume speech person	7

Situation 2 . Voice at work

Talkativeness		Vocal loudness	
Quiet untalkative person	1	Very low volume speech person	1
	2		2
	3		3
Averagely talkative person	4	Moderate volume speech person	4
	5		5
	6		6
Extremely talkative person	7	Very loud volume speech person	7