

Exploring Contextual Cues for Audio-visual Emotion Recognition

What are specific cues within the sender's context that shape human emotion perception?

1. Introduction

- The long-standing theory of universality (that emotions on faces can be read "like words on a page" (Barrett 2011), after years of debate, has finally started to fade from scientific consensus. (Ekman 1978, Barrett 2011)
- Lack of systematic cross comparison between various sender cues and how they affect emotion expression
- Crucial for Context-Aware Emotion Recognition (CAER) Systems as well as medical and law enforcement

2. Research (Sub) Questions

- Q1. Which contextual cues are most critical/influential to someone's emotional expression?
- Q2. How do these cues influence how this emotional expression is perceived? (Assuming a neutral perceiver)

4. Results

Age:

- Physical limitations of age
 - Facial muscles decrease with age
 - Wrinkles and fold obstruct signal clarity
- Emotion changes with age
 - Emotional suppression methods more heavily used
 - Emotional resilience built throughout an individual's lifetime
 - Suppress negative emotions to protect others from emotional contagion
- Own-age bias

Culture:

- Display rules
 - Individualistic versus collectivists cultures impact display rules (how people present positive and negative emotions)

In group advantage

- In group members from the same culture learn to recognize their own signals more accurately
- Exposure to a specific culture
- Express various emotions differently too

Stereotypes

- Significant effect of stereotypes of expressor affecting how their emotions are perceived
- Moroccan faces perceived as angrier than Dutch faces

Gender:

- Morphological differences
 - Female faces tend to resemble expressions of happiness, male faces tend to resemble expressions of anger
- Socially learned biases and roles

5. Discussion

- Four major mechanisms emerged
 - Emotion suppression
 - In-group advantage
 - Stereotypes and social roles
 - Physiological differences
- Literature bias
 - Studies heavily focusing on North America, Western Europe, East-Asia
 - Relatively wealthy countries studied
 - Middle East, North Africa, Latin America and South-East Asian cultures countries are less studied
- Limited cultural classification
 - While individualistic versus collectivist framework is relatively easy to classify and study, it removes many important cultural properties
- Impact for CAER and Psychology

3. Methodology - SALSA

Search

- Database search: Scopus, PsycINFO, Google Scholar
- Key search terms (derived from figure 1):
 - Emotion: Recognition, Perception, Expression
 - Context: Cultural, Social, Personality, Age, Gender
 - Field: Psychology, Cognitive Science, Cognition
 - Human
 - Excluded: Disorder, Machine Learning



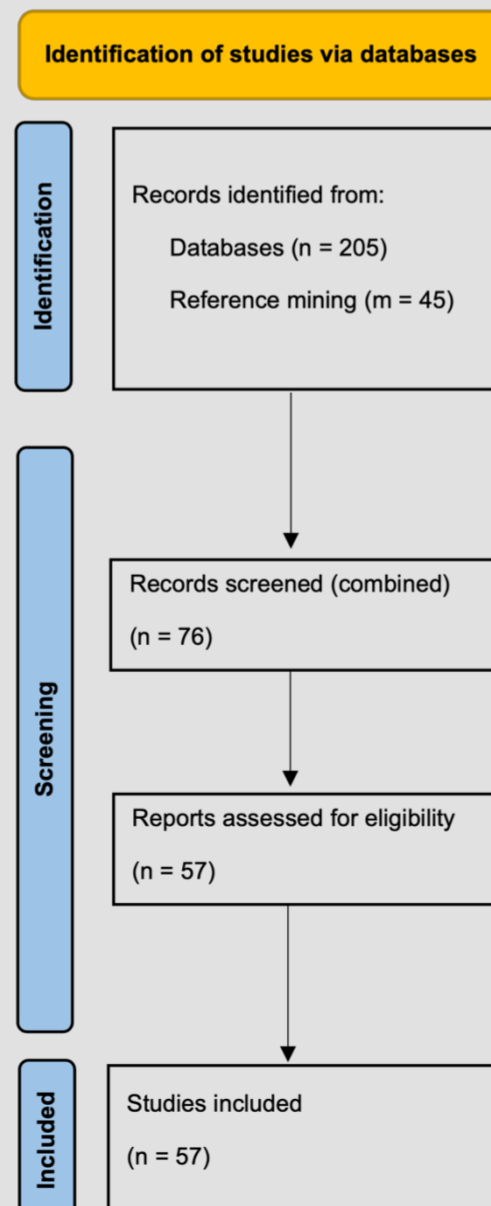
- Reference mining from key literature reviews (e.g Barrett 2011, Fölster 2014)

Appraisal

- Exclusion Criterion:

Non-English Literature
Papers with focus on facial expressions devoid of context
Papers without a focus on sender context
Studies unrelated to emotional expression
Papers primarily studying non-human subjects
Studies analyzing mental health disorders
Papers unrelated to key context: Expressor, Cultural, Social, Personality
Studies unrelated to psychology or cognitive science

- Prisma Reporting:



6. Future work

- More cross-cultural research
- Developing more advanced self report tools
 - Difficult to study internal emotional state (heavy reliance on self-report)
- Incorporating audio in the research
- More research on personality and other more subtle traits

References

Barrett et al. Context in emotion perception, 2011

Folster et al. Facial age affects emotional expression decoding, 2014

P. Ekman and W.V. Friesen. Facial action coding system: A technique for the measurement of facial movement, 1978