Phonological Processes in Shanghai Sign Language

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Introduction & Background

- Phonological processes are the results of applying a set of rules which manipulate the phonological shape of the underlying forms to obtain surface forms.
  - lexical: within a word
  - post-lexical: across words


- Recently, phonological processes at the post-lexical level tend to be approached from a phonetic perspective, with a focus on effects of the neighboring units and rate of speech (Cheek 2001; Craib:2001; Maek 2003; Russel et al. 2011; Grossvald & Orma 2012; Orme et al. 2013, 2017).

Current Study

- Shanghai Sign Language (SSL) is an understudied sign language variety of Chinese Sign Language.

- Data: citation forms of lexical signs (N=2070) produced by two Deaf SSL signers and a mini-corpus of naturalistic signing (2h, 56min; genres: speech, narratives, conversations) collected from 17 SSL Deaf signers (mean age: 56; 6 females, 12 males).

- For the citation forms: we analyze the phonological modulations that the constituting signs have undergone in forming morphologically complex signs.

- For the mini-corpus data (connected signing): modulations are annotated and compared to the citation forms.

- A modulation is included if it occurs in more than one signer; OR is observed more than twice in the same signer.

Phonological processes (lexical) are OBLIGATORY

- Processes at the lexical level are obligatory and occur within morphologically complex word formation.
  - The processes attested in the formation of complex words encompass concatenative morphological operations of compounding and affixation (instantiated by negative incorporation), and nonconcatenative morphological operations of initialization and numeral incorporation.

Table 2. Phonological processes in complex word formation (concatenative)

<table>
<thead>
<tr>
<th>Concatenative morphology</th>
<th>Phonological processes</th>
<th>Citation form examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compounding</td>
<td>regressive handshape assimilation, progressive location assimilation, syllable reanalysis</td>
<td>HEAD ^ FEW = SUPERFICIAL</td>
</tr>
<tr>
<td>Affixation (negative incorporation)</td>
<td>deletion of the base sign movement, syllable reanalysis</td>
<td>MONEY ^ NOT.NEG = NO-MONEY</td>
</tr>
</tbody>
</table>

Table 3. Phonological processes in complex word formation (non-concatenative)

<table>
<thead>
<tr>
<th>Nonconcatenative morphology</th>
<th>Phonological processes</th>
<th>Citation form examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initialization</td>
<td>Handshape substitution</td>
<td>STIR (‘G’ handshape)</td>
</tr>
<tr>
<td>Numeral incorporation</td>
<td>Handshape substitution</td>
<td>TEN-CENTS</td>
</tr>
</tbody>
</table>

Phonological processes (post-lexical) are OPTIONAL

- Processes at the post-lexical level occur in connected signing and are optional.

- Apart from assimilation and reduction, other processes such as deletion, epenthesis, and metathesis, are attested at the post-lexical level in SSL.

- The phonological processes at the post-lexical level are mainly triggered by the neighboring units, which aligns with the findings from the phonetic study on other sign languages.

Table 4. Phonological processes in connected signing

<table>
<thead>
<tr>
<th>Phonological process</th>
<th>Examples from connected signing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dropping of the weak hand</td>
<td>FINISH.ASP</td>
</tr>
<tr>
<td>Epenthesis of the weak hand</td>
<td>SURPRISED</td>
</tr>
<tr>
<td>Metathesis of location</td>
<td>DEAF</td>
</tr>
</tbody>
</table>

Conclusion

- Phonological processes at the post-lexical level apply optionally, whereas similar processes at the lexical level are obligatory since they are frozen in the SSL lexicon.

- Handshape, location, movement, and weak hand can be modulated alone, supporting their status as natural classes in constituting the internal structure of a sign.

- The dichotomy between the obligatory processes at the lexical level and the optional processes at the post-lexical level is observed in multiple sign languages and merits further investigation.