

Influences of Pause Duration on Impressions of English Speech: Comparison Between Native and Non-Native Speakers

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<https://hdl.handle.net/2324/4795545>

出版情報 : 九州大学, 2022, 博士 (芸術工学) , 課程博士
バージョン :
権利関係 :

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論 文 名	Influences of Pause Duration on Impressions of English Speech: Comparison Between Native and Non-Native Speakers (ポーズ時間長が英語音声の印象にもたらす影響：母語話者と非母語話者の比較)			
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論 文 審 査 の 結 果 の 要 旨

The purpose of Ms. Liu's research project was to investigate how the subjective impression of English speech would change when pause duration at punctuation marks was varied. She thereto performed two large-scale listening experiments (about 60 participants each) in which English speech segments were rated on a variety of evaluation items. The comma pause and the period pause durations in the speech segments were systematically varied, and both native-English speakers and non-native speakers (native-Chinese speakers and native-Japanese speakers) evaluated the segments. The ratings were then subjected to factor analysis.

In the first experiment, the pauses in three segments were made into the same durations, from 0.075 to 4.8 seconds (s). Participants rated the segments on 23 evaluation items on a rating scale from 1 to 10. A varimax rotation after PCA (principal component analysis) led to two factors that were related to speech style. These two factors could be interpreted as representing speech naturalness and speech rate. Speech segments with a pause duration of 0.6 s received the highest naturalness evaluation, while speech rate perceptually decreased as the physical pause duration increased, without any changes in utterance segments. In the second experiment, a full-factorial design of pause durations (0.15, 0.3, 0.6, 1.2, and 2.4 s) within and between sentences, i.e., for commas and for periods, was implemented in two speech segments. The original speech segments and speech segments without any pauses were also included as control conditions. From ratings on 12 evaluation items, similar to Experiment 1, two factors representing speech naturalness and speech rate were obtained. The results showed again that the perceived speech rate decreased with an increase only in pause duration. The highest evaluations for speech naturalness occurred when pause durations were 0.6 s within sentences, and either 0.6 or 1.2 s between sentences.

The results have practical implications for learning English as a second language, in that fixing all pause durations to 0.6 s would help non-native speakers to make their spoken English sound more natural. The results may also be of use in the development of artificial speech technology, regarding both speech generation and recognition. The findings and the level of the research in general described in the thesis were evaluated as sufficient by all committee members. As a result, the committee decided that a doctoral degree (Doctor of Philosophy in Design) can be conferred upon Ms. Liu. 本論文は博士（芸術工学）の学位に値すると認めた。