# Supplementary Material

Supplemental Table 1. Pairwise comparisons of characteristics between diagnostic groups.

| Pair | Age | Sex | Education | MMSE | MoCA | MoCA-MIS |
| --- | --- | --- | --- | --- | --- | --- |
| SCD – MCI | -5.78 ± 0.59,  *p* < .001 | 0.18 ± 0.15,  *p* = .972 | -0.20 ± 0.21,  *p* = .993 | 1.37 ± 0.28,  *p* < .001 | 2.33 ± 0.33, *p* < .001 | 3.62 ± 0.27, *p* < .001 |
| SCD – AD dementia | -4.44 ± 0.45,  *p* < .001 | -0.36 ± 0.11,  *p* = .044 | 0.51 ± 0.16,  *p* = .036 | 7.00 ± 0.21,  *p* < .001 | 8.64 ± 0.25, *p* < .001 | 5.85 ± 0.20, *p* < .001 |
| SCD – FTD | -2.44 ± 0.95,  *p* = .226 | -0.34 ± 0.24,  *p* = .913 | 0.45 ± 0.33,  *p* = .940 | 4.24 ± 0.44,  *p* < .001 | 6.35 ± 0.52, *p* < .001 | 4.04 ± 0.45, *p* < .001 |
| SCD – DLB | -8.47 ± 0.84,  *p* < .001 | 1.13 ± 0.26,  *p* < .001 | 0.24 ± 0.29,  *p* = .999 | 5.07 ± 0.39,  *p* < .001 | 6.90 ± 0.46, *p* < .001 | 3.60 ± 0.39, *p* < .001 |
| SCD – VD | -8.80 ± 1.18,  *p* < .001 | 0.37 ± 0.31,  *p* = .972 | 0.99 ± 0.41,  *p* = .324 | 4.08 ± 0.55,  *p* < .001 | 6.35 ± 0.65, *p* < .001 | 3.83 ± 0.54, *p* < .001 |
| SCD – PPA | -5.76 ± 1.15,  *p* < .001 | -0.25 ± 0.29,  *p* = .997 | 0.85 ± 0.41,  *p* = .534 | 2.90 ± 0.54,  *p* < .001 | 6.07 ± 0.64, *p* < .001 | 3.47 ± 0.52, *p* < .001 |
| SCD – Other dementia | -5.39 ± 1.07,  *p* < .001 | -0.16 ± 0.27,  *p* > .999 | 1.47 ± 0.38,  *p* = .004 | 3.81 ± 0.50,  *p* < .001 | 4.97 ± 0.59, *p* < .001 | 2.45 ± 0.48, *p* < .001 |
| SCD – Other neurology | 0.06 ± 0.81,  *p* > .999 | 0.36 ± 0.21,  *p* = .784 | 0.91 ± 0.28,  *p* = .042 | 1.65 ± 0.38,  *p* = .001 | 2.39 ± 0.45, *p* < .001 | 1.73 ± 0.36, *p* < .001 |
| SCD – PPD | 1.64 ± 0.56,  *p* = .101 | 0.05 ± 0.14,  *p* > .999 | 1.40 ± 0.20,  *p* < .001 | 2.43 ± 0.26,  *p* < .001 | 3.58 ± 0.31, *p* < .001 | 1.75 ± 0.25, *p* < .001 |
| MCI – AD dementia | 1.34 ± 0.59,  *p* = .339 | -0.54 ± 0.15,  *p* = .010 | 0.72 ± 0.20,  *p* = .016 | 5.64 ± 0.27,  *p* < .001 | 6.31 ± 0.32, *p* < .001 | 2.23 ± 0.26, *p* < .001 |
| MCI – FTD | 3.34 ± 1.02,  *p* = .036 | -0.52 ± 0.26,  *p* = .566 | 0.65 ± 0.36,  *p* = .714 | 2.88 ± 0.47,  *p* < .001 | 4.02 ± 0.56, *p* < .001 | 0.43 ± 0.48, *p* = .997 |
| MCI – DLB | -2.69 ± 0.92,  *p* = .100 | 0.95 ± 0.27,  *p* = .019 | 0.44 ± 0.32,  *p* = .938 | 3.70 ± 0.43,  *p* < .001 | 4.57 ± 0.51, *p* < .001 | -0.01 ± 0.43, *p* > .999 |
| MCI – VD | -3.02 ± 1.24,  *p* = .308 | 0.19 ± 0.32,  *p* > .999 | 1.19 ± 0.43,  *p* = .151 | 2.71 ± 0.58,  *p* < .001 | 4.02 ± 0.69, *p* < .001 | 0.22 ± 0.57, *p* > .999 |
| MCI – PPA | 0.02 ± 1.21,  *p* > .999 | -0.44 ± 0.30,  *p* = .916 | 1.06 ± 0.43,  *p* = .288 | 1.53 ± 0.56,  *p* = .168 | 3.74 ± 0.67, *p* < .001 | -0.15 ± 0.55, *p* > .999 |
| MCI – Other dementia | 0.39 ± 1.14,  *p* > .999 | -0.34 ± 0.28,  *p* = .972 | 1.68 ± 0.40,  *p* = .001 | 2.44 ± 0.53,  *p* < .001 | 2.63 ± 0.63, *p* = .001 | -1.17 ± 0.51, *p* = .401 |
| MCI – Other neurology | 5.85 ± 0.89,  *p* < .001 | 0.18 ± 0.23,  *p* = .999 | 1.11 ± 0.31,  *p* = .013 | 0.28 ± 0.42,  *p* > .999 | 0.06 ± 0.50,  *p* > .999 | -1.89 ± 0.40, *p* < .001 |
| MCI – PPD | 7.42 ± 0.68,  *p* < .001 | -0.13 ± 0.17,  *p* = .999 | 1.60 ± 0.24,  *p* < .001 | 1.06 ± 0.31,  *p* = .026 | 1.25 ± 0.37,  *p* = .030 | -1.87 ± 0.30, *p* < .001 |
| AD dementia – FTD | 2.00 ± 0.94,  *p* = .512 | 0.02 ± 0.23,  *p* > .999 | -0.06 ± 0.33,  *p* > .999 | -2.76 ± 0.44,  *p* < .001 | -2.29 ± 0.52,  *p* < .001 | -1.80 ± 0.44, *p* = .002 |
| AD dementia – DLB | -4.02 ± 0.83,  *p* < .001 | 1.49 ± 0.26,  *p* < .001 | -0.28 ± 0.29,  *p* = .995 | -1.93 ± 0.39,  *p* < .001 | -1.74 ± 0.46,  *p* = .007 | -2.25 ± 0.39, *p* < .001 |
| AD dementia – VD | -4.36 ± 1.18,  *p* = .009 | 0.73 ± 0.31,  *p* = .342 | 0.48 ± 0.41,  *p* = .978 | -2.92 ± 0.55,  *p* < .001 | -2.29 ± 0.65,  *p* = .017 | -2.01 ± 0.54, *p* = .008 |
| AD dementia – PPA | -1.32 ± 1.15,  *p* = .980 | 0.11 ± 0.29,  *p* > .999 | 0.34 ± 0.41,  *p* = .998 | -4.11 ± 0.53,  *p* < .001 | -2.57 ± 0.64,  *p* = .002 | -2.38 ± 0.52, *p* < .001 |
| AD dementia – Other dementia | -0.95 ± 1.07,  *p* = .997 | 0.20 ± 0.27,  *p* = .999 | 0.96 ± 0.37,  *p* = .236 | -3.19 ± 0.50,  *p* < .001 | -3.68 ± 0.59,  *p* < .001 | -3.40 ± 0.48, *p* < .001 |
| AD dementia – Other neurology | 4.51 ± 0.81,  *p* < .001 | 0.72 ± 0.21,  *p* = .020 | 0.40 ± 0.28,  *p* = .923 | -5.35 ± 0.38,  *p* < .001 | -6.25 ± 0.45,  *p* < .001 | -4.12 ± 0.36, *p* < .001 |
| AD dementia – PPD | 6.08 ± 0.55,  *p* < .001 | 0.42 ± 0.14,  *p* = .083 | 0.89 ± 0.19,  *p* < .001 | -4.58 ± 0.26,  *p* < .001 | -5.06 ± 0.31,  *p* < .001 | -4.10 ± 0.25, *p* < .001 |
| FTD – DLB | -6.02 ± 1.18,  *p* < .001 | 1.47 ± 0.33,  *p* < .001 | -0.21 ± 0.41,  *p* > .999 | 0.83 ± 0.55,  *p* = .888 | 0.55 ± 0.65,  *p* = .998 | -0.44 ± 0.56, *p* = .999 |
| FTD – VD | -6.35 ± 1.44,  *p* = .001 | 0.72 ± 0.37,  *p* = .657 | 0.54 ± 0.50,  *p* = .987 | -0.16 ± 0.67,  *p* > .999 | -0.002 ± 0.80,  *p* > .999 | -0.21 ± 0.67, *p* > .999 |
| FTD – PPA | -3.31 ± 1.42,  *p* = 365 | 0.09 ± 0.35,  *p* > .999 | 0.40 ± 0.50,  *p* = .999 | -1.34 ± 0.66,  *p* = .572 | -0.28 ± 0.79,  *p* > .999 | -0.58 ± 0.65, *p* = .997 |
| FTD – Other dementia | -2.95 ± 1.35,  *p* = .473 | 0.18 ± 0.34,  *p* > .999 | 1.02 ± 0.47,  *p* = .488 | -0.43 ± 0.63,  *p* > .999 | -1.39 ± 0.75,  *p* = .704 | -1.60 ± 0.62, *p* = .238 |
| FTD – Other neurology | 2.51 ± 1.16,  *p* = .481 | 0.70 ± 0.30,  *p* = .333 | 0.46 ± 0.40,  *p* = .981 | -2.59 ± 0.54,  *p* < .001 | -3.96 ± 0.64,  *p* < .001 | -2.32 ± 0.53, *p* < .001 |
| FTD – PPD | 4.08 ± 1.00,  *p* = .002 | 0.40 ± 0.25,  *p* = .856 | 0.95 ± 0.35,  *p* = .168 | -1.82 ± 0.47,  *p* = .004 | -2.77 ± 0.55,  *p* < .001 | -2.30 ± 0.47, *p* < .001 |
| DLB – VD | -0.33 ± 1.38,  *p* > .999 | -0.76 ± 0.39,  *p* = .621 | 0.75 ± 0.48,  *p* = .861 | -0.99 ± 0.64,  *p* 0.874 | -0.55 ± 0.76,  *p* = .999 | 0.23 ± 0.64, *p* > .999 |
| DLB – PPA | 2.71 ± 1.35,  *p* = .595 | -1.38 ± 0.37,  *p* = .006 | 0.62 ± 0.48,  *p* = .954 | -2.17 ± 0.63,  *p* = .020 | 0.83 ± 0.75,  *p* = .984 | -0.14 ± 0.62, *p* > .999 |
| DLB – Other dementia | 3.07 ± 1.28,  *p* = .328 | -1.29 ± 0.35,  *p* = .009 | 1.24 ± 0.45,  *p* = .153 | -1.26 ± 0.60,  *p* = .519 | -1.94 ± 0.71,  *p* = .163 | -1.15 ± 0.59, *p* = .625 |
| DLB – Other neurology | 8.53 ± 1.07,  *p* < .001 | -0.77 ± 0.31,  *p* = .291 | 0.68 ± 0.37,  *p* = .734 | -3.42 ± 0.50,  *p* < .001 | -4.51 ± 0.60,  *p* < .001 | -1.88 ± 0.49, *p* = .005 |
| DLB – PPD | 10.10 ± 0.90,  *p* < .001 | -1.08 ± 0.27,  *p* = .003 | 1.16 ± 0.31,  *p* = .008 | -2.64 ± 0.42,  *p* < .001 | -3.32 ± 0.50,  *p* < .001 | -1.86 ± 0.42, *p* < .001 |
| VD – PPA | 3.04 ± 1.59,  *p* = .659 | -0.63 ± 0.41,  *p* = .875 | -0.14 ± 0.56,  *p* > .999 | -1.18 ± 0.74,  *p* = 0.847 | -0.28 ± 0.88,  *p* > .999 | -0.37 ± 0.73, *p* > .999 |
| VD – Other dementia | 3.41 ± 1.53,  *p* = .439 | -0.53 ± 0.39,  *p* = .939 | 0.48 ± 0.53,  *p* = .996 | -0.27 ± 0.71,  *p* > .999 | -1.38 ± 0.85,  *p* = .832 | -1.39 ± 0.70, *p* = .610 |
| VD – Other neurology | 8.86 ± 1.36,  *p* < .001 | -0.01 ± 0.36,  *p* > .999 | -0.08 ± 0.47,  *p* > .999 | -2.43 ± 0.63,  *p* = .005 | -3.96 ± 0.75,  *p* < .001 | -2.11 ± 0.62, *p* = .024 |
| VD – PPD | 10.43 ± 1.23,  *p* < .001 | -0.32 ± 0.32,  *p* = .993 | 0.41 ± 0.43,  *p* = .994 | -1.65 ± 0.57,  *p* = .106 | -2.77 ± 0.68,  *p* = .002 | -2.09 ± 0.56, *p* = .008 |
| PPA – Other dementia | 0.37 ± 1.51,  *p* > .999 | -0.09 ± 0.38,  *p* > .999 | 0.62 ± 0.53,  *p* = .977 | 0.91 ± 0.70,  *p* =.953 | -1.11 ± 0.83,  *p* = .948 | -1.02 ± 0.68, *p* = .895 |
| PPA – Other neurology | 5.82 ± 1.33,  *p* = .001 | 0.62 ± 0.34,  *p* = .715 | 0.06 ± 0.47,  *p* > .999 | -1.25 ± 0.62,  *p* = .591 | -3.68 ± 0.74,  *p* < .001 | -1.74 ± 0.60, *p* = .107 |
| PPA – PPD | 7.40 ± 1.20,  *p* < .001 | 0.31 ± 0.30,  *p* = .990 | 0.55 ± 0.42,  *p* = .956 | -0.47 ± 0.56,  *p* =.998 | -2.49 ± 0.66,  *p* = .007 | -1.72 ± 0.54, *p* = .050 |
| Other dementia – Other neurology | 5.46 ± 1.26,  *p* = .001 | 0.53 ± 0.32,  *p* = .829 | -0.56 ± 0.44,  *p* = .960 | -2.16 ± 0.59,  *p* = .009 | -2.58 ± 0.70,  *p* = .009 | -0.72 ± 0.57, *p* = .959 |
| Other dementia – PPD | 7.03 ± 1.12,  *p* < .001 | 0.22 ± 0.28,  *p* = .999 | -0.07 ± 0.39,  *p* > .999 | -1.38 ± 0.52,  *p* = .193 | -1.39 ± 0.62,  *p* = .433 | -0.70 ± 0.51, *p* = .931 |
| Other neurology – PPD | 1.57 ± 0.87,  *p* = .735 | -0.31 ± 0.23,  *p* = .939 | 0.49 ± 0.30,  *p* = .845 | 0.78 ± 0.41,  *p* = .663 | 1.19 ± 0.48,  *p* = .292 | 0.02 ± 0.39, *p* > .999 |

*Note:* Displaying estimate ± standard deviation and adjusted *p*-value. P-values have been adjusted for multiple comparisons with Tukey’s Honest Significant Difference post-hoc test. Estimates with adjusted *p*-values > .05 are grayed out.

*Abbreviations:* AD, Alzheimer’s disease; DLB, dementia with Lewy bodies; FTD, frontotemporal dementia; PPA, primary progressive aphasia; PPD, primary psychiatric diagnosis; SCD, subjective cognitive decline; VD, vascular dementia.

Supplemental Table 2. Correlation between MMSE and MoCA, by diagnostic group.

|  |  |
| --- | --- |
| Diagnostic group | Correlation |
| All | 0.86 [0.85, 0.87] |
| SCD | 0.56 [0.50, 0.61] |
| MCI | 0.55 [0.46, 0.63] |
| AD dementia | 0.85 [0.83, 0.87] |
| FTD | 0.81 [0.72, 0.87] |
| DLB | 0.80 [0.72, 0.86] |
| VD | 0.81 [0.69, 0.89] |
| PPA | 0.69 [0.52, 0.81] |
| Other dementia | 0.77 [0.64, 0.85] |
| Other neurology | 0.73 [0.63, 0.80] |
| PPD | 0.83 [0.79, 0.86] |

*Note:* Displaying Pearson’s *r* correlation coefficient with 95% confidence intervals.

*Abbreviations:* AD, Alzheimer’s disease; DLB, dementia with Lewy bodies; FTD, frontotemporal dementia; MCI, mild cognitive impairment; MMSE, Mini-Mental State Examination; MoCA, Montreal Cognitive Assessment; PPA, primary progressive aphasia; PPD, primary psychiatric diagnosis; SCD, subjective cognitive decline; VD, vascular dementia.

Table 3. Number and proportion of patients scoring at the ceiling (30 points) and below conventional and norm-adjusted cutoffs, on MMSE and MoCA.

|  | MMSE |  |  | MOCA |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | At ceiling | Below conventional cutoff | Below norm-adjusted cutoff1 | At ceiling | Below conventional cutoff | Below norm-adjusted cutoff1 |
| All | 230 (9.9) | 653 (28.1) | 1,168 (50.6) | 33 (1.4) | 1,807 (77.7) | 654 (28.3) |
| SCD | 152 (24.7) | 9 (1.5) | 89 (14.6) | 26 (4.2) | 288 (46.8) | 15 (2.5) |
| MCI | 24 (9.1) | 20 (7.6) | 93 (35.4) | 0 (0.0) | 220 (83.7) | 23 (8.7) |
| AD dementia | 8 (1.2) | 414 (61.8) | 568 (85.2) | 0 (0.0) | 663 (99.0) | 402 (60.3) |
| FTD | 3 (3.7) | 29 (35.8) | 49 (61.3) | 0 (0.0) | 75 (92.6) | 33 (41.3) |
| DLB | 2 (1.9) | 54 (50.0) | 80 (74.8) | 0 (0.0) | 102 (94.4) | 54 (50.5) |
| VD | 2 (4.0) | 17 (34.0) | 32 (64.0) | 0 (0.0) | 48 (96.0) | 21 (42.0) |
| PPA | 1 (1.9) | 14 (26.9) | 24 (48.0) | 0 (0.0) | 45 (86.5) | 17 (34.0) |
| Other dementia | 2 (3.2) | 19 (30.6) | 41 (67.2) | 0 (0.0) | 57 (91.9) | 17 (27.9) |
| Other neurology | 10 (8.5) | 14 (12.0) | 48 (41.0) | 4 (3.4) | 82 (70.1) | 12 (10.3) |
| PPD | 26 (8.5) | 63 (20.5) | 144 (47.4) | 3 (1.0) | 227 (73.9) | 60 (19.7) |

Note: All data are displayed as *n* (%). MMSE conventional cutoff <24; MoCA conventional cutoff <26. Norm-adjusted cutoffs are adjusted for age, sex, and education. 1 excluding *n* = 15 patients for whom educational attainment was unknown.

*Abbreviations:* AD, Alzheimer’s disease; DLB, dementia with Lewy bodies; FTD, frontotemporal dementia; MCI, mild cognitive impairment; MMSE, Mini-Mental State Examination; MoCA, Montreal Cognitive Assessment; PPA, primary progressive aphasia; PPD, primary psychiatric diagnosis; SCD, subjective cognitive decline; VD, vascular dementia.

Supplementary Table 4. Mini-Mental State Examination item-level scores, in the whole sample and by diagnostic group.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Item | Whole sample | scd | mci | ad dementia | ftd | DLB | VD | ppa | Other dementia | Other neurology | ppd |
| Oriented in time  Completely oriented1  Year  Season  Month  Date  Day of the week | 1,316 (65.0)  1,836 (90.7)  1,781 (88.0)  1,826 (90.2)  1,566 (77.3)  1,742 (86.1) | 468 (88.5)  524 (98.9)  514 (97.0)  522 (98.5)  504 (95.1)  518 (97.9) | 171 (76.0)  218 (96.9)  214 (95.1)  213 (94.7)  190 (84.4)  210 (93.3) | 205 (34.8)  463 (78.3)  445 (75.3)  457 (77.2)  307 (51.9)  400 (67.7) | 45 (65.2)  65 (94.2)  61 (88.4)  64 (92.8)  55 (79.7)  59 (85.5) | 45 (53.6)  72 (84.7)  73 (85.9)  77 (90.6)  64 (75.3)  77 (91.7) | 19 (41.3)  41 (89.1)  41 (89.1)  36 (78.3)  31 (67.4)  36 (78.3) | 41 (87.2)  46 (97.9)  43 (91.5)  47 (100.0)  45 (95.7)  46 (97.9) | 39 (70.9)  49 (89.1)  47 (85.5)  50 (90.9)  46 (83.6)  48 (87.3) | 81 (79.4)  99 (97.1)  99 (97.1)  99 (97.1)  93 (91.2)  94 (92.2) | 202 (74.0)  259 (94.5)  244 (88.7)  261 (95.6)  231 (84.0)  254 (92.0) |
| Oriented in space  Completely oriented1  Province  City  Building  Department  Floor | 1,165 (57.9)  1,727 (85.4)  1,943 (96.0)  1,832 (90.6)  1,589 (78.5)  1,548 (76.4) | 442 (83.7)  500 (94.5)  529 (99.8)  525 (99.1)  504 (95.3)  495 (93.4) | 147 (65.6)  212 (94.2)  223 (99.1)  216 (96.4)  188 (83.6)  182 (80.9) | 177 (30.3)  444 (75.3)  528 (89.5)  468 (79.5)  354 (59.9)  336 (56.8) | 30 (43.5)  56 (81.2)  66 (95.7)  58 (84.1)  52 (75.4)  41 (59.4) | 39 (47.0)  69 (81.2)  83 (97.6)  74 (88.1)  59 (69.4)  60 (71.4) | 24 (53.3)  37 (82.2)  41 (89.1)  43 (93.5)  31 (67.4)  36 (78.3) | 27 (57.4)  41 (87.2)  46 (97.9)  43 (91.5)  34 (72.4)  39 (83.0) | 26 (47.3)  46 (83.6)  55 (100.0)  47 (85.5)  44 (80.0)  38 (69.1) | 64 (63.4)  91 (90.1)  100 (98.0)  98 (96.1)  80 (78.4)  83 (81.4) | 189 (68.7)  231 (83.7)  272 (98.9)  260 (94.2)  243 (88.0)  238 (86.2) |
| Immediate recall  All  2  1  None | 1,953 (96.7)  48 (2.4)  15 (0.7)  4 (0.2) | 527 (99.6)  2 (0.4)  0 (0.0)  0 (0.0) | 223 (99.1)  1 (0.4)  1 (0.4)  0 (0.0) | 552 (93.9)  23 (3.9)  11 (1.9)  2 (0.3) | 65 (94.2)  3 (4.3)  0 (0.0)  1 (1.5) | 75 (88.2)  8 (9.4)  1 (1.2)  1 (1.2) | 45 (97.8)  0 (0.0)  1 (2.2)  0 (0.0) | 45 (95.7)  2 (4.3)  0 (0.0)  0 (0.0) | 54 (98.2)  1 (1.8)  0 (0.0)  0 (0.0) | 99 (98.0)  2 (2.0)  0 (0.0)  0 (0.0) | 268 (97.5)  6 (2.2)  1 (0.4)  0 (0.0) |
| Serial 7s  All  4  3  2  1  None | 1,005 (49.7)  355 (17.5)  214 (10.6)  141 (7.0)  186 (9.2)  122 (6.0) | 381 (72.0)  101 (19.1)  26 (4.9)  13 (2.5)  7 (1.3)  2 (0.4) | 143 (63.6)  36 (16.0)  25 (11.1)  13 (5.8)  7 (3.1)  1 (0.4) | 165 (27.8)  89 (15.0)  80 (13.5)  58 (9.8)  115 (19.4)  85 (14.4) | 31 (45.6)  12 (17.6)  9 (13.2)  5 (7.4)  6 (8.8)  5 (7.4) | 17 (20.2)  16 (19.0)  12 (14.3)  14 (16.7)  20 (23.8)  5 (6.0) | 22 (47.8)  5 (10.9)  8 (17.4)  4 (8.7)  2 (4.3)  5 (10.9) | 28 (59.6)  9 (19.1)  5 (10.6)  2 (4.3)  2 (4.3)  1 (2.1) | 18 (32.7)  15 (27.3)  7 (12.7)  5 (9.1)  6 (10.9)  4 (7.3) | 64 (62.7)  16 (15.7)  7 (6.9)  7 (6.9)  6 (5.9)  2 (2.0) | 136 (49.6)  56 (20.4)  35 (12.8)  20 (7.3)  15 (5.5)  12 (4.4) |
| Delayed recall  All  2  1  None | 519 (25.7)  491 (24.3)  531 (26.3)  479 (23.7) | 252 (47.6)  151 (28.5)  87 (16.4)  39 (7.4) | 61 (27.1)  60 (26.7)  68 (30.2)  36 (16.0) | 50 (8.5)  86 (14.6)  193 (32.7)  262 (44.3) | 12 (17.6)  16 (23.5)  19 (27.9)  21 (30.9) | 13 (15.3)  21 (24.7)  19 (22.4)  32 (37.6) | 9 (20.5)  10 (22.7)  10 (22.7)  15 (34.1) | 10 (21.3)  19 (40.4)  6 (12.8)  12 (25.5) | 9 (16.4)  9 (16.4)  22 (40.0)  15 (27.3) | 31 (31.0)  22 (22.0)  32 (32.0)  15 (15.0) | 72 (26.2)  96 (34.9)  75 (27.3)  32 (11.6) |
| Object naming  Both  1  None | 1,984 (98.0)  33 (1.6)  7 (0.3) | 528 (99.6)  2 (0.4)  0 (0.0) | 224 (99.6)  1 (0.4)  0 (0.0) | 572 (96.6)  18 (3.0)  2 (0.3) | 66 (95.7)  1 (1.4)  2 (2.9) | 84 (100.0)  0 (0.0) 0 (0.0) | 45 (97.8)  1 (2.2)  0 (0.0) | 38 (80.9)  7 (14.9)  2 (4.3) | 55 (100.0)  0 (0.0)  0 (0.0) | 102 (100.0)  0 (0.0)  0 (0.0) | 270 (98.5)  3 (1.1)  1 (0.4) |
| Repetition | 1,609 (82.3) | 458 (88.8) | 198 (91.7) | 431 (75.4) | 56 (83.6) | 67 (80.7) | 38 (86.4) | 32 (69.6) | 43 (79.6) | 89 (91.8) | 197 (75.5) |
| Reading | 1,857 (94.9) | 508 (98.6) | 211 (98.6) | 517 (90.5) | 60 (89.6) | 74 (89.2) | 42 (95.5) | 41 (89.1) | 49 (90.7) | 97 (99.0) | 258 (97.7) |
| Stage command  All steps correct  2 steps correct  1 step correct  None correct | 1,700 (84.0)  257 (12.7)  56 (2.8)  10 (0.5) | 501 (94.5)  28 (5.3)  1 (0.2)  0 (0.0) | 211 (93.8)  12 (5.3)  2 (0.9)  0 (0.0) | 420 (71.2)  126 (21.4)  37 (6.3)  7 (1.2) | 52 (75.4)  14 (20.3)  3 (4.3)  0 (0.0) | 65 (77.4)  16 (19.0)  2 (2.4)  1 (1.2) | 38 (84.4)  7 (15.6)  0 (0.0)  0 (0.0) | 33 (70.2)  12 (25.5)  2 (4.3)  0 (0.0) | 45 (81.8)  10 (18.2)  0 (0.0)  0 (0.0) | 94 (92.2)  6 (5.9)  1 (1.0)  1 (1.0) | 241 (87.3)  26 (9.4)  8 (2.9)  1 (0.4) |
| Writing | 1,784 (91.2) | 500 (97.1) | 204 (94.9) | 497 (86.6) | 59 (86.8) | 71 (85.5) | 39 (90.7) | 35 (76.1) | 48 (88.9) | 88 (91.7) | 243 (92.7) |
| Visuoconstruction | 1,533 (78.4) | 491 (95.5) | 198 (91.7) | 341 (59.8) | 53 (77.9) | 39 (47.6) | 26 (59.1) | 39 (84.8) | 37 (68.5) | 84 (86.6) | 225 (85.2) |

All data displayed as number (valid percentage, i.e., excluding missing values). Due to rounding, percentages may not always add exactly to 100. 1 This row represents the patients who got all five sub-items correct.

*Abbreviations:* AD, Alzheimer’s disease; DLB, dementia with Lewy bodies; FTD, frontotemporal dementia; MCI, mild cognitive impairment; PPA, primary progressive aphasia; PPD, primary psychiatric disorder; SCD, subjective cognitive decline; VD, vascular dementia.

Supplementary Table 5. Montreal Cognitive Assessment item-level scores, in the whole sample and by diagnosis.

| Item | Whole sample | scd | mci | ad dementia | ftd | DLB | VD | ppa | Other dementia | Other neurology | ppd |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Alternating trail | 1,342 (66.5) | 469 (88.7) | 170 (75.9) | 260 (44.1) | 41 (59.4) | 24 (28.2) | 20 (43.5) | 38 (80.9) | 31 (56.4) | 81 (78.6) | 208 (76.5) |
| Cube copy | 1,153 (57.2) | 415 (78.6) | 171 (76.7) | 222 (37.8) | 32 (46.4) | 30 (35.7) | 20 (43.5) | 33 (70.2) | 21 (38.2) | 57 (55.3) | 152 (55.9) |
| Clock  All elements  2  1  None | 1,139 (56.5)  469 (23.3)  347 (17.2)  60 (3.0) | 426 (80.5)  83 (15.7)  19 (3.6)  1 (0.2) | 160 (71.4)  50 (22.3)  14 (6.3)  0 (0.0) | 174 (29.5)  162 (27.5)  205 (34.8)  48 (8.1) | 28 (40.6)  24 (34.8)  14 (20.3)  3 (4.3) | 16 (19.0)  28 (33.3)  37 (44.0)  3 (3.6) | 17 (37.0)  15 (32.6)  13 (28.3)  1 (2.2) | 24 (52.2)  18 (39.1)  3 (6.5)  1 (2.2) | 27 (49.1)  19 (34.5)  7 (12.7)  2 (3.6) | 80 (77.7)  15 (14.6)  8 (7.8)  0 (0.0) | 187 (69.3)  55 (20.4)  27 (10.0)  1 (0.4) |
| Animal naming  All  2  1  None | 1,721 (85.0)  223 (11.0)  53 (2.6)  28 (1.4) | 495 (93.4)  31 (5.8)  3 (0.6)  1 (0.2) | 207 (92.4)  16 (7.1)  1 (0.4)  0 (0.0) | 457 (77.3)  93 (15.7)  28 (4.7)  13 (2.2) | 44 (63.8)  19 (27.5)  4 (5.8)  2 (2.9) | 78 (91.8)  5 (5.9)  2 (2.4)  0 (0.0) | 39 (84.8)  7 (15.2)  0 (0.0)  0 (0.0) | 26 (55.3)  6 (12.8)  4 (8.5)  11 (23.4) | 43 (78.2)  10 (18.2)  2 (3.6)  0 (0.0) | 92 (89.3)  9 (8.7)  2 (1.9)  0 (0.0) | 240 (87.3)  27 (9.8)  7 (2.5)  1 (0.4) |
| Immediate recall, 1st trial  All  4  3  2  1  None | 720 (35.7)  527 (26.1)  336 (16.6)  187 (9.3)  93 (4.6)  156 (7.7) | 300 (56.7)  125 (23.6)  57 (10.8)  22 (4.2)  3 (0.6)  22 (4.2) | 104 (46.4)  61 (27.2)  39 (17.4)  7 (3.1)  3 (1.3)  10 (4.5) | 130 (22.1)  125 (21.2)  115 (19.5)  88 (14.9)  52 (8.8)  79 (13.4) | 16 (23.2)  18 (26.1)  12 (17.4)  10 (14.5)  7 (10.1)  6 (8.7) | 13 (15.3)  14 (16.5)  15 (17.6)  17 (20.0)  10 (11.8)  16 (18.8) | 9 (19.6)  20 (43.5)  8 (17.4)  3 (6.5)  4 (8.7)  2 (4.3) | 15 (31.9)  11 (23.4)  11 (23.4)  4 (8.5)  2 (4.3)  4 (8.5) | 12 (21.8)  23 (41.8)  11 (20.0)  5 (9.1)  1 (1.8)  3 (5.5) | 34 (33.0)  44 (42.7)  13 (12.6)  4 (3.9)  4 (3.9)  4 (3.9) | 87 (32.0)  86 (31.6)  55 (20.2)  27 (9.9)  7 (2.6)  10 (3.7) |
| Immediate recall, 2nd trial  All  4  3  2  1  None | 1,110 (55.0)  441 (21.8)  223 (11.0)  72 (3.6)  29 (1.4)  145 (7.2) | 412 (77.9)  57 (10.8)  18 (3.4)  6 (1.1)  0 (0.0)  36 (6.8) | 149 (66.5)  45 (20.1)  17 (7.6)  2 (0.9)  0 (0.0)  11 (4.9) | 201 (34.1)  163 (27.7)  100 (17.0)  43 (7.3)  22 (3.7)  60 (10.2) | 31 (44.9)  19 (27.5)  9 (13.0)  4 (5.8)  0 (0.0)  6 (8.7) | 31 (36.5)  23 (27.1)  17 (20.0)  6 (7.1)  2 (2.4)  6 (7.1) | 24 (52.2)  13 (28.3)  7 (15.2)  0 (0.0)  0 (0.0)  2 (4.3) | 23 (48.9)  10 (21.3)  8 (17.0)  2 (4.3)  1 (2.1)  3 (6.4) | 27 (49.1)  11 (20.0)  10 (18.2)  1 (1.8)  0 (0.0)  6 (10.9) | 59 (57.3)  29 (28.2)  9 (8.7)  1 (1.0)  1 (1.0)  4 (3.9) | 153 (56.0)  71 (26.0)  28 (10.3)  7 (2.6)  3 (1.0)  11 (4.0) |
| Digit span forward | 1,694 (83.7) | 491 (92.8) | 202 (90.2) | 454 (76.6) | 57 (82.6) | 65 (77.4) | 39 (84.8) | 41 (87.2) | 44 (80.0) | 93 (90.3) | 208 (76.2) |
| Digit span backward | 1,626 (80.4) | 476 (89.8) | 201 (89.7) | 427 (72.3) | 49 (71.0) | 57 (67.9) | 34 (73.9) | 40 (85.1) | 40 (72.7) | 91 (88.4) | 211 (77.0) |
| Vigilance (Go/No go) | 1,703 (85.2) | 502 (95.4) | 205 (92.8) | 451 (77.8) | 50 (75.8) | 58 (69.0) | 34 (73.9) | 36 (76.6) | 38 (70.4) | 97 (94.2) | 232 (85.0) |
| Serial 7s  4 or 5 correct  2 or 3 correct  1 correct  None correct | 1,296 (64.4)  378 (18.8)  209 (10.4)  130 (6.5) | 471 (88.8)  48 (9.1)  8 (1.5)  3 (0.6) | 167 (75.2)  47 (21.2)  7 (3.2)  1 (0.5) | 228 (38.7)  143 (24.3)  124 (21.1)  94 (16.0) | 42 (61.8)  15 (22.1)  5 (7.4)  6 (8.8) | 32 (39.5)  24 (29.6)  21 (25.9)  4 (4.9) | 26 (56.5)  12 (26.1)  3 (6.5)  5 (10.9) | 36 (78.3)  8 (17.4)  2 (4.3)  0 (0.0) | 32 (58.2)  12 (21.8)  9 (16.4)  2 (3.6) | 75 (73.5)  17 (16.7)  6 (5.9)  4 (3.9) | 187 (68.2)  52 (19.0)  24 (8.8)  11 (4.0) |
| Repetition  Both  1  None | 910 (45.4)  733 (36.6)  362 (18.1) | 332 (63.4)  151 (28.8)  42 (7.8) | 130 (58.3)  71 (31.8)  22 (9.9) | 173 (29.5)  253 (43.2)  160 (27.3) | 29 (42.0)  25 (36.2)  15 (21.7) | 25 (30.1)  43 (51.8)  15 (18.1) | 26 (56.5)  16 (34.8)  4 (8.7) | 10 (21.7)  18 (39.1)  18 (39.1) | 25 (46.3)  21 (38.9)  8 (14.8) | 55 (53.9)  34 (33.3)  13 (12.7) | 105 (38.7)  101 (37.3)  65 (24.0) |
| Phonetic fluency | 1,038 (51.9) | 362 (69.0) | 144 (64.6) | 276 (47.1) | 16 (25.0) | 35 (42.7) | 12 (26.7) | 15 (31.9) | 10 (18.2) | 41 (40.2) | 127 (47.0) |
| Abstract reasoning  Both  1  None | 1,088 (54.1)  688 (34.2)  234 (11.6) | 393 (74.4)  125 (23.7)  10 (1.9) | 148 (66.4)  66 (29.6)  9 (4.0) | 229 (39.2)  227 (38.9)  128 (21.9) | 23 (33.8)  27 (39.7  18 (26.5) | 27 (32.5)  42 (50.6)  14 (16.9) | 18 (39.1)  21 (45.7)  7 (15.2) | 19 (41.3)  11 (23.9)  16 (34.8) | 19 (35.2)  29 (53.7)  6 (11.1) | 62 (60.2)  37 (35.9)  4 (3.9) | 150 (54.5)  103 (37.5)  22 (8.0) |
| Spontaneous delayed recall  All  4  3  2  1  None | 110 (5.4)  164 (8.1)  237 (11.7)  299 (14.8)  252 (12.5)  961 (47.5) | 67 (12.7)  99 (18.7)  103 (19.5)  113 (21.4)  65 (12.3)  82 (15.5) | 4 (1.8)  8 (3.6)  25 (11.2)  30 (13.4)  38 (17.0)  119 (53.1) | 1 (0.2)  4 (0.7)  17 (2.9)  43 (7.3)  44 (7.4)  481 (81.5) | 3 (4.3)  3 (4.3)  7 (10.1)  8 (11.6)  5 (7.2)  43 (62.3) | 2 (2.4)  2 (2.4)  11 (12.9)  12 (14.1)  17 (20.0)  41 (48.2) | 1 (2.2)  0 (0.0)  3 (6.5)  6 (13.0)  8 (17.4)  28 (60.9) | 2 (4.3)  5 (10.6)  3 (6.4)  8 (17.0)  4 (8.5)  25 (53.2) | 5 (9.1)  5 (9.1)  4 (7.3)  9 (16.4)  5 (9.1)  27 (49.1) | 9 (8.7)  6 (5.8)  17 (16.5)  16 (15.5)  20 (19.4)  35 (34.0) | 16 (5.8)  32 (11.6)  47 (17.1)  54 (19.6)  46 (16.7)  80 (29.1) |
| Orientation  All  5  4  3  2  1  None | 1,353 (67.2)  326 (16.2)  147 (7.3)  70 (3.5)  62 (3.1)  36 (1.8)  18 (0.9) | 478 (90.2)  45 (8.5)  4 (0.8)  2 (0.4)  0 (0.0)  1 (0.2)  0 (0.0) | 178 (79.8)  31 (13.9)  10 (4.5)  3 (1.3)  1 (0.4)  0 (0.0)  0 (0.0) | 217 (37.1)  139 (23.8)  85 (14.5)  45 (7.7)  52 (8.9)  32 (5.5)  15 (2.6) | 43 (63.2)  17 (25.0)  5 (7.4)  0 (0.0)  1 (1.5)  1 (1.5)  1 (1.5) | 45 (54.9)  22 (26.8)  8 (9.8)  5 (6.1)  2 (2.4)  0 (0.0)  0 (0.0) | 22 (47.8)  11 (23.9)  8 (17.4)  2 (4.3)  1 (2.2)  2 (4.3)  0 (0.0) | 41 (89.1)  4 (8.7)  1 (2.2)  0 (0.0)  0 (0.0)  0 (0.0)  0 (0.0) | 39 (70.9)  6 (10.9)  4 (7.3)  4 (7.3)  2 (3.6)  0 (0.0)  0 (0.0) | 80 (78.4)  16 (15.7)  5 (4.9)  1 (1.0)  0 (0.0)  0 (0.0)  0 (0.0) | 210 (76.4)  35 (12.7)  17 (6.2)  8 (2.9)  3 (1.1)  0 (0.0)  2 (0.7) |

All data displayed as number (percentage). Due to rounding, percentages may not always add exactly to 100.

*Abbreviations:* AD, Alzheimer’s disease; DLB, dementia with Lewy bodies; FTD, frontotemporal dementia; MCI, mild cognitive impairment; PPA, primary progressive aphasia; PPD, primary psychiatric disorder; SCD, subjective cognitive decline; VD, vascular dementia.

Supplemental Table 6. Linear models investigating the influence of patient characteristics on MMSE and MoCA total scores.

| Model | MMSE | | MoCA | |
| --- | --- | --- | --- | --- |
| B | 95%CI | B | 95%CI |
| 1: Age in years | -0.06 | [-0.08, -0.03] | -0.09 | [-0.11, -0.06] |
| 2: Female sex | -0.80 | [-1.17, -0.43] | -1.05 | [-1.49, -0.61] |
| 3: Education in years | 0.39 | [0.32, 0.45] | 0.54 | [0.46, 0.61] |
| 4: Diagnosis  mci  ad dementia  ftd  dlb  vd  ppa  Other dementia  Other neurology  ppd | -1.37  -6.98  -3.96  -5.07  -4.08  -2.66  -3.81  -1.65  -2.30 | [-1.89, -0.84]  [-7.38, -6.58]  [-4.80, -3.11]  [-5.82, -4.32]  [-5.13, -3.03]  [-3.69, -1.63]  [-4.76, -2.86]  [-2.37, -0.93]  [-2.80, -1.80] | -2.33  -8.58  -6.12  -6.90  -5.95  -5.20  -4.97  -2.39  -3.35 | [-2.95, -1.72]  [-9.04, -8.11]  [-7.11, -5.13]  [-7.78, -6.03]  [-7.18, -4.72]  [-6.41, -3.99]  [-6.08, -3.85]  [-3.23, -1.55]  [-3.93, -2.96] |
| 5: Everything  Age in years  Female sex  education in years  Diagnosis  mci  ad dementia  ftd  dlb  vd  ppa  Other dementia  Other neurology  ppd | 0.01  -0.34  0.34  -1.52  -6.82  -3.85  -5.22  -3.88  -2.44  -3.43  -1.37  -1.83 | [-0.01, 0.03]  [-0.64, -0.05]  [0.29, 0.39]  [-2.04, -1.00]  [-7.21, -6.42]  [-4.67, -3.03]  [-5.96, -4.48]  [-4.91, -2.86]  [-3.46, -1.42]  [-4.36, -2.49]  [-2.07, -0.67]  [-2.32, -1.34] | -0.00  -0.51  0.48  -2.45  -8.28  -5.93  -6.93  -5.52  -4.59  -4.37  -2.00  -2.71 | [-0.02, 0.02]  [-0.84, -0.17]  [0.42, 0.54]  [-3.04, -1.85]  [-8.73, -7.82]  [-6.87, -4.99]  [-7.77, -6.08]  [-6.69, -4.34]  [-5.76, -3.43]  [-5.44, -3.30]  [-2.80, -1.20]  [-3.27, -2.15] |

*Abbreviations:* AD, Alzheimer’s disease; DLB, dementia with Lewy bodies; FTD, frontotemporal dementia; MCI, mild cognitive impairment; MMSE, Mini-Mental State Examination; MoCA, Montreal Cognitive Assessment; PPA, primary progressive aphasia; PPD, primary psychiatric diagnosis; VD, vascular dementia; 95%CI, 95% confidence interval.

Supplemental Table 7. Estimates of patient characteristics’ influence on the relationship between MMSE and MoCA scores, from linear mixed models.

|  |  |
| --- | --- |
| Model | B [95%CI] |
| 0: No covariates  Screener | -3.76 [-3.87, -3.65] |
| 1: Age in years  Screener  Age  Age x screener | -1.85 [-2.67, -1.03]  -0.06 [-0.08, -0.03]  -0.03 [-0.04, -0.02] |
| 2: Female sex  Screener  Sex  Sex x screener | -3.65 [-3.80, -3.51]  -0.80 [-1.21, -0.39]  -0.25 [-0.47, -0.02] |
| 3: Education in years  Screener  Education  education x screener | -5.54 [-6.00, -5.08]  0.39 [0.32, 0.46]  0.15 [0.12, 0.19] |
| 4: Diagnosis  Screener  mci  ad dementia  ftd  dlb  vd  ppa  Other dementia  Other neurology  ppd  mci x screener  ad dementia x screener  ftd x screener  dlb x screener  vd x screener  ppa x screener  Other dementia x screener  Other neurology x screener  ppd x screener | -2.73 [-2.94, -2.52]  -1.37 [-1.94, -0.80]  -6.98 [-7.42, -6.55]  -3.96 [-4.88, -3.04]  -5.07 [-5.88, -4.26]  -4.08 [-5.22, -2.94]  -2.66 [-3.78, -1.54]  -3.81 [-4.85, -2.77]  -1.65 [-2.44, -0.87]  -2.30 [-2.84, -1.76]  -0.97 [-1.35, -0.58]  -1.59 [-1.88, -1.30]  -2.16 [-2.77, -1.55]  -1.83 [-2.37, -1.29]  -1.87 [-2.63, -1.11]  -2.54 [-3.29, -1.79]  -1.16 [-1.85, -0.47]  -0.74 [-1.26, -0.22]  -1.05 [-1.41, -0.68] |

|  |  |
| --- | --- |
| Model | B [95%CI] |
| 5: Everything  Screener  Age  Age x screener  Sex  Sex x screener  Education  Education x screener  mci  ad dementia  ftd  dlb  vd  ppa  Other dementia  Other neurology  ppd  mci x screener  ad dementia x screener  ftd x screener  dlb x screener  vd x screener  ppa x screener  Other dementia x screener  Other neurology x screener  ppd x screener | -3.52 [-4.47, -2.57]  0.01 [-0.01, 0.03]  -0.01 [-0.03, -0.00]  -0.34 [-0.66, -0.03]  -0.16 [-0.38, 0.05]  0.35 [0.28, 0.39]  0.14 [0.10, 0.18]  -1.52 [-2.08, -0.96]  -6.82 [-7.24, -6.39]  -3.85 [-4.73, -2.96]  -5.22 [-6.01, -4.42]  -3.88 [-4.99, -2.78]  -2.44 [-3.53, -1.34]  -3.43 [-4.43, -2.42]  -1.37 [-2.12, -0.62]  -1.83 [-2.36, -1.31]  -0.93 [-1.31, -0.50]  -1.46 [-1.80, -1.18]  -2.08 [-2.69, -1.47]  -1.71 [-2.25, -1.16]  -1.63 [-2.39, -0.87]  -2.16 [-2.91, -1.40]  -0.94 [-1.63, -0.25]  -0.63 [-1.15, -0.12]  -0.87 [-1.24, -0.51] |

*Note:* The reference for screener was MMSE (i.e., showing estimate for MoCA); the reference for diagnosis was SCD (i.e., showing each diagnosis compared to SCD).

*Abbreviations:* AD, Alzheimer’s disease; B, estimate; DLB, dementia with Lewy bodies; FTD, frontotemporal dementia; MCI, mild cognitive impairment; MMSE, Mini-Mental State Examination; MoCA, Montreal Cognitive Assessment; PPA, primary progressive aphasia; PPD, primary psychiatric diagnosis; SCD, subjective cognitive decline; VD, vascular dementia; 95%CI, 95% confidence interval.

Supplemental Figure 1. Raw MMSE and equated MoCA scores (left, in blue), and raw MoCA and equated MMSE scores (right, in green).



Supplemental Figure 2. Item-level data from MMSE and MoCA, in the whole sample and by diagnostic group.

Bars extending left from the center represent scores of less than half the available points (e.g., <3 out of 5) and darker red shades represent fewer points; bars extending right from the center of the plot represent scores of more than half the available points (e.g., ≥3 out of 5) and darker shades represent more points. The total possible number of points is displayed in each item header.

*Abbreviations:* AD, Alzheimer’s disease; FTD, frontotemporal dementia; DLB, dementia with Lewy bodies; MCI, mild cognitive impairment; MMSE, Mini-Mental State Examination; MoCA, Montreal Cognitive Assessment; PPA, primary progressive aphasia; PPD, primary psychiatric disorder; pt(s)., point(s); SCD, subjective cognitive decline; VD, vascular dementia.