



# The Impact of a Teaching or Singing Career on the Female Vocal Quality at the Age of 67 Years

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## Purpose

Due to aging, changes in vocal quality may arise (Xue & Deliyski, 2001; Mazetto de Menezes et al., 2014; Dehqan et al., 2012). In literature, no consensus exists about the possible influence of a high vocal load during the professional life. Therefore, the purpose of the present study was to assess the vocal quality in females aged between 60 and 75 years and to determine the impact of a teaching or singing career on the vocal quality. It was hypothesized that a teaching or singing career can result in a decreased vocal quality at the age of 60+ in comparison with females with a non-vocal professional career.

## Methods and materials

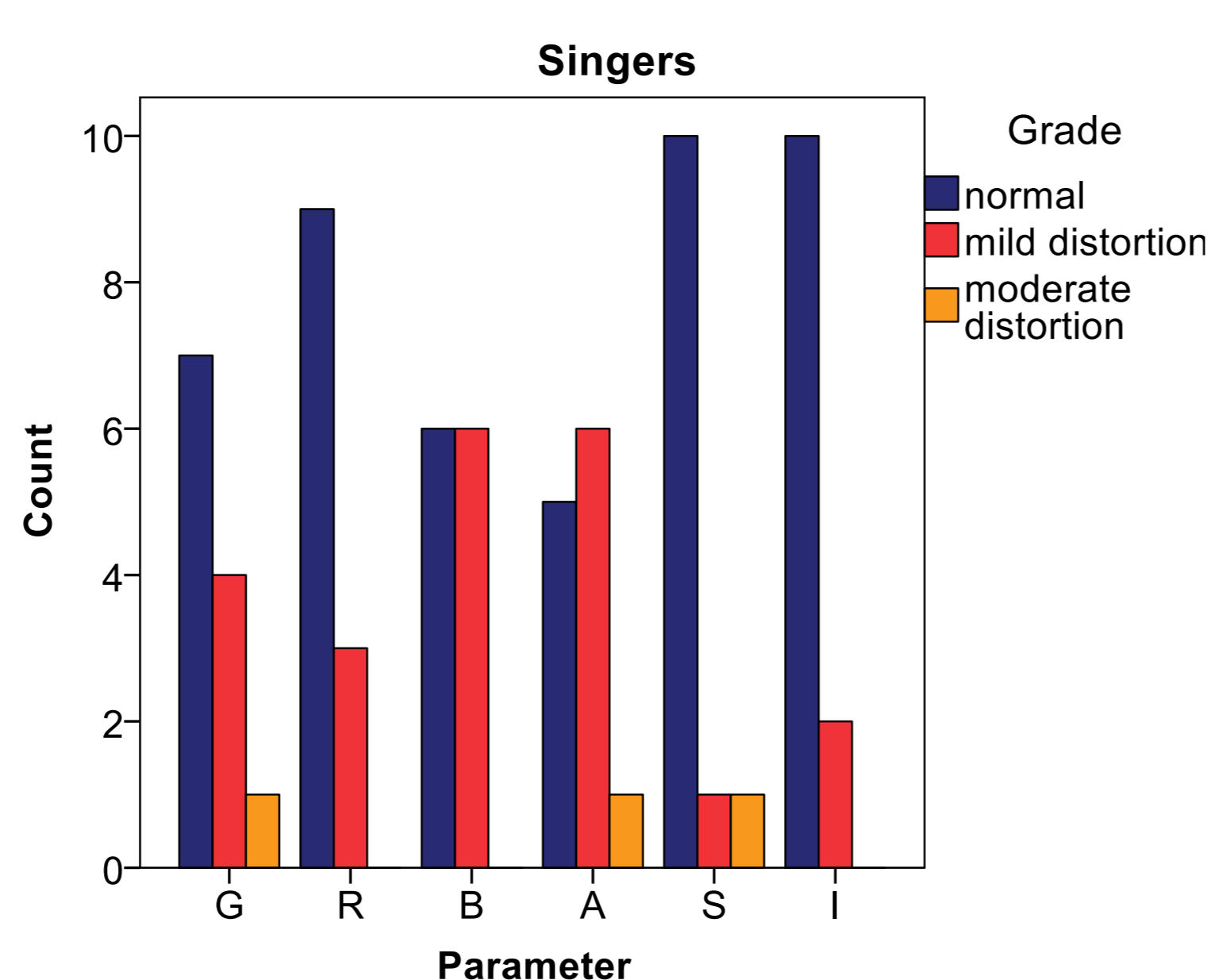
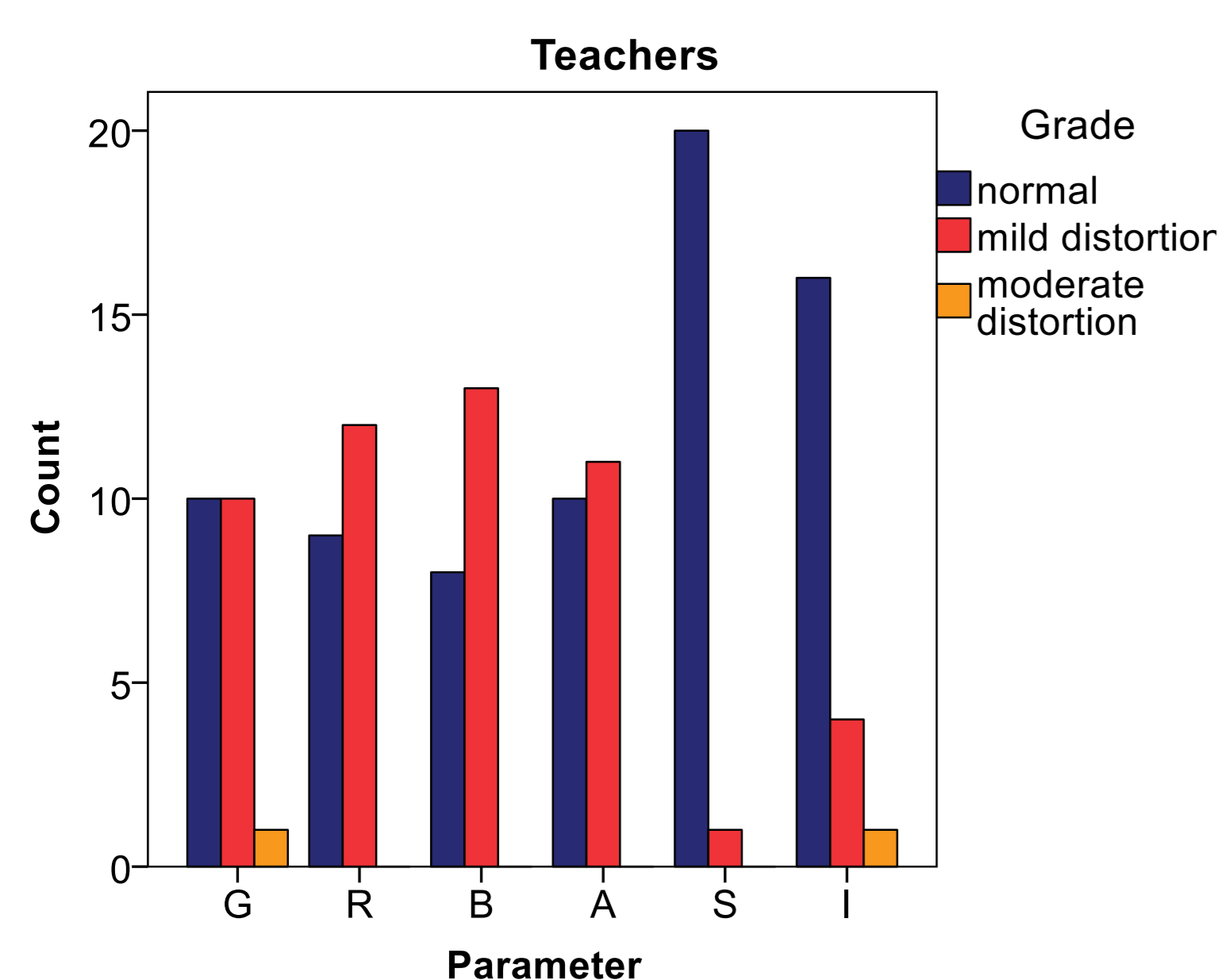
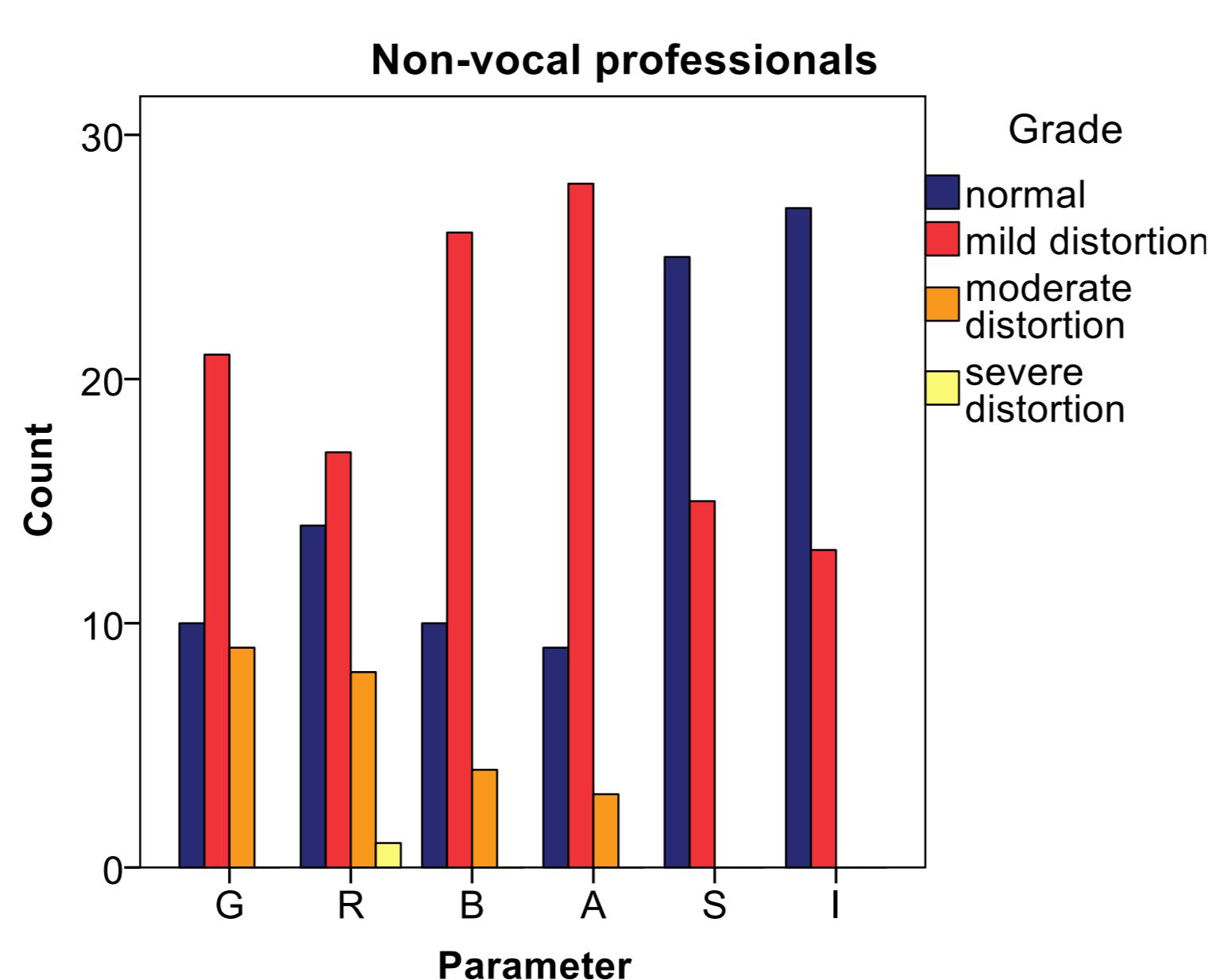
	Teachers	Singers	Non-vocal professionals
N	21	12	40
Mean age (SD)	66y (4.60)	66y (4.95)	67y (4.36)

### Voice assesment protocol

- **Auditory perceptual evaluation**
  - \* GRBASI
- **Objective measurements**
  - \* Aerodynamic measurements
  - \* Voice Range Profile
    - Fhigh, Flow
    - lhigh, llow
- **Voice Handicap Index (VHI)**
  - \* Acoustic measurements
    - Fundamental frequency /a:/
    - Jitter
    - Shimmer
    - Noise to harmonic ratio (NHR)
  - \* Dysphonia Severity Index (DSI)

## Results

The vocal quality in the **non-vocal professionals** was characterized by the presence of **increased roughness** ( $p=0.019$ ) in comparison with the singers and **more strained** ( $p=0.018$ ) in comparison with the teachers.



	Teachers	Singers	Non-vocal professionals	ANOVA
<b>Aerodynamic parameters</b>				
MFT (s)	19.72 (1.45)	16.44 (1.47)	17.31 (1.49)	
<b>Voice range profile</b>				
Flow (Hz)	118.14 (4.42)*	109.35 (2.95)†	136.17 (3.44)*†	* $p<0.001$ † $p<0.001$
Fhigh (Hz)	665.71 (53.34)	696.19 (59.57)	611.80 (28.43)	
llow (dB)	59.76 (1.05)	59.67 (2.95)	61.03 (0.81)	
lhigh (dB)	102.38 (1.26)*	102.92 (1.57) †	98.75 (0.84)*†	* $p=0.032$ † $p=0.046$
<b>Acoustic analysis</b>				
F0 (Hz) /a:/	182.37 (5.25)	189.80 (5.01)	185.84 (5.15)	
Jitter (%)	1.22 (0.14)	1.45 (0.29)	1.39 (0.17)	
Shimmer (%)	3.45 (0.26)	3.01 (0.44)	3.27 (0.22)	
NHR	0.13 (0.00)	0.12 (0.01)	0.13 (0.00)	
DSI	+1.51 (0.53)	+1.00 (0.53)	+0.38 (0.39)	
VHI	6 (1.8)	3 (1.1)	6.8 (1.9)	

## Conclusion

At the age of 67 year, a teaching or singing career has no negative impact on the female subjective and objective vocal quality. Further research can focus on the evaluation of other influencing variables, such as medication, on the elderly voice. Additionally, the effect of a high vocal load during the professional career can be analyzed in men to verify the possible difference of this influencing factor between men and women.

### References

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