

발화 모드에 따른 한국인 발화 영어의 기본 주파수 비교

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Does speech mode affect the fundamental frequency of the L2 English spoken by native Korean learners?

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Abstract

The purpose of the current study is to examine how speech modes (controlled vs. spontaneous) influence vocal characteristics when native Korean learners of English speak English as their second language. We found that mean F0 was higher under controlled mode than spontaneous mode. In terms of F0 range, it was wider under spontaneous mode than under controlled mode. These results demonstrate that speech modes do affect the mean F0 and F0 range when native Korean learners speak English.

1. Introduction

Previous studies have proved that the mean F0 and F0 range can be different when people speak their native language (L1) and second language (L2). For example, [1] demonstrated that English sentences spoken by Italians have overall higher F0 levels and narrower ranges than the Americans. In addition, [2] analyzed a learner corpus with French and German speakers to compare the F0 variation. Their results showed that speakers produced a smaller F0 range in their L2, which was true for both groups of native speakers.

What has been remained unclear, however, is the effect of a speech mode on mean F0 and F0 range. [3] found that Arabic L1 speakers showed a significantly higher F0 under reading mode than spontaneous speech, in both L1 (Arabic) and L2 (English). Based on these results, this study aims to

compare mean F0 and F0 range of the English produced by Korean L2 learners of English under controlled and spontaneous mode. It is predicted that mean F0 will be higher in controlled mode as [3] showed.

2. Methodology

Twelve Korean learners of English participated in this study - 6 females (age: mean=24, SD=2) and 6 males (age: mean=28, SD=2). None of the subjects reported any hearing or speaking disorders.

For controlled mode, the participants read aloud one short written passage (The north wind and the sun) in English. For spontaneous mode, the subjects answered the following two questions without time limit: "please tell me the story of the Snow White and seven dwarfs" and "please tell me the story of Cinderella". Before or after the recording process, a cloze test [5] and a linguistic background questionnaire were distributed to the subjects.

The experiment was conducted in a linguistic laboratory at Yonsei University, and a ZOOM H6 professional handy recorder was used for the recording. The mean F0 and F0 range were analyzed by Praat software.

3. Results

Repeated measures of two-way ANOVAs were conducted with mean F0 and F0 range as dependent variables, and Speech mode (controlled vs.

spontaneous) and Gender (female vs. male) as independent variables.

3.1 Mean F0

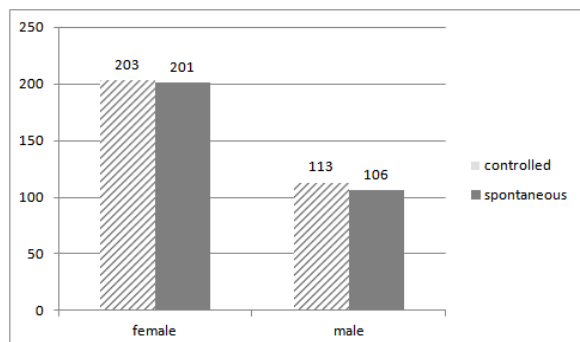


Figure 1. Mean Pitch of each speech mode

The result showed a main effect of Speech mode ($F(1,797)=6.302, p<.05$) only. This result indicates that the participants spoke English with higher F0 in controlled speech mode than in spontaneous speech mode, regardless of the gender.

3.2 F0 range

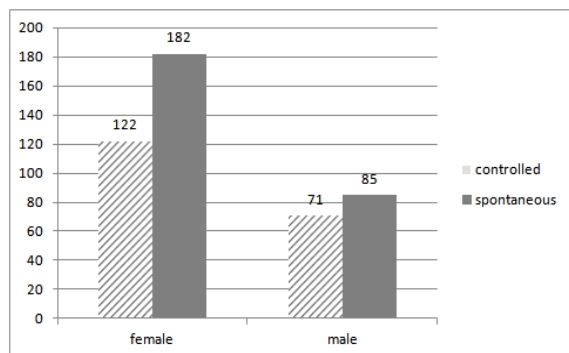


Figure 2. F0 range of each speech mode

With respect to F0 range, we found a main effect of Speech mode ($F(1, 293)=4.521, p<.05$) and Speech mode by Gender interaction ($F(1, 293)=6.640, p<.05$). Both participants had wider F0 range in spontaneous speech mode than controlled speech mode. However, the degree of difference was different depending on the gender. This difference will be discussed in the next section.

4. Discussion and Conclusion

Overall, there was a significant effect of mode in both F0 and F0 range. The current study found that even within L2 speaking condition, speech modes

can be a factor that leads to a different F0 and F0 range. In addition, it is interesting that the interaction between the gender effect and the mode effect was only found in F0 range measurement. This difference might be explained based on [6], which shows in adult-direct speech, F0 range was significantly influenced by sex-role values.

The results of the current study demonstrate that different speech modes do affect the mean F0 and F0 range when people speak their non-native language. However, to exactly figure out what makes different mean F0 and F0 range between two speech modes, the comparison with L1 should be analyzed. In other words, it is uncertain that we can find a higher mean F0 under controlled mode when people speak their L1.

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