**Supplementary Table 1.** Characteristics and HVLT-R summary scores for other participant groups not included in the main analyses.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Asians (n=128)** | | | **Multiracial (n=56)** | | | **Completed in Spanish (n=56)** | | |
| Age, mean (SD), range | 74.3 (3.6), 70.3 to 90.4 | | | 74.5 (3.6), 70.2 to 84.2 | | | 75.1 (4.7), 65.1 to 89.3 | | |
| *n* (%) |  | | |  | | |  | | |
| * *70-74* | 85 (66.4) | | | 37 (66.1) | | | 23 (41.1) | | |
| * *≥ 75* | 43 (33.6) | | | 19 (33.9) | | | 33 (58.9) | | |
| Female, n (%) | 71 (55.5) | | | 31 (55.4) | | | 41 (73.2) | | |
| Education, n (%) |  | | |  | | |  | | |
| * 0 to 12 years | 40 (31.3) | | | 29 (51.8) | | | 48 (85.7) | | |
| * ≥ 12 years | 88 (68.8) | | | 27 (48.2) | | | 8 (14.3) | | |
| **Component** | **Range** | **Mean** | **S.D.** | **Range** | **Mean** | **S.D.** | **Range** | **Mean** | **S.D.** |
| Immediate Recall |  |  |  |  |  |  |  |  |  |
| Trial 1 | 2 to 11 | 5.4 | 1.8 | 2 to 11 | 5.6 | 2.2 | 2 to 9 | 4.8 | 1.6 |
| Trial 2 | 4 to 12 | 7.9 | 2.0 | 4 to 12 | 8.7 | 2.1 | 3 to 10 | 7.0 | 1.7 |
| Trial 3 | 4 to 12 | 9.0 | 1.8 | 5 to 12 | 9.4 | 2.0 | 4 to 12 | 8.3 | 1.5 |
| Total Recall | 11 to 35 | 22.2 | 4.9 | 13 to 33 | 23.7 | 5.3 | 9 to 29 | 20.2 | 4.1 |
| Learning | -1 to 9 | 3.7 | 1.7 | 0 to 9 | 4.0 | 2.0 | 1 to 7 | 3.6 | 1.4 |
| Delayed Recall | 0 to 12 | 7.5 | 2.7 | 2 to 12 | 8.3 | 2.5 | 3 to 10 | 6.8 | 1.8 |
| * Retention, % | 0 to 125 | 81.7 | 21.0 | 29 to 117 | 85.4 | 16.5 | 37.5 to 150 | 80.8 | 19.8 |
|  | **Range** | **Median** | **IQR** | **Range** | **Median** | **IQR** | **Range** | **Median** | **IQR** |
| Delayed Recognition |  |  |  |  |  |  |  |  |  |
| True positive responses | 7 to 12 | 12 | 11 to 12 | 8 to 12 | 12 | 11 to 12 | 1 to 12 | 11 | 10 to 12 |
| False-positive errors | 0 to 9 | 0 | 0 to 0.5 | 0 to 2 | 0 | 0 to 0 | 0 to 9 | 0 | 0 to 1 |
| * RDI | 3 to 12 | 11 | 10 to 12 | 8 to 12 | 12 | 10 to 12 | 0 to 12 | 10 | 8 to 12 |

S.D: standard deviation; n: number; IQR: Interquartile range (25th to 75th percentile); RDI: Recognition Discrimination Index.

Total Recall is calculated as the sum of the three learning trials. Learning is calculated as the higher score from trial 2 or 3, minus the score from trial 1. % Retention is calculated as the delayed recall trial score divided by the higher of learning trial 2 or 3, multiplied by 100. RDI is calculated as the difference between the number of correct responses and false positives on the delayed recognition trial.

**Supplementary Table 2.** Summary scores for the HVLT-R across the ethno-racial groups where normative data is presented (n=18,541).

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **White Australians**  (n=16,251) | | | **White U.S.**  (n=1,082) | | | **African-American U.S.** (n=894) | | | **Hispanic/Latino U.S.** (n=314) | | |
| **Component** | **Range** | **Mean** | **S.D.** | **Range** | **Mean** | **S.D.** | **Range** | **Mean** | **S.D.** | **Range** | **Mean** | **S.D.** |
| Immediate Recall |  |  |  |  |  |  |  |  |  |  |  |  |
| Trial 1 | 0 to 12 | 5.6 | 2.0 | 1 to 12 | 5.8 | 1.9 | 1 to 11 | 5.6 | 2.0 | 1 to 11 | 5.2 | 1.9 |
| Trial 2 | 0 to 12 | 7.9 | 2.1 | 2 to 12 | 8.3 | 2.0 | 3 to 12 | 7.7 | 2.1 | 1 to 12 | 7.7 | 2.1 |
| Trial 3 | 0 to 12 | 8.9 | 2.1 | 3 to 12 | 9.4 | 2.0 | 2 to 12 | 8.7 | 2.1 | 2 to 12 | 8.8 | 2.1 |
| Total Recall | 5 to 36 | 22.5 | 5.5 | 8 to 36 | 23.4 | 5.2 | 8 to 35 | 22.0 | 5.4 | 4 to 35 | 21.7 | 5.3 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Learning | -4 to 11 | 3.5 | 1.7 | -2 to 9 | 3.8 | 1.7 | -1 to 9 | 3.3 | 1.7 | 0 to 9 | 3.8 | 1.7 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Delayed Recall | 0 to 12 | 7.7 | 2.8 | 0 to 12 | 8.4 | 2.7 | 0 to 12 | 7.4 | 2.9 | 0 to 12 | 7.6 | 2.5 |
| * Retention, % | 0 to 300 | 83.1 | 22.3 | 0 to 150 | 86.5 | 20.0 | 0 to 160 | 81.4 | 24.6 | 0 to 133 | 84.1 | 19.0 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **Range** | **Median** | **IQR** | **Range** | **Median** | **IQR** | **Range** | **Median** | **IQR** | **Range** | **Median** | **IQR** |
| Delayed Recognition |  |  |  |  |  |  |  |  |  |  |  |  |
| True positive responses | 0 to 12 | 12 | 11-12 | 0 to 12 | 12 | 11-12 | 0 to 12 | 11 | 10-12 | 0 to 12 | 11 | 11-12 |
| False-positive errors | 0 to 12 | 0 | 0-0 | 0 to 12 | 0 | 0-1 | 0 to 12 | 0 | 0-1 | 0 to 9 | 0 | 0-1 |
| * RDI | -12 to 12 | 11 | 10-12 | -1 to 12 | 11 | 10-12 | -2 to 12 | 11 | 9-12 | 0 to 12 | 11 | 10-12 |

S.D: standard deviation; IQR: Interquartile range (25th to 75th percentile); RDI: Recognition Discrimination Index.

Total Recall is calculated as the sum of the three learning trials. Learning is calculated as the higher score from trial 2 or 3, minus the score from trial 1. % Retention is calculated as the delayed recall trial score divided by the higher of learning trial 2 or 3, multiplied by 100. RDI is calculated as the difference between the number of correct responses and false positives on the delayed recognition trial.

**Supplementary Table 3.** Multivariate linear regression models for the association between participant characteristics and HVLT-R scores (n=18,541).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Total Recall** | | **Learning** | | **Delayed Recall** | | **% Retention** | | **RDI** | |
|  | **Β (S.E)** | **p** | **Β (S.E)** | **p** | **Β (S.E)** | **p** | **Β (S.E)** | **p** | **Β (S.E)** | **p** |
| *Ethno-racial group:* |  |  |  |  |  |  |  |  |  |  |
| White Australians | Reference |  | Reference |  | Reference |  | Reference |  | Reference |  |
| White U.S. | -0.72 (0.17) | 0.67 | 0.22 (0.06) | <0.0001 | 0.21 (0.09) | 0.04 | 1.87 (0.71) | 0.008 | -0.17 (0.06) | 0.003 |
| African-American U.S. | -2.38 (0.18) | <0.0001 | -0.27 (0.07) | <0.0001 | -1.17 (0.09) | <0.0001 | -5.38 (0.78) | <0.0001 | -0.84 (0.07) | <0.0001 |
| Hispanic/Latino U.S. | -1.83 (0.30) | <0.0001 | 0.21 (0.10) | 0.03 | -0.59 (0.15) | <0.0001 | -1.38 (1.26) | 0.27 | -0.34 (0.10) | 0.001 |
|  |  |  |  |  |  |  |  |  |  |  |
| Male | Reference |  | Reference |  | Reference |  | Reference |  | Reference |  |
| Female | 2.47 (0.08) | <0.0001 | 0.13 (0.03) | <0.0001 | 1.10 (0.04) | <0.0001 | 4.66 (0.33) | <0.0001 | 0.48 (0.03) | <0.0001 |
|  |  |  |  |  |  |  |  |  |  |  |
| Age, years | -0.27 (0.01) | <0.0001 | -0.006 (0.003) | 0.05 | -0.13 (0.004) | <0.0001 | -0.63 (0.03) | <0.0001 | -0.06 (0.002) | <0.0001 |
|  |  |  |  |  |  |  |  |  |  |  |
| Education: < 9 years | Reference |  | Reference |  | Reference |  | Reference |  | Reference |  |
| Education: 9-11 years | 1.26 (0.12) | <0.0001 | 0.02 (0.04) | 0.64 | 0.55 (0.06) | <0.0001 | 2.17 (0.50) | <0.0001 | 0.28 (0.04) | <0.0001 |
| Education: 12 years | 1.66 (0.15) | <0.0001 | 0.01 (0.05) | 0.79 | 0.65 (0.08) | <0.0001 | 2.19 (0.62) | <0.0001 | 0.23 (0.05) | <0.0001 |
| Education: 13-15 years | 2.24 (0.13) | <0.0001 | 0.06 (0.05) | 0.19 | 0.96 (0.07) | <0.0001 | 3.49 (0.57) | <0.0001 | 0.38 (0.05) | <0.0001 |
| Education: 16 years | 2.88 (0.16) | <0.0001 | 0.10 (0.05) | 0.05 | 1.21 (0.08) | <0.0001 | 4.32 (0.68) | <0.0001 | 0.37 (0.05) | <0.0001 |
| Education: 17+ years | 3.61 (0.14) | <0.0001 | 0.12 (0.05) | 0.009 | 1.62 (0.07) | <0.0001 | 6.45 (0.58) | <0.0001 | 0.56 (0.05) | <0.0001 |
|  |  |  |  |  |  |  |  |  |  |  |

S.E: standard error; n: number; RDI: Recognition Discrimination Index.

Total Recall is calculated as the sum of the three learning trials. Learning is calculated as the higher score from trial 2 or 3, minus the score from trial 1. % Retention is calculated as the delayed recall trial score divided by the higher of learning trial 2 or 3, multiplied by 100. RDI is calculated as the difference between the number of correct responses and false positives on the delayed recognition trial.

**Supplementary Table 4.** Multivariate linear regression models for the association between participant characteristics and HVLT-R scores in white Australian participants (n=16,251)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Total Recall** | | **Learning** | | **Delayed Recall** | | **% Retention** | | **RDI** | |
|  | **Β (S.E)** | **p** | **Β (S.E)** | **p** | **Β (S.E)** | **p** | **Β (S.E)** | **p** | **Β (S.E)** | **p** |
|  |  |  |  |  |  |  |  |  |  |  |
| Male | Reference |  | Reference |  | Reference |  | Reference |  | Reference |  |
| Female | 2.44 (0.08) | <0.0001 | 0.11 (0.03) | <0.0001 | 1.08 (0.04) | <0.0001 | 4.67 (0.35) | <0.0001 | 0.47 (0.03) | <0.0001 |
|  |  |  |  |  |  |  |  |  |  |  |
| Age, years | -0.28 (0.01) | <0.0001 | -0.004 (0.003) | 0.21 | -0.13 (0.005) | <0.0001 | -0.66 (0.04) | <0.0001 | -0.06 (0.003) | <0.0001 |
|  |  |  |  |  |  |  |  |  |  |  |
| Education: < 9 years | Reference |  | Reference |  | Reference |  | Reference |  | Reference |  |
| Education: 9-11 years | 1.27 (0.12) | <0.0001 | 0.01 (0.04) | 0.77 | 0.55 (0.06) | <0.0001 | 2.17 (0.51) | <0.0001 | 0.27 (0.04) | <0.0001 |
| Education: 12 years | 1.70 (0.16) | <0.0001 | 0.01 (0.05) | 0.90 | 0.65 (0.08) | <0.0001 | 2.15 (0.67) | 0.001 | 0.20 (0.05) | <0.0001 |
| Education: 13-15 years | 2.22 (0.14) | <0.0001 | 0.05 (0.05) | 0.27 | 0.98 (0.07) | <0.0001 | 3.78 (0.60) | <0.0001 | 0.36 (0.05) | <0.0001 |
| Education: 16 years | 2.82 (0.17) | <0.0001 | 0.07 (0.06) | 0.07 | 1.21 (0.09) | <0.0001 | 4.66 (0.74) | <0.0001 | 0.33 (0.06) | <0.0001 |
| Education: 17+ years | 3.58 (0.14) | <0.0001 | 0.09 (0.06) | <0.0001 | 1.60 (0.07) | <0.0001 | 6.49 (0.61) | <0.0001 | 0.54 (0.05) | <0.0001 |

S.E.: standard error; n: number; IQR: Interquartile range (25th to 75th percentile); RDI: Recognition Discrimination Index.

Total Recall is calculated as the sum of the three learning trials. Learning is calculated as the higher score from trial 2 or 3, minus the score from trial 1. % Retention is calculated as the delayed recall trial score divided by the higher of learning trial 2 or 3, multiplied by 100. RDI is calculated as the difference between the number of correct responses and false positives on the delayed recognition trial.

**Supplementary Table 5.** Multivariate linear regression for the association between characteristics and HVLT-R scores in US participants.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Total Recall** | | **Learning** | | **Delayed Recall** | | **% Retention** | | **RDI** | |
|  | **Β (S.E)** | **p** | **Β (S.E)** | **p** | **Β (S.E)** | **p** | **Β (S.E)** | **p** | **Β (S.E)** | **p** |
| ***Whites*** |  |  |  |  |  |  |  |  |  |  |
| Age, years | -0.21 (0.03) | <0.0001 | 0.003 (0.01) | 0.80 | -0.11 (0.02) | <0.0001 | -0.59 (0.13) | <0.0001 | -0.04 (0.01) | <0.0001 |
| Male | Reference |  | Reference |  | Reference |  | Reference |  | Reference |  |
| Female | 2.87 (0.03) | <0.0001 | 0.26 (0.11) | 0.02 | 1.21 (0.17) | <0.0001 | 3.53 (1.29) | 0.006 | 0.65 (0.12) | <0.0001 |
| Education: ≤12 years | Reference |  | Reference |  | Reference |  | Reference |  | Reference |  |
| Education: years >12 | 1.58 (0.39) | <0.0001 | -0.07 (0.14) | 0.62 | 0.50 (0.20) | 0.01 | 0.21 (1.54) | 0.89 | 0.10 (0.14) | 0.51 |
|  |  |  |  |  |  |  |  |  |  |  |
| ***African Americans*** |  |  |  |  |  |  |  |  |  |  |
| Age, years | -0.20 (0.03) | <0.0001 | -0.03 (0.01) | 0.007 | -0.09 (0.02) | <0.0001 | -0.42 (0.15) | 0.005 | 0.61 (0.27) | 0.02 |
| Age2, years |  |  |  |  |  |  |  |  | -0.005 (0.002) | 0.01 |
| Male | Reference |  | Reference |  | Reference |  | Reference |  | Reference |  |
| Female | 2.64 (0.37) | <0.0001 | 0.29 (0.12) | 0.02 | 1.41 (0.20) | <0.0001 | 6.77 (1.74) | <0.0001 | 0.72 (0.16) | <0.0001 |
| Education: ≤12 years | Reference |  | Reference |  | Reference |  | Reference |  | Reference |  |
| Education: years >12 | 1.18 (0.37) | 0.002 | 0.49 (0.12) | <0.0001 | 0.40 (0.20) | 0.05 | -0.51 (1.76) | 0.77 | 0.33 (0.16) | 0.05 |
|  |  |  |  |  |  |  |  |  |  |  |
| ***Hispanic/Latinos*** |  |  |  |  |  |  |  |  |  |  |
| Age, years | -0.25 (0.06) | <0.0001 | -0.03 (0.02) | 0.11 | -0.11 (0.03) | <0.0001 | -0.37 (0.21) | 0.08 | -0.09 (0.02) | <0.0001 |
| Male | Reference |  | Reference |  | Reference |  | Reference |  | Reference |  |
| Female | 2.31 (0.57) | <0.0001 | 0.06 (0.20) | 0.77 | 0.89 (0.27) | 0.001 | 1.48 (2.21) | 0.51 | 0.53 (0.20) | 0.009 |
| Education: ≤12 years | Reference |  | Reference |  | Reference |  | Reference |  | Reference |  |
| Education: years >12 | 3.32 (0.56) | <0.0001 | 0.15 (0.20) | 0.46 | 1.29 (0.27) | <0.0001 | 3.40 (2.20) | 0.12 | 0.52 (0.20) | 0.01 |

S.E.: standard error; n: number; RDI: Recognition Discrimination Index; Age2: squared age, it has only been shown for the regression model where it was significant.

Total Recall is calculated as the sum of the three learning trials. Learning is calculated as the higher score from trial 2 or 3, minus the score from trial 1. % Retention is calculated as the delayed recall trial score divided by the higher of learning trial 2 or 3, multiplied by 100. RDI is calculated as the difference between the number of correct responses and false positives on the delayed recognition trial.

**Supplementary Table 6.** Participant characteristics and HVLT-R summary scores for individuals with incident dementia in the first three years after study recruitment.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Incident dementia1 (n=259)** | | | **White Australians with incident dementia (n=213)** | | |
| Age, mean (SD), range | 78.3 (5.4), 65.8 to 92.0 | | | 78.6 (5.4), 70.0 to 92.0 | | |
| *n* (%) |  | | |  | | |
| * *65-69* | 7 (2.7) | | |  | | |
| * *70-74* | 75 (28.4) | | | 63 (29.6) | | |
| * *≥ 75* | 182 (68.9) | | | 150 (70.4) | | |
| Female, n (%) | 138 (52.3) | | | 105 (49.3) | | |
| Education, n (%) |  | | |  | | |
| * 0 to 12 years | 160 (60.6) | | | 144 (67.6) | | |
| * ≥ 12 years | 104 (39.4) | | | 69 (32.4) | | |
|  |  | | |  | | |
| **Component** | **Range** | **Mean** | **S.D.** | **Range** | **Mean** | **S.D.** |
| Total Immediate Recall | 5 to 33 | 16.4 | 5.2 | 5 to 33 | 16.1 | 5.0 |
| Learning | -1 to 7 | 3.1 | 1.6 | -1 to 7 | 3.2 | 1.6 |
| Delayed Recall | 0 to 12 | 4.6 | 2.9 | 0 to 11 | 4.5 | 2.7 |
| * Retention, % | 0 to 140 | 62.6 | 32.6 | 0 to 140 | 62.9 | 31.7 |
|  |  |  |  |  |  |  |
|  | **Range** | **Median** | **IQR** | **Range** | **Median** | **IQR** |
| * RDI | 0 to 12 | 9 | 7 to 11 | 0 to 12 | 9 | 7 to 11 |

**1**Includes 213 White Australians, 26 White U.S., 15 African American and 5 Hispanic/Latinos.

S.D: standard deviation; IQR: Interquartile range (25th to 75th percentile); RDI: Recognition Discrimination Index.

Total Recall is calculated as the sum of the three learning trials. Learning is calculated as the higher score from trial 2 or 3, minus the score from trial 1. % Retention is calculated as the delayed recall trial score divided by the higher of learning trial 2 or 3, multiplied by 100. RDI is calculated as the difference between the number of correct responses and false positives on the delayed recognition trial.

**Supplementary Table 7:** Age, education and gender specific reference values, mean (SD), in Australian Whites, excluding 213 individuals with an adjudicated dementia diagnosis within three years of baseline cognitive testing (n=16 038).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Age, years** | **Education <9 years** | | **Education 9-11 years** | | **Education 12 years** | | **Education 13-15 years** | | **Education ≥16 years** | |
|  | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** |
| 70-74 | n=658 | n=767 | n=1,306 | n=1,767 | n=439 | n=556 | n=666 | n=776 | n=1,235 | n=1,144 |
| 75-79 | n=346 | n=454 | n=589 | n=879 | n=195 | n=262 | n=248 | n=381 | n=444 | n=452 |
| 80+ | n=229 | n=326 | n=273 | n=512 | n=122 | n=166 | n=179 | n=199 | n=250 | n=218 |
| **Total Recall** | |  |  |  |  |  |  |  |  |  |
| 70-74 | 20.0 (4.8) | 22.7 (4.8) | 21.7 (5.1) | 23.9 (5.0) | 21.8 (5.5) | 24.5 (5.2) | 22.4 (5.2) | 25.2 (5.0) | 23.8 (5.4) | 26.0 (5.0) |
| 75-79 | 19.2 (5.0) | 21.2 (5.3) | 20.3 (5.1) | 22.8 (5.2) | 20.8 (5.3) | 23.3 (5.3) | 20.9 (5.5) | 23.6 (5.5) | 22.5 (5.3) | 24.4 (5.3) |
| 80+ | 17.5 (4.7) | 20.0 (5.4) | 19.1 (5.3) | 20.8 (5.3) | 19.1 (5.2) | 21.5 (5.2) | 19.6 (5.1) | 21.9 (5.3) | 20.0 (5.1) | 23.0 (5.4) |
| **Learning** | |  |  |  |  |  |  |  |  |  |
| 70-74 | 3.4 (1.7) | 3.6 (1.7) | 3.4 (1.6) | 3.6 (1.7) | 3.5 (1.7) | 3.5 (1.7) | 3.6 (1.7) | 3.6 (1.8) | 3.5 (1.7) | 3.5 (1.7) |
| 75-79 | 3.3 (1.8) | 3.6 (1.8) | 3.4 (1.7) | 3.6 (1.7) | 3.5 (1.7) | 3.3 (1.7) | 3.3 (1.7) | 3.6 (1.7) | 3.6 (1.7) | 3.6 (1.7) |
| 80+ | 3.4 (1.8) | 3.5 (1.8) | 3.2 (1.7) | 3.7 (1.8) | 3.7 (1.8) | 3.4 (1.8) | 3.3 (1.7) | 3.7 (1.9) | 3.5 (1.7) | 3.6 (1.6) |
| **DELAYED RECALL** | |  |  |  |  |  |  |  |  |  |
| 70-74 | 6.7 (2.6) | 7.8 (2.5) | 7.4 (2.7) | 8.4 (2.5) | 7.3 (2.9) | 8.6 (2.5) | 7.7 (2.8) | 9.0 (2.5) | 8.3 (2.7) | 9.3 (2.4) |
| 75-79 | 6.2 (2.7) | 7.3 (2.7) | 6.8 (2.8) | 7.8 (2.7) | 7.0 (2.6) | 8.0 (2.7) | 7.0 (2.8) | 8.2 (2.7) | 7.7 (2.8) | 8.6 (2.6) |
| 80+ | 5.5 (2.6) | 6.6 (2.7) | 6.1 (2.9) | 7.0 (2.9) | 6.0 (3.0) | 7.0 (2.7) | 6.3 (2.9) | 7.5 (2.7) | 6.7 (2.9) | 8.0 (2.9) |
| **RETENTION** | |  |  |  |  |  |  |  |  |  |
| 70-74 | 80.2 (23.5) | 83.9 (20.6) | 82.6 (22.4) | 86.2 (19.6) | 80.9 (23.6) | 87.5 (20.2) | 83.4 (22.4) | 88.7 (18.3) | 85.9 (19.3) | 89.8 (17.1) |
| 75-79 | 75.8 (26.4) | 81.9 (23.4) | 79.5 (23.9) | 83.8 (21.6) | 80.4 (22.3) | 84.5 (21.1) | 80.7 (22.5) | 84.9 (18.6) | 829. (21.7) | 87.6 (18.9) |
| 80+ | 72.1 (26.6) | 78.8 (27.5) | 74.6 (27.0) | 79.3 (25.7) | 72.3 (27.7) | 78.8 (22.9) | 75.3 (26.3) | 82.0 (22.5) | 78.2 (24.6) | 84.3 (21.0) |

n: number.

Total Recall is calculated as the sum of the three learning trials. Learning is calculated as the higher score from trial 2 or 3, minus the score from trial 1. % Retention is calculated as the delayed recall trial score divided by the higher of learning trial 2 or 3, multiplied by 100.

**Supplementary Table 8.** Age, education and gender specific reference values, mean (SD) for HVLT-R in U.S. whites (n=1 056), African Americans (n=879) and Hispanic/Latinos (n=365), excluding 46 individuals with an adjudicated dementia diagnosis within three years of baseline cognitive testing.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Education 0-12 years** | | **Education >12 years** | |
| **TOTAL RECALL** | **Male** | **Female** | **Male** | **Female** |
| **U.S. White** |  |  |  |  |
| 70-74 | 21.0 (5.5), n=28 | 23.6 (5.0), n=55 | 22.7 (4.9), n=129 | 25.6 (4.8), n=267 |
| 75-85+ | 19.0 (5.2), n=31 | 23.1 (4.8), n=84 | 21.4 (5.0), n=151 | 24.1 (4.8), n=311 |
| **U.S. African American** | |  |  |  |
| 65-69 | 19.9 (5.1), n=53 | 22.8 (5.5), n=63 | 21.4 (4.4), n=99 | 24.5 (4.7), n=181 |
| 70-85+ | 19.4 (5.8), n=59 | 21.6 (6.1), n=103 | 20.2 (5.1), n=86 | 22.2 (5.0), n=235 |
| **U.S. Hispanic/Latino** | |  |  |  |
| 65-69 | 20.2 (4.6), n=30 | 22.7 (4.7), n=65 | 24.7 (4.3), n=23 | 25.4 (4.2), n=38 |
| 70-85+ | 18.2 (4.7), n=46 | 19.8 (4.5), n=93 | 20.7 (4.5), n=34 | 23.4 (5.8), n=36 |
|  |  |  |  |  |
| **LEARNING** |  |  |  |  |
| **U.S. White** |  |  |  |  |
| 70-74 | 3.4 (1.7), n=28 | 4.2 (1.8), n=55 | 3.7 (1.9), n=129 | 3.8 (1.6), n=267 |
| 75-85+ | 3.5 (1.8), n=31 | 3.9 (1.7), n=84 | 3.6 (1.7), n=151 | 3.9 (1.7), n=311 |
| **U.S. African American** |  |  |  |  |
| 65-69 | 2.8 (1.6), n=53 | 3.7 (1.7), n=63 | 3.8 (1.7), n=99 | 3.5 (1.6), n=181 |
| 70-85+ | 2.6 (1.6), n=59 | 2.8 (1.4), n=103 | 2.9 (1.6), n=86 | 3.5 (1.8), n=235 |
| **U.S. Hispanic/Latino** |  |  |  |  |
| 65-69 | 3.9 (1.6), n=30 | 3.9 (1.8), n=65 | 3.9 (2.1), n=23 | 3.9 (1.8), n=38 |
| 70-85+ | 3.5 (1.5), n=46 | 3.5 (1.6), n=93 | 3.8 (1.6), n=34 | 3.9 (1.8), n=36 |
|  |  |  |  |  |
| **DELAYED RECALL** |  |  |  |  |
| **U.S. White** |  |  |  |  |
| 70-74 | 7.4 (2.3), n=28 | 8.5 (2.5), n=55 | 8.2 (2.3), n=129 | 9.3 (2.3), n=267 |
| 75-85+ | 6.9 (2.7), n=31 | 8.3 (2.5), n=84 | 7.4 (2.9), n=151 | 8.6 (2.5), n=311 |
| **U.S. African American** |  |  |  |  |
| 65-69 | 6.6 (2.7), n=53 | 8.0 (2.7), n=63 | 6.9 (2.5), n=99 | 8.6 (2.5), n=181 |
| 70-85+ | 6.3 (3.2), n=59 | 7.1 (3.2), n=103 | 6.2 (2.9), n=86 | 7.6 (2.7), n=235 |
| **U.S. Hispanic/Latino** |  |  |  |  |
| 65-69 | 7.0 (1.9), n=30 | 7.9 (2.3), n=65 | 8.6 (2.4), n=23 | 9.2 (2.1), n=38 |
| 70-85+ | 6.3 (1.1), n=46 | 6.8 (2.4), n=93 | 7.2 (2.5), n=34 | 8.1 (2.7), n=36 |
|  |  |  |  |  |
| **% RETENTION** |  |  |  |  |
| **U.S. White** |  |  |  |  |
| 70-74 | 87.0 (15.2), n=28 | 86.3 (16.7), n=55 | 88.3 (15.4), n=129 | 90.5 (15.8), n=267 |
| 75-85+ | 87.0 (23.4), n=31 | 87.2 (19.0), n=84 | 81.6 (24.7), n=151 | 86.9 (19.0), n=311 |
| **U.S. African American** |  |  |  |  |
| 65-69 | 81.8 (27.3), n=53 | 85.6 (21.2), n=63 | 76.3 (21.1), n=99 | 86.5 (20.3), n=181 |
| 70-85+ | 79.3 (29.1), n=59 | 81.7 (27.1), n=103 | 74.7 (28.0), n=86 | 82.7 (22.8), n=235 |
| **U.S. Hispanic/Latino** |  |  |  |  |
| 65-69 | 82.6 (16.2), n=30 | 82.5 (16.5), n=65 | 85.7 (18.3), n=23 | 89.8 (17.7), n=38 |
| 70-85+ | 83.7 (21.9), n=46 | 81.7 (20.6), n=93 | 83.7 (22.2), n=34 | 83.4 (18.3), n=36 |

n: number.

Total Recall is calculated as the sum of the three learning trials. Learning is calculated as the higher score from trial 2 or 3, minus the score from trial 1. % Retention is calculated as the delayed recall trial score divided by the higher of learning trial 2 or 3, multiplied by 100.

**Supplementary Table 9.** Age, education and gender specific reference values1 for Retention Discrimination Index (RDI) in Australian whites, excluding 213 individuals with an adjudicated dementia diagnosis within three years of baseline cognitive testing (n=16,038).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Education <9 years** | | **Education 9-11 years** | | **Education 12 years** | | **Education 13-15 years** | | **Education ≥16 years** | |
| **Age, years** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** |
| **70-74** | n=658  4,5,7,8,11 | n=767  6,7,8,9,11 | n=1,306  5,6,8,9,11 | n=1,767  6,7,8,9,12 | n=439  1,5,7,8,11 | n=556  7,7,9,9,12 | n=666  6,7,8,9,11 | n=778  6,8,9,10,12 | n=1,235  5,7,8,9,11 | n=1,144  6,8,9,10,12 |
| **75-79** | n=346  1,2,6,8,11 | n=454  5,6,7,8,11 | n=589  5,5,7,8,11 | n=879  5,6,8,9,11 | n=195  0,3,7,8,11 | n=262  3,7,8,9,11 | n=248  3,5,6,8,11 | n=387  5,7,8,9,12 | n=444  2,6,7,9,11 | n=452  6,7,8,9,11 |
| **80+** | n=229  -1,3,5,6,10 | n=326  3,5,6,8,11 | n=273  2,5,7,7,11 | n=512  4,5,7,8,11 | n=122  -6,1,6,7,11 | n=166  3,5,6,8,11 | n=179  2,4,7,8,11 | n=199  5,6,8,8,11 | n=250  4,6,7,8,11 | n=218  3,5,8,9,11 |

1Data reported as 1st, 2nd, 5th, 10th & 50th (median) percentiles. n: number; RDI is calculated as the difference between the number of correct responses and false positives on the delayed recognition trial.

**Supplementary Table 10.** Age, education and gender specific reference values1 for Retention Discrimination Index (RDI) in US whites (n=1,056), African Americans (n=879) and Hispanic/Latinos (n=365), excluding 46 individuals with an adjudicated dementia diagnosis within three years of baseline cognitive testing.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Education 0-12 years** | | **Education >12 years** | |
|  | **Male** | **Female** | **Male** | **Female** |
| **U.S. white** |  |  |  |  |
| 70-74 | n=28  6,6,7,9,11 | n=55  6,8,9,11,11 | n=129  0,7,9,10,11 | n=267  7,9,10,11,12 |
| 75-85+ | n=31  2,4,6,9,10 | n=84  7,8,9,10,11 | n=151  5,7,8,9,11 | n=311  5,8,9,10,11 |
| **U.S. African American** | |  |  |  |
| 65-69 | n=53  -2,5,6,8,11 | n=63  4,7,8,9,11 | n=99  5,6,7,9,11 | n=181  6,8,9,10,11 |
| 70-85+ | n=59  1,6,7,9,10 | n=103  0,4,7,9,11 | n=86  0,3,6,8,10 | n=235  2,6,8,10,11 |
| **U.S. Hispanic/Latino** | |  |  |  |
| 65-69 | n=30  0,4,8,9,11 | n=65  2,7,8,10,12 | n=23  8,8,9,11,12 | n=38  7,9,9,11,11 |
| 70-85+ | n=46  0,2,7,9,11 | n=93  5,6,7,9,11 | n=34  5,6,7,10,11 | n=36  4,7,8,10,11 |

1Due to the smaller number in each cell, data reported are 2nd, 5th, 10th, 25 & 50th (median) percentiles. n: number; RDI is calculated as the difference between the number of correct responses and false positives on the delayed recognition trial.

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**Supplementary Figure 1:** The distribution of scores on the Trials 1-3 and Learning, and (b) a histogram of the Total Recall scores.

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**Supplementary Figure 2:** The distribution of scores on the Delayed Recall, Retention (%) and Delayed Recognition components of the HVLT-R.