

# Subvocalization in Reading L1 Japanese Texts and L2 English Texts

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‘Subvocalization’ means a subjective experience that is felt while reading silently by a reader as if he/she were hearing a voice reading the text inside his/her head. As this psychological phenomenon is difficult to verify directly, many of the studies start with the assumption that subvocalization does occur in reading, and then, by giving concurrent articulatory suppression tasks, they try to examine its occurrence (e.g. Levy, 1977). Following the same line, this study aimed at reexamining psychological reality of subvocalization in reading. Moreover, this was done with a comparison between L1 Japanese reading and L2 English reading, the latter of which will not be developed with as much phonological necessity as the former. Two experiments were conducted, with the second one modified, considering the participants’ tiredness and the cognitive load on a part of the task in the first one.

## Experiment 1

### Method

**Participants.** Forty-four Japanese high school students aged 16 to 17 participated.

**Materials.** Ten Japanese texts (about 400 letters long) and 10 English texts (about 125 words long) were prepared as reading materials. Each was followed by its comprehension test with six questions. These texts and tests formed a booklet, with five divisions in it so that ‘two Japanese texts and tests’ and ‘two English texts and tests’ should be included in each division. These five divisions were to be assigned to each of the five reading conditions below.

**Design.** A repeated measures design was used. The two within-participants factors were Text Language (L1 Japanese, L2 English) and Reading Conditions (condition A, B, C, D, E). The conditions were set with the instruction as follows; A) Just read silently, B) Read aloud in your head, C) Read out loud, D) Read with repeatedly whispering “I am in the second grade at Sapporo high school.” E) Read with chewing gum.

**Procedure.** Given the booklet, participants read the texts and answered the tests under the five reading conditions (1 m for a Japanese text, and 1.5 m for an English text was given for reading).

### Results

The comprehension test scores for each reading condition were analyzed with a 2 (Text Language)  $\times$  5 (Reading Conditions) ANOVA. The main effects of Language and Conditions were both significant ( $F_1(1, 43) = 6.85, p < .05$ ,  $F_2(1, 18) = 4.76, p < .05$ ); ( $F_1(4, 172) = 47.00, p < .01$ ,  $F_2(4, 172) = 54.3, p < .01$ , respectively). The interaction between Language and Conditions was marginally significant ( $F_1(1, 43) = 2.00, p < .10$ ,  $F_2(4, 172) = 1.50, p < .10$ ).

## Discussion

The results suggested that both in L1 Japanese and L2 English readings, subvocalization occurred, but that its degree in two languages could be different, implying that subvocalization would not necessarily occur in L2 English reading compared to L1 Japanese reading.

## Experiment 2

### Method

**Participants.** Sixty-five Japanese high school students aged 16 to 17 participated.

**Materials.** 12 Japanese texts and 12 English texts, and their tests were newly prepared. The concept of the materials was the same as in Experiment 1, but two more texts and tests in each language were added for checking learning effect by conducting condition A twice.

**Design.** Exactly the same as in Experiment 1 was used.

**Procedure.** Experiment 2 was conducted in the same manner as in Experiment 1, but condition D was modified into the one with the instruction of ‘Read with whispering “te-to-te-to ...”’ in order to avoid possible floor effect in Experiment 1. Also participants’ tiredness was lessened by four separate days of the experiment.

### Results

The same analysis as in Experiment 1 showed that the main effect of Language and Conditions were both significant ( $F_1(1, 64) = 269.18, p < .01$ ,  $F_2(1, 22) = 129.26, p < .01$ ); ( $F_1(4, 256) = 27.93, p < .01$ ,  $F_2(4, 88) = 19.07, p < .01$ , respectively). The interaction between Language and Conditions was significant ( $F_1(4, 256) = 3.45, p < .05$ ,  $F_2(4, 88) = 1.80, p > .10$ ).

## Discussion

The results were almost the same as those in Experiment 1, suggesting the occurrence of subvocalization and its different degree in L1 Japanese reading and L2 English reading.

## General Discussion

Two experiments confirmed the psychological reality of subvocalization in reading. They also suggested that L2 English reading would involve less subvocalization than L1 Japanese reading. This phenomenon might be accountable, considering that reading English as a foreign language (L2) will be developed without sufficient basis of its vocalization.

## Reference

Levy, B. A. (1977). Reading: Speech and meaning processes. *Journal of Verbal Learning and Verbal Behavior*, 16, 623-638.