

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)

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_{\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

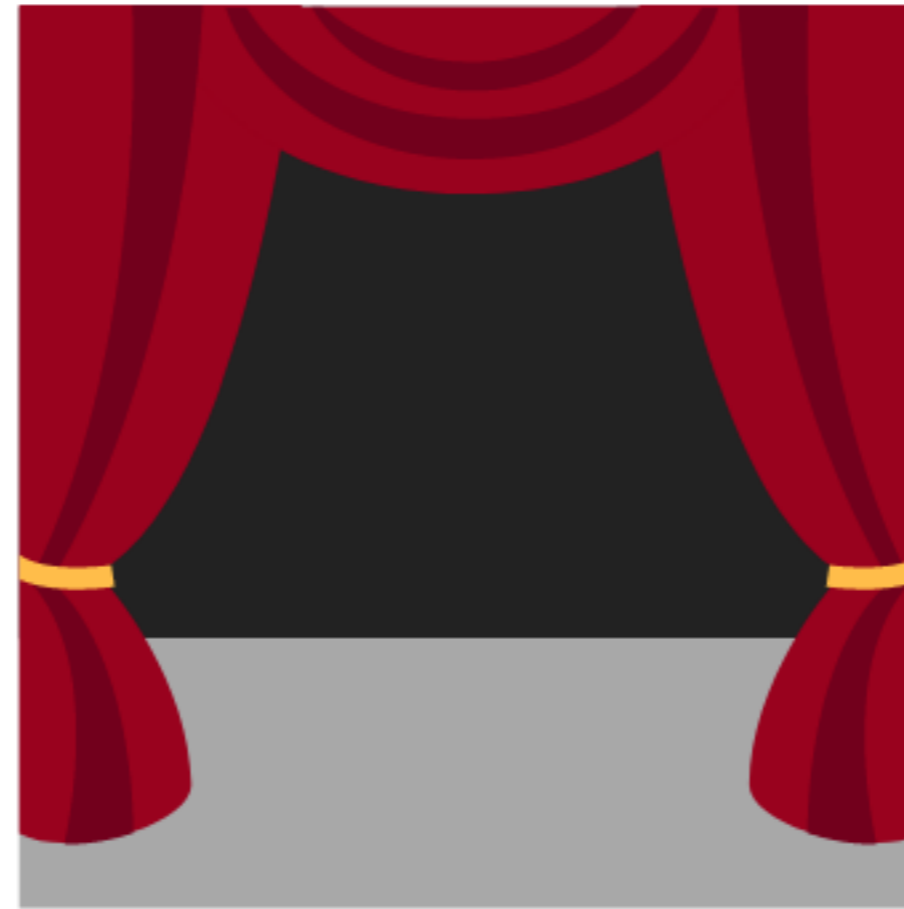
Is there an impact of one performance on the objective and subjective vocal quality of *professional actors, non-professional actors* and *professional dancers*?

SUBJECTS

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

Inclusion & exclusion criteria

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



Vocal quality

Performance

Vocal quality

VOICE ASSESSMENT PROTOCOL

Auditory perceptual evaluation

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

Acoustic analysis *in PRAAT*

- /a:/
 - F_0 , 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*)

Multiparamater 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_{range} ($p=0,010$)

♀ ↑ MFT ($p=0,008$)

↓ I_{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

2

Professional actors

No differences

Non-professional actors

↓ I_{high} ($p=0,015$)

↓ I_{range} ($p=0,032$)

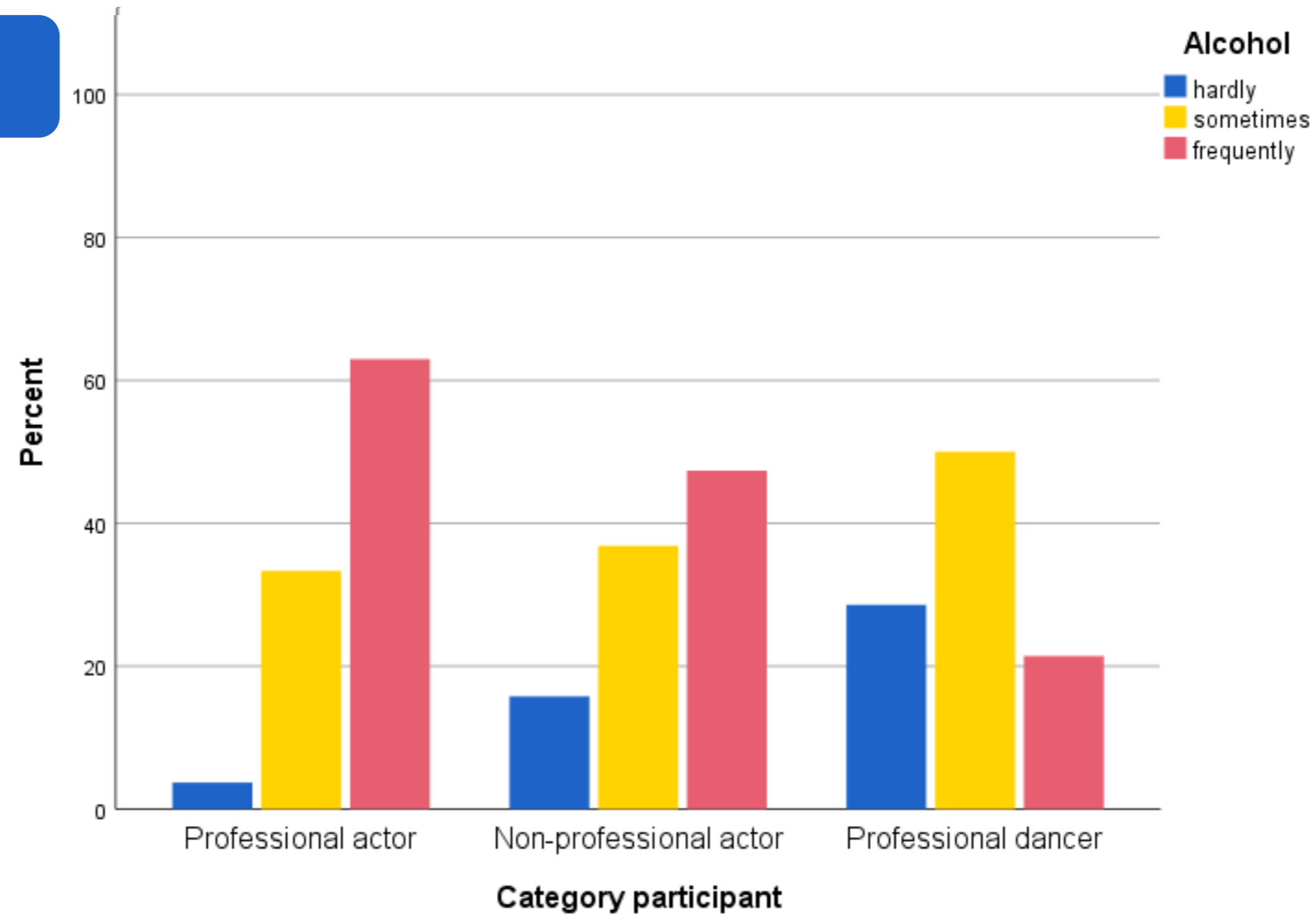
♂ ↑ MPT ($p=0,038$)

Professional dancers

↓ VHI total score ($p=0,048$)

RISK FACTORS

Substance use



VOCAL QUALITY

1

- Better vocal capacities in PA than in NPA
- Worse vocal quality in PD than in actors
- Bad vocal habits in professional actors

2

- No short-term impact on vocal capacities and vocal quality
- Long-term impact?

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