



snippets

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5.

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On the relationship between children's working memory capacity and their use of contextual information in sentence comprehension.

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Otsu (1994) argues that Japanese children can correctly comprehend scrambling sentences only when stimulus sentences are presented with information that expresses the previous discourse. Without such information, children cannot obtain the correct interpretation. A sample stimulus in Otsu's (1994) experiment is represented in (1) (contextual information provided is underlined).

- (1) Kooen-ni ahiru-san-ga imasita.
 park in duck Nom be-Polite-Past
 'There was a duck in a park.'
 Sono-ahiru-san-o kame-san-ga osimasita. (scrambling)
 that duck Acc turtle Nom push-Polite-Past
 'A turtle pushed that duck.'

A prediction of Otsu's approach is that children with lower memory capacity, who therefore cannot retain information about context, should experience difficulty with scrambling sentences. In this snippet, I report experimental results that support this prediction.

92 monolingual Japanese children (mean age = 5;6 [years;months], range = 4;4-6;3) participated in two experiments: a listening span test (for measuring their working memory capacity; see Daneman and Carpenter 1980, Ishio and Osaka 1994) and a picture-selection task (for investigating their scrambling comprehension; see Gerken and Shady 1996). (For details of the experiments, see Mizumoto 2006.) Regarding the presence of the contextual information, two conditions (with/without context) were treated as a between-subject variable. Listening span scores were calculated using the scoring procedure described by Daneman and Carpenter 1980. On the basis of this score, children were divided into three groups: low span ($0.0 \leq 0.5$), mid span ($1.0 \leq 1.5$), and high span ($2.0 \leq$).

Results of the picture-selection task in each memory span group are shown in Table 1. A 2-sample test for equality of proportions revealed that the difference of the correct percentage between the 'without context' and 'with context' conditions was not statistically significant in the low span group ($p = .65$), whereas it was significant in the mid and high span groups ($p < .0001$). This result shows that an increase in the percentage of correct answers along with the availability of contextual information is observed in children with relatively high working memory span, but not observed in

low span children. Low capacity of working memory means little information is retained in the working memory. It is plausible to consider that for children with low span, contextual information that is previously provided can no longer be retained in their working memory when they engage in comprehending the second stimulus sentence (scrambling).

Table 1. Results of the picture-selection task

	Stimulus type (4 tokens in each type)			
	Without context		With context	
Low span	21 / 40	(52.50%)	24 / 40	(60.00%)
Mid span	47 / 108	(43.52%)	100 / 108	(92.59%)
High span	16 / 36	(44.44%)	34 / 36	(94.44%)

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