**Supplementary Table 1:** Gender-stratified models for demands and control, for cognitive tests in which gender-by-exposure interactions were statistically significant at the 0.05 level.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | | Demands (continuous) | | | | | | Control (continuous) | | | | | |
|  |  | **Men** | |  | **Women** | | |  |  | **Men** |  | **Women** | |
|  | β | (SE) | | P | β | (SE) | P |  | β | (SE) | P | β | (SE) | P | |
| **Digit Symbol Substitution Test** |  |  | |  |  |  |  |  |  |  |  |  |  |  | |
| M1: age, | 0.000 | 0.025 | | 0.986 | -0.005 | 0.045 | 0.915 |  | 0.123 | 0.025 | <0.001 | 0.016 | 0.045 | 0.714 | |
| M2: M1+education, occupationb | -0.07 | 0.025 | | 0.004 | -0.023 | 0.045 | 0.790 |  | 0.033 | 0.027 | 0.201 | -0.007 | 0.047 | 0.877 | |
| M3: M2+social, vascular risksc | -0.07 | 0.025 | | 0.010 | -0.005 | 0.046 | 0.909 |  | 0.019 | 0.027 | 0.020 | 0.004 | 0.049 | 0.931 | |
| **FCSRT-Immediate** |  |  | |  |  |  |  |  |  |  |  |  |  |  | |
| M1: age | 0.026 | 0.025 | | 0.295 | 0.026 | 0.046 | 0.567 |  | 0.031 | 0.025 | 0.22 | -0.120 | 0.045 | 0.008 | |
| M2: M1+education, occupationb | 0.001 | 0.026 | | 0.954 | 0.032 | 0.046 | 0.491 |  | -0.005 | 0.027 | 0.846 | -0.132 | 0.048 | 0.006 | |
| M3: M2+social, vascular risksc | -0.004 | 0.026 | | 0.882 | 0.037 | 0.047 | 0.424 |  | -0.02 | 0.028 | 0.583 | -0.160 | 0.048 | 0.001 | |

**Supplementary Table 2:** Quadrants of job demands and control, stratified by gender

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Low strain |  | Passive | | | | | | |  | Active | | |  | High strain | | |
|  |  |  | β | | | | SE | P | |  | β | SE | P |  | β | SE | P |
| **Men** |  |  |  | | |  | |  | |  |  |  |  |  |  |  |  |
| *FCSRT-Immediate* |  |  |  | | |  | |  | |  |  |  |  |  |  |  |  |
| M1: agea | (ref) |  | -0.04 | | | (0.04) | | 0.206 | |  | 0.01 | 0.03 | 0.824 |  | -0.02 | 0.03 | 0.436 |
| M2: M1+education, occupationb | (ref) |  | -0.01 | | | 0.03 | | 0.658 | |  | -0.001 | 0.03 | 0.874 |  | -0.01 | 0.03 | 0.655 |
| M3: M2+social, vascular risksc | (ref) |  | -0.01 | | | 0.03 | | 0.717 | |  | -0.01 | 0.03 | 0.742 |  | -0.002 | 0.03 | 0.940 |
| *FCSRT-Delayed* |  |  | |  | |  | |  | |  |  |  |  |  |  |  |  |
| M1: agea | (ref) |  | | -0.05 | 0.03 | | | | 0.095 |  | -0.03 | 0.03 | 0.361 |  | -0.01 | 0.03 | 0.363 |
| M2: M1+education, occupationb | (ref) |  | | -0.02 | 0.03 | | | | 0.453 |  | -0.04 | 0.03 | 0.215 |  | -0.001 | 0.03 | 0.947 |
| M3: M2+social, vascular risksc | (ref) |  | | -0.03 | 0.03 | | | | 0.406 |  | -0.04 | 0.03 | 0.173 |  | -0.001 | 0.03 | 0.980 |
| *DSST* |  |  | |  |  | | | |  |  |  |  |  |  |  |  |  |
| M2: M1+age | (ref) |  | | -0.12 | 0.03 | | | | <.001 |  | -0.02 | 0.03 | 0.588 |  | -0.09 | 0.03 | 0.001 |
| M3: M2+educ, occ | (ref) |  | | 0.05 | 0.03 | | | | 0.082 |  | -0.05 | 0.3 | 0.090 |  | -0.07 | 0.03 | 0.013 |
| M4: M3+social, vascular | (ref) |  | | 0.06 | 0.03 | | | | 0.073 |  | -0.06 | 0.03 | 0.059 |  | -0.06 | 0.03 | 0.029 |
| **Women** |  |  | |  |  | | | |  |  |  |  |  |  |  |  |  |
| *FCSRT-Immediate* |  |  | |  |  | | | |  |  |  |  |  |  |  |  |  |
| M1: agea | (ref) |  | | 0.18 | 0.07 | | | | 0.010 |  | 0.14 | 0.06 | 0.024 |  | 0.18 | 0.07 | 0.008 |
| M2: M1+education, occupationb | (ref) |  | | 0.18 | 0.07 | | | | 0.014 |  | 0.14 | 0.06 | 0.023 |  | 0.19 | 0.07 | 0.007 |
| M3: M2+social, vascular risksc | (ref) |  | | 0.19 | 0.07 | | | | 0.008 |  | 0.15 | 0.06 | 0.012 |  | 0.22 | 0.07 | 0.001 |
| *FCSRT-Delayed* |  |  | |  |  | | | |  |  |  |  |  |  |  |  |  |
| M1: agea | (ref) |  | | 0.19 | 0.07 | | | | 0.009 |  | 0.15 | 0.06 | 0.021 |  | 0.16 | 0.07 | 0.021 |
| M2: M1+education, occupationb | (ref) |  | | 0.17 | 0.07 | | | | 0.018 |  | 0.15 | 0.06 | 0.021 |  | 0.15 | 0.07 | 0.029 |
| M3: M2+social, vascular risksc | (ref) |  | | 0.17 | 0.07 | | | | 0.014 |  | 0.15 | 0.06 | 0.017 |  | 0.18 | 0.07 | 0.006 |
| *DSST* |  |  | |  |  | | | |  |  |  |  |  |  |  |  |  |
| M2: M1+age | (ref) |  | | 0.003 | 0.07 | | | | 0.961 |  | 0.10 | 0.06 | 0.101 |  | 0.05 | 0.07 | 0.478 |
| M3: M2+educ, occ | (ref) |  | | 0.02 | 0.07 | | | | 0.793 |  | 0.10 | 0.06 | 0.121 |  | 0.06 | 0.07 | 0.121 |
| M4: M3+social, vascular | (ref) |  | | 0.04 | 0.07 | | | | 0.549 |  | 0.14 | 0.06 | 0.030 |  | 0.06 | 0.07 | 0.357 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | MMSE | TMT-A | TMT-B | FCSRT-Imm | FCSRT-Delayed | DSST | Lex A | Lex B |
| **Active (ref) vs.:** |  |  |  |  |  |  |  |  |
| Low strain | 0.005 | 0.022 | -0.001 | -0.009 | 0.024 | 0.019 | 0.012 | 0.012 |
| High strain | 0.002 | -0.021 | 0.019 | 0.014 | 0.036 | -0.029 | -0.054\* | -0.061\* |
| Passive | -0.002 | -0.027 | -0.043 | -0.002 | 0.014 | -0.024 | -0.042 | -0.061\* |
| **Low strain (ref) vs.:** |  |  |  |  |  |  |  |  |
| Active | -0.005 | -0.024 | 0.001 | 0.010 | -0.025 | -0.020 | -0.013 | -0.013 |
| High strain | -0.003 | -0.043 | 0.020 | 0.023 | 0.012 | -0.051 | -0.067\* | -0.073\*\* |
| Passive | -0.008 | -0.052 | -0.041 | 0.010 | -0.013 | -0.043 | -0.055 | -0.079\*\* |
| **High strain (ref) vs.:** |  |  |  |  |  |  |  |  |
| Low strain | 0.003 | 0.044 | -0.020 | -0.023 | -0.013 | 0.044 | 0.069\* | 0.075\*\* |
| Active | -0.002 | 0.022 | -0.020 | -0.015 | -0.038 | 0.026 | 0.058\* | 0.065\* |
| Passive | -0.004 | -0.002 | -0.064\* | -0.018 | -0.023 | -0.001 | 0.021 | 0.004 |
| **Passive (ref) vs.:** |  |  |  |  |  |  |  |  |
| Low strain | 0.002 | 0.047 | 0.037 | -0.008 | 0.012 | 0.045 | 0.049 | 0.071\*\* |
| Active | 0.007 | 0.025 | 0.037 | 0.001 | -0.013 | 0.027 | 0.039 | 0.062\* |
| High strain | 0.002 | 0.002 | 0.056\* | 0.015 | 0.024 | 0.001 | -0.019 | -0.004 |

**Supplementary Table 3**: Pairwise differences in cognitive performance by job strain quadrant (adjusted for all covariates)

\* p<0.05

\*\*p<0.01

\*\*\*p<0.001

**Supplementary Table 4:** Association of skill discretion and decision authority (the two components of job control) with multiple cognitive outcomes, adjusting for age, gender, educational attainment, occupational grade at testing, depressive and anxious symptoms, smoking status, alcohol consumption, BMI, high cholesterol, diabetes, history of myocardial infarction, years since retirement at testing, and marital status

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Decision authority (continuous) | | |  | Skill discretion  (continuous) | | |
|  | β | (SE) | P |  | β | (SE) | P |
| Mini-Mental State Exam | -0.002 | 0.02 | 0.913 |  | -0.014 | 0.02 | 0.578 |
| Trailmaking Test A | 0.040 | 0.02 | 0.086 |  | 0.050 | 0.02 | 0.052 |
| Trailmaking Test B | 0.040 | 0.02 | 0.085 |  | 0.064 | 0.02 | 0.009 |
| FCSRTa-Immediate | -0.031 | 0.02 | 0.189 |  | -0.040 | 0.02 | 0.102 |
| FCSRTa-Delayed | -0.017 | 0.02 | 0.483 |  | -0.008 | 0.02 | 0.734 |
| Digit Symbol Substitution Test | 0.031 | 0.02 | 0.165 |  | -0.001 | 0.02 | 0.960 |
| Phonemic fluency | 0.051 | 0.02 | 0.030 |  | 0.072 | 0.02 | 0.004 |
| Semantic fluency | 0.064 | 0.02 | 0.004 |  | 0.074 | 0.02 | 0.002 |

a Free and Cued Selective Reminding Test