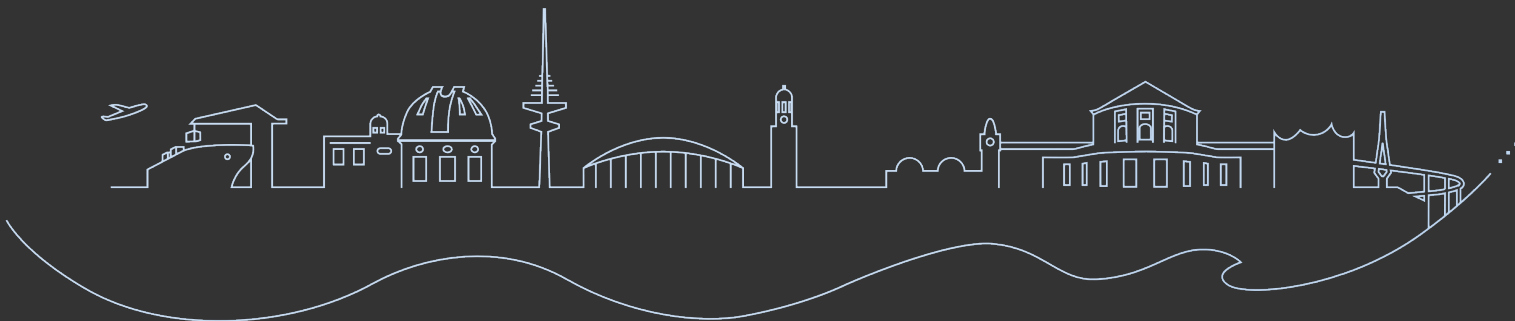




Universität Hamburg

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INSTITUT FÜR  
DEUTSCHE GEBÄRDENSPRACHE UND  
KOMMUNIKATION GEHÖRLOSER (IDGS)



# Emotions in the DGS Corpus: Lexemes, nonmanuals, or both?

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# Agenda

- 1 Who we are
- 2 Emotions and facial expressions in DGS
- 3 Method and Data
- 4 Results
- 5 Teaching

# 1

## Who we are

# Who we are!



Simon Kollien   Jenne Mertens   Sarah Schwarzenberg   Alexander Eisenzimmer   Annika Herrmann

# 2

## Emotion signs and facial expressions in DGS



# Background

- We skip background on nonmanuals in general
- We skip background on emotional facial expressions
- We skip background on grammaticalization of facial expressions
- THANKS to all presenting so far!! 😊

# Background

DGS has ...

- conventionalized lexemes that can be used to describe emotional states such as SAD and HAPPY
- nonmanuals as affective and linguistic expressions
- certain adverbs (*write concentrated*), certain adjectives (*slim person*), modality, etc. that are expressed by nonmanuals only

(u.a. Eichmann et al. 2012, Herrmann 2014, Pendzich 2020)

# Questions

- How are the basic emotions or universal facial expressions for the basic emotions according to Ekman (1993) expressed in DGS?
- Do DGS signers make use of lexemes and/or nonmanuals and which constellations appear in the corpus data?



# Example SAD

- nonmanuals of SAD in DGS  
“[...] downcast corners of the mouth, a tiny eye aperture, and furrowed eyebrows [...]”  
(Herrmann & Pendzich, 2014, p. 2155)



# Examples and Action Units (AU) (FACS)

- happy
  - AU6 cheek raiser
  - AU12 lip corner puller
- sad
  - AU1 inner brow raiser
  - AU4 brow lowerer
  - AU15 lip corner depressor
- angry
  - AU4 brow lowerer
  - AU5 upper lid raiser
  - AU7 lid tightener
  - AU23 lip tightener

(Ekman & Friesen 1978)

# 3

## Method and Data



# Method

- Using the DGS-Korpus (Konrad et al. 2020)
- Extraction of lexical signs for three basic emotions
- Using MY DGS – ANNIS (Isard & Konrad 2022)
  - Searching approx. 50 hours of open access data via specific queries
  - E.g. for the word ,traurig‘:

Gloss != /(.\*|| )\*TRAURIG.\* / & Deutsch=/.\*[Tt]raurig.\* / & #1 ->ident #2

- Extraction of German equivalents in the translation tier (only taking those without the respective lexical sign, but potentially other signs triggering nonmanuals could be part of the utterance)

# Method



Define target emotions



Define ID-gloss and words for corpus search



Check the DGS corpus via types list and via MY DGS ANNIS



Evaluate the results



Implement in teaching

# Data

- List of the ID-glosses for lexical signs searched for in the corpus
- Amount of translations found with target words but without a resp. lexical element in the signing

# Data

- ID-glosses for lexical signs searched for in the corpus: SAD



TRAURIG1



TRAURIG2



TRAURIG3



TRAURIG4



TRAURIG6



TRAURIG7

# Data

- ID-glosses for lexical signs searched for in the corpus: ANGRY



WÜTEND1A



WÜTEND1B



WÜTEND2



# Data

- ID-glosses for lexical signs searched for in the corpus: HAPPY



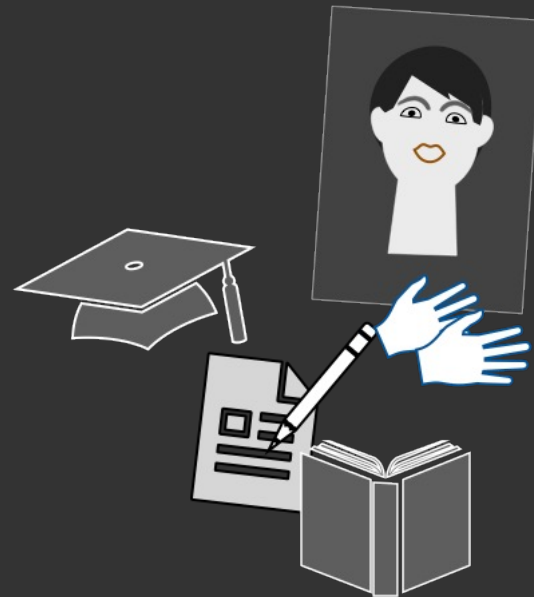
FROH1



FROH2

# 4

## Results



# Target nonmanuals on other signs



sad



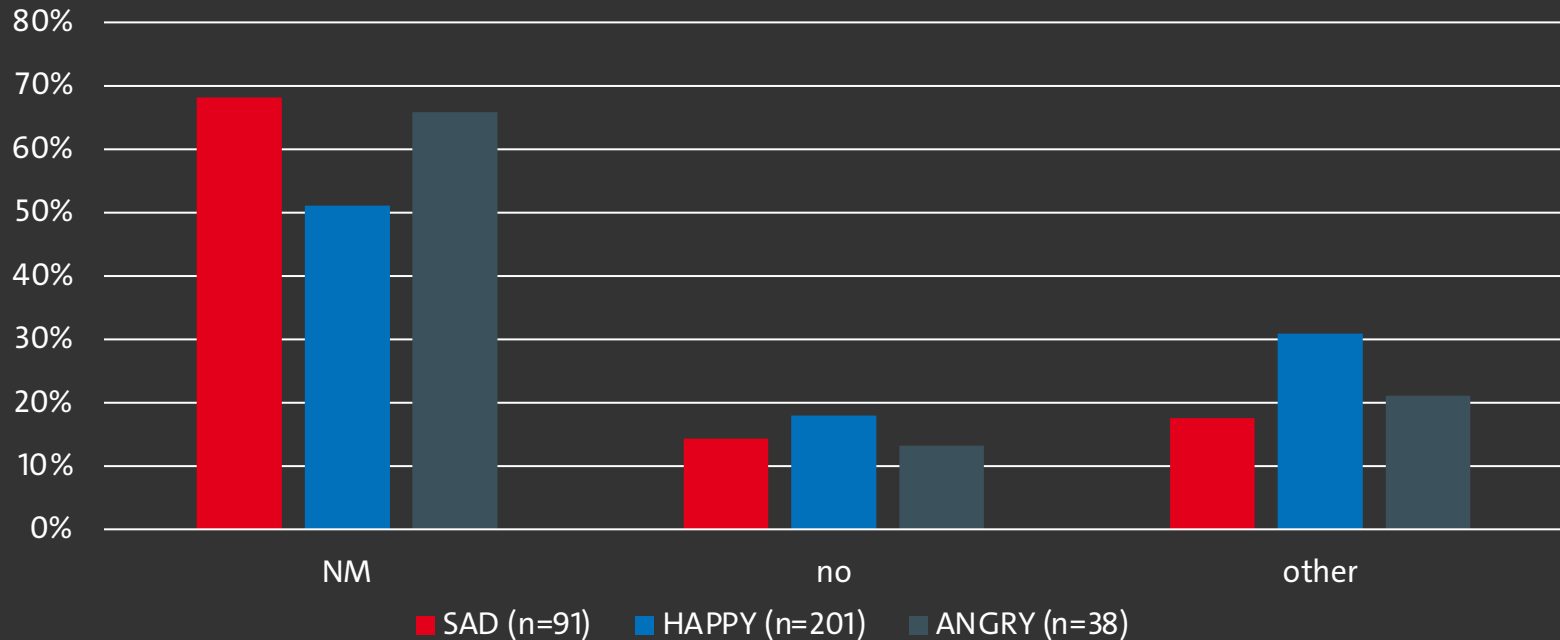
angry



happy

# Results

## 1. Evaluation of nonmanuals on lexical signs



# Example *other*

## Lexeme SAD with different nonmanuals

YES START BRIEFLY GEST-OFF <sup>NM tounge</sup> SAD GEST-OFF  
Yes, at the beginning, I was sad very briefly.



YES



START



BRIEFLY



GEST-OFF



SAD



GEST-OFF



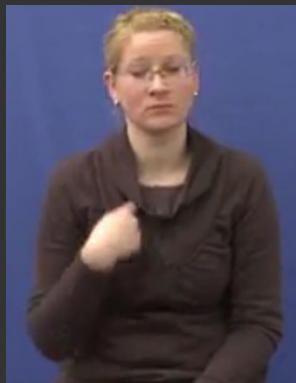
# Example *other*

## Lexeme HAPPY with different nonmanuals

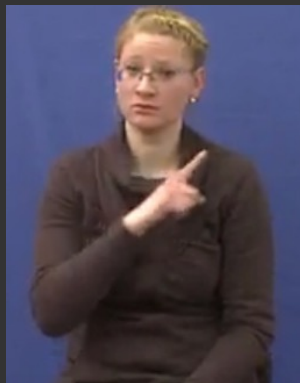
NM raised eyebrows, downcast corners of the mouth

I SELF NOW MOMENT HAPPY

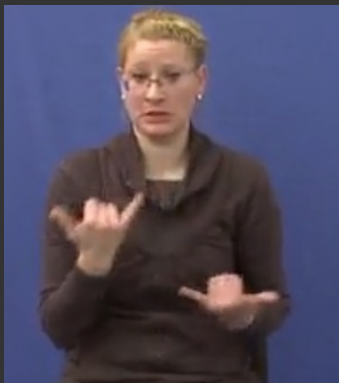
At the moment, I am happy.



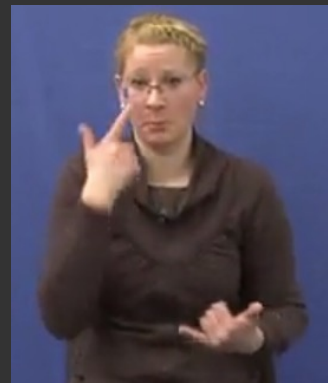
I



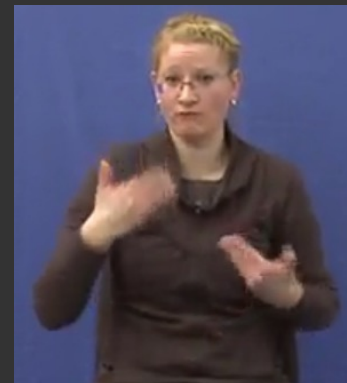
SELF



NOW



MOMENT



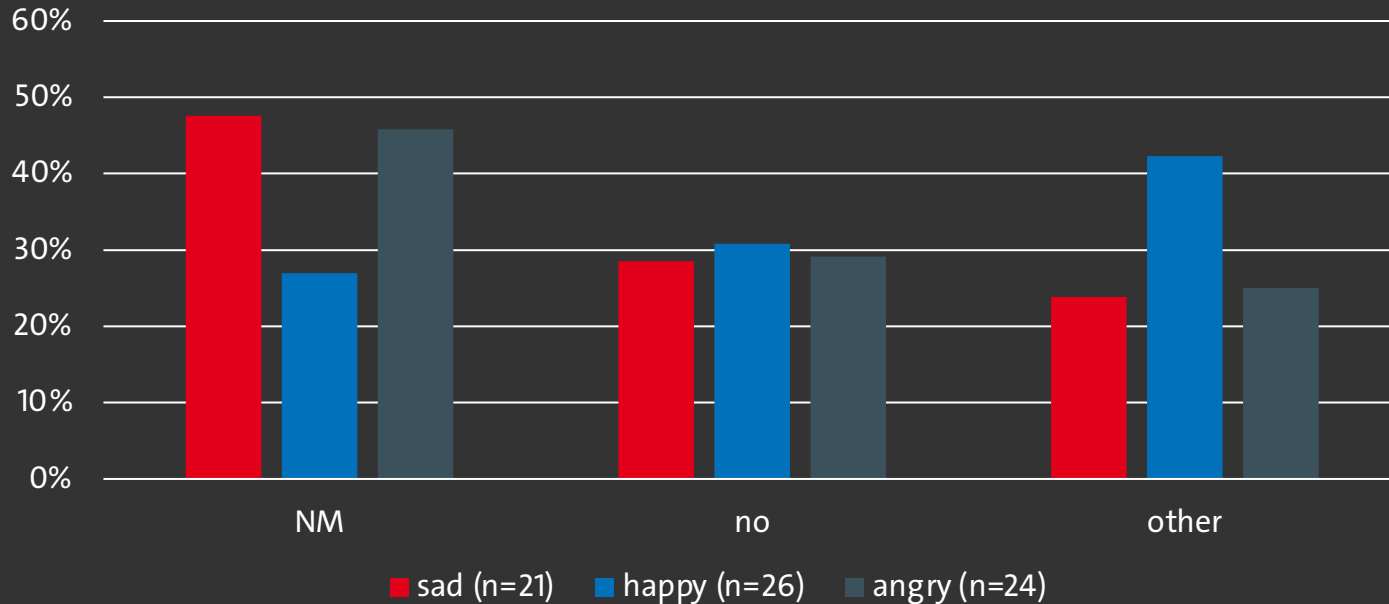
HAPPY





# Results

- 2. Evaluation of translation tier without resp. lexical sign in the utterance



# Example

Expressing emotion *angry* without lexeme

NM ANGRY

BUT POISE-BODY GEST-OFF I FATHER TO-HIT NOT TO-SPEAK PEACE

W.r.t. behavior, I would say that my father did not hit the table angrily, everyone was rather calm.



BUT



POISE-BODY



GEST-OFF



I



FATHER



TO-HIT



NOT



TO SPEAK



PEACE



# Example

## Expressing emotion *happy* without lexeme

NM HAPPY

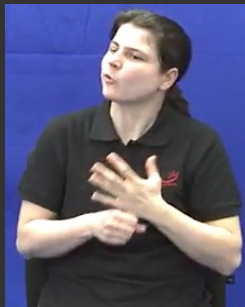
I TO-HIT ALREADY I TO-WORK CONTRACT UNLIMITED GEST-OFF ADVANTAGE I GEST-OFF  
I was happy that I got a permanent work contract and I did not want to risk anything.



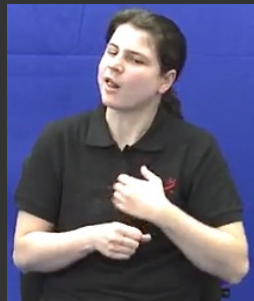
I



TO-HIT



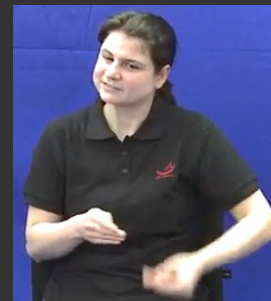
ALREADY



I



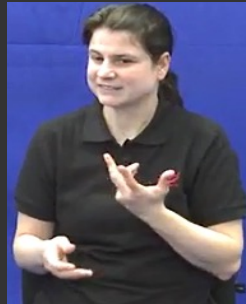
TO-WORK



CONTRACT



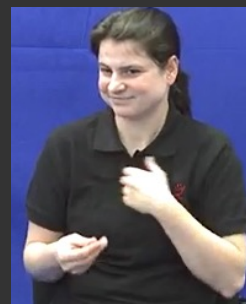
UNLIMITED



GEST-OFF



ADVANTAGE



I

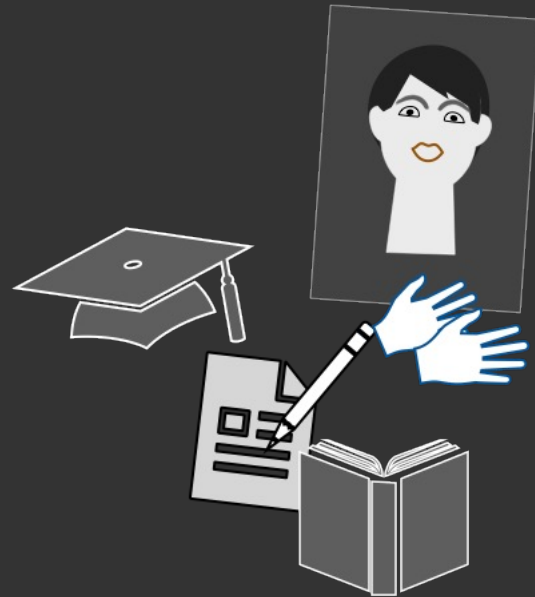


GEST-OFF



# 5

## Teaching



# Teaching

- Implementing the results in teaching, especially w.r.t. the Common Framework of Reference for Languages
- Results provide confirmation of previous teaching strategies
- Results provide new impulses for teaching
- Future collaboration between researchers, teachers and students should continue!

# Teaching

Expression of emotions in teaching (according to the language levels of the Common Framework of Reference for Languages):

A1	<ul style="list-style-type: none"><li>• Simple lexemes like <i>sour, angry, sad, cheerful</i> and <i>happy</i></li><li>• Simple constructed action sequences with emotional coloring</li></ul>
A2	<ul style="list-style-type: none"><li>• Verbs with emotional connotations such as <i>scolding</i> or <i>crying</i>.</li><li>• Classifiers with movement forms that have emotional expressions.</li></ul>
B1	<ul style="list-style-type: none"><li>• Idiomatic signs as more difficult lexemes with emotional content in longer sentences.</li></ul>
B2	<ul style="list-style-type: none"><li>• Complex sentences that are accompanied by an overarching, emotionally significant facial expression.</li></ul>
C1...	<ul style="list-style-type: none"><li>• Longer texts such as narratives with comprehensive representations of emotional states in the form of differentiated linguistic use.</li></ul>



# Summary

- Nonmanuals seem very robust in lexical signs for emotions
- Support for lexical status of lexical nonmanuals for emotions
- Possible combinations appear and other signs act as triggers of (emotional) facial expressions
- Rare instances of *nonmanuals only* (methodological issue of excluding CA, focus on translations as first step)
- First step, many open questions ...

# Thanks

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- Thanks to Lara-Sophie Isernhagen for her assistance
- Thank you for your attention!

# Questions?



# References

- Eichmann, H., Hansen, M., & Heßmann, J. (Eds.). (2012). *Handbuch Deutsche Gebärdensprache. Sprachwissenschaftliche und anwendungsbezogene Perspektiven*. (Vol. 50). Signum.
- Ekman, P., & Friesen, W. V. (1978). Facial action coding system (Bd. 1). Consulting Psychologists Press. <https://books.google.de/books?id=08l6wgEACAAJ>
- Herrmann, A. (2014). Modal and focus particles in sign languages: A cross-linguistic study. De Gruyter Mouton.
- Herrmann, A., & Pendzich, N.-K. (2014). 170. Nonmanual gestures in sign languages. In C. Müller, A. Cienki, E. Fricke, S. Ladewig, D. McNeill, & J. Bressem (Eds.), Volume 2 (pp. 2149–2162). De Gruyter Mouton. <https://doi.org/10.1515/9783110302028.2149>
- Konrad, R., Hanke, T., Langer, G., Blanck, D., Bleicken, J., Hofmann, I., Jeziorski, O., König, L., König, S., Nishio, R., Regen, A., Salde
- Isard, A., & Konrad, R. (2022). MY DGS - ANNIS: ANNIS and the Public DGS Corpus. In E. Efthimiou, S.-E. Fotinea, T. Hanke, J. A. Hochgesang, J. Kristoffersen, J. Mesch, & M. Schulder (Eds.), Proceedings of the LREC2022 10th Workshop on the Representation and Processing of Sign Languages: Multilingual Sign Language Resources (pp. 73–79). European Language Resources Association (ELRA). <https://www.sign-lang.uni-hamburg.de/lrec/pub/22034.pdf>
- n, U., Wagner, S., Worseck, S., Böse, O., Jahn, E., & Schulder, M. (2020). MY DGS – annotated. Public Corpus of German Sign Language, 3rd release MEINE DGS – annotiert. Öffentliches Korpus der Deutschen Gebärdensprache, 3. Release (3.0) [Video/mp4,application/xml,eaf,ilex,srt,OpenPose,cmdi]. Universität Hamburg. <https://doi.org/10.25592/DGS.CORPUS-3.0>
- Pendzich, N.-K. (2020). Lexical Nonmanuals in German Sign Language: Empirical Studies and Theoretical Implications (Vol. 13). De Gruyter. <https://doi.org/10.1515/9783110671667>