**Supplementary File**

to the manuscript ‘Differences in White Matter Hyperintensities in socio-economically deprived groups: Results of the Population-Based LIFE Adult Study’

**Table A.1.** Factor loadings (n=582).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Factor 1: Distress** | **Factor 2: Health** | **Factor 3: Feeling overloaded** | **Factor assigned to** |
| Socially isolated | 0.05 | 0.21 | -0.33 | none |
| Smoking | 0.16 | -0.12 | -0.05 | 1 |
| Depression | 0.32 | 0.13 | 0.35 | 3 |
| Diabetes | -0.16 | 0.61 | 0.25 | 2 |
| Physical activity§ | -0.00 | 0.12 | 0.04 | none |
| Obese | 0.00 | 0.46 | 0.36 | none |
| Elevated blood lipids | 0.08 | 0.51 | 0.09 | 2 |
| Hypertension | -0.09 | 0.73 | 0.21 | 2 |
| TICS Work overload | 0.78 | -0.26 | 0.34 | 3 |
| TICS Social overload | 0.69 | -0.27 | 0.34 | 3 |
| TICS Pressure to perform | 0.69 | -0.31 | 0.33 | 3 |
| TICS Work discontent | 0.75 | 0.12 | -0.18 | 1 |
| TICS Excessive demands | 0.77 | 0.18 | -0.11 | 1 |
| TICS Lack of social rec. | 0.77 | 0.07 | 0.11 | 1 |
| TICS Social tensions | 0.66 | 0.13 | 0.16 | 1 |
| TICS Feeling socially isolated | 0.68 | 0.17 | -0.29 | 1 |
| TICS Chronic worrying | 0.68 | 0.19 | -0.28 | 1 |
| TICS Chronic stress | 0.95 | 0.09 | -0.14 | 1 |

*Notes*: TICS, German Trier Inventory for Chronic Stress.

**Table A.2.** Generalized equation modelling to confirm factor structure (n=582).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **b** | **CI95%** | **p** |
| Factor 1: Distress | TICS Work discontent | 1 |  |  |
|  | TICS Chronic stress | 15.98 | 5.50-26.47 | 0.003 |
|  | TICS Excessive demands | 1.24 | 0.91-1.56 | <0.001 |
|  | TICS Chronic worrying | 1.19 | 0.88-1.52 | <0.001 |
|  | TICS Lack of social rec. | 1.05 | 0.78-1.32 | <0.001 |
|  | TICS Feeling socially isolated | 0.87 | 0.65-1.09 | <0.001 |
|  | TICS Social tensions | 0.80 | 0.59-1.01 | <0.001 |
|  | Smoking | 0.15 | 0.01-0.29 | 0.040 |
| Factor 2: Health | Diabetes | 1 |  |  |
|  | Hypertension | 0.59 | 0.19-0.99 | 0.004 |
|  | Elevated blood lipids | 0.41 | 0.17-0.65 | 0.001 |
| Factor 3: Feeling overloaded | Depression | 1 |  |  |
|  | TICS Work overload | 6.32 | 2.12-10.52 | 0.003 |
|  | TICS Social overload | 4.28 | 1.58-6.98 | 0.002 |
|  | TICS Pressure to perform | 3.65 | 1.35-5.95 | 0.002 |

*Notes*: TICS, German Trier Inventory for Chronic Stress.

**Table A.3.** White matter hyperintensities (in cm³) by income and education. (WMH n=1,185; deep and periventricular WMH n=869; Fazekas score n=1,179)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Income** | |  |  |  |  |  |  |  |  |
|  | **Very low** | | **Low** | | **High** | | **Very High** | |  |  |
|  | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | **Chi²** | **p** |
| WMH | 3895.0 | 6673.8 | 3188.2 | 5100.4 | 2148.3 | 3686.4 | 1993.8 | 5184.5 | 107.8 | <0.001 |
| Deep WMH | 1493.9 | 3080.4 | 1240.5 | 2626.7 | 680.6 | 1595.1 | 656.9 | 1827.5 | 35.7 | <0.001 |
| Peri. WMH | 3010.3 | 3640.5 | 2493.9 | 3098.2 | 1813.4 | 2216.9 | 1403.6 | 1980.1 | 61.5 | <0.001 |
|  | **%** | **n** | **%** | **n** | **%** | **n** | **%** | **n** | **Chi²** | **p** |
| Fazekas 0 | 26.1 | 87 | 27.8 | 106 | 40.4 | 110 | 45.3 | 87 | 51.9 | <0.001 |
| Fazekas 1 | 53.3 | 178 | 58.5 | 223 | 50.7 | 138 | 49.5 | 95 |  |  |
| Fazekas 2 | 19.8 | 66 | 12.9 | 49 | 8.5 | 23 | 4.7 | 9 |  |  |
| Fazekas 3 | 0.9 | 3 | 0.8 | 3 | 0.4 | 1 | 1 | 0.5 |  |  |
|  | **Education** | |  |  |  |  |  |  |  |  |
|  | **Low** | | **Moderate** | | **High** | |  |  |  |  |
|  | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | **Chi²** | **p** |  |  |
| WMH | 3018.7 | 5829.7 | 3137.6 | 5452.4 | 2772.5 | 4921.9 | 5.0 | 0.082 |  |  |
| Deep WMH | 1148.9 | 2814.6 | 1079.7 | 2479.3 | 985.0 | 2066.6 | 2.9 | 0.232 |  |  |
| Peri. WMH | 2332.3 | 3235.3 | 2249.0 | 2899.1 | 2223.4 | 2734.6 | 0.8 | 0.669 |  |  |
|  | **%** | **n** | **%** | **n** | **%** | **n** | **Chi²** | **p** |  |  |
| Fazekas 0 | 31.3 | 127 | 33.6 | 103 | 34.3 | 160 | 4.8 | 0.566 |  |  |
| Fazekas 1 | 53.7 | 218 | 52.1 | 160 | 54.9 | 256 |  |  |  |  |
| Fazekas 2 | 14.0 | 57 | 13.7 | 42 | 10.3 | 48 |  |  |  |  |
| Fazekas 3 | 0.9 | 4 | 0.7 | 2 | 0.4 | 2 |  |  |  |  |

*Notes:* p, level of significance; SD, standard deviation; Peri., periventricular; WMH, white matter hyperintensities.

**Table A.4.** Estimates of the regression analyses on the association of white matter on performance in cognitive testing, adjusted for age, APOE e4 allele, gender, arterial hypertension, heart disease, education, and income. Separate regression analyses for each WMH measure on each cognitive test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **TMT A** | **TMT B** | **VFT** | **WLT** |
|  | b (CI95%) | b (CI95%) | b (CI95%) | b (CI95%) |
| WMH | 0.07 (-0.11-0.26) | 0.64 (-0.02-1.30) | 0.01 (-0.05- 0.07) | -0.06 (-0.11- -0.01)\* |
| Deep WMH | 0.29 (-0.29-0.88) | 1.99 (0.04-3.95)\* | -0.05 (-0.21- 0.11) | -0.13 (-0.24- -0.01)\* |
| Peri. WMH | 0.33 (-0.12-0.79) | 1.66 (0.10-3.21)\* | 0.03 (-0.11- 0.16) | -0.14 (-0.23- -0.05)\*\* |
| Fazekas 0 | REF | REF | REF | REF |
| Fazekas 1 | 0.25 (-1.34-1.83) | 1.51 (-3.63-6.64) | -0.77 (-1.59-0.07) | 0.19 (-0.24-0.62) |
| Fazekas 2 | -0.97 (-3.63-1.70) | 10.01 (0.19-19.82)\* | -1.91 (-3.09- -0.72)\*\* | -0.94 (-1.69- -0.18)\* |
| Fazekas 3 | 2.98 (-9.75-15.71) | 22.51 (-24.96-69.98) | 1.55 (-1.91-5.02) | -0.85 (-3.73-2.02) |

*Notes:* \*, p<0.05; \*\*, p<0.01; \*\*\*, p<0.001; b, regression coefficient, CI95%, confidence interval of 95%; TMT, trail making test with lower scores reflecting better cognitive abilities; VFT, verbal fluency test; WLT, word list test; WMH, white matter hyperintensities. TMT A & WMH n=1,175; TMT A & deep WMH n=862; TMT A & periventricular WMH n=862; TMT A & Fazekas score n=1,169; TMT B & WMH n=1,166; TMT B & deep WMH n=855; TMT B & periventricular WMH n=855; TMT B & Fazekas score n=1,160; VFT & WMH n=1,173; VFT & deep WMH n=861; VFT & periventricular WMH n=861; VFT & Fazekas score n=1,167; WLT & WMH n=1,174; WLT & deep WMH n=858; WLT & periventricular WMH n=858; WLT & Fazekas score n=1,168.

**Figures**



**Figure A.1.** Residuals of the adjusted regression analysis on white matter hyperintensities (in cm3) by income (n=1,126).



**Figure A.2.** Predicted performance in the Word List Test (WLT) by level of white matter hyperintensities in quartiles (Q) and educational group, as estimated via linear regression analysis adjusted for age, gender, APOE e4 allele, arterial hypertension, heart disease, and income (n=1,174).