PUBLIC SPEAKING

ACOUSTIC CHARACTERISTICS OF VOICE

IN GIVING A SPEECH COMPARED TO A READING CONDITION

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Ferreira Marinho et al., 2017 ; Niebuhr et al., 2018 ;   Van Ginkel et al., 2015 ; Wörtwein et al., 2015

Methodology
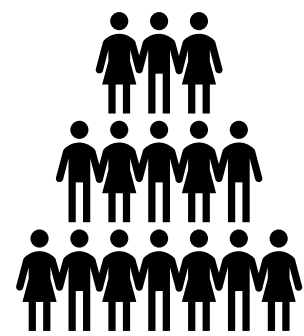
65 students
38♀ 27♂

Oral presentation
(PS)

Phonetically balanced text
(Ctrl)

10 m
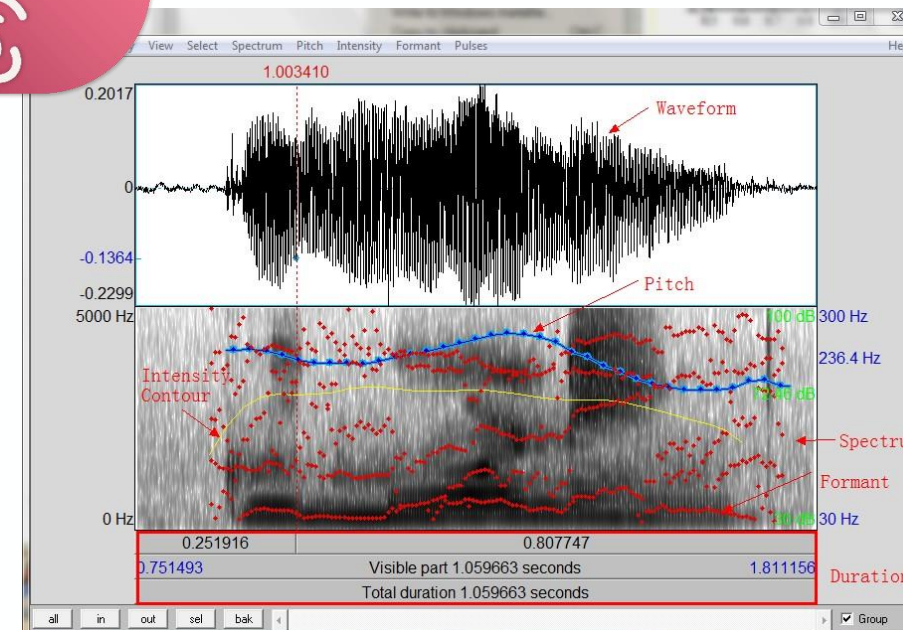80 m²
5 cm
2 m
8 m
Environnemental noise : 55.9 dB(C)   SNR : 35.35
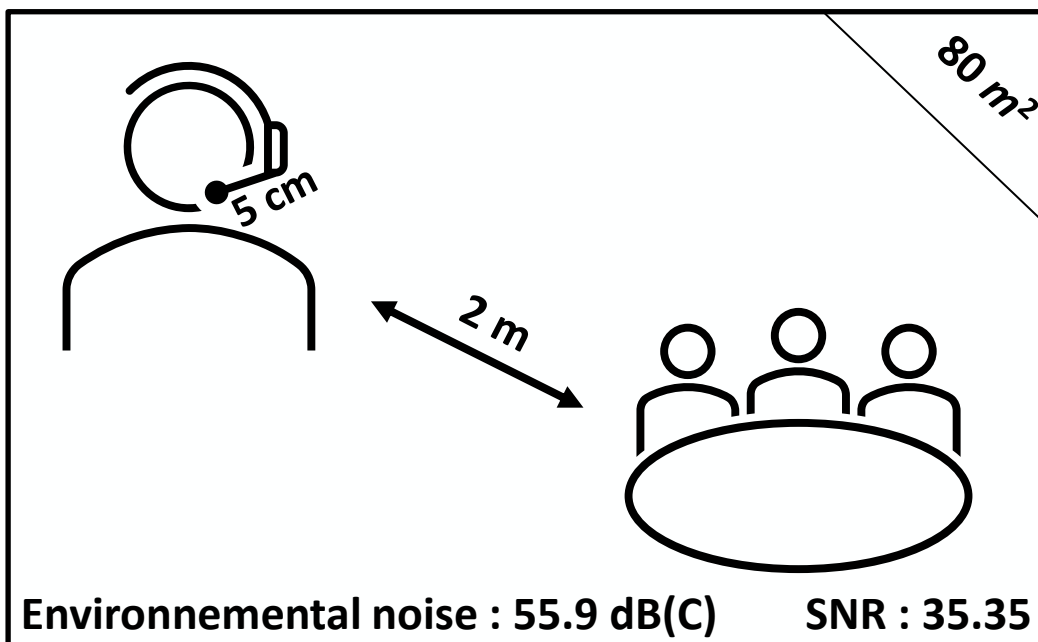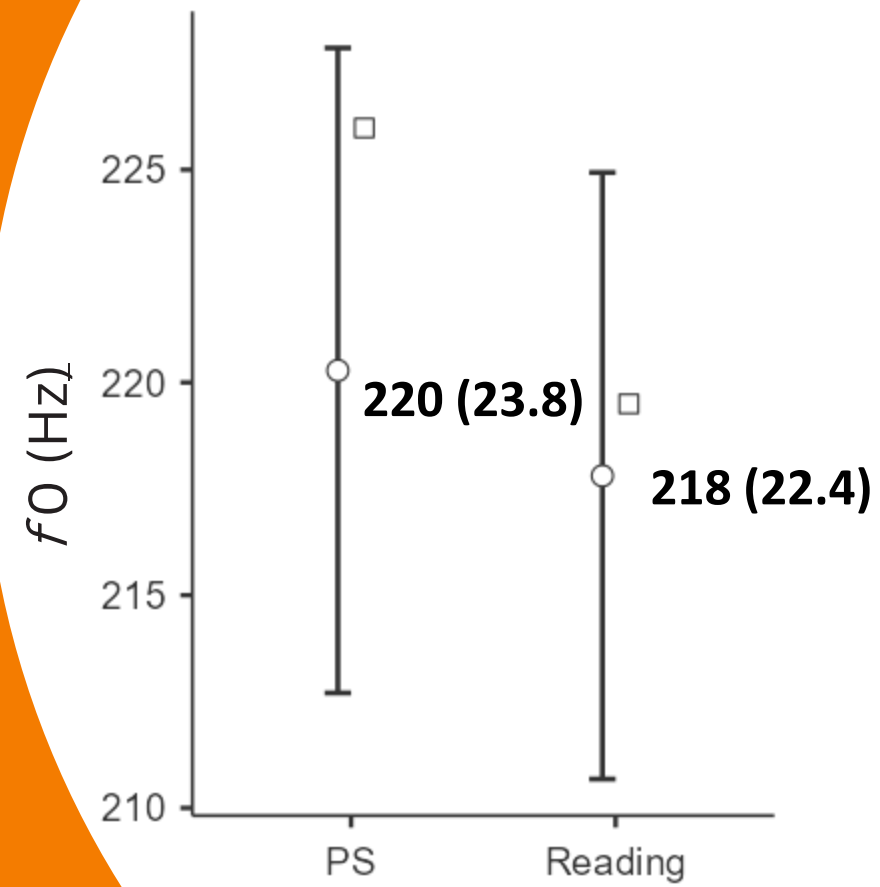
Median f0
f0 SD
CPPS
Spectral slope
CoG

Paired t-test
(Bonferroni correction)

2

Frequency parameters

Median *f*0

Women

Men
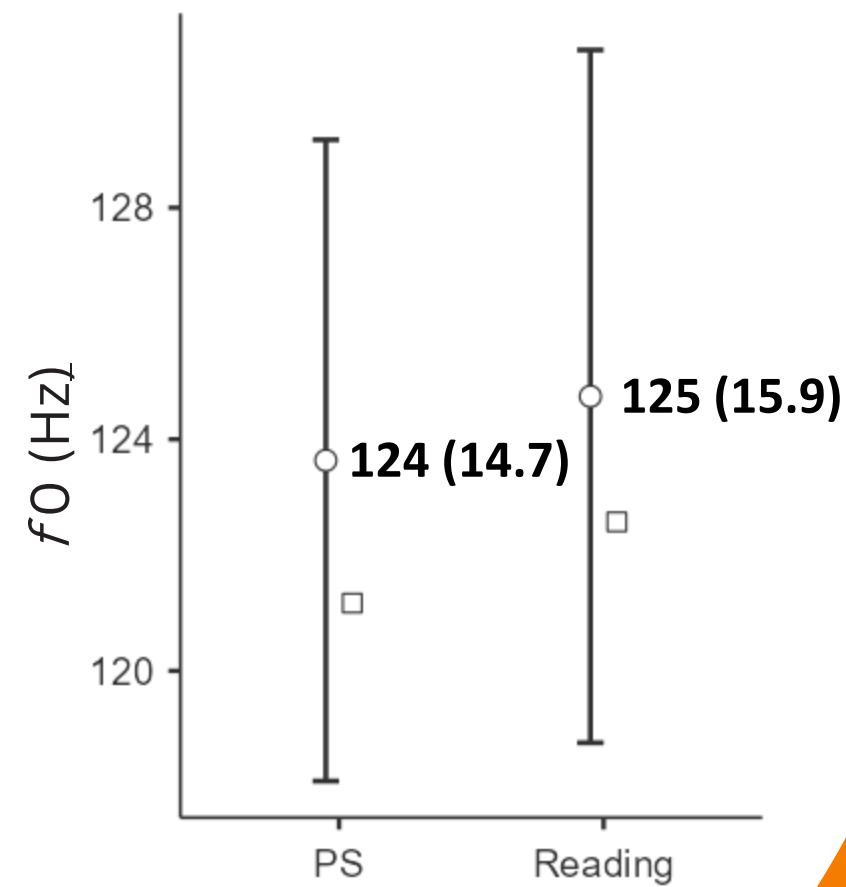
T = 0.582
p = 0.563
d = 0.07

*f*0 SD

T = 2.75
p = 0.008
d = 0.34

○ Mean
□ Median

3
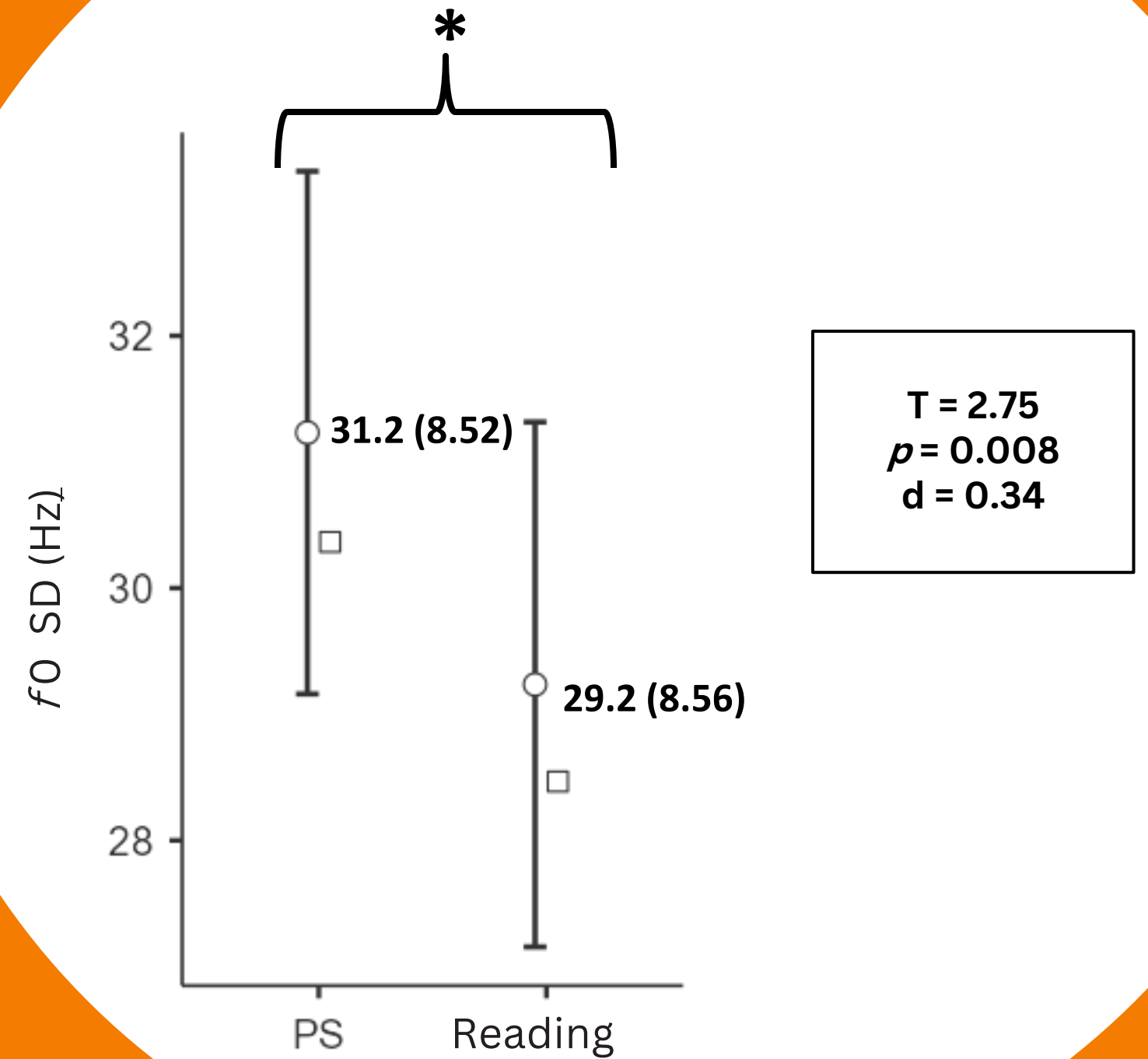
Long-term spectral features

Spectral slope

Spectral slope (dB)

*

19.5 (1.81)

18.7 (1.92)

PS   Reading
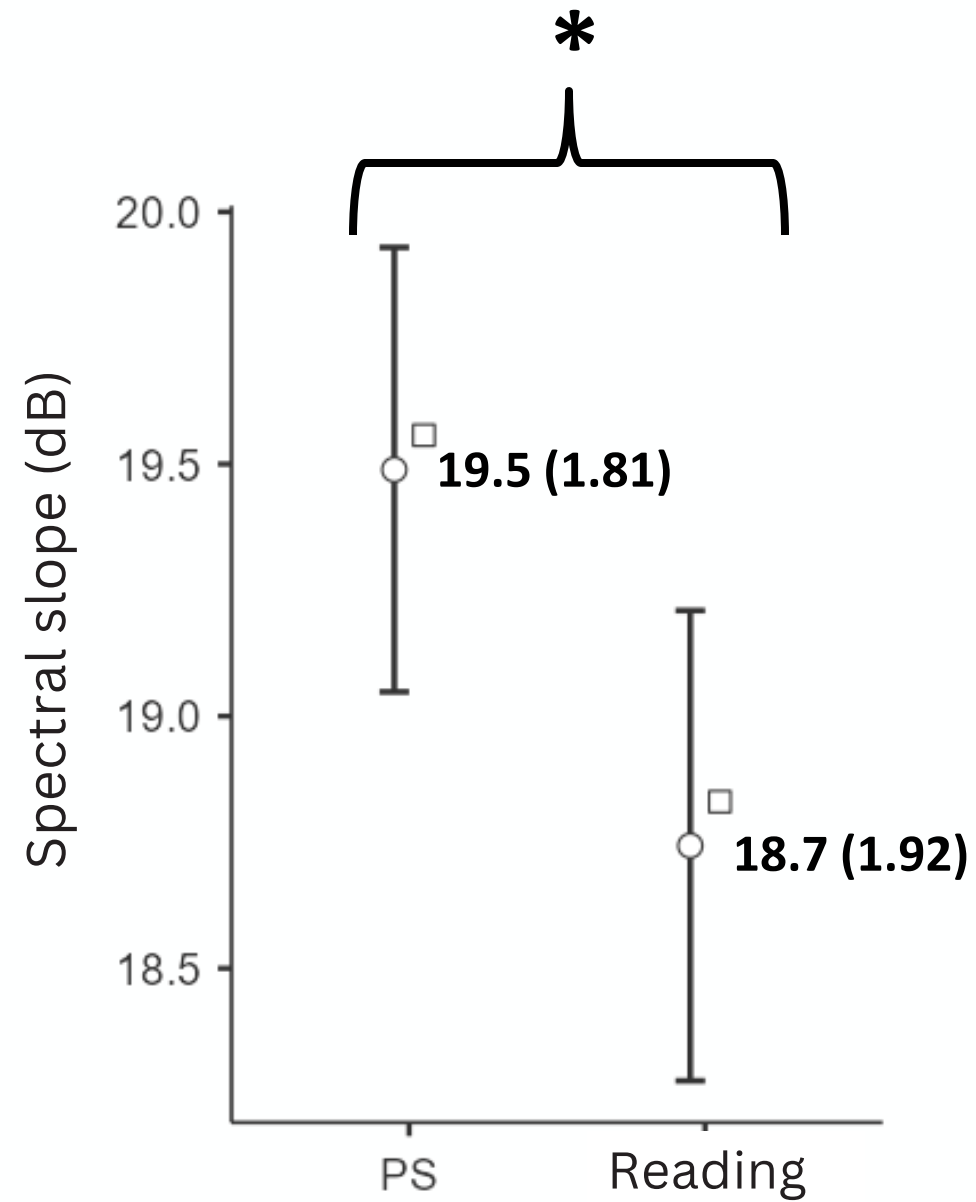
T = 3.72
p < 0.001
d = 0.46

Center of Gravity

CoG (Hz)

*

400 (64.3)

382 (48.7)

PS   Reading

T = 3.06
p = 0.003
d = 0.38

CPPS

CPPS (dB)

*

7.54 (1.11)

6.91 (0.92)

PS   Reading
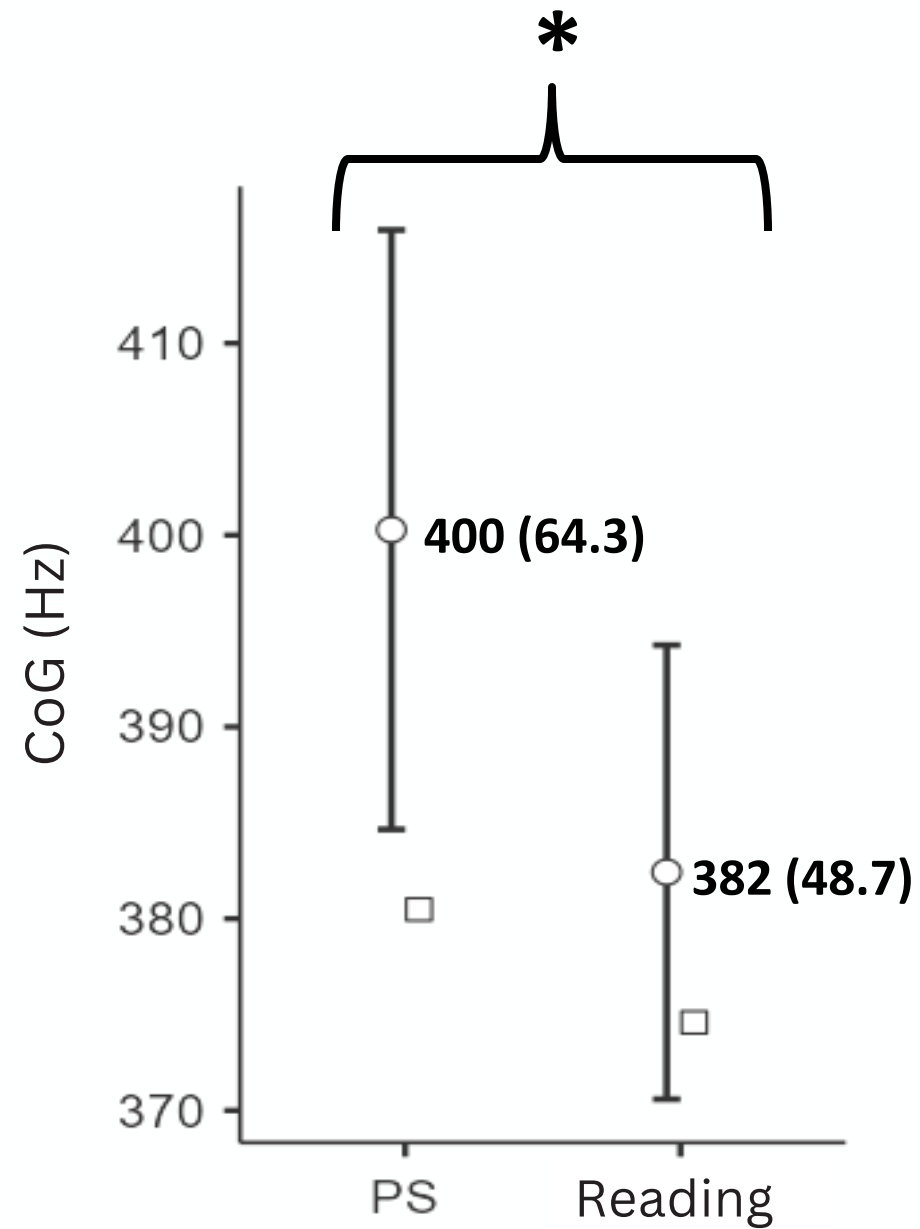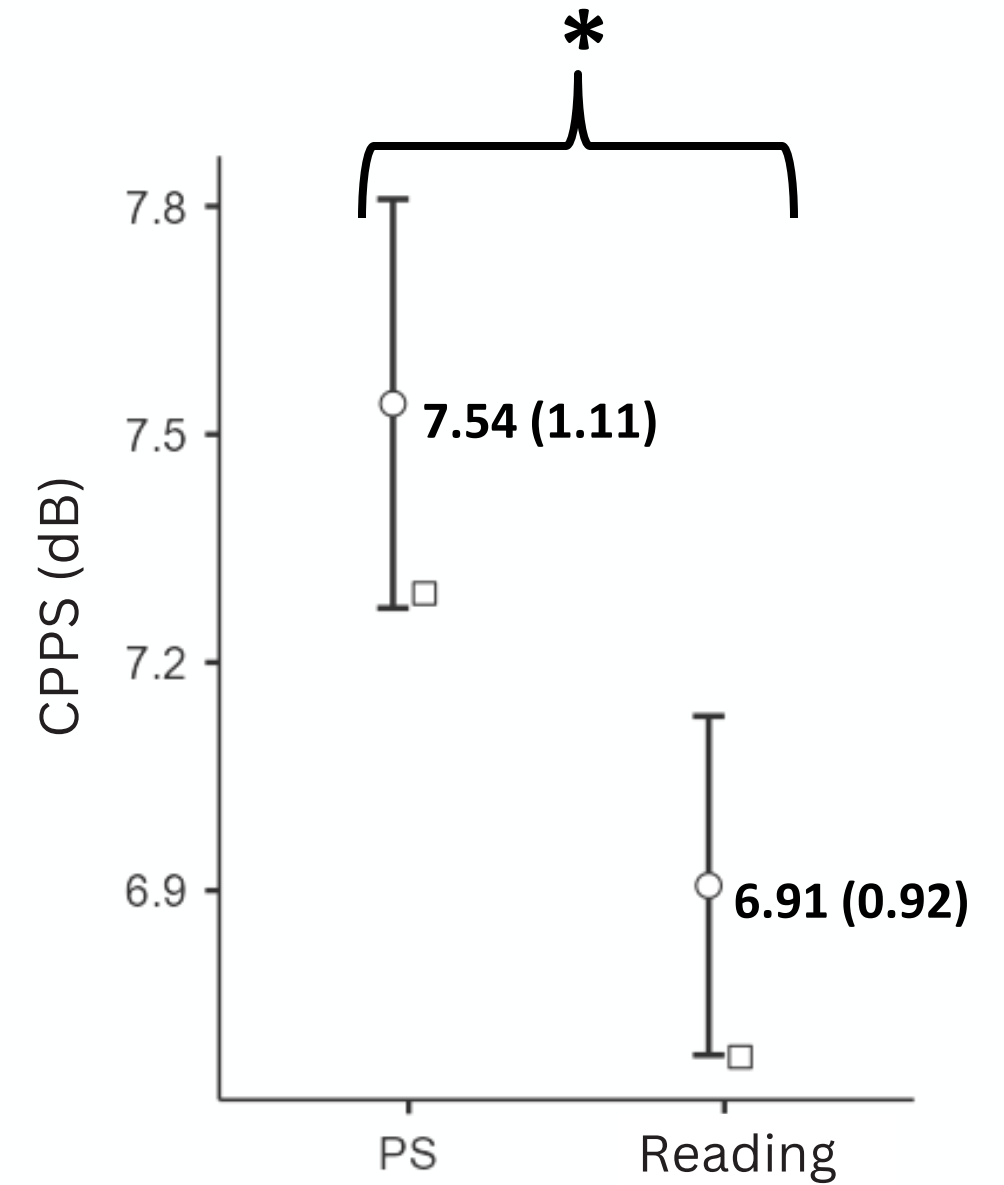
T = 7.52
p < 0.001
d = 0.93

○ Mean
□ Median

4

Specific voice characteristics in PS ?

Increased intonation

Significant difference on $f0$ SD

Enhanced vocal quality

Significant difference on :

Spectral slope → Flattening associated with glottal closure

Center of gravity → Specific higher-formants clustering

CPPS → ↓ Acoustic perturbation and ↑ periodicity

Acoustic characteristics found in other speaking styles used in challenging communication situations such as *Lombard speech* and *Clear speech*

Garnier & Henrich, 2014 , Han et al., 2021; Krause & Braida, 2004 ; Murton et al., 2020

Conclusions

Increased **intonation** ($f0$ SD) and enhanced **vocal quality** (spectral slope, CoG, CPPS)

Significant difference between voice in giving a speech and reading

These **acoustics characteristics** are **also found in** *Lombard speech* and *Clear speech*

Influence of **increased loudness** in PS

Speech material / amount of voicing should be similar between conditions

Interpretation of results **in context of other recommended measures**

Garnier & Henrich, 2014 , Han et al., 2021; Krause et Braida, 2004 ; Murton et al., 2020

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GOT QUESTIONS?

Reach out.

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