The effects of word length for Korean verbs

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The length effect in word recognition refers to the phenomenon that the shorter a word is, the faster it is recognized than longer words. However, a megastudy based on the English Lexicon Project showed a different picture of the effect. New et al. (2006) recently found a U-shaped curve of word length effect. Very short English words of 3 to 5 letters have a disadvantage in lexical decision (New et al., 2006).

In addition, Korean studies have reported some evidence for the opposite effect of conventional word length: Shorter words, mono-syllabic words in particular, had a disadvantage in the lexical decision tasks (Kim, 2010; Park, 1993). One explanation for the disadvantage of very short words is that there is ideal word length—the most frequent length—for each language. The ideal length is 5 to 8 letters for English, and two syllables for Korean. The purpose of the present study is to test the ideal length hypothesis with Korean verbs. We exploited the fact that there is no monosyllabic Korean verb because a verb must have an ending ‘ta’ that marks its identity as a verb. As a consequence, the shortest verbs are bisyllabic in Korean. According to the ideal length hypothesis, bisyllabic verbs are ideal since bisyllabic words are the most common in Korean. It is expected that RTs to bisyllabic verbs are shorter than tri- and quadri-syllabics.

Method

Participants. 32 undergraduate students from Yeungnam University participated for course credit. They were all native speakers of Korean with normal or corrected-to-normal vision.

Materials. Three groups of Korean verbs with 2, 3, or 4 syllables were used as experimental stimuli. Each length group contained 40 verbs. Half of the words in each group were of high frequency and the other half were of low frequency. 120 nonwords of 2, 3, or 4 syllables were made up for negative responses by randomly mixing syllables of other verbs with 2, 3, or 4 syllables without changing their positions. Both words and nonwords had a syllable ‘ta’ at the final position.

Design. A factorial design with two variables was used: Length (two, three, and four syllables in a word) and frequency (High and Low).

Procedure. Participants were tested individually and requested to judge if stimuli on the center of the screen was a Korean word or not. Response times were measured from the start of presentation of a stimulus to the initiation of the response. The presentation of stimuli and the recording of response times were controlled by the experimental software DMDX (Forster & Forster, 1999).

Results and Discussion

The mean response times (RTs) and the mean error rates in the lexical decision task are shown in Figure 1 and 2. Two-way analysis of variance (ANOVA) was performed for correct RTs and error rates respectively, with participant as a random variable.

A main effect of word length was significant, $F(2, 62)= 3.29, \text{MSE}=1087.02, p = .04$. It took longer to respond to shorter verbs compared with longer words. A main effect of word frequency was also significant, $F(1, 31)= 65.38, \text{MSE}=2433.61, p = .0000$. High frequency verbs were responded more quickly. An interaction of word length and frequency was also significant, $F(2, 62)= 4.06, \text{MSE}=1059.80, p = .02$. The simple effect analysis suggested that there was no length effect for high frequency words, but the length effect was significant for low frequency words. For less frequent verbs, RTs to bisyllabic verbs were significantly longer than tri- and quadri-syllabic words, but were not different between tri- and quadri-syllabic words. ANOVA for error rates revealed significant main effects of word length, $F(2, 62)= 3.00, \text{MSE}=12.23, p = .05$, and frequency, $F(1, 31)= 19.55, \text{MSE}=16.81, p = .0001$, but no interaction of the two. Participants made more errors to bisyllabic verbs than tri- and quadri-syllabic words.

The results are not consistent with the ideal length hypothesis in that RTs to the verbs of the ideal length were longer than non-ideal ones. To develop an alternative to the ideal length hypothesis, it is suggested that we should pay attention to the role of morphological transparency in modulating the length effect. In addition, the results have implications for commonality and specificity of languages and writing systems.

![Figure 1. Mean Lexical Decision Times (ms) for Korean verbs](image1)

![Figure 2. Mean Error Rates (%) for Korean verbs](image2)