Background

- Amongst FTD variants, semantic deficits seem particularly prominent in MAPT mutation carriers (Hardy et al., 2016).
- C9orf72 mutation carriers are often found to show early impairments on various cognitive tests (Russell et al., 2020; Moore et al., 2020).
- To date, no task has been found to identify early cognitive changes in MAPT mutation carriers specifically.

Methods

- Boston Naming Test (BNT) performance (naming 30 pictures of objects) was compared between all groups (stars in bars for comparisons with control group) using a bootstrapped linear regression model, adjusting for age and education.
- All symptomatic groups performed significantly worse than controls, and worse than the prodromal and asymptomatic mutation carriers within the same genetic group.
- The MAPT symptomatic group also performed significantly worse than the GRN and C9orf72 symptomatic groups.
- Furthermore, both the MAPT asymptomatic and prodromal groups performed significantly worse than controls which was not the case in the other genetic groups.

Results

- The relationship between BNT performance and grey matter volume was assessed using Voxel-Based Morphometry. Genetic groups and scanner types were model factors, whilst age, total intracranial volume and sex were included as covariates.
- In C9orf72 and GRN mutation carriers, reduced grey matter volume related to BNT performance was less clustered within the temporal lobes and included frontal and striatal areas.

Discussion

- MAPT mutation carriers show early deficits and more severe impairments in naming which is consistent with previous literature, likely due to impaired semantic knowledge affected by temporal lobe atrophy (Moore et al., 2020).
- The BNT detects early deficits, allowing dissociation of MAPT mutation carriers from controls and from other genetic groups.