

# Comparison of a Useful External Cue for Regulation of Speech in Parkinson's Disease

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In this study, we examined the external cues that could be useful for regulation of speech in patients with Parkinson's disease. In four Parkinson's disease patients with a weakening voice, regulation of speech was attempted by using two methods, namely the delayed auditory feedback (DAF) method, which uses auditory cues, and a method that uses visual cues by showing sound pressure on a monitor. The results showed that, in terms of "vocal intensity," useful cues were different for one patient to another, whereas in terms of "vocal pitch height," effects were found in some patients no matter which cue was used. Regardless of which cue was used, there was no apparent effect on "pitch range." Only DAF intervention had an effect on the "rate of speech." Both with the DAF method and with the visual feedback method, findings showed that, in some patients, the ameliorating effect persisted after the intervention, in the absence of cues. The findings of our study indicated that external cues useful for regulation of speech were different according to the subject, or according to the measured indicators.