Judging Faces with the Ears:

How Emotional Tone Influences Face Perception

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Introduction & Hypotheses

Much of interpersonal interaction and its processing is characterized by the fact that visual information about faces occurs in combination with verbal information. This verbal information can differ both in the valence of its semantic content (verbal context) and in the valence of its emotional tone (nonverbal context).

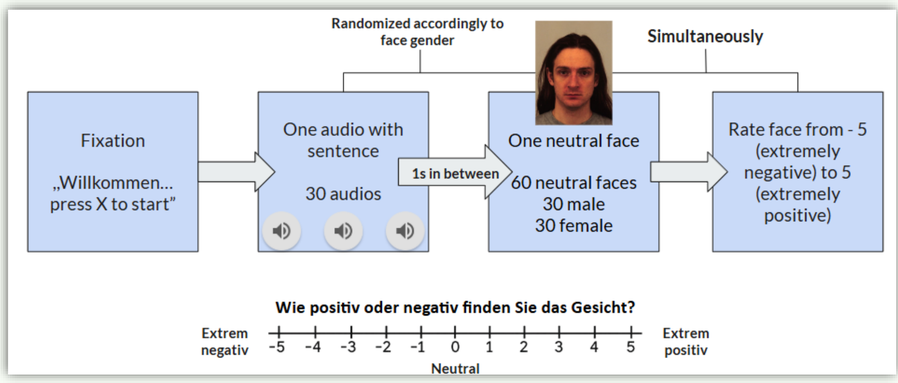
In this study, we examined the influence of emotional tone on the perception of neutral faces. Therefore, the semantic content of all sentences was controlled to remain neutral. This allowed us to minimize the influence of verbal context and isolate the effect of nonverbal context, specifically the speaker's emotional tone, on participants' perception of facial expressions.

H1: The emotional valence of auditory stimuli (positive, neutral and negative) will influence the perception of neutral faces.

H2: Neutral faces presented after negative auditory stimuli will receive more negative ratings than those presented after neutral auditory stimuli.

H3: Neutral faces presented after positive auditory stimuli will receive more positive ratings than those presented after neutral auditory stimuli.

Methods



Design

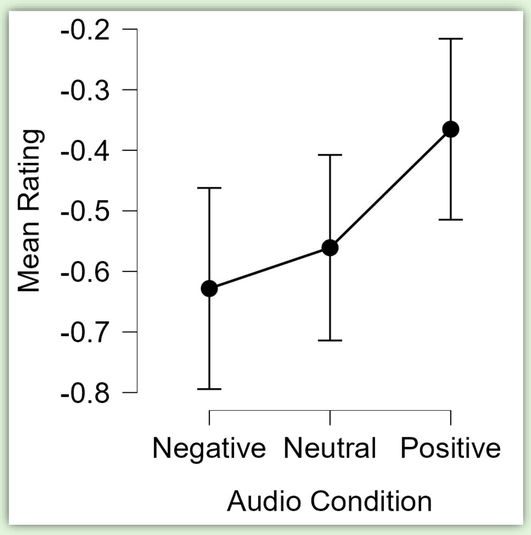
- Computer-based experimental task, randomized, mixed factorial design
- Independent variable: audio condition (negative, neutral, and positive)
- Dependent variable: face rating given by participants [-5; 5]
- Participants were told to ignore the verbal information during the rating

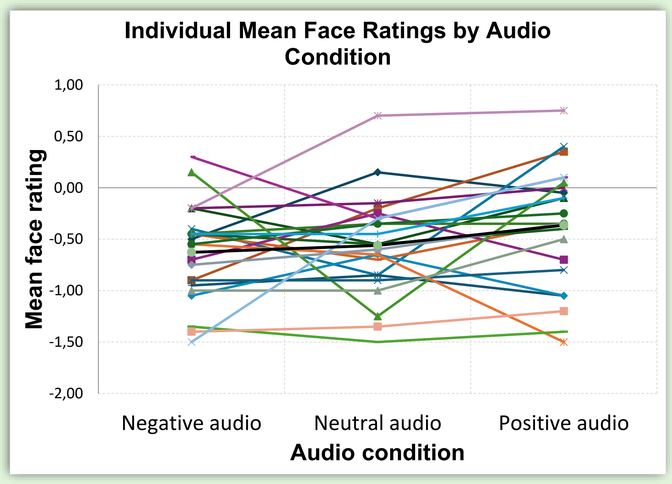
Participants

- 23 university students (5 male, 18 female), all native German speakers, reporting normal hearing, with no history of hearing impairments were included in the Analysis
- 4 had been excluded due to technical difficulties, 1 due to extremely divergent rating

Results

Repeated-Measures ANOVA





each line represents one participant, the black line represents the group mean

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p	η^2	η^2_p	η^2_G
Audio Condition	0.859	2	0.429	3.283	.047	0.130	0.130	0.047
Residuals	5.755	44	0.131					

Note. Type III Sum of Squares

➢The significant main effect of audio condition (p-value = .047) suggests that emotional tone influenced face rating

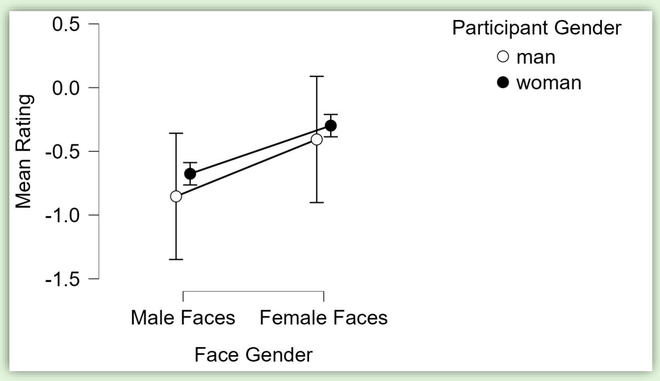
➢Ratings became more positive from negative to neutral to positive auditory stimuli with a significant difference (p-value = .024) between the negative and the positive condition (t-test)

Exploratory Mixed ANOVA

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p	η^2_p	ω^2
Face Gender	1.330	1	1.330	23.99	< .001	0.533	0.121
Face Gender ✻ Participant Gender	0.009	1	0.009	0.168	.686	0.008	0.000
Residuals	1.164	21	0.055				

Note. Type III Sum of Squares



➢There was a significant effect for the face gender (p-value < 0.001)

➢female faces were rated significantly more positive than male faces

Between Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p	η^2_p	ω^2
Participant Gender	0.160	1	0.160	0.436	.516	0.020	0.000
Residuals	7.708	21	0.367				

Note. Type III Sum of Squares

➢There was no significant effect for the participants gender on the rating of the faces (p-value = 0.516)

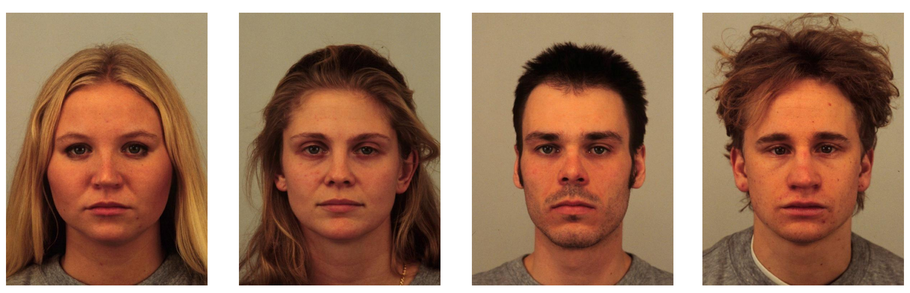
Discussion

Even though the study did provide statistically significant support for the proposed hypotheses there are several limitations:

- small sample size
- uneven gender distribution of participants
- uneven demographic and educational background of the participants
- only one speaker per gender
- simple paradigm

Future studies could improve the experimental design and investigate additional variables, such as face gender and cultural differences. Moreover, incorporating neurophysiological measures such as EEG or neuroimaging techniques such as fMRI may provide further insight into the mechanisms underlying facial perception and emotion evaluation.

check out the auditory stimuli:



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