Sensitivity to native language letters in Japanese 18-month-olds
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**Introduction**

Acquiring the visual features of letters from one’s native language is a critical landmark for literacy acquisition. A previous study showed that over 80% of English-speaking 3-year-olds can categorize alphabetic letter strings as writing (Lavine et al. 1977), indicating that toddlers can explicitly recognize the letters of their native language. Additionally, a recent study shows early emergence of language-specific characteristics in early stage of development (Otake et al. 2018). They present writing products of Chinese and U.S. toddlers for Chinese and U.S. adults and asked them the nationality of writer. Nationally of writing products by 2- and 3-year-olds were significantly judged above chance level. This results imply language-specific knowledge emerges well before the reading acquisition (i.e. 2 years old). However, as writing requires higher levels of motor skills, children might show sensitivity to writing of their native language before two years olds of age.

Our study used an eye-tracking technique and focused on Japanese hiragana letters to investigate whether toddler in 18-month-olds possess a sensitivity to native language letters.

**Method**

**Participants**

- A total of 16 17-19 month-old toddlers (9 boys, Mage = 18.31 mo., age range: 17.16-19.59 mo.)
  - Further 13 toddlers were excluded from final sample.

**Procedure**

- Preferential looking paradigm (Eye-tracking:Tobii TX300)
  - Letters were presented side by side, and looking time for these letters were measured.
- Experimental condition
  - Hiragana (native language) and Ge’ez letters were presented side by side on the screen.
- Control condition
  - Hiragana - hiragana condition

If toddlers aware language-specific characteristics, their proportion of target looking should significantly apart from chance level.

**Stimuli**

<table>
<thead>
<tr>
<th>Hiragana</th>
<th>Ge’ez</th>
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<tr>
<td>- Japanese speaking children start to acquire hiragana naming from 3 to 4 years old (Shimamura et al.,1994).</td>
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<td>- Ge’ez letters is not familiar for Japanese and visual complexity is similar to hiragana.</td>
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There is no significant differences between hiragana and Ge’ez letters in visual complexity both of which is used for experimental stimuli ($t(15) = 0.36, p = .73$).

**Results & Discussion**

**Letter-sound naming**

- To check toddler’s development of letter-sound naming, we asked their parents whether their child could read (name) some hiragana letters by questionnaire.
- Although one of them can read some hiragana letters, 14 toddlers could not read hiragana letters at all.

**Sensitivity to native language letters**

- In the experimental condition, one-sample t-test reveals that mean looking ratio for target letters were significantly smaller than 0.5 ($t(15) = -2.56, p = .02$), suggesting that toddlers looked unfamiliar Ge’ez letters significantly longer.
- However, the control condition did not produce significant differences ($t(15) = 0.98, p = .34$).

This result implies toddlers at 18 months old who are well before the acquisition of letter-sound naming shows sensitivity to native language letters.

**WHY??**

- Emergence of sensitivity to native language letters may be induced by enviromental exposure (e.g. shared-book reading).
- However, our result might be attributed by other factors (e.g. attractiveness of letters) which should be addressed in future studies.

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