**Additional material**

**Table S1. Comparison of eye movement and cognitive function and eye movement parameters among for DS, NDS and HC groups stratified by marital status**

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|  unmarried married  DS(n=30) NDS(n=41) HC(n=18) P DS(n=7) NDS(n=8) HC(n=62) P  |
| NEF | 20.5(15.5) | 27(11) | 29(4.3) | <0.001 | 27(13) | 26.5(14.8) | 31(4) | 0.011 |
| RSS | 3(3) | 4(2) | 7(1.5) | <0.001 | 4(1) | 4(2.8) | 7.5(1) | 0.002 |
| D score | 6(3) | 5(3.1) | 2.4(1.7) |  <0.001 | 5.2(1.7) | 5(1.7) | 1.5(1.4) | 0.007 |
| TESL | 128(132.4) | 214.3(135.3) | 263(100) | 0.008 | 120.2(99.3) | 90(65.2) | 286.8(120) | <0.001 |
| MESL | 7.5(4.6) | 9.2(4.8) | 10.5(4) | <0.001 | 5(2.5) | 4.3(3.1) | 11.7(5.8) | <0.001 |
| MDRS-2 | 82.5(35) | 114(25) | 140.5(3) | <0.001 | 81(37) | 98.5(26) | 138.5(6) | <0.001 |
| attention | 34(5.2) | 36(2) | 37(0) | <0.001 | 35(8) | 35(3.2) | 37(0) | <0.001 |
| initiation/retention | 13(12) | 25(12.5) | 36(1) | <0.001 | 16(9) | 19(7.5) | 36(2) | <0.001 |
| concept formation | 16.5(18.2) | 29(8) | 36(2.3) | <0.001 | 17(12) | 19.5(12) | 35(4) | <0.001 |
| structure | 5.5(3) | 6(1) | 6(0) | 0.002 | 3(3) | 5(3) | 6(0) | <0.001 |
| memory | 14(10) | 20(4.5) | 25(0) | <0.001 | 13(7) | 20(5.5) | 25(0) | <0.001 |

Note: Median (quartile spacing); NEF: the numbers of eye fixations; RSS: responsive of search scores; TESL: total eye scanning length; MESL: mean eye scanning length; MDRS: Dementia Rating Scale.

**Table S2. Comparison of eye movement and cognitive function and eye movement parameters among for DS, NDS and HC groups stratified by family history**

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|  Family history No family history negative  DS(n=17) NDS(n=16) HC(n=0) P DS(n=20) NDS(n=33) HC(n=80) P  |
| NEF | 18(22.5) | 24(12.3) | 0 | 0.406 | 23.5(14.3) | 28(7) | 30(4) | <0.001 |
| RSS | 3(2.5) | 4.5(3) | 0 | 0.018 | 4(2) | 4(2.5) | 7(1) | <0.001 |
| D score | 6.5(3.2) | 4.6(3.4) | 0 | 0.052 | 5.2(2.4) | 5.2(2.9) | 2(1.3) | <0.001 |
| TESL | 114(116.8) | 198.8(124.4) | 0 | 0.031 | 138.1(150.6) | 192.6(166.8) | 281.8(111.7) | <0.001 |
| MESL | 6.1(6.7) | 9.4(5.7) | 0 | 0.160 | 6.6(3.8) | 8.4(4.4) | 11(5.6) | <0.001 |
| MDRS-2 | 84(26) | 118(18) | 0 | 0.005 | 80(37) | 108(26) | 139(6) | <0.001 |
| attention | 35(6) | 36(0.7) | 0 | 0.077 | 33.5(5.5) | 35(3) | 37(0) | <0.001 |
| initiation/retention | 14(11) | 28(12.5) | 0 | 0.012 | 13(12.2) | 22(10.5) | 36(2) | <0.001 |
| concept formation | 17(17) | 28.5(7.5) | 0 | 0.004 | 15(19.2) | 27(12) | 35(3) | <0.001 |
| structure | 6(2.5) | 6(1) | 0 | 0.731 | 4(5.5) | 6(1) | 6(0) | <0.001 |
| memory | 14(8.5) | 20.5(8) | 0 | 0.011 | 12.5(9.5) | 20(5.5) | 25(0) | <0.001 |

Note: Median (quartile spacing); NEF: the numbers of eye fixations; RSS: responsive of search scores; TESL: total eye scanning length; MESL: mean eye scanning length; MDRS: Dementia Rating Scale.