The train goes 'choo choo'

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The train goes ‘choo-choo’: A corpus analysis of onomatopoeic words in child-directed speech and early production

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ONOMATOPOEIC WORDS (OWs)

- Words like woof and choo-choo with phonological forms that resemble sounds and objects in the real world.
- A common feature of child-directed speech across different languages.

What role do OWs play in early language development?

Sound-symbolism bootstrapping hypothesis: The non-arbitrary nature of OWs provides infants with referential insight into sound-meaning mappings in words (Imai & Kita, 2014).

Easier articulation: The phonological characteristics of OWs, including the limited inventory of sounds, articulatorily easier segments, and less complex syllables, may facilitate the initial stages of children’s word production (Laing, 2014; Massaro & Perinian, 2017).

METHOD

Data. Five typically developing children and their mothers from the Providence Corpus (Demuth, Culbertson & Alter, 2006).

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TABLE 1. Total No. of Words

<table>
<thead>
<tr>
<th>CHILD NAME</th>
<th>AGE RANGE</th>
<th>Total No. of Words (MOT)</th>
<th>Total No. of Words (CHI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alex</td>
<td>01/04/21-01/11/21</td>
<td>38,287</td>
<td>3,709</td>
</tr>
<tr>
<td>Lily</td>
<td>01/01/20-01/11/26</td>
<td>107,659</td>
<td>8,703</td>
</tr>
<tr>
<td>Naima</td>
<td>01/00/14-01/11/26</td>
<td>152,092</td>
<td>36,634</td>
</tr>
<tr>
<td>Violet</td>
<td>01/02/24-01/11/28</td>
<td>41,398</td>
<td>3,326</td>
</tr>
<tr>
<td>William</td>
<td>01/04/12-01/11/15</td>
<td>47,200</td>
<td>3,900</td>
</tr>
</tbody>
</table>

Data Extraction and Coding. All lexical variants of 22 conventional OWs and corresponding Adult words (AWs) from the MacArthur-Bates CDI:

- Each item was coded as either OW (e.g., woof) or AW (e.g., dog).
- Each OW was examined in the context of the utterance and further coded as referential expression or sound effect (a la Laing, 2014).

RESULTS

Figure 1. Proportion of OWs and their corresponding AWs in each parent-child dyad.

- OWs represented less than 1% of the adult input and less than 2% of the children’s production (see also Ota & Skarabela, 2016; Laing et al., 2017; and Ota et al., 2018).
- All children except Alex produced more AWs than OWs.
- Three of the five children used OWs at higher rates than their mothers.

Figure 2. OWs as referential nouns versus sound effects in each parent-child dyad.

- However, both mothers and children used OWs as sound effects in the vast majority of cases (88% and 93% on average for children and mothers respectively).
- In these contexts, there are no alternative adult forms. Children, therefore, had no choice but select the OW.

Figure 3. Alternating OWs and AWs in each mother-child dyad.

- In referential contexts where either OWs or AWs were available (e.g., ‘There is a choo-choo/train’), the children overwhelmingly chose to produce the AWs.
- While some children had a higher proportion of OWs than their mothers, both children and mothers overwhelmingly used AWs (96% and 98% respectively).

CONCLUSIONS

- When they have a choice to represent referents with either OW or AW, children, like adults, use AWs most of the time.
- No direct evidence that OWs provide an articulatory easier alternative to learners.
- In real-life language learning, OWs may not provide referential insights to canonical lexical sound-meaning mappings. They are primarily used as sound effects, whose role in word learning is still poorly understood.