Subjective self-ratings through a prolonged reading task in dysphonic versus normophonic female teachers

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1 Introduction

Teaching is a high risk profession for the development of occupational voice disorders.[1] Risk factors include high vocal load, background noise, poor room acoustics, dry and dusty air quality, stress and poor posture.[2] The present study focuses on the impact of vocal load.
The specific questions are:
1. what are the effects of a two-hour loading task on teachers' voice?
2. does the vocal load affect differently the pathological than the healthy teachers?

2 Methods

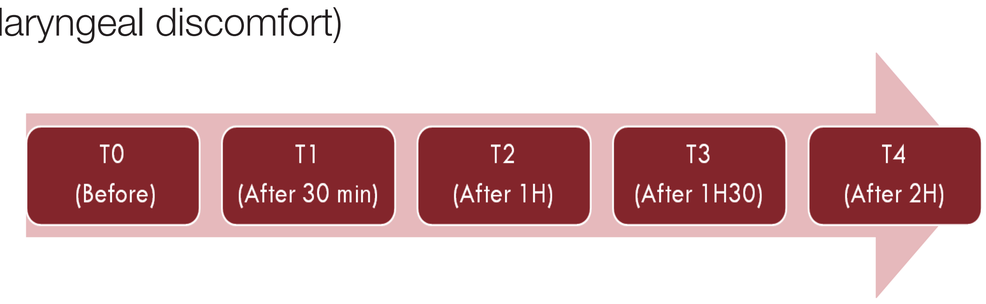
Subjects:
16 normophonic ♀ teachers (34.1 years) and 16 dysphonic ♀ teachers with vocal nodules (33.8 years). Normophonic and dysphonic teachers are paired by age. The diagnosis is established using a videolaryngostroboscopic examination.

Loading task:
Voices are orally loaded by reading a novel in French for 2 hours. Teachers are instructed to read for imaginary students, as in their classroom. Voice intensity is constantly controlled between 70 and 75 dB(A) using a Digital Sound Level Meter, at a distance of 40cm from the mouth.

3 Evaluation Protocol

Every 30 minutes, participants are asked to answer the following questions using a 100-mm horizontal visual analogue scale:

1. How is your voice quality?
   (The extremes on the scale were 0% for the minimum voice quality and 100% for the maximum voice quality)
2. Do you feel any phonation effort?
   (0% for no effort and 100% for a maximum vocal effort)
3. Do you feel any vocal fatigue?
   (0% for no fatigue and 100% for a maximum vocal fatigue)
4. Do you feel any laryngeal discomfort?
   (0% for no discomfort and 100% for a maximum laryngeal discomfort)

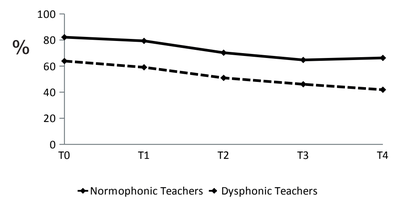


4 Hypotheses

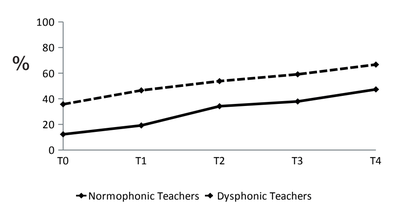
Self-ratings are expected

1. to worsen through the reading task for both groups;
2. to be better for the normophonic than for the dysphonic group;
3. to show a different evolution in both groups, the dysphonic group having a quicker and more important deterioration than the normophonic group.

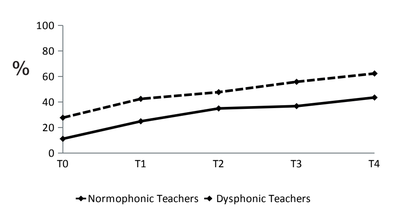
5 Results



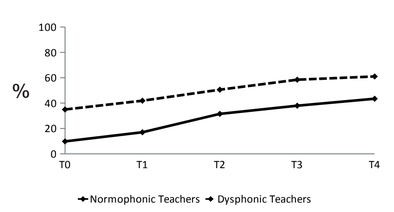
Voice Quality:
Duration effect: F(4,120) = 13.83, p <.0001
Group effect: F(1, 30) = 8.37, p =.007
No Duration x Group interaction



Phonation Effort:
Duration effect: F (4, 120) = 24.95, p <.0001
Group effect: F (1, 30) = 4.45, p =.04
No Duration x Group interaction



Vocal Fatigue:
Duration effect: F(4, 120) = 30.75, p <.0001
Group effect: F(1, 30) = 8.22, p =.007
No Duration x Group interaction



Laryngeal Discomfort:
Duration effect: F(4, 120) = 26.13, p <.0001
Group effect: F(1, 30) = 7.63, p =.009
No Duration x Group interaction

6 Conclusions

1. As hypothesized, self-ratings of both groups demonstrate progressive and negative changes during the reading task.
2. Dysphonic teachers have more complaints than normophonic teachers before and during the reading.
3. Surprisingly, no significant interaction between duration and group was found. This means that subjective self-ratings depict a similar evolution of both groups, while we expected more worsening of voice through time in the dysphonic group.

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References:
1. Roy N, Merrill RM, Thibeault S, Parsa RA, Gray SD, Smith EM. Prevalence of voice disorders in teachers and the general population. Journal of Speech Language & Hearing Research. 2004;47:281-293.
2. Epstein R, Remacle A, Morsomme D. From Reactive Intervention to Proactive Prevention: The Evolution of Occupational Dysphonia. American Speech-Language-Hearing Association. 2011;21:48-55.