Japanese-speaking children’s interpretation of ka and ya ‘or’

Masuyo Ito (Fukuoka University, Japan)

Aim This study examines whether Japanese-speaking children are able to interpret the connectives ka and ya ‘or’ correctly depending on the context in which they are used. Two questions addressed are: does the availability of the inclusive conjunction ya (meaning ‘or’) in Japanese affect children’s interpretations of the disjunction ka (also meaning ‘or’), whose interpretations are reported to be logically inclusive or illicitly conjunctive (Tieu et al. 2017; cf. Singh et al. 2016 for English children); 2) are children (in)sensitive to ignorance inferences involved in ‘or’ sentences. My goals are 1) to present experimental results about children’s (and adults’) interpretation of ka and ya and 2) to provide evidence supporting ‘access to alternatives’ accounts (e.g. Singh et al. 2016).

Previous Studies Unlike adults, children are reported to interpret ‘or’ sentences (without a deontic modal verb) in non-downward-entailing (DE) contexts inclusively (Paris 1973; Boster and Crain 1993; Chierchia et al. 2001, 2004; Crain et al. 2002; Huang et al. 2019, among others) or conjunctively as well (Singh et al. 2016; Tieu et al. 2017) when adults assign exclusive interpretations. As for the Japanese connectives, to my knowledge, the only study which investigates SI calculation of ka is Tieu et al. (2017), which reports children’s illicit conjunctivity in prediction mode; children’s interpretation of ya has not been studied. (Goro and Akiba (2004) report children’s illicit conjunctive interpretation assigned to ka in simple negative sentences.) Previous studies have attributed children’s unsuccessful calculation of scalar implicature (SI) to: 1) their inability to calculate SI or 2) their inability to retrieve (lexical) alternatives such as ‘and’ despite their being able to compute SI (e.g. Chierchia et al. 2001, 2004; Singh et al. 2016). If children are able to calculate SI, then it is expected that SI arises in non-DE contexts, while it does not in DE contexts, as found in Chierchia et al. 2001, 2004, among others. When ignorance or uncertainty is involved, such as when disjunctive statements are used to make a prediction, SI tends not to arise. However, Hochstein et al. (2014; 4-year-olds) and Barner et al. (2018) report children’s insensitivity to ignorance inferences involved in the use of ‘or’ sentences. A question arises as to whether account 2 and insensitivity to ignorance inferences are compatible. More interpretation data are necessary.

‘Or’ in Japanese The Japanese disjunction ka ‘or’ is interpreted inclusively or exclusively in the DE context, but only exclusively in the non-DE context. (Ka, unlike the English or, can be interpreted exclusively in the former context). Japanese has another connective ya ‘or’ (Kuno 1973), which is interpreted inclusively or conjunctively in the DE context (1a), but conjunctively in the non-DE context (1b) (see also Tables 1a,b below). I adopt Sudo’s (2014) derived conjunctivity analysis of ya and assume that the interpretation of ya also involves SI, as shown in (1c).

(1) a. [Mosi Taroo-ga [kooihii ya kootya]-o nom-eba] yoru nemur-e-nai-darou (inclusive/conjunctive)
   if Taro-nom [coffee YA tea]-acc drink-if night sleep-can-neg will
   ‘If Taro drinks things like coffee and/or tea, he won’t be able to sleep at night.’

b. Taroo-wa [kooihii ya kootya]-o nonda (conjunctive)
   Taro-nom [coffee YA tea]-acc drank
   ‘Taro drank things like coffee and/or tea.’

c. (Taro drank coffee˅Taro drank tea) ˄ ┐(Taro did not drink both) (Sudo 2014)

The experiment To see whether explanation 2 above (i.e. the access-to-alternatives one) and insensitivity to ignorance inferences are true, an experiment was done by testing ya as well, and testing ka and ya in prediction mode (PM) and description mode (DM). The experiment investigated whether the availability of ya in Japanese affects whether or not children assign illicit interpretations to ka: conjunctive (always illicit) or inclusive (illicit in DM). The use of ya allowed us to test ‘access to alternatives’ explanations proposed by Singh et al. (based on Fox 2007) because they would predict that despite the availability of ya, children should interpret both ka and ya inclusively or conjunctively, the latter resulting from SI based on available ‘domain’ alternatives. Two modes were given to test sensitivity to ignorance inferences.

Participants A TV (or felicity) JT (Crain and Thornton 1998) was used with two groups of Japanese-speaking children (‘PM’/‘DM’: 31/34 4-to-6-year-olds). 18 adults as controls.

Stimulus sentences Both ka and ya were tested when one or both of the disjuncts were true (1- vs. 2-item conditions; within-subject) in the story presented on the PC screen, with four replications for
each sentence type. *Ya* was tested in 3-item conditions as well. (Item types are shown in Tables 1a,b, except for the 3-item *ya*. The mode in which both connectives were used, PM vs. DM, was the between-subject factor. *(To *‘and’, 0-item *ka* and *ya*, as controls, and fillers were also interspersed.)* In the PM, children were presented with a test statement describing an expectation in the form ‘*(I) thought….’* after the story was told, and were asked if the puppet’s expectation matched what happened in the story. (The puppet mumbled something unintelligible before the outcome was known.)

**Table 1a. Interpretations of *ka* and *ya*: prediction-mode**

<table>
<thead>
<tr>
<th></th>
<th>1 item</th>
<th>2 item</th>
<th></th>
<th>1 item</th>
<th>2 item</th>
</tr>
</thead>
<tbody>
<tr>
<td>inclusive</td>
<td>OK</td>
<td>OK</td>
<td><em>ya</em></td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>exclusive</td>
<td>OK</td>
<td>OUT</td>
<td>conjunctive</td>
<td>OUT</td>
<td>OK</td>
</tr>
</tbody>
</table>

**Table 1b. Interpretations of *ka* and *ya*: description-mode**

<table>
<thead>
<tr>
<th></th>
<th>1 item</th>
<th>2 item</th>
<th></th>
<th>1 item</th>
<th>2 item</th>
</tr>
</thead>
<tbody>
<tr>
<td>exclusive</td>
<td>OK/odd</td>
<td>OUT</td>
<td>conjunctive</td>
<td>OUT</td>
<td>OK</td>
</tr>
</tbody>
</table>

An example of test items given in each mode is given in (2) and (3), respectively:

(2) 2-item *ka* given in PM (context: the Cat bought the apple and the orange)


‘(I) thought (that) the Cat would buy the apple KA the orange.’

(3) 1-item *ya* given in DM (context: the Pig only brought the Rabbit)

*Puppet:* Pig-san-ga Usagi-san ya Kumai-ken-o tureteki-ta yo (correct: ‘F’)

‘The Pig brought the Rabbit YA the Bear.’

**Major results/Discussion**

1) The children’s non-adult-like interpretations were seen in their acceptance of 2-item *ka* in PM and DM and rejection of 1-item *ka* in PM (all at significantly higher frequencies than those of the adults, PM/DM 2ka *p* < .005, PM 1ka *p* < .01; Cochran-Mantel-Haenszel test) (Figure 1). The children were found to interpret *ka* conjunctively or inclusively in both modes, which parallels Singh et al.’s and Tieu et al.’s findings. 2) The children interpreted DM *ya* inclusively as well when the adults only interpreted conjunctively (*p* < .005). 3) The children did not vary their interpretation of *ya* or *ka*, depending on the mode, which seems to suggest that they are not sensitive to the speaker’s knowledge such as (one type of) ignorance inferences. This partly supports Hochstein et al.’s and Barner et al.’s findings. 4) The individual data showed that children interpret both *ka* and *ya* conjunctively (Illicitly for *ka*) or inclusively (licitly or illicitly) at higher frequencies than adults. The entire results seem to suggest that access-to-alternatives proposals made in Singh et al. are plausible explanations for children’s non-adult interpretation of ‘or.’ Children’s insensitivity to the modes seems to show their non-adult-like computation of SI.

A recent study, Huang et al. (2019) mention that for the felicitous use of disjunction, there is a need for more objects/individuals in the experimental discourse than those mentioned by disjuncts. This paper focuses the way the children differ from the adults in their interpretation of *ka* or *ya* (in the same experimental setting), leaving their idea for future study.

![Figure 1. Rejections of *ka* and *ya* (%) (only items that revealed significant differences)](image-url)
Selected references


