



# Asymmetries in cross-linguistic emotion recognition

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Theories on emotion recognition in speech do not predict any asymmetries in the cross-linguistic recognition of emotion. This study investigates the occurrence of such asymmetries.

## Previous research

- **Universality:** especially “basic emotions” are universally recognized to some extent (Ekman et al., 1969).
- **Language-specificity:** emotions are better recognized in listeners’ native language (L1) than in other languages (Elfenbein and Ambady, 2002; Pell et al., 2009).
- **Language distance:** language-typological similarity facilitates cross-linguistic emotion recognition (Scherer et al., 2001).
- No current theories predict cross-linguistic perceptual asymmetries.
- Problem previous methodologies: lopsided (“many-to-1” / “1-to-many”) design.

## This study

### Questions

#### Replication:

1. Are listeners always better at emotion recognition in L1 > unknown language?
2. Does small language distance always improve emotion recognition?

#### New question: Are there asymmetries in cross-linguistic emotion recognition?

- 3a. Some emotions recognized better by one listener group than another?
- 3b. Some emotions expressed more effectively in one language than another?

## Experiment 1

### (1) Corpus recording

#### Speakers

- 8 Dutch (M: 4; F: 4) & 8 Korean (M: 4; F: 4) professional actors

#### Materials

- A meaningless fixed phrase: [nuto hɔm sɛpikɑŋ]
  - all phonemes legal in Dutch, Korean, and English
  - all phonotactic combinations legal in Dutch, Korean, and English
  - no clearly embedded words in Dutch, Korean, and English

#### Procedure

- Recording 8 emotions using [nuto hɔm sɛpikɑŋ]<sup>1</sup>

Valence	Positive		Negative	
Arousal	High	Low	High	Low
Emotions	joy, pride	tenderness, relief	anger, fear	sadness, irritation

<sup>1</sup> Please listen to some of the recordings on our laptop.

- 4 tokens per actor
- Stanislavski’s method acting approach, with professional stage directors

### (2) Judgment study

#### Participants

- 24 Dutch (M: 11; F: 13) & 24 Korean listeners (M: 12; F: 12)

#### Materials

- 256 Dutch & 256 Korean utterances (each language: 8 emotions \* 8 actors \* 4 repetitions)

#### Procedure

- Dutch listeners: 256 Dutch stimuli; Korean listeners: 256 Korean stimuli
- Classify stimuli as one of 8 emotions or neutral
- Rate naturalness of the emotion (1: very unnatural – 4: very natural)

### (3) Corpus selection

- 2 utterances of each actor-emotion pair were selected
  - with the highest standardized hit rate
  - in a tie: with the higher naturalness rating

## Experiment 2

### General Method

- Fully crossed “many-to-many” design: speakers and listeners from two typologically unrelated languages, Dutch and Korean.
- Also listeners of American English, typologically close to Dutch, not Korean.

### Participants

- 30 Dutch, 23 Korean, and 26 American English listeners

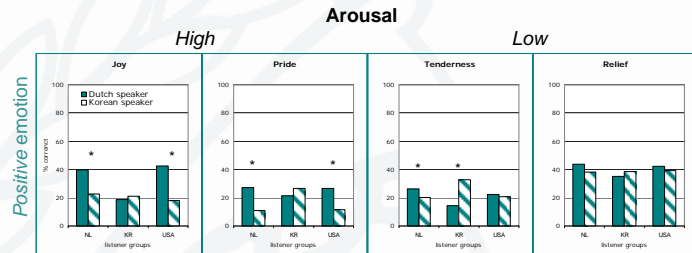
### Materials

- 128 Dutch & 128 Korean utterances selected in Experiment 1 (each language: 8 emotions \* 8 actors \* 2 repetitions)

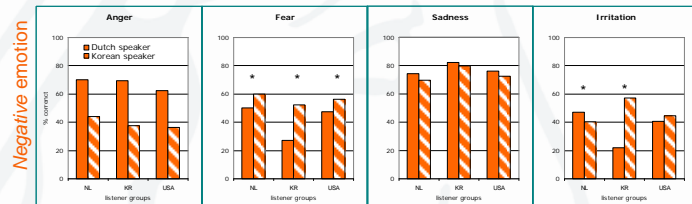
### Procedure

- All participants: all 256 stimuli
- Classify stimuli as one of 8 emotions or neutral

### Results



- listeners: (NL = USA) > KR
- interaction
- interaction



- speakers: Dutch > Korean
- speakers: Dutch < Korean
- speakers: Dutch > Korean
- interaction
- listeners: NL > USA
- listeners: (NL = USA) > KR
- listeners: NL < KR
- interaction

1. For some emotions but not for all, recognition L1 > unknown language (e.g., *Tenderness* & *Irritation*).

2. For some emotions but not for all, clear effects of language distance (e.g., *Joy* & *Pride*: for American listeners, recognition Dutch > Korean).

3a. Some emotions recognized more effectively by one group than by the others (e.g., *Sadness* for Korean listeners).

3b. Some emotions expressed more effectively in one language than in the other (e.g., *Anger* & *Sadness* in Dutch, and *Fear* in Korean).

## Conclusion

Models of emotion recognition should be extended to include differential efficiency in expressing and decoding specific emotions in different languages.

## References

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