

Spatial metaphors in antonym pairs across sign languages

Introduction

Do spatial metaphors reflect valence across sign languages?

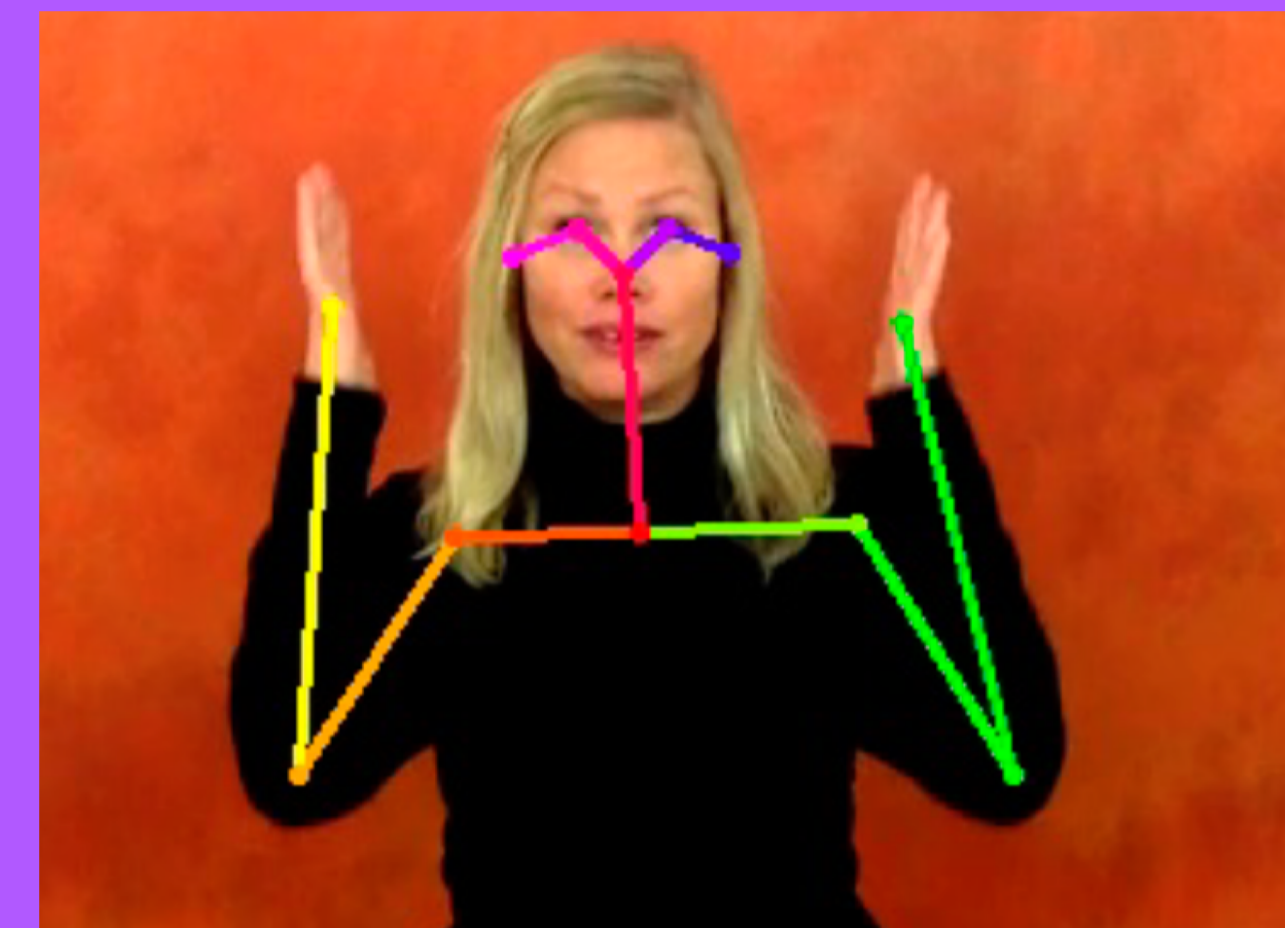


Dataset

Spread the Sign:

- 27 sign languages
- 779 signs (antonyms)
 - + = 426
 - = 353

Methodology



- OpenPose**
- Automatic sign height
 - Height per sign frame

Manual coding

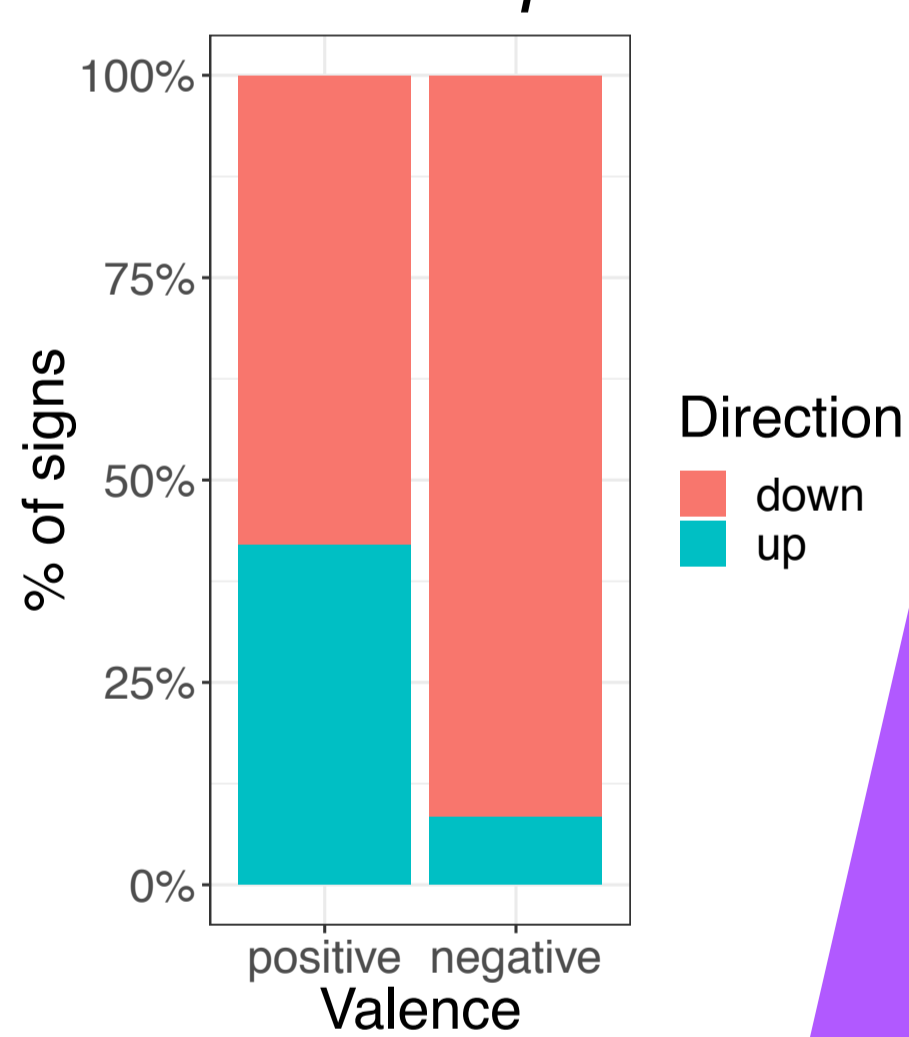
- Coding movements:
 - y: up ~ down
 - z: in ~ out

Vertical

Positive valence → upwards movement

$$\chi^2(1) = 43.053$$

$$p < 0.0001$$

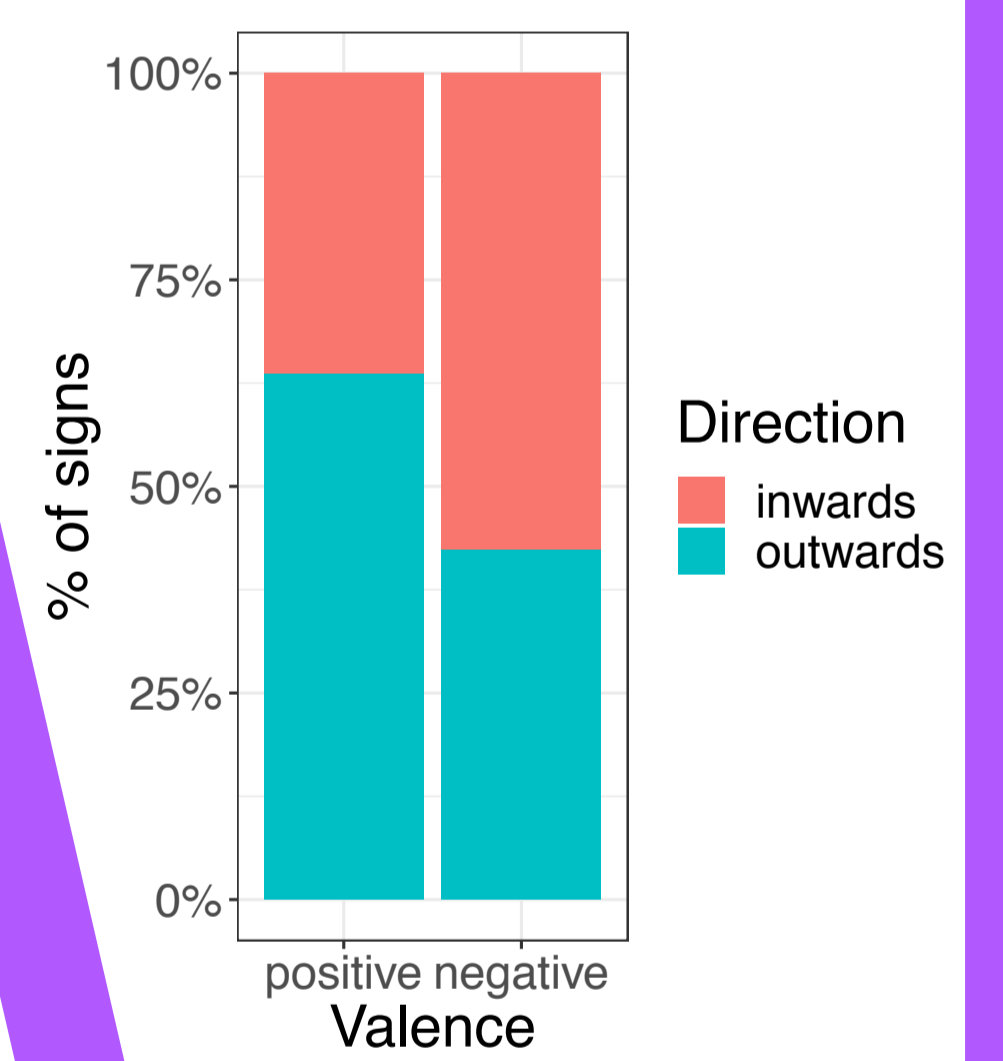


Sagittal

Positive valence → outwards movement

$$\chi^2(1) = 8.9434$$

$$p < 0.01$$



Vertical & sagittal movement reflects valence in antonyms

GOOD

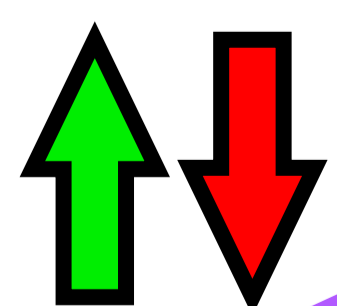
good, happy, alive, ...

BAD

bad, sad, dead, ...

Summary

Our results show that spatial metaphors reflect positive vs. negative valence in property sign antonym pairs across sign languages



UP is GOOD

Upwards and outwards movement is more often associated with positive valence

OUT is GOOD

OpenPose analysis shows correlations between manual sign height, valence and time

Valence: $\beta = 3.0257$; $t(33706.9428) = 6.475^{***}$
 Time: $\beta = -18.8648$; $t(33697.6658) = -16.484^{***}$