

The Demo / Kemo corpus

A principled approach to the study of cross-cultural differences in the vocal expression and perception of emotion

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Two designs in cross-cultural
perception of emotion:
One-to-many and
many-to-one

The Kemo / Demo
corpus:
Many-to-many

Corpus
construction

Future plans and
discussion

Cross-cultural perception of emotion

- Basic emotions (joy, anger, fear, disgust, sadness) are recognized well above chance between cultures
- Other emotions (pride, shame, pleasure) depend more on cultural factors



Cross-cultural perception of emotion

- Most of this research has been done in the facial domain
- The vocal domain is interesting since it simultaneously communicates linguistic content and emotional meaning
- The field has addressed the study of cross-cultural emotion perception with two research designs

Many-to-one versus One-to-many

Two approaches to constructing corpora in the study of cross-cultural differences in the vocal expression of emotion

Many-to-one and One to many designs

Many-to-one versus One-to-many

One-to-many design

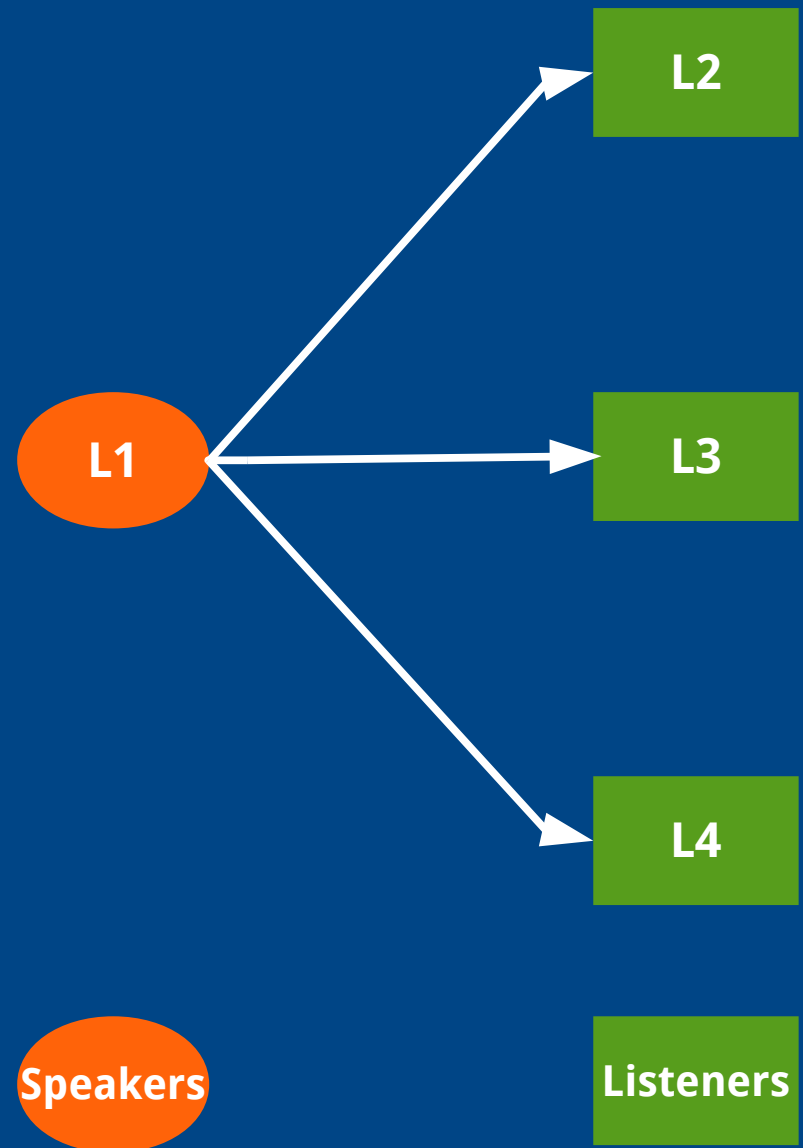
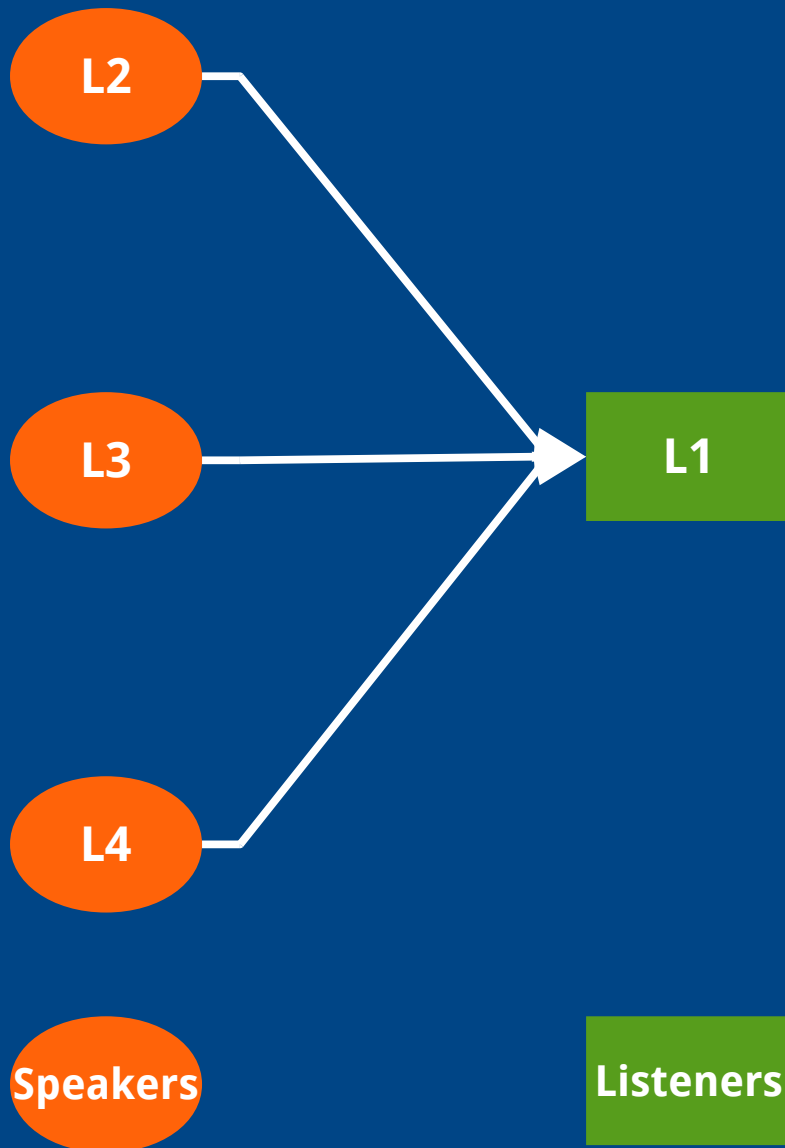
Use an existing corpus of emotional expression that has been developed and validated in *one* language to assess the ability of speakers from one or more other languages to successfully decode the emotional expressions

Many-to-one versus One-to-many

Many-to-one design

Develop and validate a corpus in several languages and then present the expressions to listeners from one language

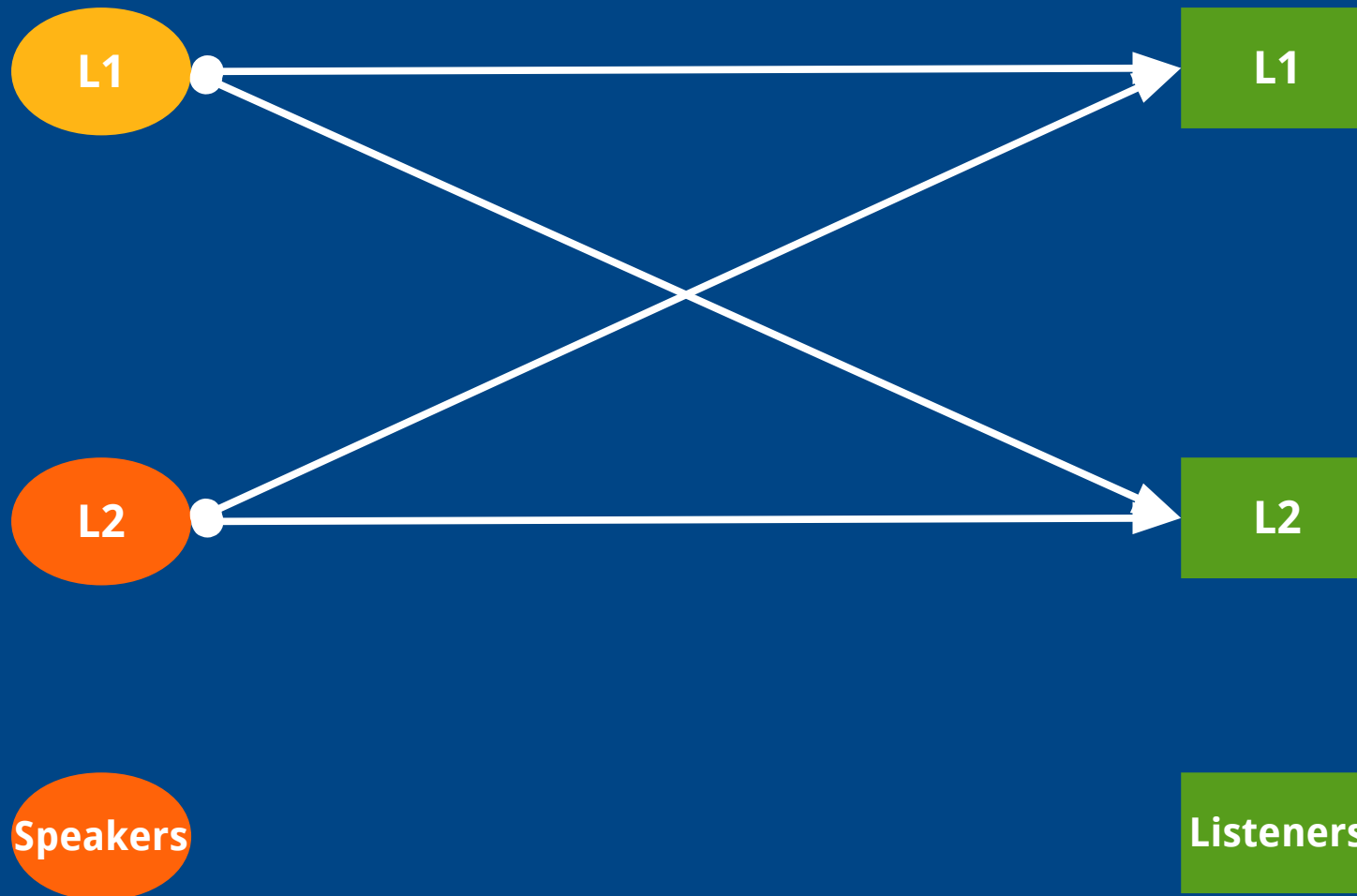
Many-to-one versus One-to-many



Many-to-one versus One-to-many

- Neither design unambiguously separates effects of language and emotion:
- Emotions are expressed with non-native phonetic characteristics
- There are no within language controls that listen to both the L1 and L2 versions
- Solution: a many-to-many design

Many-to-many



The Demo / Kemo corpus

- Dutch and Korean actors
- 8 emotions x 8 actors (4 M, 4 F) x 2 languages
- Carrier phrase: “nutohom seppikang”
 - Meaningless in both languages
 - Phonetically / phonotactically possible in both languages
 - No embedded words

The Demo / Kemo corpus

Emotions

		Valence	
		<i>Positive</i>	<i>Negative</i>
A r o u s a l	<i>High</i>	Joy Pride	Anger Fear
	<i>Low</i>	Tenderness Relief	Sadness Irritation

The Demo / Kemo corpus

Recording sessions

- Scenario approach, but also free improvisation
- In interaction with a stage director
- Order of emotions randomized over actors
- Four valid emotion portayals
- Validation by forced choice identification

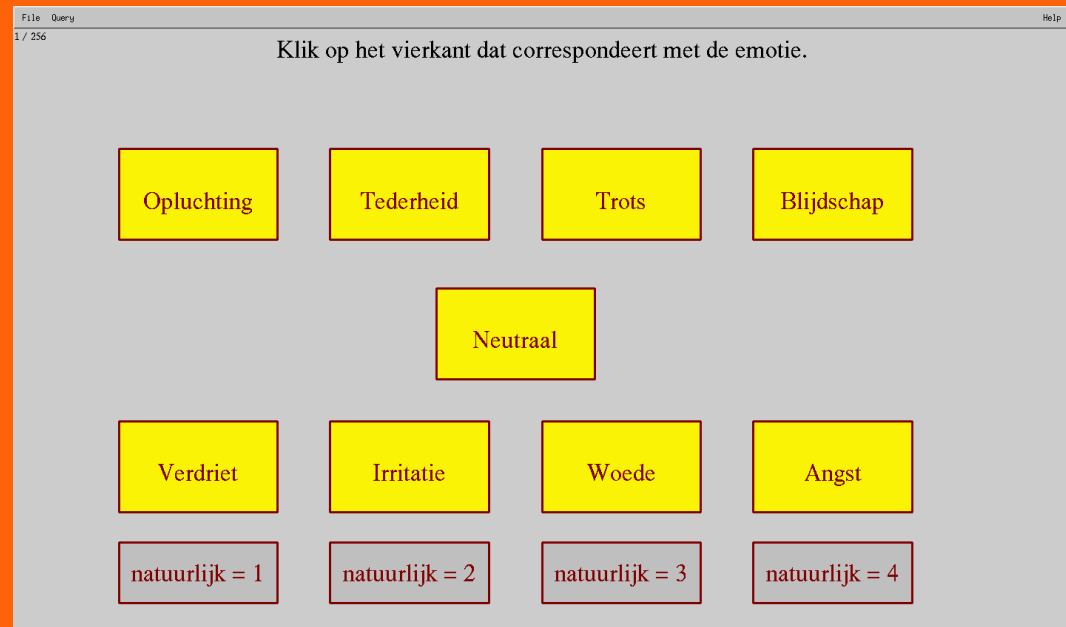
The Demo / Kemo corpus

Examples

The Demo / Kemo corpus

Validation study

- 24 listeners from each language (Nijmegen and Seoul)
- 8 emotions x 8 speakers x 4 repetitions = 256 utterances per language
- Praat MFC experiment with naturalness rating
- Results expressed in unbiased hitrates

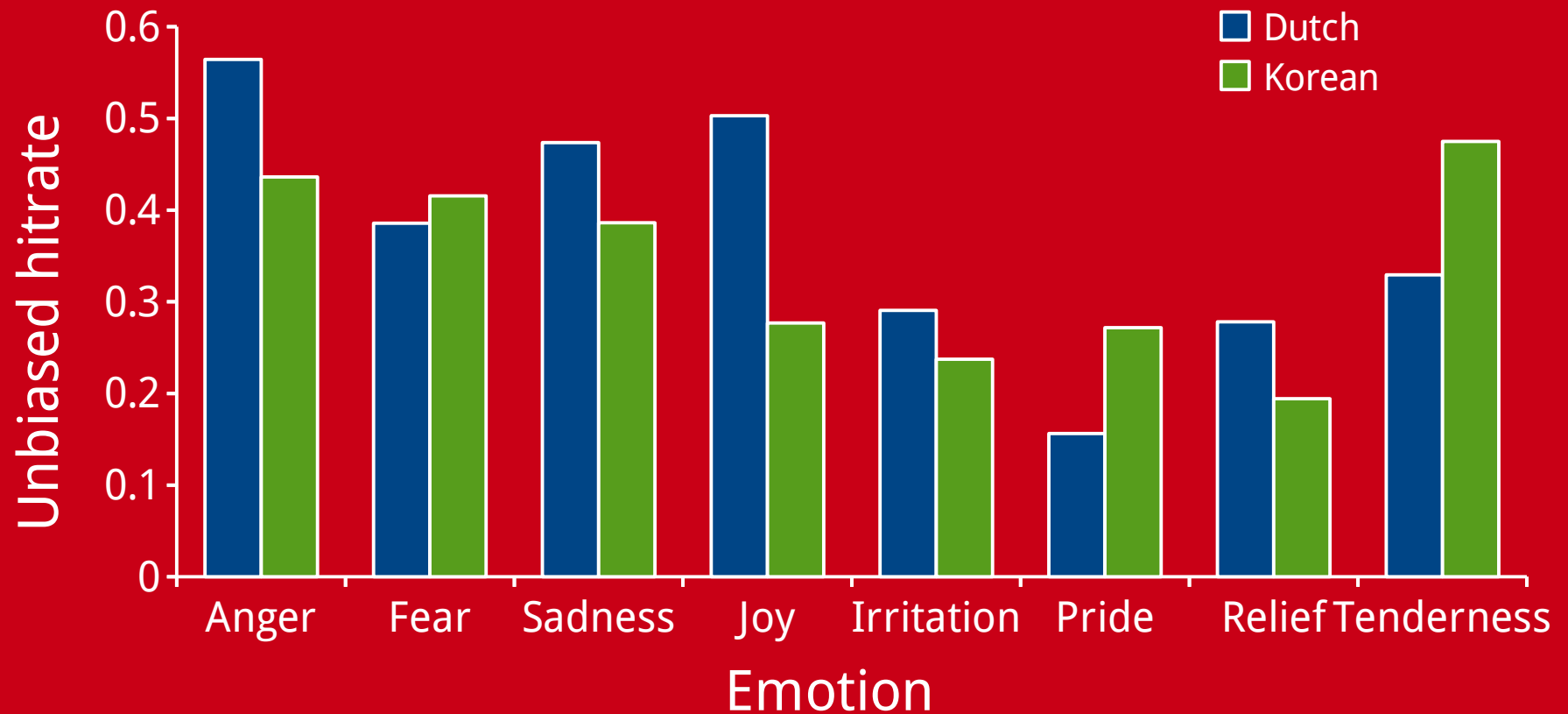


Corpus construction

- From the four rated portrayals the best two were selected based on
 - The unbiased hitrate (Hu)
 - Confusions with other emotions
 - Goodness ratings
 - Chance (if all else failed)
- This resulted in a corpus with 256 expressions

Corpus construction

Average unbiased hitrates



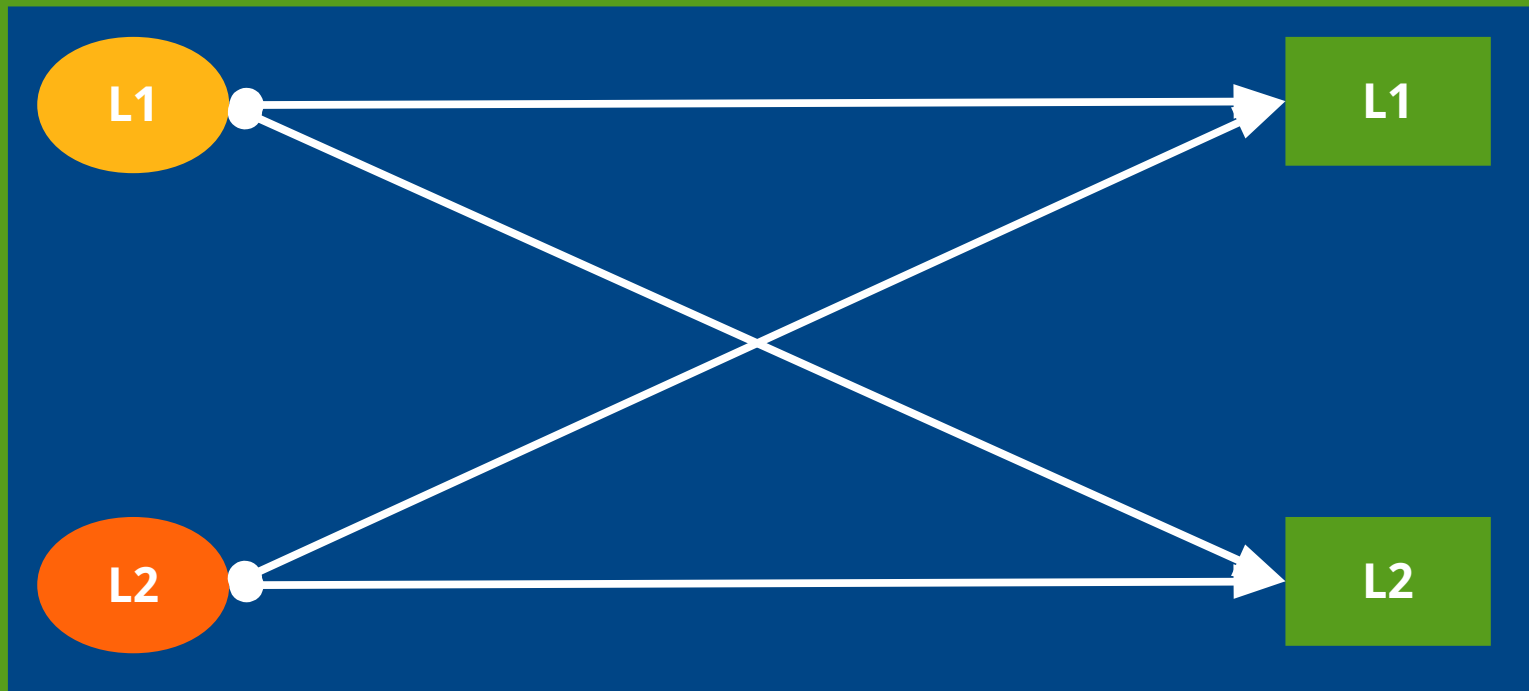
Corpus construction

Statistical analysis

- Significant effect of emotion: some emotions are better recognized than others
- No significant effect of language
- No significant interaction between language and emotion
- **Conclusion:** quality of recordings equally well for both languages / all emotions recognized equally well in both languages

Future plans and discussion

Many-to-many perception experiment



Future plans and discussion

- Acoustic analysis; duration
- Several small corpora or one big one?
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