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Supplemental Materials

Demographics of post-stroke aphasia recovery: a systematic review-informed individual participant data (IPD) meta-analysis

Supplement 1) Table I: Standardised measures for each language domain

| Language domain | Standardised Measurement | Range |
|--------------------------|--|---------------------------------------|
| Overall Language Ability | Western Aphasia Battery (Aphasia Quotient) | 0-100 |
| Auditory Comprehension | Aachen Aphasia Test Token Test | 0-50 (reflecting positive scoring) |
| Naming | Boston Naming Test | 0-60 |
| Reading | Reading subtest of the Comprehensive Aphasia Test | 0-74 |
| Writing | Writing subtest of the Comprehensive Aphasia Test | 0-76 |
| Other Spoken Language | Porch Index of Communicative Ability | 0-16 |
| Functional Communication | Aachen Aphasia Test Spontaneous Communication domain | 0-5 |

Supplement 2) Table II: Participant Demography

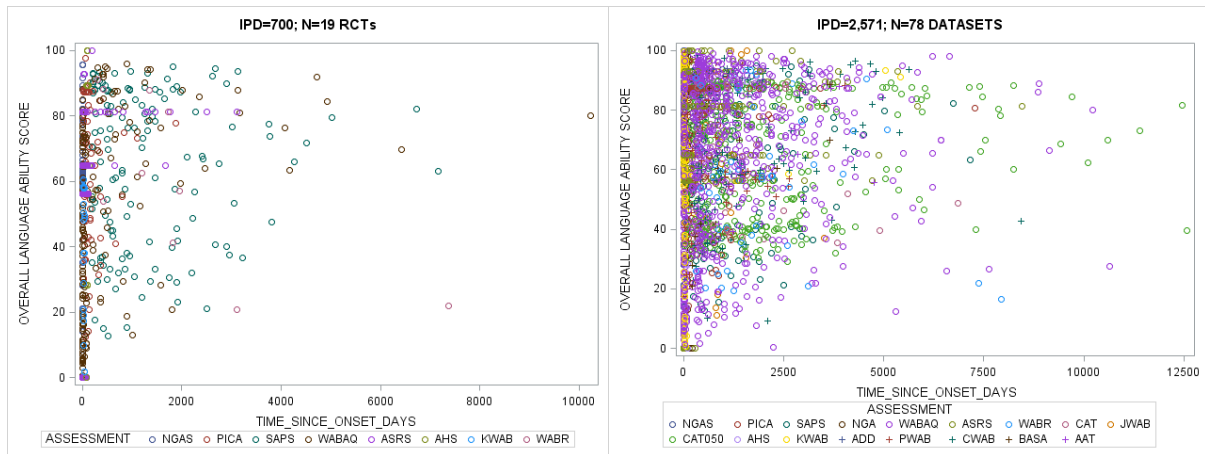
| Parameter | | Language Domain | | | |
|--|------------------|-----------------------------------|----------------------------------|-----------------|-----------------------------------|
| | | Overall language ability N=943 | Auditory comprehension N=1056 | Naming N=791 | Functional Communication N=974 |
| Age, years (median, IQR) | | 63 (53-73), n=914 | 61 (51-69), n=1046 | 61 (52-69) | 67 (57-77) |
| By age group | ≤55 years | 281 | 360 (34%) | 269 | 208 (21) |
| | 56-65 years | (31%) | 322 (31%) | (34%) | 228 (23) |
| | 66-75 years | 248 | 231 (22%) | 245 | 267 (27) |
| | >75 years | (27%) | 133 (13%) | (31%) | 271 (28) |
| | Missing | 195 | 10 | 190 | 0 |
| | | (21%) | | (24%) | |
| | | 190 | | 87 | |
| | | (21%) | | (11%) | |
| | | 29 | | 0 | |
| Time since stroke, days (median, IQR) | | 36 (7-548), n=940 | 116 (18-883), n=1046 | 131 (30-883) | 28 (6-244), n=962 |
| By Time group | 0-28 days | 442 | 339 (32%) | 194 | 501 (52) |
| | 4 weeks-3 months | (47%) | 151 (14%) | (25%) | 129 (13) |
| | 3-6 months | 107 | 97 (9%) | 143 | 69 (7) |
| | >6 months | (11%) | 459 (44%) | (18%) | 263 (27) |
| | Missing | 59 (6%) | 10 | 106 | 12 |
| | | 332 | | (13%) | |
| | | (35%) | | 348 | |
| | | 3 | | (44%) | |
| | | | | 0 | |
| Sex | Female | 360 | 385 (37%) | 278 | 417 (43) |
| | Male | (40%) | 660 (63%) | (36%) | 557 (57) |
| | Missing | 544 | 11 | 502 | 0 |
| | | (60%) | | (64%) | |
| | | 39 | | 11 | |
| Ethnicity | Asian | 24 (2.5%) | 22 (2%) | 0 | 0 |
| | Black | 0 | 4 (0.4%) | 5 (0.6%) | 5 (0.5) |
| | White | 25 (2.5%) | 71 (7%) | 72 (9%) | 80 (8) |
| | Not specified | 894 | 959 (91%) | 714 | 889 (91) |
| | | (95%) | | (90%) | |
| Handed | Right | 616 | 852 (95%) | 586 | 536 (94) |
| | Left | (95%) | 37 (4%) | (94%) | 24 (4) |
| | Ambidextrous | 25 (5%) | 12 (1%) | 29 (5%) | 10 (2) |
| | Missing | 7 (1%) | 155 | 8 (1%) | 404 |
| | | 295 | | 168 | |
| Hemisphere | Left | 627 | 725 (90%) | 618 | 645 (98) |
| | Right | (90%) | 61 (8%) | (89%) | 11 (2) |
| | Bilateral | 55 (8%) | 20 (2%) | 59 (9%) | 5 (0.7) |

| | | | | | |
|-----------------------|--------------------|--------------------|----------------------|-----------------------------|----------------------|
| | Missing | 18 (3%) 243 | 250 | 16 (2%) 98 | 313 |
| Type | ICH | 90 (10%) | 128 (12%) | 76 | 70 (7 |
| | Ischaemic | 628 | 671 (64%) | (10%) | 704 (74 |
| | Mixed | (68%) | 0 | 502 | 0 |
| | SAH | 29 (3%) | 15 (1%) | (64%) | 9 (1 |
| | Unclassified | 14 (1.5%) | 227 (22%) | 0 | 164 (17 |
| | Missing | 162 (18%) 20 | 15 | 8 (1%) 201 (26%) 4 | 19 |
| Living context | Alone | 55 (34%) | 19 (18%) | 23 | 86 (34 |
| | Formal care | 7 (4%) | 30 (29%) | (21%) | 30 (12 |
| | Living with others | 102 (62%) | 55 (53%) 952 | 30 (27%) | 136 (54 721 |
| | Missing | 776 | | 58 (52%) 680 | |
| | Language | Arabic | 29 (3%) | 0 | 0 |
| Danish | | 19 (2%) | 0 | 0 | 19 (2%) |
| Dutch | | 0 | 292 (28%) | 172 | 171 (18%) |
| English | | 329 (35%) | 278 (26%) 31 (3%) | (22%) 309 | 357 (37%) 23 (2%) |
| Finnish | | 36 (4%) | 0 | (39%) | 0 |
| French | | 99 (11%) | 175 (17%) | 36 (5%) | 112 (12%) |
| German | | 128 (14%) | 0 115 (11%) | 0 42 (5%) | 0 0 |
| Greek | | 0 | 58 (5%) | 38 (5%) | 0 |
| Italian | | 0 | 21 (2%) | 50 (6%) | 0 |
| Japanese | | 24 (3%) | 39 (4%) | 36 (5%) | 0 |
| Korean | | 21 (2%) | 25 (2%) | 21 (3%) | 23 (2%) |
| Norwegian | | 39 (4%) | 0 | 39 (5%) | 0 |
| Portuguese | | 25 (3%) | 22 (2%) | 25 (3%) | 231 (24%) |
| Spanish | | 0 | | 10 (1%) | |
| Swedish | | 194 (21%) | | 13 (2%) | |

Supplement 3) Figure I: Transformed language domain scores, stratified by contributing assessment tool

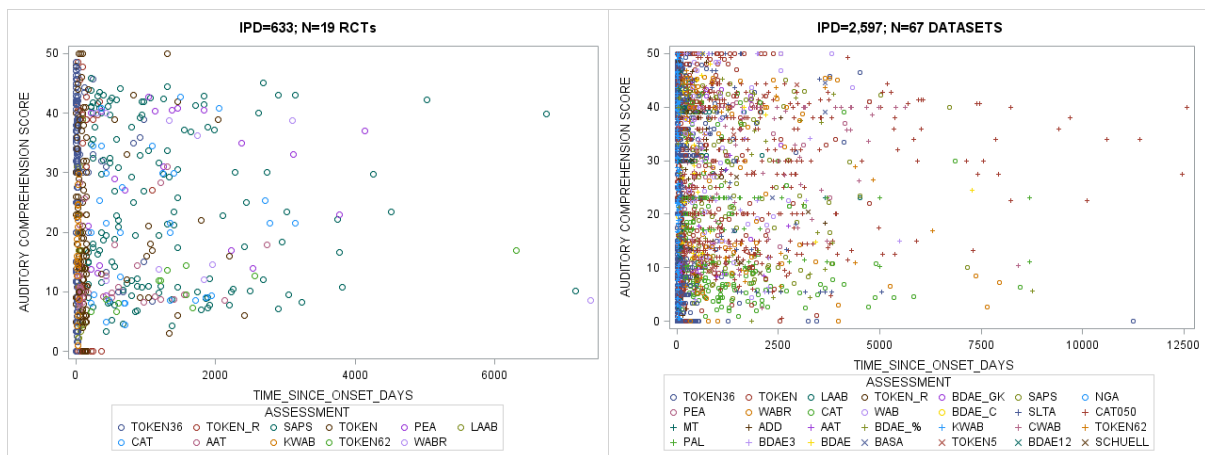
a) Overall-language-ability

Overall Language Ability: Standardised scores stratified by assessment tools used



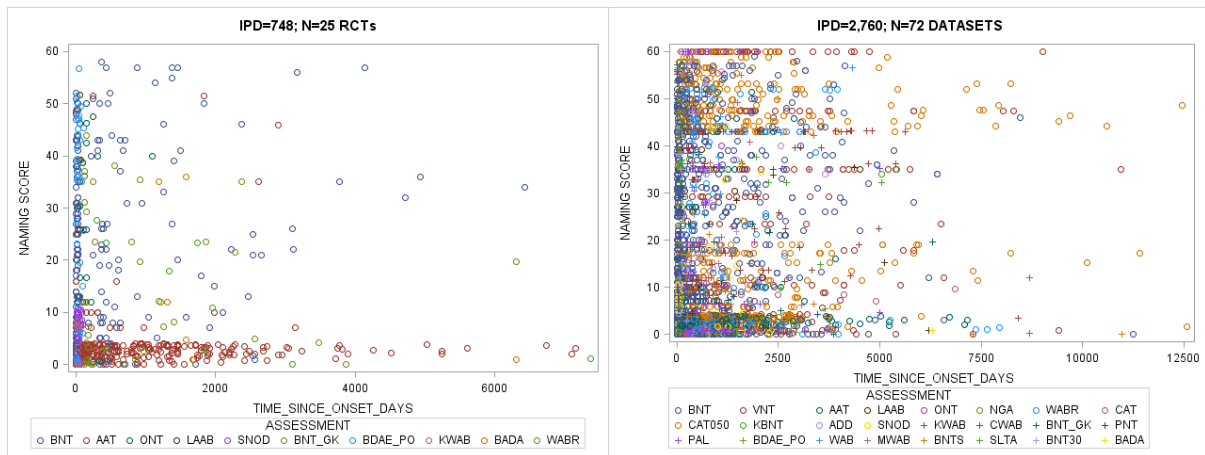
b) Auditory comprehension

Auditory comprehension: Standardised scores stratified by assessment tools used



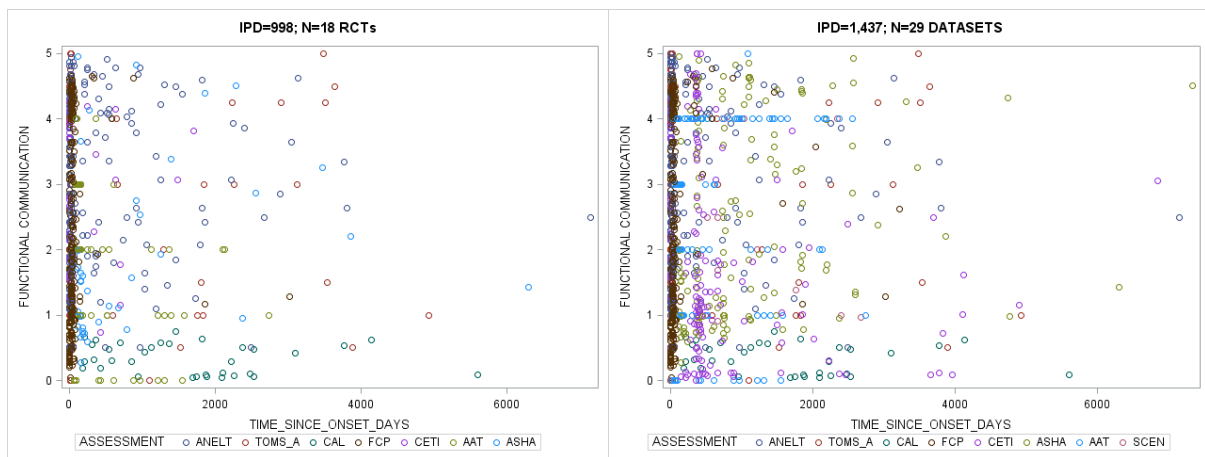
c) Naming

Naming: Standardised scores stratified by assessment tools used



d) Functional communication: observer-rated activity

Functional Communication: Standardised scores stratified by assessment tools used



The spread of data points overlapped, with no clustering of transformed scores from contributing assessment tools. The transformed values generated by each of the assessment tools were therefore considered to be valid and fell within an expected range.

Supplement 4a) Table III: Associations between demographic factors and overall language ability (WAB-AQ)

| Variable | RCTs | IPD* | Estimate of means | Lower Quartile | Upper Quartile | All Studies Designs | IPD | Estimate of means | Lower Quartile | Upper Quartile |
|---------------------|-------------|-------------|------------------------------|---------------------------|---------------------------|------------------------------------|------------|------------------------------|---------------------------|---------------------------|
| Female | 11 | 206 | 14.25 | 9.01 | 19.50 | 16 | 250 | 14.15 | 9.66 | 18.65 |
| Male | 11 | 276 | 12.30 | 7.16 | 17.44 | 17 | 378 | 12.17 | 7.89 | 16.46 |
| <55 years | 11 | 136 | 15.43 | 9.95 | 20.91 | 17 | 192 | 16.51 | 10.03 | 22.99 |
| 56-65 years | 11 | 141 | 12.36 | 6.90 | 17.82 | 16 | 178 | 12.88 | 6.38 | 19.38 |
| 66-75 | 10 | 96 | 11.49 | 5.73 | 17.25 | 14 | 123 | 13.22 | 6.69 | 19.75 |
| >75 | 7 | 109 | 13.81 | 7.82 | 19.81 | 9 | 135 | 13.83 | 6.94 | 20.73 |
| 0-28 days | 8 | 260 | 19.14 | 13.89 | 24.39 | 9 | 335 | 20.99 | 13.78 | 28.20 |
| 1-3 months | 6 | 64 | 16.17 | 10.20 | 22.13 | 8 | 71 | 16.44 | 9.02 | 23.86 |
| 3-6 months | 3 | 16 | 9.60 | 0.07 | 19.14 | 5 | 19 | 9.58 | -0.07 | 19.22 |
| >6 months | 4 | 142 | 8.19 | -0.12 | 16.50 | 8 | 203 | 9.44 | 2.81 | 16.07 |
| | | | | | Random (no) | 6 | 146 | 14.17 | 7.36 | 20.99 |
| | | | | | Random (yes) | 11 | 482 | 12.37 | 7.70 | 17.04 |

*Individual participant data

Supplement 4b) Table IV: Associations between demographic factors and auditory comprehension (AAT-TT)

| Variable | RCTs | IPD* | Estimate of means | Lower Quartile | Upper Quartile | All Study Designs | IPD | Estimate of means | Lower Quartile | Upper Quartile |
|---------------------|-------------|-------------|------------------------------|---------------------------|---------------------------|------------------------------|------------|------------------------------|---------------------------|---------------------------|
| Female | 16 | 211 | 3.82 | 0.98 | 6.66 | 22 | 239 | 4.92 | 2.15 | 7.70 |
| Male | 16 | 329 | 3.10 | 0.35 | 5.85 | 21 | 402 | 4.35 | 1.65 | 7.04 |
| <55 years | 16 | 178 | 6.05 | 3.16 | 8.94 | 22 | 232 | 7.05 | 4.32 | 9.77 |
| 56-65 years | 16 | 182 | 2.83 | -0.04 | 5.71 | 22 | 212 | 4.31 | 1.52 | 7.09 |
| 66-75 | 15 | 116 | 3.50 | 0.46 | 6.53 | 19 | 131 | 4.61 | 1.65 | 7.58 |
| >75 | 12 | 64 | 1.46 | -1.90 | 4.82 | 14 | 66 | 2.57 | -0.74 | 5.88 |
| 0-28 days | 6 | 139 | 5.25 | 1.69 | 8.82 | 6 | 139 | 6.33 | 2.57 | 10.08 |
| 1-3 months | 9 | 97 | 4.27 | 1.07 | 7.47 | 10 | 106 | 5.16 | 1.99 | 8.34 |
| 3-6 months | 6 | 61 | 2.88 | -1.81 | 7.56 | 8 | 65 | 4.32 | 0.04 | 8.60 |
| >6 months | 9 | 243 | 1.44 | -1.85 | 4.72 | 15 | 331 | 2.73 | 0.12 | 5.34 |
| | | | | | Random (no) | 5 | 101 | 6.11 | 1.65 | 10.57 |
| | | | | | Random (yes) | 16 | 540 | 3.16 | 0.67 | 5.65 |

*Individual participant data

Supplement 4c) Table V: Associations between demographic factors and naming (BNT)

| Variable | RCTs | IPD* | Estimate of means | Lower Quartile | Upper Quartile | All Study Designs | IPD | Estimate of means | Lower Quartile | Upper Quartile |
|---------------------|-------------|-------------|------------------------------|---------------------------|---------------------------|------------------------------|------------|------------------------------|---------------------------|---------------------------|
| Female | 13 | 165 | 6.92 | 2.47 | 11.36 | 21 | 219 | 7.54 | 3.84 | 11.23 |
| Male | 13 | 220 | 6.70 | 2.33 | 11.07 | 21 | 333 | 7.73 | 4.10 | 11.36 |
| <55 years | 13 | 103 | 9.31 | 4.71 | 13.90 | 21 | 181 | 9.72 | 6.00 | 13.44 |
| 56-65 years | 13 | 124 | 7.34 | 2.79 | 11.90 | 21 | 169 | 8.08 | 4.30 | 11.87 |
| 66-75 | 12 | 97 | 6.16 | 1.48 | 10.84 | 18 | 134 | 7.35 | 3.48 | 11.22 |
| >75 | 11 | 61 | 4.42 | -0.56 | 9.40 | 15 | 68 | 5.38 | 1.11 | 9.66 |
| 0-28 days | 5 | 129 | 11.12 | 5.71 | 16.54 | 6 | 138 | 11.35 | 6.62 | 16.09 |
| 1-3 months | 8 | 93 | 7.74 | 2.89 | 12.59 | 10 | 116 | 8.70 | 4.56 | 12.84 |
| 3-6 months | 6 | 70 | 4.26 | -1.58 | 10.10 | 9 | 92 | 5.70 | 1.17 | 10.23 |
| >6 months | 7 | 93 | 4.11 | -1.08 | 9.29 | 15 | 206 | 4.78 | 1.08 | 8.48 |
| | | | | | Random (no) | 8 | 167 | 8.56 | 2.88 | 14.24 |
| | | | | | Random (yes) | 13 | 385 | 6.71 | 2.57 | 10.85 |

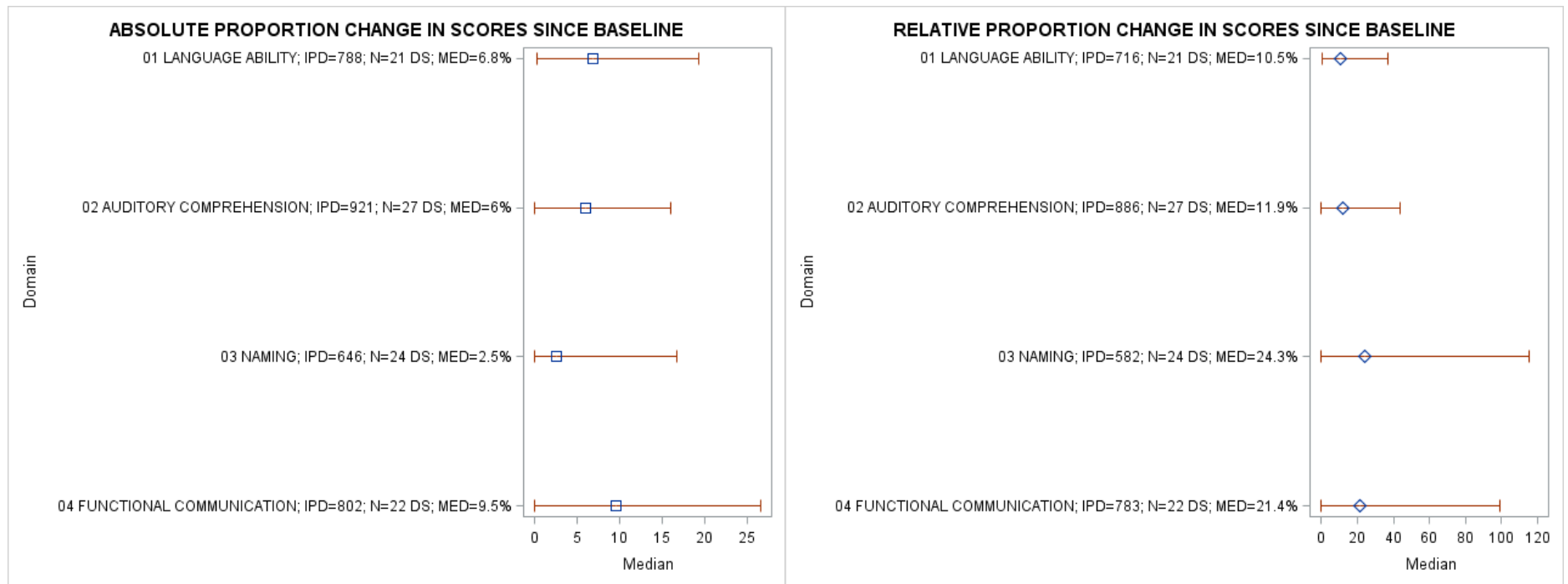
*Individual participant data

Supplement 4d) Table VI: Associations between demographic factors and functional communication (AAT-SC)

| Variable | RCTs | IPD* | Estimate of means | Lower Quartile | Upper Quartile | All Study Designs | IP D | Estimate of means | Lower Quartile | Upper Quartile |
|-------------|------|------|----------------------|-------------------|-------------------|-------------------------|---------|----------------------|----------------|-------------------|
| Female | 14 | 236 | 0.76 | 0.48 | 1.03 | 18 | 275 | 0.69 | 0.40 | 0.98 |
| Male | 14 | 296 | 0.57 | 0.30 | 0.84 | 19 | 372 | 0.54 | 0.26 | 0.83 |
| <55 years | 14 | 147 | 0.75 | 0.46 | 1.04 | 19 | 181 | 0.69 | 0.39 | 0.99 |
| 56-65 years | 13 | 145 | 0.70 | 0.41 | 1.00 | 18 | 170 | 0.66 | 0.36 | 0.96 |
| 66-75 | 14 | 121 | 0.55 | 0.25 | 0.85 | 18 | 148 | 0.52 | 0.21 | 0.82 |
| >75 | 12 | 119 | 0.65 | 0.34 | 0.96 | 15 | 148 | 0.61 | 0.30 | 0.92 |
| 0-28 days | 6 | 232 | 1.05 | 0.70 | 1.40 | 7 | 277 | 0.97 | 0.61 | 1.34 |
| 1-3 months | 5 | 68 | 0.87 | 0.51 | 1.23 | 6 | 70 | 0.83 | 0.46 | 1.21 |
| 3-6 months | 4 | 62 | 0.40 | -0.06 | 0.87 | 5 | 63 | 0.37 | -0.10 | 0.83 |
| >6 months | 7 | 170 | 0.33 | 0.00 | 0.66 | 11 | 237 | 0.30 | 0.01 | 0.60 |
| | | | | | Random (no) | 5 | 115 | 0.57 | 0.11 | 1.03 |
| | | | | | Random (yes) | 14 | 532 | 0.67 | 0.41 | 0.94 |

*Individual participant data

Supplement 5) Figure II: Absolute and Relative Proportion of Change from Baseline in Language Domain Scores across All Study Designs



Key: IPD= Individual Participant Data; N=number of datasets; MED=median proportion of recovery