Cuteness modulates size sound symbolism at its extremes

Dominic Schmitz

✉ dominic.schmitz@hhu.de

🐦 dmncschmtz

🔗 dominicschmitz.com

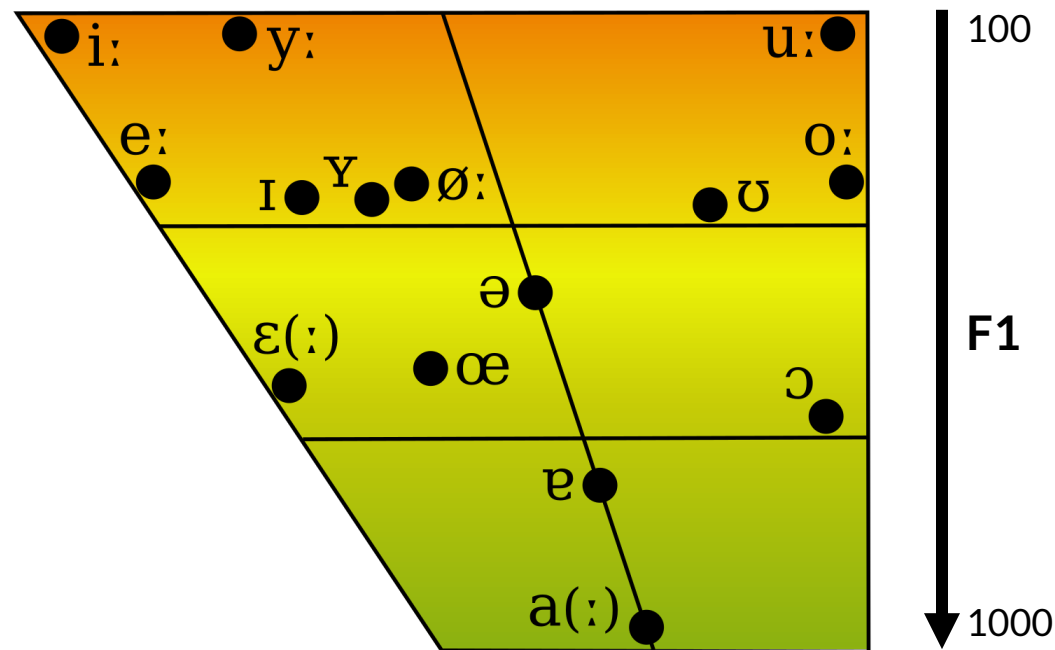# Background

Cuteness modulates size sound symbolism at its extremes

Background: Size

- Sapir (1929)
  - /a/ → **big**
  - /i/ → **small**

- Blasi et al. (2016)
  - /i/ → **small**

- Knoeferle et al. (2017)
  - high F1 → **bigger**

- Kawahara et al. (2018)
  - lower F1 → **smaller**

- Winter & Perlman (2021)
  - /a/ → **big**
  - /i/ → **small**

- Chang et al. (2021)
  - /a/ → **big**
  - /i, u/ → **small**

Background

Cuteness modulates size sound symbolism at its extremes

Background: Cuteness

- cuteness may be seen as a special type of shape

- shape has been investigated consistently

  → the infamous *bouba* vs. *kiki* (e.g. Ćwiek et al., 2022)

- cuteness is a fundamental feature of human perception and correlates with size (Kringelbach et al., 2016)

  → well-known "baby schema" (Lehmann et al., 2013)

- research on Japanese has shown that cuteness is also found as sensory information to be combined with speech sound (Kumagai, 2019)

  → /p/ is the "cutest" sound

Research questions

size
sound symbolism

cuteness
sound symbolism

Can we replicate findings on

vowel size?

How cute are certain sounds?

How "big" and how "cute" are German long vowels?

Forced-choice task

size meets cuteness

Stimuli

- pseudowords to remove effects of real-world or lexical knowledge (Caselli et al., 2016; Gahl, 2008)

- pseudoword structure

  - disyllabic, stress on first syllable

  - onsets: /d, f, j, k, r/; coda: none

  - nuclei: German long vowels /aː, ɛː, eː, iː, oː, øː, uː, yː/

| C	V	C	V
d		d	
f		f	
j	aː ɛː	j	aː ɛː
k	eː iː	k	eː iː
d, f, j, k	oː øː	r	oː øː
r	uː yː	d, f, j, k	uː yː

Stimuli

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C	V	C	V
d		d	
f		f	
j	aː ɛː eː iː	j	aː ɛː eː iː
k	oː øː uː yː	k	oː øː uː yː
d, f, j, k		r	
r		d, f, j, k	

ˈfiːriː

ˈroːjoː

Stimuli

- each of the resulting 96 pseudowords was produced three times by a native speaker of German

- the best recording for each pseudoword was chosen as audio stimulus

- the audio stimuli were matched with visual stimuli (van de Vijver & Baer-Henney, 2014) as participants were told that pseudowords were names of alien creatures
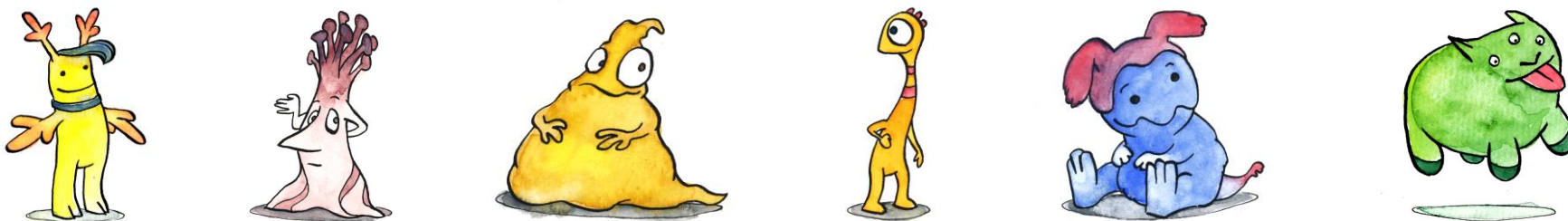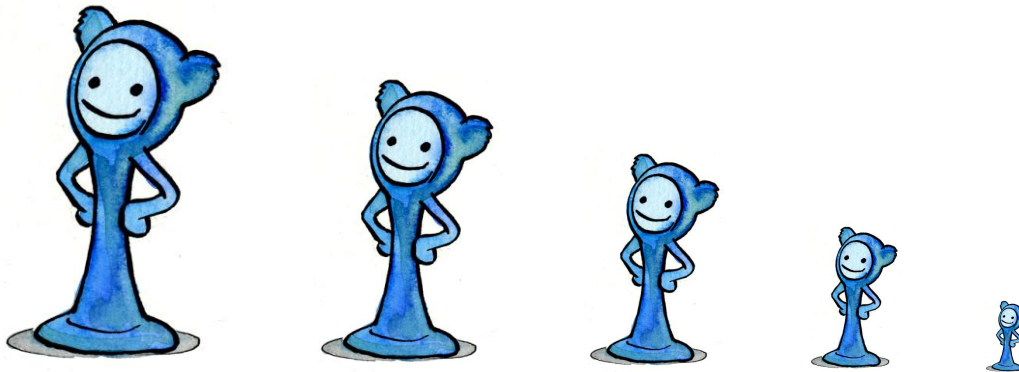

- fully randomised matching of audio & visual stimuli to control for semantic effects (cf. Schmitz et al., 2021)

Procedure

- the experiment setup consisted of three parts

1. **size judgement task**

   - 5 differently sized versions of a visual stimulus were presented

   - 1 audio stimulus was played

   - participants were to decide which image fitted the audio best by mouse-clicking on the pertinent image as fast as possible

Procedure

- the experiment setup consisted of three parts

2. **cuteness judgement task**

    - 1 version of a visual stimulus was presented

    - all visual stimuli were presented with the same size

    - participants were to judge how cute a creature was on a 5-point Likert scale ranging from *nicht niedlich* 'not cute' to *sehr niedlich* 'very cute'

Procedure

- the experiment setup consisted of three parts

3. **brief personal info questionnaire**

  - age

  - L1s

  - L2s

Analysis
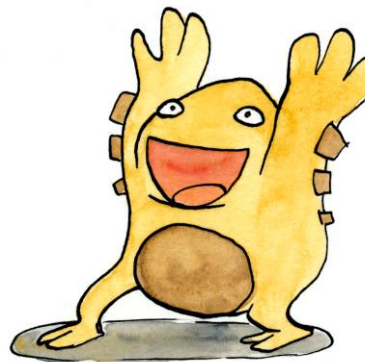
- the biggest and the smallest pseudowords

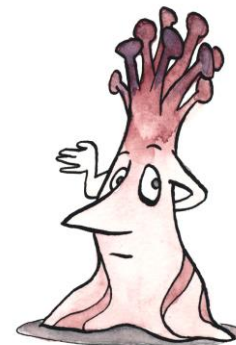 /ˈdaːdaː/   mean = 4.3, median = 4

  /ˈryːdyː/   mean = 2.1, median = 2

- the cutest and the least cute creatures

| 4.4 | 4.4 | 1.8 | 1.5 |

Analysis

- data of 21 participants (n = 1248) entered a generalised additive mixed model regression analysis after data cleaning

- dependent variable

  - size judgement

- independent variables

  - cuteness judgement * vowel

  - phonological neighbourhood density

  - first onset consonant, second onset consonant

  - participant

  - discarded: L1s, L2s, age due to distribution of data

Analysis

- data of 21 participants (n = 1248) entered a generalised additive mixed

  model regression analysis after data cleaning

```
gam(size ~

      s(cuteness, bs = "bs", by = vowel, k = 5) +

      vowel +

      s(phonological_neighbourhood_density, k = 7) +

      s(onset_1, bs = "re") +

      s(onset_2, bs = "re") +

      s(participant, bs = "re"),

   data = data_fin)
```
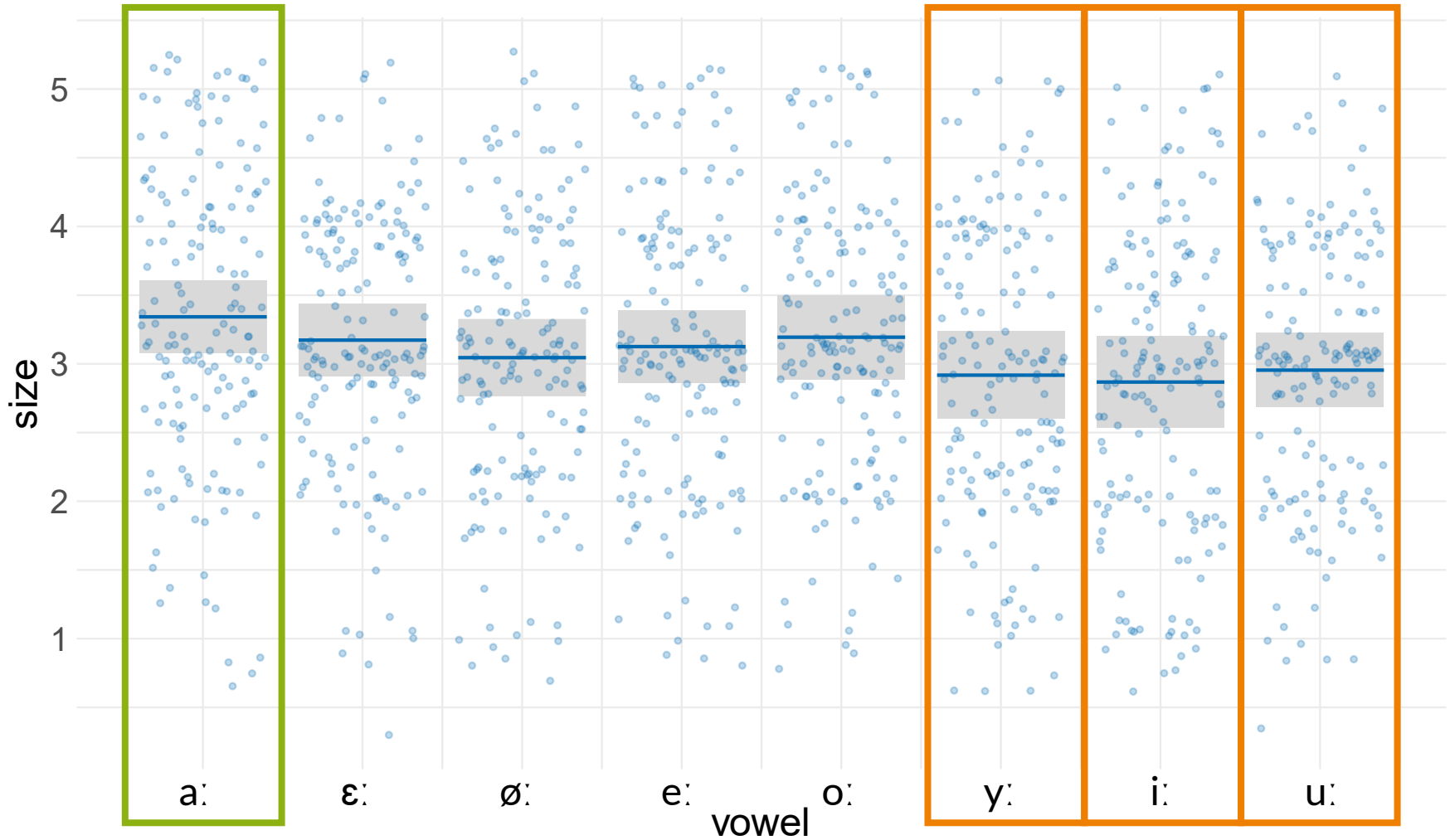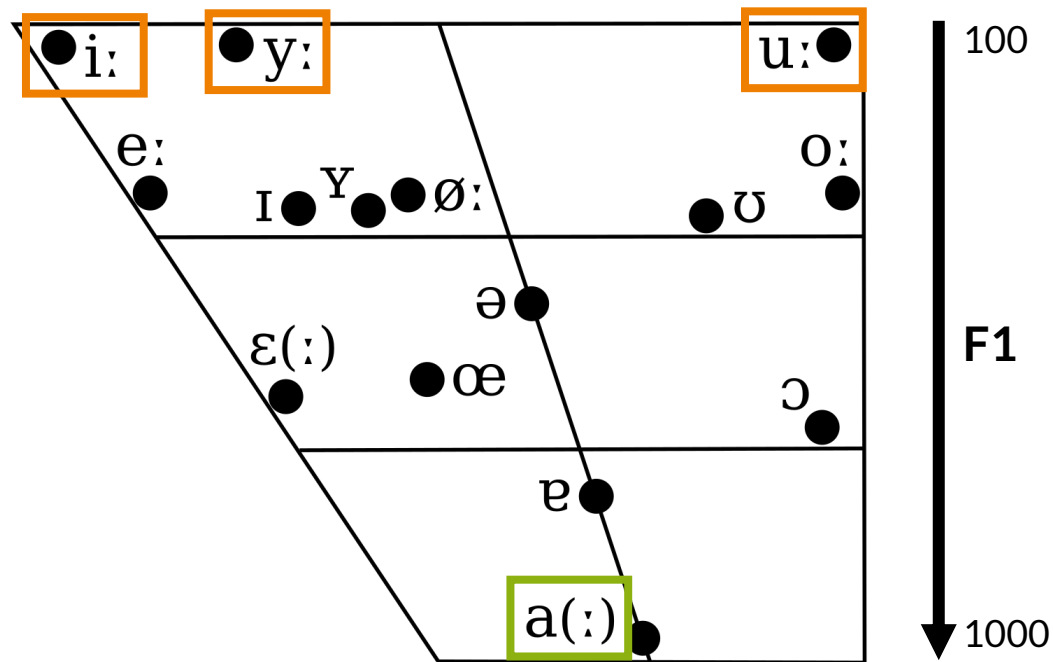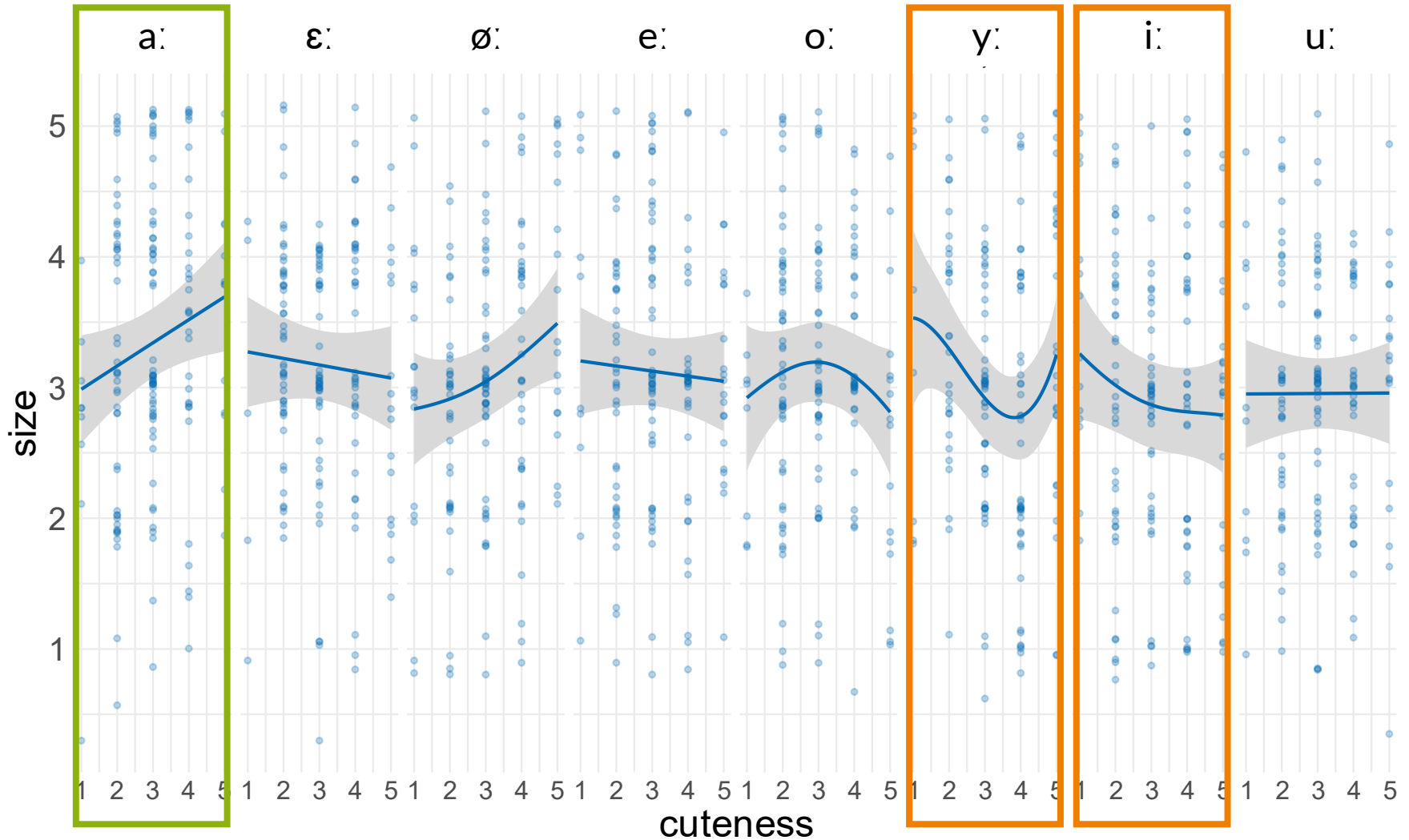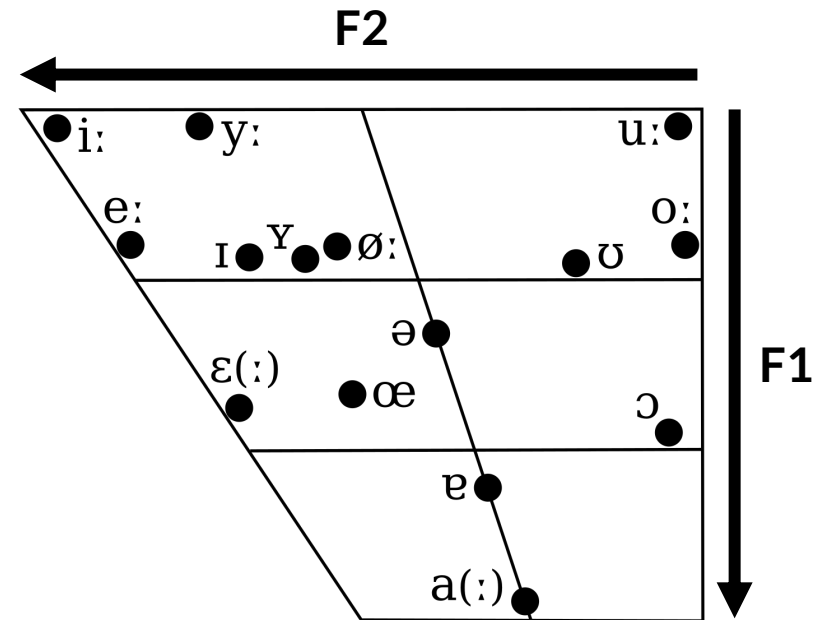
Results: Size & cuteness
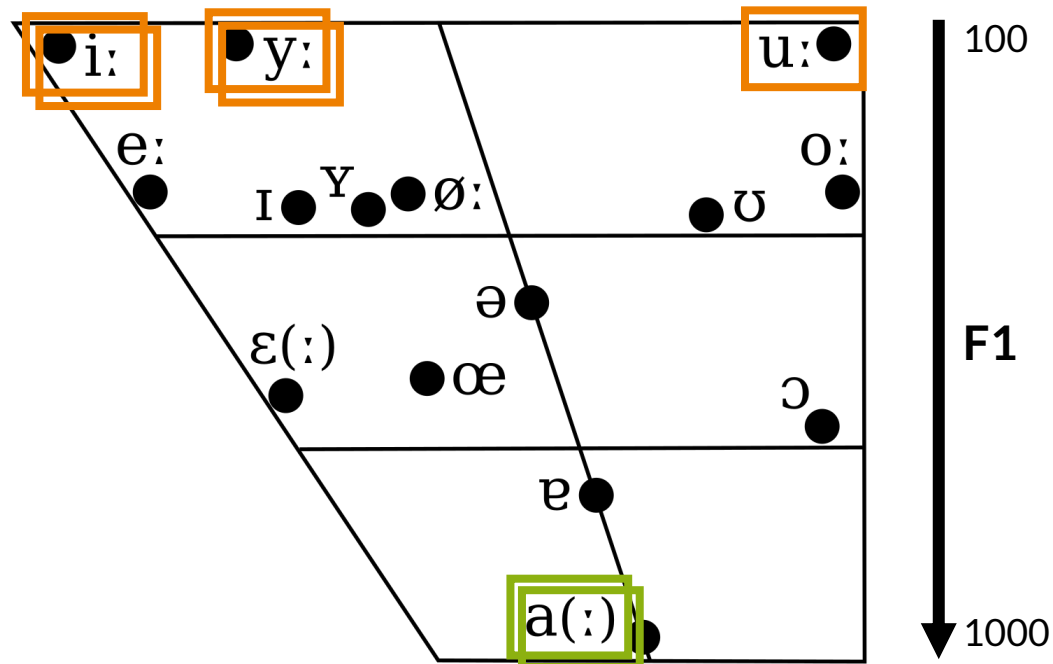
Discussion

- **size**

    - /aː/ is biggest

    - /iː, uː, yː/ are smallest

        → in line with previous findings

- **cuteness**

    - no effect on its own

    - amplifies size effect for /aː, iː, yː/

    - no effect found for /uː/

        → potentially connected to

        frontness/F2

Discussion

- further research into the interaction of size and cuteness is called for

  → a replication with 4 times as many participants is currently underway

- neglecting further sources while considering but one might lead to undiscovered interferences and/or patterns in reported findings

- the present findings thus call for the incorporation of multiple dimensions of sensory information in research on sound symbolism where applicable

THANK YOU!

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