

Social and acoustic determinants of perceived laughter intensity

BACKGROUND

PERCEPTUAL INTENSITY ≠ SOUND PRESSURE

- We investigate **human judgments of laughter intensity**
- Humans are natural “experts” in laughter
- Human judgments of laughter intensity predict judgments of humor (McKeown & Curran, 2015)
- After controlling for perceived intensity and in absence of contextual information laughs produced in different contexts look equally genuine to observers (Curran et al., 2018)

BUT WHAT IS PERCEPTUAL INTENSITY?

- Can we predict human judgments of intensity based on laughter acoustics?
- Do laughs produced in different social situations systematically vary in intensity?

PARADIGM & METHODS

- We recorded groups of participants playing enjoyable games, $N = 60$



- We engineered three types of situations conducive to laughter
- 30 sequences extracted based on specific criteria



Amused laughter

Embarrassed laughter

Schadenfreude laughter

- Each sequence rated for perceived intensity by 203 participants

ANALYSIS AND RESULTS

- Acoustics of laughter extracted from audio recordings using Praat (Boersma & Weenink, 2018)
- Linear mixed models used to regress ratings of intensity on:
 - Social situation (amusement, embarrassment, Schadenfreude)
 - 11 acoustic features covered in previous research (Rychlowska et al., 2018; Wood et al., 2017)

THE TYPE OF SOCIAL SITUATION DOES NOT SIGNIFICANTLY PREDICT INTENSITY JUDGMENTS

Variable	B	SE	t	p
Social context	2.60	3.12	0.83	0.41
Duration*	5.86	4.46	1.31	0.20
Amplitude in dB	1.17	0.17	6.68	<.001
F0 mean	1.29	1.07	1.21	0.24
F0 range	0.13	0.30	0.42	0.68
SD F0/Duration*	-12.05	9.55	-1.26	0.22
F0 slope*	2.84	6.34	0.56	0.66
Center of gravity*	7.60	5.00	1.52	0.14
Harmonicity	1.20	0.47	2.52	0.02
Voicing	0.18	0.10	1.78	0.08
F1 mean	0.01	0.02	0.83	0.41
F2 mean	-0.04	0.01	-2.87	<.001

CONCLUSIONS

- Amplitude, harmonicity, and F2 are the only predictors of perceived intensity
- Intensity does not covary with social situation
- Results yield fewer significant predictors than in Rychlowska et al. (2015)
- Questions for future research: Can observers accurately judge the emotional state of a person when their laughter is presented without contextual information?

REFERENCES

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