

IMPACT OF A ONE-DAY PREVENTIVE VOICE PROGRAM FOR TEACHERS: A LONGITUDINAL STUDY

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I. INTRODUCTION

Teachers are professional voice users, i.e. people who rely on a consistent, special, or appealing voice quality to achieve their job. If afflicted with dysphonia or aphonia, they would generally lose motivation at work and seek alternative employment [1]. Teachers represent the largest group of professionals complaining of dysphonia: they represent 20% to 25% of the treatment-seeking workers [2, 3].

Voice disorders impact both physical and psychological health. They represent a public health problem, since they have considerable economic consequences in terms of treatment and replacement of professionals who suffer from these problems [4]. Moreover, they have been shown to interfere with quality of life, emotional state, job satisfaction, performance and attendance [4, 5]. Finally, a teacher's dysphonia adversely impacts students' comprehension and learning [6]. These negative effects of teachers' voice disorders motivate to develop prevention programs and test their efficacy.

This study aims to evaluate the impact over a five-month period of a one-day prevention program for female teachers. This program includes both direct and indirect methods.

II. METHODS

A. Participants

Twenty-two female kindergarten and elementary schoolteachers with less than 5 years of experience participated in this study. Half of them (test group) took part in a one-day prevention program in October, while the other half (control group) received no counseling on the use of the voice.

B. Assessments

For each participant, five sustained /a/ vowels and the reading of a text were recorded (1) at two times of the workday (morning and evening), and (2) at three times of the year: October (T0), December (T1) and February (T2).

For the sustained vowels, we measured maximum phonation time (MPT), mean fundamental frequency (F0), values of jitter, shimmer and harmonics-to-noise ratio (HNR). For the texts, we measured mean F0, standard deviation in F0 and intensity, and parameters related to speech rate (number of syllables per second, number of pauses and mean duration of pauses). For each parameter, a repeated-measures ANOVA (2 groups * 2 times of day * 3 times of year) was carried out.

Participants also completed a questionnaire on voice use and comfort at the three test sessions.

III. RESULTS

A. Time of day effect

The main effect of time of day showed an increase in the mean F0 of the vowels and the text following a workday ($p < .01$). MPT and HNR also increased ($p < .01$), while jitter and shimmer decreased at the end of the day ($p < .05$). The speech rate measures showed that the teachers tended to pause less often while reading the text at the end of the day, and their pauses were shorter ($p < .05$).

B. Time of year effect

The main effect of time of year showed an increase in the mean F0 of the vowels and the text during the year ($p < .01$), with the highest values observed in December (T1). The speech rate measures also showed an increase in the number of syllables per second ($p < .01$) and a tendency for speakers to pause less often later in the year.

C. Group effect

Several acoustic parameters showed that voice changed during the day and during the year in significantly different ways in the two groups. Thus, the MPT increased more during the year for the control group than for the test group. The elevation of mean F0 during the day increased to a similar degree for both groups between T0 and T1, but continued to increase until T2 for the control group, while it decreased for the test group. Jitter and shimmer decreased significantly following a workday for both groups at T0, and this decrease was more marked for the test group at T1 and T2.

Finally, analysis of the questionnaires showed a very strong deterioration in teachers' self-evaluations of vocal comfort and control at T1; nevertheless there were significantly fewer complaints from the group that received the prevention program.

IV. DISCUSSION AND CONCLUSION

For both groups, the changes in the observed parameters suggested an increase in vocal fatigue and hyperfunctional phonation during the day and during the year. The results showed greater vocal deterioration in December than at the other points in the school year (October and February).

For several acoustic parameters, the comparison of the two groups showed a less severe vocal deterioration for subjects who received the preventive program. Moreover, the questionnaires showed that the prevention program had a significantly positive impact on the changes in the teachers' perception during the year. These results encourage to offer such preventive interventions to teachers before or during their career, since they have a positive impact on teachers' perception and vocal comfort.

V. REFERENCES

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