**Introduction**
- Phonological similarity effects in immediate serial recall tasks suggest that short-term memory (STM) uses a phonological (speech-based) code for printed words (Baddeley 1986)
- Mixed evidence for phonological coding in deaf readers (Conrad 1979, Chincotta & Chincotta 1996)

**Fingerspelling (FS)** provides an alternative coding for English orthography for deaf users of American Sign Language (ASL)
- Is there a manual similarity effect for FS words?
- Are printed words recoded into FS?

**Stimuli & Task**
- Lists: 12 similar, 12 dissimilar four-word lists per condition
- **Procedure**
  - lists: 12 similar, 12 dissimilar four-word lists per condition presented in pseudorandom order (+8 practice lists)
  - order of conditions (phonological, manual) counterbalanced across subjects
  - immediate serial word recall using written response

**Study 1: STM for printed words**
- If deaf ASL signers recode printed words into a phonological code, phonological/manual similarity should reduce accuracy in serial recall of print.

**Participants**
- 21 deaf signers ($M_{age} = 31.1$, $SD = 10.6$; 11M)
- 21 hearing non-signers ($M_{age} = 22.7$, $SD = 5.2$; 18M)

**Phonological awareness: Hearing > Deaf:** $p = .007$; Groups matched on reading comprehension (PIAT), reading fluency, print exposure & non-verbal KBIT ($p > .3$)

**Stimuli & Task**
- Printed words: 8 similar, 8 dissimilar words per condition:

<table>
<thead>
<tr>
<th>Phonological similarity</th>
<th>Manual similarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>dissimilar</td>
<td>similar</td>
</tr>
<tr>
<td>similar</td>
<td>similar</td>
</tr>
<tr>
<td>blue, shoe, chew, who</td>
<td>blue, race, cap, love, desk, new, lie, sick</td>
</tr>
<tr>
<td>who</td>
<td>east, son, mat, same, not, meat</td>
</tr>
</tbody>
</table>

**Procedure**
- lists: 12 similar, 12 dissimilar four-word lists per condition presented in pseudorandom order (+8 practice lists)
- order of conditions (phonological, manual) counterbalanced across subjects
- immediate serial word recall using written response

**Study 2: STM for fingerspelled words**
- If deaf ASL signers recode fingerspelled words into a phonological code, phonological/manual similarity should impact serial recall of FS.

**Participants**
- 22 deaf signers ($M_{age} = 31.6$, $SD = 9.6$, 10F; 12 from Study 1)

**Stimuli & Task**
- FS words: 8 similar, 8 dissimilar words per condition:

<table>
<thead>
<tr>
<th>Phonological similarity</th>
<th>Manual similarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>dissimilar</td>
<td>similar</td>
</tr>
<tr>
<td>similar</td>
<td>similar</td>
</tr>
<tr>
<td>k-i-n-j, s-o-m-e, f-a-r-m, w-i-t-h-h</td>
<td>b-i-u-e, s-h-o-e, c-h-e-e-w, w-h-o</td>
</tr>
<tr>
<td>j-e-i-n-s, e-a-s-t</td>
<td>b-o-x, r-a-c-e, c-a-p, r-o-s-e-e</td>
</tr>
</tbody>
</table>

**Procedure**
- same as Study 1 with words and lists re-ordered
- immediate serial word recall using FS response

**Results: serial recall of printed words**
- Phonological similarity effects in hearing & deaf groups:
  - No manual similarity effects in hearing & deaf groups:

**Results: serial recall of fingerspelled words**
- Deaf signers recoded fingerspelled words into a phonological code, but no evidence for use of a manual code:
  - Phonological coding was systematic for deaf signers across both print and FS modalities ($n = 19$):

**Discussion**
- Phonological similarity led to poorer recall in both deaf and hearing groups (groups matched on reading skill)
- Deaf readers recoded printed and FS words using a phonological (speech-based) code in STM
- Phonological recoding in print did not correlate with phonological awareness scores (hearing $p = .50$; deaf $p = .92$) or reading skill (hearing $p = .78$)
- In the deaf group, recall accuracy for print correlated with reading skill ($p = .009$) and ASL skill ($p = .002$)

**References**
- Baddeley, A. (1986) Short-term memory for word sequences as a function of acoustic, semantic & formal similarity. Q.J. Exp. Psychol. 18
- Hanson, V. et al. (1984) Linguistic coding by deaf children in relation to beginning reading success. JECF 37

**Contact:**

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**Zed Sevcikova Sehyr, Karen Emmorey**
Laboratory for Language and Cognitive Neuroscience, San Diego State University