Title: Typical listeners' recognition of monosyllabic words carrying Cantonese contour lexical tones produced by speakers with Parkinson's disease

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Speakers with Parkinson's disease (PD) have impaired speech prosody. Cantonese has lexical tones (LTs) with different fundamental frequency (F0) patterns carrying semantic contrasts of words which share the same segmental structure. Cantonese PD speakers with subtle laryngeal control problems have compromised speech intelligibility due to semantic change in short monosyllabic or polysyllabic utterances with low redundancies. The collapse of LT boundaries could compromise communication exchanges between the PD speakers and their listeners.
We investigated typical listeners' recognition accuracy of contour LT productions at monosyllabic level spoken by 6 Cantonese speakers with PD [aged 55-70] as compared to their controls without speech disorders.

Stimuli consisted of five different carrier syllables in all three contour LTs of Cantonese - high rising, low falling and low rising F0 contours for LTs 2, 4 and 5 [T2, T4 & T5] respectively. Contour LTs could pose more difficulties for speakers with PD due to rigidity and slow movements of laryngeal muscles to cope with the rapid change of F0 within a syllable. Speech tokens were recorded from 6 Cantonese speakers with PD and 6 typical age-matched controls without speech disorders. Fourteen typical listeners identified the speakers' productions from a closed-set of all six LT choices.

Recognition scores of LTs produced by typical speakers outperformed those by PD speakers T4 outperformed T2 and T5. A unique error where T2 was misrecognized as T5 was observed exclusively in the PD group but not the typical group, whereas T5 was misrecognized as T2 in both groups.

Typical listeners have more difficulties recognizing monosyllabic words which have different LT contrasts spoken by PD speakers than by their age-matched controls. The unique error in the PD group, i.e. T2 misrecognized as T5, is a potential marker to identify subtle motor speech disorders in Cantonese patients who are suspected with PD.