Vocal Quality after a Performance in Theatre Actors compared to Dancers

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VOCAL QUALITY IN ACTORS

- Pressure, stress & typical lifestyle
  (Ormezzano et al., 2011)
- Vocal overload (Emerich et al., 2005)
- Vocal fatigue
  (Novak et al., 1991; D'haeseleer et al., 2016)
- Vocally violent behaviour
  (Ferrone et al., 2004; Roy et al., 2000)
- Environmental conditions
  (Goulart et al., 2011; Hoffman-Ruddy, Lehman, Crandell, Ingram, & Sapienza, 2001)
- Poor vocal hygiene habits
  (Timmermans et al., 2002; Varosanec-Skanic, 2008; D’haeseleer et al., 2016)

- Better knowledge about vocal hygiene
  (Zeine et al., 2002)
- More favourable glottal setting
  (Master et al., 2008)
Introduction

Purpose

Methods

Results

Discussion

Conclusion

IMPACT PERFORMANCE

- Objective vocal quality
  - Expiratory airflow (Rangarathnam et al., 2017)
- Auditory perceptual vocal quality
  - CAPE-V (Rangarathnam et al., 2017)

- Objective vocal quality
  - AVQI (D’haeseleer et al., 2016)
  - (Novak et al., 1991)
- Auditory perceptual vocal quality
  - (Novak et al., 1991)

- Objective vocal quality
  - $I_{\text{max}}$, perturbation measures, s/z ratio (Ferrone et al., 2004)
- Auditory perceptual vocal quality
  - GRBASI scale (D’haeseleer et al., 2016)
1. Is there a difference in objective and subjective vocal quality between professional actors, non-professional actors and professional dancers, measured at the baseline?

2. Is there an impact of one performance on the objective and subjective vocal quality of professional actors, non-professional actors and professional dancers?
### SUBJECTS

<table>
<thead>
<tr>
<th>n (total) = 62</th>
<th>Professional actors (PA)</th>
<th>Non-professional actors (NPA)</th>
<th>Professional dancers (PD)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>n (♀, ♂)</td>
<td>27 (13 ♀, 14 ♂)</td>
<td>19 (12 ♀, 7 ♂)</td>
<td>16 (12 ♀, 4 ♂)</td>
<td>/</td>
</tr>
<tr>
<td>Age tot. (years)</td>
<td>35,8 (21-48)</td>
<td>21,6 (18-29)</td>
<td>25,8 (16-42)</td>
<td>PA-NPA/PD: &lt;0,001</td>
</tr>
<tr>
<td>Age ♂ (years)</td>
<td>37,9 (29-48)</td>
<td>22,0 (20-23)</td>
<td>38,3 (33-42)</td>
<td>PA/PD-NPA: &lt;0,001</td>
</tr>
<tr>
<td>Age ♀ (years)</td>
<td>33,6 (21-46)</td>
<td>21,4 (18-29)</td>
<td>22,7 (16-32)</td>
<td>PA-NPA/PD: &lt;0,001</td>
</tr>
<tr>
<td>Dur. perf. (min)</td>
<td>87</td>
<td>101</td>
<td>52</td>
<td>PA/NPA-PD: &lt;0,001</td>
</tr>
</tbody>
</table>

### Inclusion & exclusion criteria

- Professionals: earn their living with performing
- Min. 4 hours/week acting/dancing
- Leading of relevant supporting role
- No musical actors
- No health or hearing problems
VOICE ASSESSMENT PROTOCOL

Auditory perceptual evaluation

- GRBASI scale (Hirano, 1981; Dejonckere et al., 1996)

Acoustic analysis in PRAAT

- /a:/
  - F0, jitter
- /a:/ + continuous speech
- CPPS, HNR, SL, SLdB, slope, tilt

Voice Range Profile in PRAAT

- I_{low} - I_{high}
- F_{low} - F_{high}

Self-evaluation questionnaires

- Voice Handicap Index (Jacobson et al., 1997; De Bodt et al., 2000)
- Vocal Tract Discomfort Scale (Mathieson, 2009; Luyten et al., 2016)
- Corporal Pain Scale (Van Lierde, 2011)

Multiparameter indexes

- Dysphonia Severity Index (Wuyts et al., 2000)
  - MPT, jitter, F_{high}, I_{low}
  - Vocal capacities
- Acoustic Vocal Quality Index (Maryn et al., 2010)
  - CPPS, HNR, SL, SLdB, slope, tilt
  - Vocal quality
STATISTICAL ANALYSIS

– Linear mixed models
  – Restricted maximum likelihood estimations
  – Scaled identity covariance structures
– GRBASI
  – Kruskal-Wallis Test between groups
  – Wilcoxon Signed Ranks Test within groups
VOCAL QUALITY BETWEEN GROUPS

1

PA – NPA
♀ ↓ $F_0$ (p=0.003)
♀ ↑ $F_{\text{range}}$ (p=0.010)
♀ ↑ MFT (p=0.008)
♀ ↓ $I_{\text{low}}$ (p=0.020)

PD – PA
♀ ↑ CPS I (p=0.002)

PD – PA / NPA
♀ ↑ AVQI (p=0.025 / p=0.003)

PD – NPA
♀ ↑ VTDS F (p=0.016)
♀ ↑ VTDS I (p=0.039)

= DSI
GRBASI
VHI
IMPACT OF THE PERFORMANCE

Professional actors
No differences

Non-professional actors
↓ high (p=0.015)
↓ range (p=0.032)
♂ ↑ MPT (p=0.038)

Professional dancers
↓ VHI total score (p=0.048)
RISK FACTORS

Alcohol
- hardly
- sometimes
- frequently

Professional actor: 30%
Non-professional actor: 40%
Professional dancer: 50%

Category participant
**VOCAL QUALITY**

1. Better vocal capacities in PA than in NPA
2. Worse vocal quality in PD than in actors
3. Bad vocal habits in professional actors
4. No short-term impact on vocal capacities and vocal quality
5. Long-term impact?
Julie Daelman
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