Workshop on Emotional Gestures

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Expressing and Representing Emotion in Signed Languages

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Topics

1. Gestures used with signing
    - 1.1. Borrowed and grammaticalized gestures
    - 1.2. Referential use of signing space as gesture
2. Nonverbal signals produced with signing
3. Linguistic representation of emotions
    - 3.1. via lexical items
    - 3.2. via constructed speech/action
4. Some final thoughts and questions
    - 4.1. Some possible consequences of Deaf persons' missing acoustic channel
    - 4.2. Multi-channel redundancy and compensating for missing channels

1. Gestures used with signing

- Gestures are recognizably different elements from signs
  - ‘stop signing, gesture, start signing again’
  - tests to see if gesture undergoes obligatory linguistic rules

    Ex. ‘copying around’ pronoun at end of sentence (HE WRONG HE)

    (Emmorey 2002)

- Signers’ gestures are often related to gestures used in the surrounding hearing culture

  (McClave 2001)

Example 1: ‘Affirmative’ Lateral Headshake Gesture

- Meaning of headshake (Eng.): “It‘s incredible!”
- Positive intensifier
- Probably culturally specific
  - American hearing culture (several studies)
  - German hearing culture (Scherer & Ellgring 2006)
    multimodal joyful surprise = positive facial cluster
    + jaw drop + faster speech rate
    + headshaking
  - but - also in French, Chinese...????
- American Sign Language (ASL) - This headshake is used as a gesture; is not a linguistic marker

Example 2: ‘Uncertainty’ Lateral Headshake

- Meaning: “What did I do?”
  Uncertainty, aware of missing bit of information
- Culture: American (other?)
- ASL: Similar to headshakes used as linguistic accompanying signals for W-questions.

1.1. Borrowed and grammaticalized gestures

- ASL and English = contact languages
- Should expect borrowing
- Deaf borrow what they can visually perceive
- Some gestures still have borrowed status in ASL (ex. ‘affirmative headshake’)
- Some become grammaticalized (‘uncertain headshake’ as linguistic negative marker in ASL but not in other signed languages)

Relevance of gestures in signed discourse for general research on gestures

Looking at what signers use and borrowed can help pinpoint aspects of speaker's gestural and nonverbal behavior that might be worth looking at more closely.

(See related discussions of gestures and signed languages in
Liddell & Metzger 1998
Emmorey 1999
McClave 2001
Engberg-Pedersen 2002
Janzen & Schaffer 2002
Wilcox 2004
Pfau & Steinberg 2004/06
Schembri et. al. 2005)

1.2. Referential use of signing space as gesture

Liddell (2003) :

Directional signs used for:

- pronouns
- agreement verbs
- spatial verbs
  - to show source and goal of action
  - in verbs with ‘classifier’ handshapes

Liddell's arguments for why directional signs should be considered gestures

- Can't linguistically specify the directional verb's location, as the location is discourse dependent;

- Spatial location for a referent is not 'a point in space' but rather the signer's 'mental envision of the referent in that space'

  Ex. : Adjustment of the location of the ASL sign TELL to the height of envisioned referent.

Relevance of coding spatial reference for speaker's gestures

- Speakers also 'semantically load' the space around them,
- and consistently refer to specific locations for referents over long, sometimes interrupted, stretches of discourse.
- In 'emotional gesturing', Speakers use points (with hand, chin, eyes) for referents when angry.

  "HE (+point) did it!"

  Here, the 3-D spatial referent for 'HE' might therefore also be important to code.

2. Nonverbal signals of signer's own nonverbal emotions / states

- In signing, nonverbal signals use the same visual channels as do the linguistic signals

- Facial expressions used grammatically have a scope and timing closely correlated with that of the co-produced manual signs.

  (See, for example, Baker-Shenk 1983)

- Although Deaf children master early many facial signals for nonverbal expressions, they master these signals for linguistic functions much later.

  (Reilly, McIntire & Bellugi 1994)

Nonverbal signals which accompany or modify sign production

Nonverbal signals mentioned in early sign language research:

- Facial expressions
- Torso leans
  - forward: openness, happiness
  - backwards: suspicion, moodiness

(Padden, 1990, Coulter 1990)

Study 1: How manual signs are affected by 5 emotional states (Reilly, McIntire, Seago 1992)

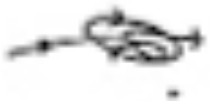
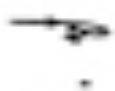
- American Sign Language (ASL)
- 12 ASL sentences
- Angry, happy, surprised, sad & neutral
- Face of signer masked and unmasked
- Deaf subjects
- Production and reception

Production Results (in masked condition)

Only sad / angry were found to be differentiated in the manual signals alone.

	duration	*form*	*path*
SAD	longer	rounder	longer
ANGRY	shorter	angular	truncated

Path drawings of the sign LOOK-FOR

	Subject 1	Subject 2	Subject 3	Subject 4
neutral				
sad				
angry				

Reilly et. al. 1992

‘Windows’ of the extent of movement of the sign LOOK-FOR with different emotions



angry neutral sad

adapted from Reilly et. al.1992

Reception Results (masked & unmasked)

- Can get some information in masked condition, but need face for accurate judgments of emotional state.
- Intensity /arousal seems to be the differentiating factor in masked condition.
- Large individual difference in how much the manual information helps in the masked condition.

Comparable to results of other studies & observations

Walbot (1998) : “Expansive use of space”:

Space used for hot anger, elated joy

> despair, cold anger, terror

> all other 'passive' emotions

Perhaps ‘expansive space’ isn’t precise enough

(Reilly et. al. study’s ‘sad’ was vertically larger, ‘anger’ was horizontally larger.)

Study 2: Expression of signing in an anxious, nervous state (Jauch 1994)

- Swiss German Sign Language
- Near-accident described
  - a) immediately afterwards to class of Deaf peers
  - b) 1 week later to Deaf mother
- Compared the use of
  - face,
  - space,
  - hands.

Face in anxious state

- Frozen over long stretches of discourse

  or

- More exaggerated than normal

- Generally less ‘mouthing’

  ‘mouthings’ are mouth movements somewhat related to spoken language words, in contrast to ‘mouth gestures’ which are mouth movements more related to nonverbal signals

(see Boyes Braem 2000)

‘frozen’ face held over several signs



ACCIDENT AUAU I WHAT? AUTO ....

normal face with AUAU



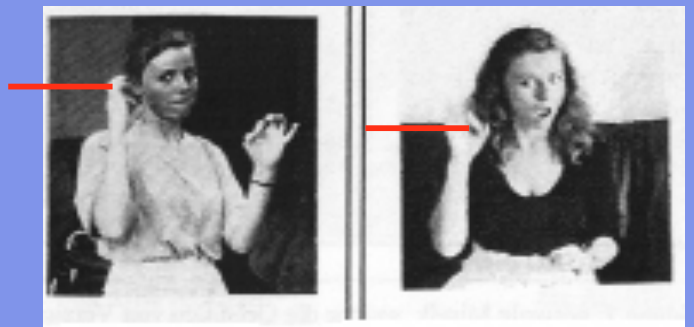
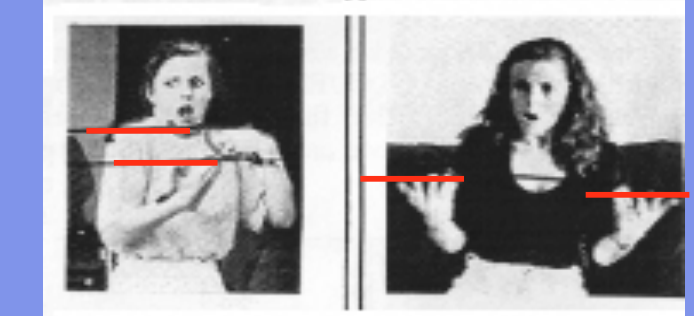
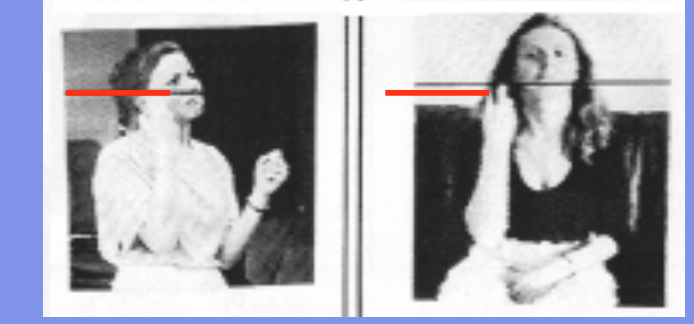
‘exaggerated’ face



DRIVE (+anxious)

DRIVE (normal)

Space: Vertical placement of signs higher than normal

	+anxious	*normal*
ALMOST		
WHAT-TO-DO?		
THINK-ABOUT		

General signing space higher than normal



anxious normal

Tracings of paths of sign sequences

(Jauch 1994)

Heights in signing and voice

Speakers: high physiological arousal = High FO, high amplitude, high upper frequency energy (Scherer & Ellgring, 2006)

Signers: high physiological arousal = signs higher in signing space (shoulders also sometimes higher)

Could high arousal be more generally characterized to cover languages in both modalities as a tightening/contraction of muscles used in the production of the respective language?

Hands (1): More holding of sign with one hand while beginning the next sign with the other hand

passive hand begins sign PERSON-COMES



active hand holds sign YOU-KNOW?

Hands (2) : More holding of passive hand without function in signing space

nervous *normal*



active hand = Gubristunnel
passive hand = no function

active hand = Gubristunnel
passive hand = out of signing space

Conclusion: Nonverbal signals with signing

Both the Reilly et. al. and the Jauch studies of two different signed languages show that the emotional state of the signer modifies in consistent ways the production of both manual and non-manual symbolic gestures (signs).

3. Representing Emotions Linguistically in Signed Languages

3.1. via lexical items

3.2. via Constructed Speech/Action

3.1. Lexically: A small study of signs for emotion in Swiss German Sign Language

Are there any consistent formal markers distinguishing signs for positive and negative emotions in the sign's

- location
- direction of movement
- handshape?

Data:

- Basic vocabulary for Sign Language Courses (ca. 3000 signs in GS-Media CD: ‘Vokabeltrainer’)
- Eliminated signs obviously based on a German or visual metaphor (e.g. angry = cook, shiver = teeth clapping, blocked = machine, grudgingly accept = swallow)
- Kept opening-hand signs, as seemed to be more related to gestures often used by speakers
- Data Set analyzed = 20 positive, 28 negative signs

Signs for positive emotions

anticipating (pleasantly)
content
convinced
courageous
enthusiastic
fantastic
glad
good (feeling)
happy
happy (radiantly)
hopeful
joy
motivated
pleased
quiet, peaceful
relieved
self-confident
special (positive)
strong
surprise (positive)

Examples of positive signs



happy

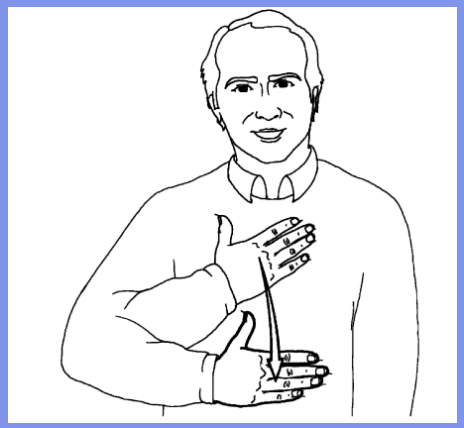


happy, glad



courageous

content





calm

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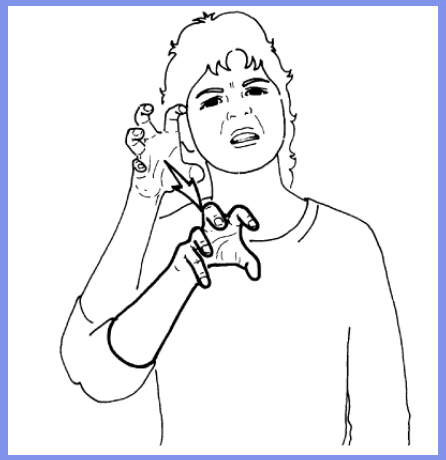
Signs for negative emotions

aggressive
angry
cold-blooded, untouched
cry
dangerous, precarious
anxious
awful
fearful
frustrated
hate
knackered
misfortunate
mistrustful
nervous
painful
rage
sad
shocked
skeptical
speechless
stressed
stuck
surprised (negatively)
tired
uncertain
weak
weep
worried

Examples of negative signs

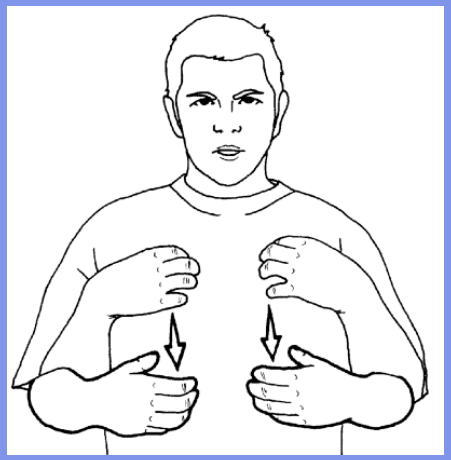
angry

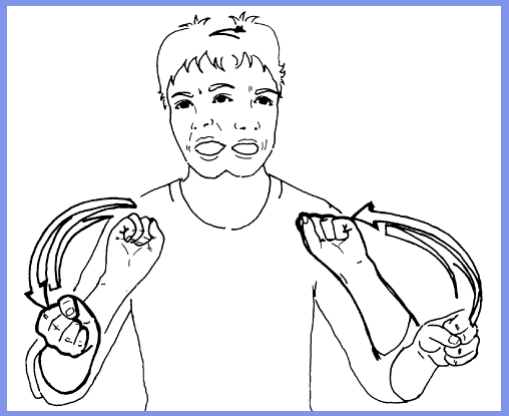




aggressive

frustrated





stressed



sad

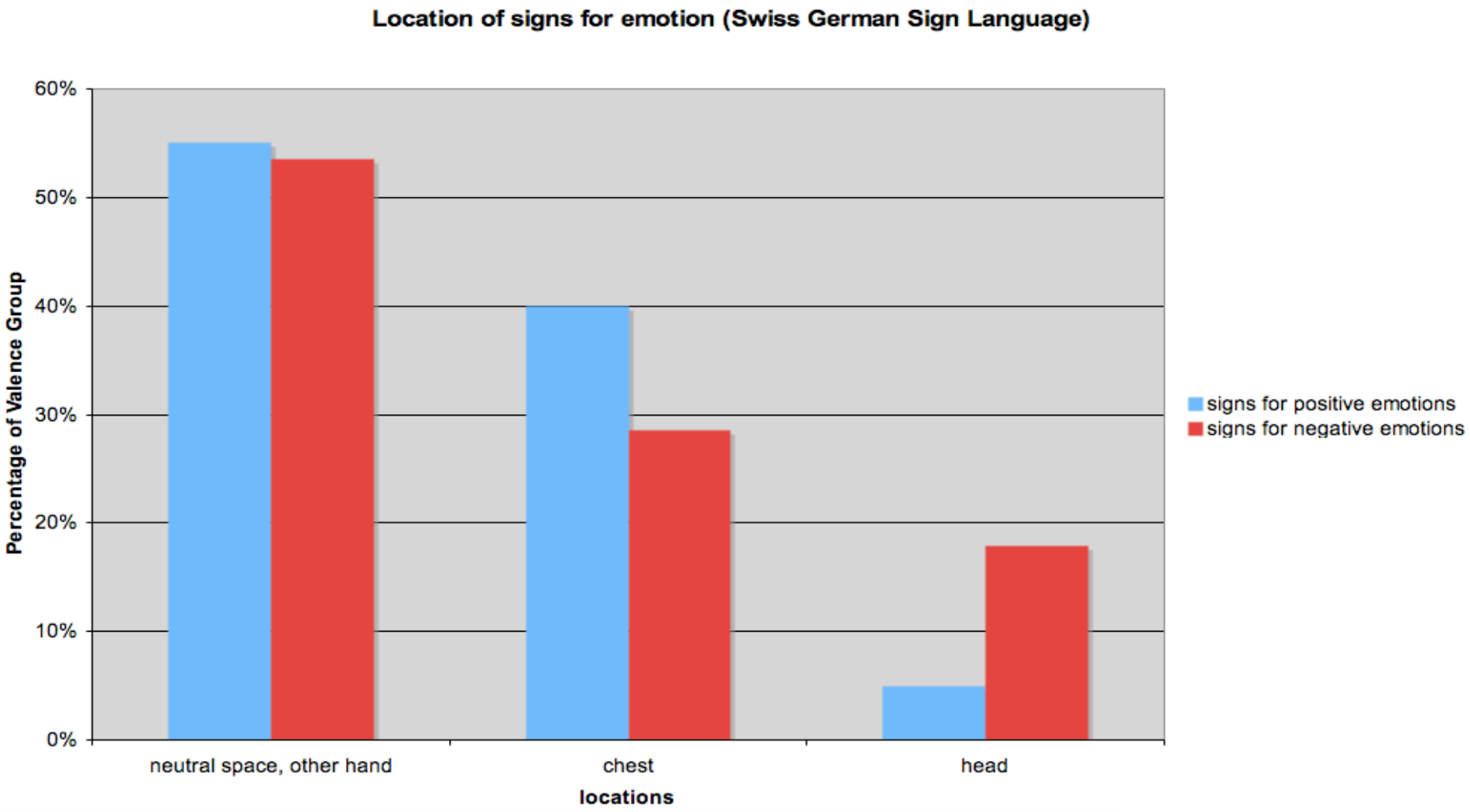
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Emotions on the chest?

- Previous research: emotions on the chest, cognition on the head

(See for example, Rosenstock 2006)

Location of Swiss German Signs for Emotions



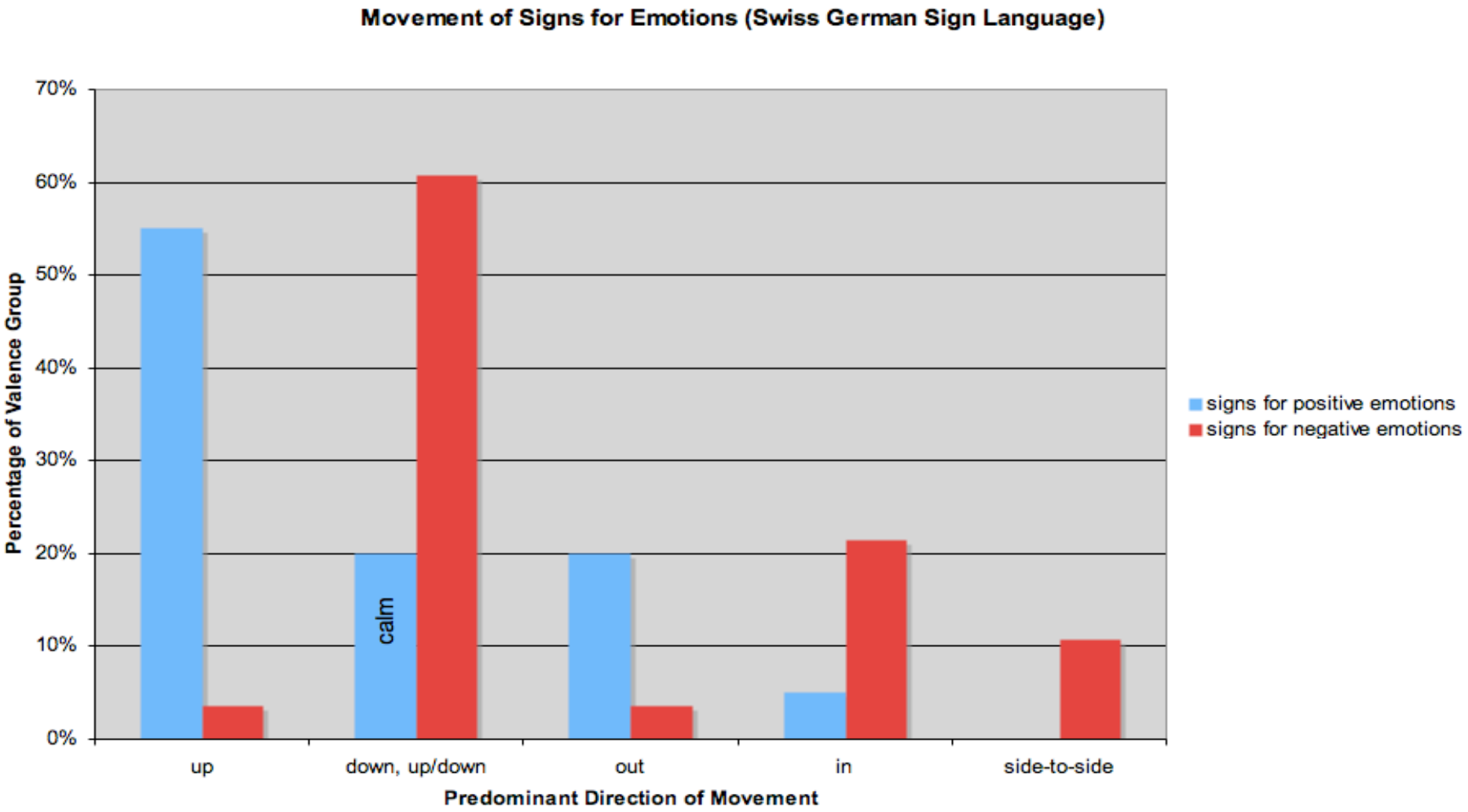
Emotions mainly on the chest?

In Swiss German Sign Language:

- Many on the chest
- Some Locations on head

  (are mostly related to ‘crying’)
- Many in neutral space or on other hand

Movement of Swiss German Signs for Emotions

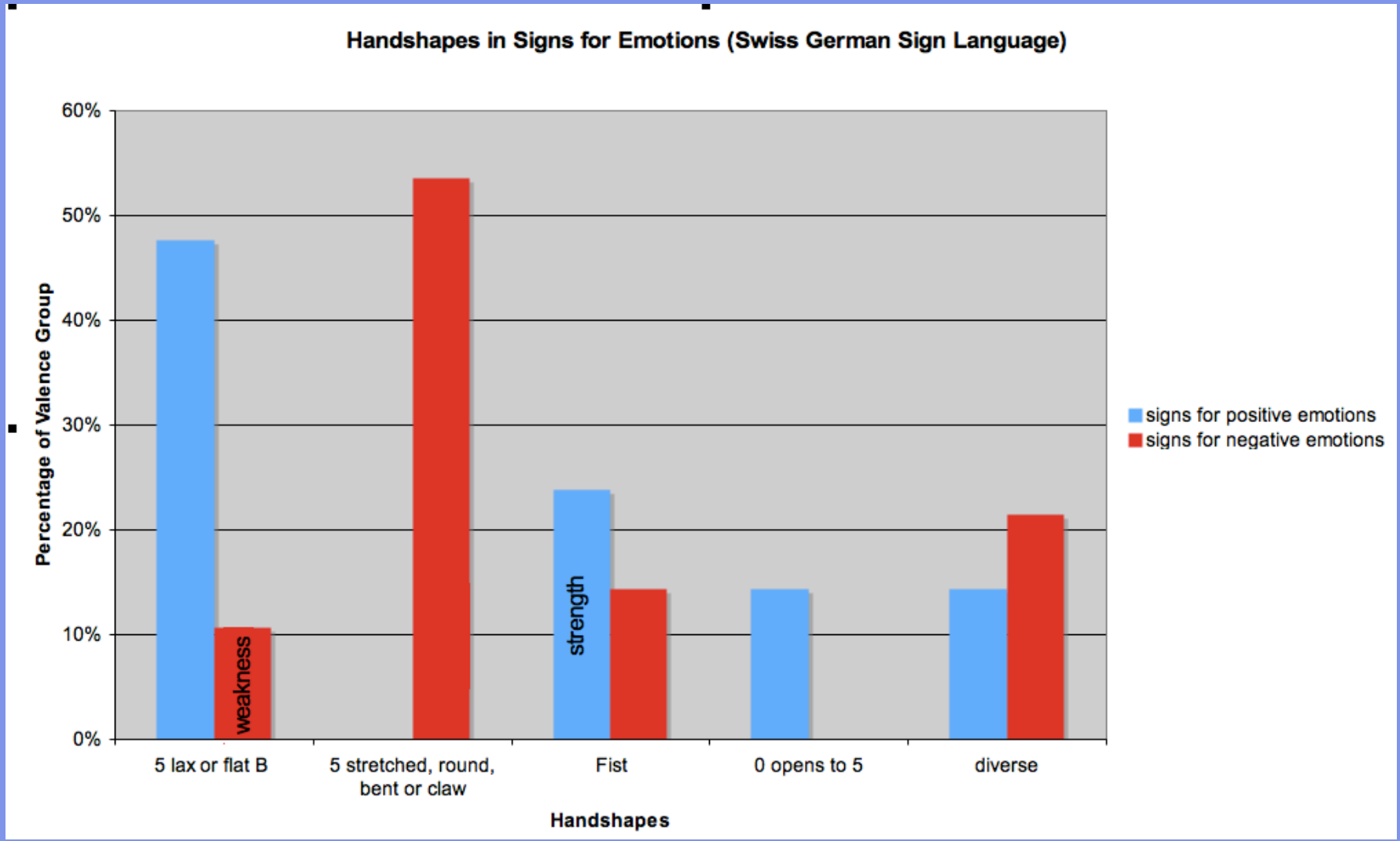


Emotional valence and direction of movement

- positive = predominantly upwards (Exception are signs involving ‘calm’ which is associated with a single down and slightly outwards movement.)

- negative = predominantly down or repeated up-down movements; some side-to-side and in towards signer movements

Handshapes of Swiss German Signs for Emotions



Emotional valence and handshape

- positive: tendency for



5 hand -lax



B hand

- negative: many more



5 hand -tense, stretched or claw hands

- negative (force, aggression) und positive (strength)



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3.2. Signed Constructed Speech/Action

Functions of constructed speech/action in signed languages:

- to represent nonverbal behaviour of referents
- to identify referents and change of referents in the discourse

Signals used in constructed speech/action:

- facial and body postures and movements identified with the referent (Ex. aggressive posture, frown)
- direction of signs and eye gaze from the point of view of the referent in the reported situation

Constructed Action/Speech ≠ Nonverbal Communication

- For learners (especially late learners) constructed action is difficult to produce accurately for the following reasons:
  - The non-manual signals must be precisely timed to coordinate with linguistic components;
  - Durations of the constructed action/speech segments can be very short;
  - Changes between represented referents can be very rapid (“role-switch”).

- Neurologically, perhaps constructed action/speech are encoded and encoded differently than are spontaneous and acted nonverbal behavior?

4. Some Final Thoughts and Questions

4.1. Some possible consequences of Deaf persons' missing acoustic channel

4.2. Multi-channel redundancy and compensating for missing channels

4.1. Some possible consequences of the Deaf person's missing acoustic channel

- Hearing views of Deaf persons ?

  People tend to distrust persons who have a higher rate of gesturing and direct their gaze much longer at the addressee.

  (Rimé &Schiarature 1978)

- Deaf views of hearing persons?

  "Observers react strongly to channel discrepancies and dissociation is often seen as a sign of pathology or deception."

  (Scherer & Ellgring 2006)

4.2. Multi-channel redundancy and compensating for missing channels

Perhaps for the Deaf person, both redundantly and non-redundantly transmitted information should be considered:

- Redundant information transmitted in channels one can perceive
- Non-redundant (modifying, augmenting, negating) information expressed in different modalities, especially if the modifying information is transmitted in a channel one can’t perceive.

Sign Language Interpreters

- The sign language interpreter's task is to convey all relevant verbal and nonverbal information for the Deaf client.
- How is this done in the visual sign modality alone?

  For example, how are Scherer & Ellgring's variables distinguishing different speaker's emotions by

  - Voice alone
  - Voice + Face (shame vs. boredom)
  - Voice + Face + Body (disgust, sadness, despair, panic fear)

  transmitted by visual signals alone?

Multimodal agitation /resignation and ‘urge to inform’

Multimodal agitation/resignation is characterized by appraisal of

high urgency - an urge to communicate

loss of control - no urge to inform environment

Scherer & Ellgring 2006

Blind persons and missing channels

- The gestures which blind children are reported to develop seem to be all symbolic gestures (mostly deictic and handling gestures).

  (See Iverson & Goldin-Meadow 1998)

- However, there is little information about gestures expressing emotions used by blind children.

- Some studies indicate blind children have less emotional expressive faces for fear, anger, surprise and disgust (although more for humor).

  (Rinn 1991)

Urge to inform and visual communication

A hypothesis:

Facial and gestural expressions of emotion related to ‘urge to inform’, and ‘no urge to inform’ are perhaps only developed through living in a visually-perceivable community.

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