The duration of silent intervals in connected speech is associated with articulatory, prosodic, and/or linguistic processes. A wide range of definitions have been used to examine pause, with some authors defining a pause as a silent interval lasting at least 10 ms and other authors defining pause as a silent interval lasting at least 250 ms. Because speakers with PD exhibit pause abnormalities, several authors have examined the extent to which respiratory, articulatory, prosodic, and linguistic deficits contribute to pause abnormalities in this population. The purpose of this study was to examine the duration of short silent intervals in the connected speech of individuals with and without PD that reflect articulatory processes. Reading samples from 10 individuals with idiopathic PD (5 males, 5 females) and 10 older control speakers (5 males, 5 females) were analyzed. The speakers with PD presented with hypokinetic dysarthria, which ranged from mild to severe with seven speakers falling in the mild to moderate range. Silent intervals longer than 15 ms were labeled in PRAAT using spectrographic and waveform displays as a guide. Each silent interval was categorized according to its syntactic and phonetic context, and whether it coincided with a visually identifiable inspiratory breath. For the current study, within-word intervals and between-word intervals that were not associated with a phrase or clause boundary, occurred in the middle of a phrase, and were not associated with a disfluency or inspiration were examined. No between-group differences in speech rate, syllable number, or total speaking duration were observed, $p>0.05$ for all comparisons. The duration of the silent intervals included in the analysis ranged from 15 to 200 ms. On average, 61.40, $SD=18.83$, silent intervals were identified for speakers in the PD group and 69.70, $SD=11.15$ for the control speakers. Mixed-model analysis revealed that the average duration of these silent intervals was slightly, but significantly longer for the PD group, $Estimate=6.455$ ms, $SE=3.021$, $t=2.137$, $p<0.05$. Examination of the phonetic context indicated that the majority of these short silent intervals were stop gaps. Results of this study suggest that short silent intervals that are unrelated to linguistic or prosodic emphasis or an inspiratory breath are slightly longer for speakers with PD, than for healthy controls. This slightly longer duration between speech segments may result from timing deficits associated with basal ganglia dysfunction secondary to PD. These deficits may reflect a subtle disruption in speech fluency or articulation.

References