

## Conversational turn-taking in frontotemporal dementia and related disorders

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**State of the art:** Conversational turn-taking requires motivation to take the floor, linguistic ability, attention, and ability to predict the other person's speech, all of which may be compromised by neurodegeneration. We hypothesized that people with neurodegenerative conditions would differ from healthy controls in turn-taking behavior. We also correlated turn-taking with well-established measures of neuropsychological function as well as neuroimaging.

**Methodology:** We analyzed dyadic conversations, including healthy controls (N=14), Alzheimer's disease (N=24), corticobasal syndrome (N=15), progressive supranuclear palsy (N=18), behavioral variant frontotemporal dementia (bvFTD, N=46), logopenic PPA (N=10), right temporal FTD (N=8), nonfluent PPA (N=21), and semantic variant primary progressive aphasia (N=14). Speech onset and offset for each speaker was manually labeled. Customized computer scripts extracted total number of conversational turns taken, as well as gaps (>0.1 seconds between speakers), overlaps (<0 seconds between speakers), and perfect exchanges (between 0 to 0.1 seconds between speakers). These were compared between diagnostic groups and correlated with neuropsychological measures and whole brain voxel-based morphometry (VBM).

**Results:** BvFTD had a greater proportion of conversational gaps than healthy controls ( $p < 0.013$ ). The greater proportion of gaps correlated with poorer performance on a trails task ( $p = 0.001$ ), lexical fluency ( $p = 0.011$ ) and digit span forward ( $p = 0.038$ ) and backward ( $p = 0.016$ ). VBM demonstrated correlations between greater gaps and smaller volumes in bilateral superior and middle frontal cortex, and right lateral cerebellum.

**Conclusion:** BvFTD had a greater proportion of conversational gaps than HC. This may reflect differences in required aspects of executive function, mediated through the dorsolateral prefrontal cortex and right Cerebellum.

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### Conflicts of interest

N/A