1. Introduction

- **Research Questions:**
  1. What kind of information is available in child-directed speech?
  2. How do children use such information in their own production?

- Corpus data used to examine the information that helps Chinese children learn transitive verbs in their L1
- Both input and output comprehensive account of children’s acquisition of the argument structure of Chinese transitive verbs
- Word order, animacy contrast, and markers ba and bei analyzed within the framework of the Competition Model

2. Literature Review

- Mandarin Chinese:
  - null arguments
  - flexible word order
  - no inflectional morphology

- Input Chinese children receive is indeterminate

- **Cues** used to encode transitive events in Chinese:
  - **word order** (WO, canonically SVO)
  - **animacy contrast** (AC, subjects typically animate, objects inanimate)
  - **object marker ba** (optionally marks the object in non-canonical SOV sentences)
  - **passive marker bei** (also signals non-canonical word order)

- **Cue-strength hierarchy for adult Chinese speakers**
  - AC > WO (Miao 1981; Liu et al. 1992)
  - bei > AC > WO > ba (Li et al. 1993)

- **Competition Model** (Bates & MacWhinney, 1989)
  - Language learning as a process of acquiring mappings between forms (surface cues) and features (meanings)
  - Cue **availability** = the extent to which a cue is present when needed
  - Cue **reliability** = the degree to which a cue leads to the correct interpretation when you count on it
  - Cue **validity** = the degree to which a cue wins out in a competition situation
  - **Conflict** validity = multiple cues working together to support the interpretation

3. Methodology

- **Data:** Taiwan Corpus of Child Mandarin (TCCM, Cheung & Chang 2011) in CHILDES (MacWhinney, 2000)
  - 926 utterances produced by 7 out of 11 children (mean age 2;5)
  - 1572 utterances produced by adults (e.g., interviewer, mother, father, and occasionally other family members)

- **Analysis:**
  - Utterances including simple transitive verbs
  - Coded using CLAN for word order, animacy contrast, ba and bei markers (coding schema adopted from Kempe & MacWhinney 1998, Tanaka & Shirai 2014) (see below)

- **Word Order (WO):**
  - Available when both subject and object are present (1-5)
  - Reliable when SVO (1-3)

- **Animacy Contrast (AC):**
  - Available when one NP animate and one NP inanimate (1, 2)
  - Reliable when subject is animate and object inanimate (1)

- **Object marker ba:**
  - Available when present (4)
  - Reliable when followed by overt NP, i.e. direct object (4)

- **Passive marker bei:**
  - Available when present (5)
  - Reliable when followed by overt NP, i.e. agent (5)

- Inanimate NPs underlined below:

  (1) **WO available and reliable; AC available and reliable**

  apo ye hui ti qiù qù
  ‘Grandma too MOD kick ball-ball.’ (CHILD 2;6 from WANG)

  (2) **WO available and reliable; AC available but unreliable**

  duo zi zhong le chong.
  ‘The belly grew bug.' (CHILD 1;7 from WU)

  (3) **WO available and reliable; AC unavailable**

  wo bu hui da ni
  ‘I’m not gonna hit you.’ (CHILD 3;6 from CHW)

  (4) **WO available but unreliable; ba available and reliable**

  ni zenme ba chezi nong dao le?
  ‘Why did you drop the car?’ (ADULT from CHW)

  (5) **WO available but unreliable; bei available and reliable**

  ni na ge pengyou bei ni da
  ‘Which friend of yours has been beaten by you?’ (ADULT from CHW)

4. Results

- **Table 1. Availability, reliability and validity of word order (WO) and animacy contrast (AC)**

<table>
<thead>
<tr>
<th></th>
<th>Children</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>WO</td>
<td>43.84%</td>
<td>76.13%</td>
</tr>
<tr>
<td>AC</td>
<td>92.61%</td>
<td>98.58%</td>
</tr>
<tr>
<td>WO</td>
<td>50.00%</td>
<td>78.50%</td>
</tr>
<tr>
<td>AC</td>
<td>91.48%</td>
<td>98.62%</td>
</tr>
<tr>
<td>Validity</td>
<td>40.60%</td>
<td>75.05%</td>
</tr>
<tr>
<td></td>
<td>45.74%</td>
<td>77.42%</td>
</tr>
</tbody>
</table>

- The coalition of WO and AC is frequent in both input and output (adults: 33%, children: 26%)
- AC was more likely to be the sole reliable cue (adults: 44%, children: 49%) than WO (14% for both)

5. Summary and Conclusion

- **Proposed cue-strength hierarchy:** AC > WO > ba > bei
- AC is the most important cue in expressing transitive events in Chinese-speaking children’s input and output
- First study (1) to report a cue-strength hierarchy for Chinese-speaking children and (2) to draw on naturalistic corpus data to evaluate cue-strength in Chinese

Selected References