Research Question & Hypothesis

Q: How does lexical competition affect the production of signs?
H: Greater neighbourhood density will correlate with increased visible amplitude.

Methodology

• **ASL-Lex** (Caselli et al. 2017):
  - Database of ~1000 signs of ASL
  - Articulated by a single deaf native signer
  - Each signed in isolation
• **ASL-SignBank** (Hochgesang et al. 2019):
  - Database of ~2000 ASL signs
  - Articulated by deaf native signers
  - Each signed in isolation
  - Included only signs that also occur in ASL-Lex
• “Minimal” Neighbourhood Density (ND)
  - Taken from ASL-Lex
  - The number of signs that share at least one of 5 characteristics with a given sign (# of hands, major location, major movement, selected fingers, finger flexion)
  - Most similar to measures used by other sign ND studies
  - Thought to better “capture the phonological structure of the lexicon” (Caselli et al. 2017: 9)
• **Removed**:
  - Compounds, atypical handedness or location, clipped videos
• **Total signs analyzed**:
  - 691 videos for ASL-Lex and 644 for ASL-SignBank
• **Optical flow analysis**:
  - FlowAnalyzer software (Barbosa 2013)
  - Visible amplitude (VA) of each sign computed as in Fig. 4
• **Linear model**:
  - Visible amplitude ~ number of hands + major location + minor location + major movement + ND
  - Compare to model without ND

Results

ASL-Lex (left):
- ND is a significant predictor (p = 0.009)
- Effect is in expected direction, though small

ASL-SignBank (right):
- ND is a significant predictor (p = 0.015)
- Effect is in expected direction, though small

Discussion

• Lexical competition may affect articulation in signed languages in a manner similar to that in spoken languages.
• Increased competition is associated with increased magnitude of movements in signs.
• Wedel et al. (2016): spoken language effects better captured by lexical-item-specific measures than generalized ND – how can we capture this in signed languages?
• Note: a similar analysis of the “minimal” ND measure in ASL-Lex (neighbours share 4 of 5 characteristics) showed no significant effect of ND in either database.

**References**


References from the paper: [List of references cited in the paper]