Supplement Table 1. Demographic, clinical, and neuropsychological data at clinic presentation for AD and bvFTD, including AD-IEF and AD-SEF and bvFTD-Mild and bvFTD-Severe.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | AD (total) | AD-IEF | AD-SEF | bvFTD (total) | bvFTD-Mild | bvFTD-Severe | Controls |
| *N* | 33 | 13 | 20 | 31 | 17 | 14 | 47 |
| Sex (m: f) | 22:11 | 9:4 | 13:7 | 25:6 | 15:2 | 10:4 | 18:29 |
| Age (years) | 63.12 (16.1) | 63.38 (6.1) | 62.95 (20.38) | 58.87 (16.99) | 63.15 (9.3) | 53.78 (22.6) | 67.85 (5.73) |
| Education (years) | 12.46 (3.4) | 13.29 (3.5) | 11.97 (3.38) | 11.16 (2.47) | 11.30 (2.7) | 10.98 (2.3) | 13.12 (2.92) |
| Age of disease onset (years) | 56.45 (24.7) | 52.23 (29.8) | 59.20 (21.08) | 48.16 (27.13) | 53.17 (23.0) | 42.07 (31.2) | - |
| FRS (Rasch) | 1.07 (1.5)‡,¶¶¶ | 0.66 (1.7)\* | 1.32 (1.26)\*\* | -0.65 (1.40)@,§§ | -0.14 (1.4)# | -1.20 (1.2)### | - |
| CBI – R total (%) | 20.43 (12.8)‡‡‡,¶¶¶ | 20.14 (14.4)\*\* | 20.58 (12.33)\*\* | 41.65 (16.52)@,§§§ | 37.14 (13.8)### | 47.20 (18.4)### | 4.15 (4.64) |
| CBI-R Memory (%) | 45.10 (21.7)¶ | 44.68 (20.09) | 45.31 (22.95) | 51.74 (21.35) | 44.33 (16.2)¶ | 60.86 (23.9)‡,# | 6.95 (6.87) |
| ACE-R total | 76.90 (9)‡ | 74.61 (8.5) | 78.40 (9.1) | 76.16 (12.0) | 83.00 (7.5)¶¶,# | 67.85 (11.5)‡‡ | 94.91 (3.57) |

*Note*. AD-IEF, Alzheimer’s disease – impaired executive functions; AD-SEF, Alzheimer’s disease – spared executive functions; bvFTD, behavioural variant frontotemporal dementia; CBI-R, Cambridge Behavioural Inventory – Revised; ACE-R, Addenbrooke’s Cognitive Examination – Revised.

As compared to bvFTD (total) - \*, *p*<0.01; *\*\*, p*<0.001

As compared to AD (total) - #, *p*<0.05; ##, *p*<0.01; *###, p*<0.001

As compared to AD-SEF - @, *p*<0.001

As compared to AD-IEF - §, *p*<0.05; §§, *p*<0.01; §§§, *p*<0.001

As compared to bvFTD-Mild - ‡, *p*<0.05; ‡‡, *p*<0.01; ‡‡‡, *p*<0.001

As compared to bvFTD-Severe - ¶, *p*<0.05; ¶¶, *p*<0.01; ¶¶¶, *p*<0.001

Supplement Table 2. Neuropsychological assessment performances for AD and bvFTD subgroups: clinic presentation

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Neuropsychological tests | AD-IEF | AD-SEF | bvFTD | SEF vs. IEF | SEF vs. bvFTD | IEF vs. bvFTD |
| Backward digit span | 4.30 (1.03) | 5.95 (1.50) | 4.25 (2.37) | n.s. | n.s. | n.s. |
| TMT B-A time difference (seconds) | 201.76 (132.91) | 76.05 (143.00) | 143.65 (81.54) | 0.02 | n.s. | n.s. |
| Hayling A+B Errors | 7.92 (3.06) | 2.75 (2.76) | 8.29 (5.18) | 0.002 | <0.001 | n.s. |
| FAS letter fluency | 8.30 (4.02) | 12.70 (4.25) | 8.03 (4.26) | 0.02 | 0.003 | n.s. |
|  | bvFTD-Mild | bvFTD-Severe | AD | bvFTD-Mild vs. Severe | bvFTD Mild vs. AD | bvFTD Severe vs. AD |
| Orientation – Total (10) | 9.41 (0.79) | 7.78 (1.96) | 8.15 (1.78) | 0.05 | 0.08 | n.s. |
| ACE-R Total memory (%) | 83.25 (8.03) | 55.21 (15.79) | 59.32 (16.31) | <0.001 | <0.001 | n.s. |
| RAVLT LTPR (%) | 50.07 (36.76) | 61.90 (85.32) | 40.07 (39.18) | n.s. | n.s. | n.s. |
| RCF 3-min delayed (%) | 32.46 (19.84) | 13.19 (12.65) | 13.84 (13.61) | 0.01 | 0.002 | n.s. |

*Note*. Exact *p*-values reported for post-hoc comparisons on neuropsychological test variables; AD-IEF, Alzheimer’s disease – impaired executive functions; AD-SEF, Alzheimer’s disease – spared executive functions; bvFTD, behavioural variant frontotemporal dementia; ACE-R, Addenbrooke’s Cognitive Examination – Revised; RAVLT, Rey Auditory Verbal Learning Test; RCF, Rey Complex Figure; n.s., not significant (*p*>0.1)

Supplement Table 3. Neuropsychological assessment performance for AD and bvFTD subgroup: longitudinal evaluation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Main effect of follow-up time | | Interaction between follow-up time and diagnosis | |
| Testsa | bχ2 | *p* | cχ2 | *p* |
| AD subgroups vs. bvFTD | | | | |
| Backward digit span | 20.22 | \*\*\* | 0.47 | n.s. |
| TMT B-A time difference | 32.79 | \*\*\* | 5.09 | n.s. |
| Hayling A+B Errors | 3.64 | n.s. | 3.94 | n.s. |
| FAS letter fluency | 4.69 | \* | 4.86 | n.s. |
| ACE-R | 24.24 | \*\*\* | 3.58 | n.s. |
| bvFTD subgroups vs. AD | | | | |
| Orientation – Total | 3.15 | n.s. | 4.93 | n.s. |
| ACE-R Total memory | 7.64 | \*\* | 1.25 | n.s. |
| RAVLT LTPR | 4.75 | \* | 3.68 | n.s. |
| RCF 3-min delayed | 2.05 | n.s. | 0.46 | n.s. |
| ACE-R | 23.86 | \*\*\* | 2.41 | n.s. |

*Note.* aAll models fitted on z-scores; bAll degrees of freedom = 1; cAll degrees of freedom = 3; AD-IEF, Alzheimer’s disease – impaired executive functions; AD-SEF, Alzheimer’s disease – spared executive functions; bvFTD, behavioural variant frontotemporal dementia; TMT, Trail Making Test; ACE-R, Addenbrooke’s Cognitive Examination – Revised; RAVLT LTPR, Rey Auditory Verbal Learning Test Long Term Percentage Retention; RCF, Rey Complex Figure TestSupplement Table 4: Neuropsychological measures performance for bvFTD (executive function) and AD (orientation and memory) subgroups: clinic presentation

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Neuropsychological tests | bvFTD-Mild | bvFTD-Severe | AD | bvFTD-Mild vs. Severe | bvFTD-Mild vs. AD | bvFTD-Severe vs. AD |
| Backward digit span | 4.64 (1.78) | 3.84 (2.91) | 5.30 (1.55) | n.s. | n.s. | n.s. |
| TMT B-A time difference (seconds) | 120.43 (75.58) | 172.23 (82.27) | 127.12 (150.49) | n.s. | n.s. | n.s. |
| Hayling A+B Errors | 7.14 (5.06) | 9.90 (5.17) | 4.78 (3.83) | n.s. | n.s. | 0.02 |
| FAS letter fluency | 9.20 (4.17) | 6.69 (4.11) | 10.96 (4.64) | n.s. | n.s. | 0.02 |
| ACE-R | 83.00 (7.49) | 67.85 (11.48) | 76.90 (8.96) | <0.001 | 0.04 | n.s. |
|  | AD-IEF | AD-SEF | bvFTD | AD-IEF vs. SEF | AD-SEF vs. bvFTD | AD-IEF vs. bvFTD |
| Orientation – Total (10) | 8.07 (1.93) | 8.20 (1.73) | 8.67 (1.64) | n.s. | n.s. | n.s. |
| ACE-R Total memory (%) | 55.62 (15.27) | 61.73 (16.90) | 70.59 (18.54) | n.s. | n.s. | 0.02 |
| RAVLT LTPR (%) | 37.00 (39.81) | 42.05 (39.86) | 55.28 (61.65) | n.s. | n.s. | n.s. |
| RCF 3-min delayed (%) | 12.07 (15.26) | 15.12 (17.24) | 24.20 (18.34) | n.s. | n.s. | n.s. |
| ACE-R | 64.88 (12.06) | 74.41 (11.94) | 67.76 (16.25) | n.s. | n.s. | n.s. |

*Note*. Exact *p*-values reported for post-hoc comparisons on neuropsychological test variables; AD, Alzheimer’s disease; AD-IEF, AD-Impaired Executive Functions; AD-SEF, AD-Spared Executive Functions; bvFTD, behavioural variant Frontotemporal dementia; TMT, Trail Making Test; ACE-R, Addenbrooke’s Cognitive Examination – Revised; RAVLT, Rey Auditory Verbal Learning Test; RCFT, Rey Complex Figure Test. n.s., not significant (*p*>0.1)

Supplement Table 5. Neuropsychological assessment performance for AD (orientation and memory) and bvFTD (executive function) subgroup: longitudinal evaluation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Main effect of follow-up time | | Interaction between follow-up time and diagnosis | |
| Testsa | bχ2 | *p* | cχ2 | *p* |
| bvFTD subgroups vs. AD | | | | |
| Backward digit span | 20.78 | \*\*\* | 0.07 | n.s. |
| TMT B-A time difference | 31.38 | \*\*\* | 0.01 | n.s. |
| Hayling A+B Errors | 3.58 | n.s. | 5.33 | n.s. |
| FAS letter fluency | 6.92 | \*\* | 0.07 | n.s. |
| ACE-R | 23.86 | \*\*\* | 2.41 | n.s. |
| AD subgroups vs. bvFTD | | | | |
| Orientation - Total | 3.62 | n.s. | 4.30 | n.s. |
| ACE-R Total Memory | 8.55 | \*\* | 0.84 | n.s. |
| RAVLT LTPR | 6.18 | \* | 2.78 | n.s. |
| RCF 3-min delayed recall | 2.23 | n.s. | 0.20 | n.s. |
| ACE-R | 24.24 | n.s. | 3.58 | n.s. |

*Note.* aAll models fitted on z-scores; bAll degrees of freedom = 1; cAll degrees of freedom = 2; AD, Alzheimer’s disease; bvFTD, behavioural variant frontotemporal dementia; TMT, Trail Making Test; ACE-R, Addenbrooke’s Cognitive Examination – Revised; RAVLT LTPR, Rey Auditory Verbal Learning Test Long Term Percentage Retention; RCF, Rey Complex Figure. \*, *p*<0.05; \*\*, *p*<0.01; *\*\*\**, *p*<0.001; n.s., not significant

Supplement Table 6. Percentage of patients completing tasks across longitudinal evaluation

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Tests | Baseline | | 1st follow-up | | 2nd follow-up | | 3rd follow-up | |
| AD | bvFTD | AD | bvFTD | AD | bvFTD | AD | bvFTD |
| BDS | 100 | 87 | 36 | 85 | 93 | 64 | 53 | 63 |
| TMT B-A | 96 | 93 | 26 | 65 | 56 | 57 | 53 | 54 |
| Hayling A+B | 100 | 77 | 100 | 100 | 100 | 100 | 100 | 100 |
| FAS | 100 | 90 | 26 | 45 | 87 | 28 | 30 | 36 |
| Orientation | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Total Memory | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| LTPR | 84 | 80 | 31 | 30 | 25 | 42 | 7 | 54 |
| RCF Recall | 93 | 90 | 63 | 65 | 50 | 50 | 15 | 54 |
| ACE-R | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

*Note.* AD, Alzheimer’s disease; bvFTD, behavioural variant frontotemporal; BDS, Backward Digit Span; TMT B-A, Trail Making Test B-A time difference; FAS, FAS letter fluency; ACE-R, Addenbrooke’s Cognitive Examination Revised; Total Memory, ACE-R Total Memory score; LTPR, Rey Auditory Verbal Learning Test Long Term Percentage Retention; RCF, Rey Complex Figure 3-min delayed recall