**Online Supplemental Content**

Brett BL, Kerr ZY, Chandran A et al; A dominance analysis of subjective cognitive difficulties comorbidities in professional football players with and without a diagnosis of MCI

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Supplemental Figure 1. STROBE diagram of eligibility and enrollment

Text

Description automatically generated with medium confidence

Supplemental Table 1. Missingness for individual variables of interest

|  |  |
| --- | --- |
| Variable | n(%) |
| Depression | 28 (3.1%) |
| Sleep Disturbance | 76 (8.4%) |
| Concussion History | 0 (0.0%) |
| Pain Interference | 21 (2.3%) |
| Anxiety | 41 (4.5%) |
| Education | 0 (0.0%) |
| Fatigue | 62 (6.8%) |
| Stress-Related Events | 0 (0.0%) |
| Social Roles/Activities | 14 (1.5%) |
| Cognition | 23 (2.5%) |
| Emotional and  Behavioral Dyscontrol | 22 (2.4%) |

Supplementary Table 2. Sensitivity analyses including participants with self-reported diagnosis of dementia for multivariable models of all comorbid contributing factors with general cognition and emotional and behavioral dyscontrol

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Cognition | B | SE | β | p-value |
| Depression | -0.01 | 0.08 | -0.02 | 0.876 |
| Sleep Disturbance | -0.03 | 0.06 | -0.03 | 0.644 |
| Concussion History | -0.20 | 0.33 | -0.03 | 0.545 |
| Pain Interference | 0.04 | 0.06 | 0.04 | 0.585 |
| Anxiety | -0.22 | 0.07 | -0.30 | 0.003 |
| Education | -0.15 | 0.60 | -0.01 | 0.806 |
| Fatigue | -0.14 | 0.07 | -0.19 | 0.039 |
| Stress-Related Events | <0.01 | <0.01 | 0.07 | 0.186 |
| Social | 0.24 | 0.08 | 0.25 | 0.004 |
| Emotional and Behavioral Dyscontrol | | |  |  |
| Depression | 0.04 | 0.10 | 0.04 | 0.685 |
| Sleep Disturbance | 0.10 | 0.08 | 0.07 | 0.190 |
| Concussion History | 0.11 | 0.41 | 0.01 | 0.792 |
| Pain Interference | 0.08 | 0.08 | 0.07 | 0.319 |
| Anxiety | 0.44 | 0.09 | 0.44 | <.001 |
| Education | 1.36 | 0.76 | 0.09 | 0.074 |
| Fatigue | 0.05 | 0.08 | 0.05 | 0.534 |
| Stress-Related Events | <0.01 | <0.01 | 0.06 | 0.258 |
| Social | -0.15 | 0.10 | -0.12 | 0.132 |

B=unstandardized beta coefficient; SE=standard error; β=standardized coefficient; social=Ability to Participate in Social Roles and Activities; education 1 unit increase= increase in education level from below bachelor’s degree, bachelor’s degree, and professional degree; concussion history 1 unit increase=increase in concussion history group from 0, 1-2, 3-5, 6-9, and 10+; Depression, Sleep Disturbance, Pain Interference, Anxiety, and Ability to Participate in Social Roles and activities 1 unit increase = 1 T-score point change. Stress-Related Events =Social Readjustment Rating Scale (SRRS), 1 unit=1 point increase on the SRRS; Higher T-scores on the Anxiety, Depression, Sleep Disturbance, and Pain Interference indicate greater (i.e., poorer) dysfunction in that area. Higher T-scores on the Ability to Participate in Social Roles and Activities inventory indicated higher levels (i.e., better) of function on these domains

Supplemental Table 3. Bootstrap dominance analysis results of SCD-associated factors and self-report general cognition in MCI group

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| dominance | Factori | Factorj | Dij | mDij | SE.Dij | Pij | Pji | Pnoij | Rep |
| complete | Anxiety | Fatigue | 0.5 | 0.67 | 0.34 | 0.44 | 0.11 | 0.44 | 0.44 |
| complete | Anxiety | Social | 1 | 0.77 | 0.27 | 0.56 | 0.02 | 0.42 | 0.56 |
| complete | Anxiety | Depression | 1 | 0.90 | 0.23 | 0.81 | 0.02 | 0.17 | 0.81 |
| complete | Anxiety | Pain | 1 | 0.91 | 0.19 | 0.83 | 0.00 | 0.17 | 0.83 |
| complete | Anxiety | SleepDstr | 1 | 0.97 | 0.13 | 0.93 | 0.00 | 0.07 | 0.93 |
| complete | Anxiety | ConHx | 1 | 0.98 | 0.11 | 0.95 | 0.00 | 0.05 | 0.95 |
| complete | Anxiety | Education | 1 | 0.97 | 0.11 | 0.95 | 0.00 | 0.05 | 0.95 |
| complete | Anxiety | LifeEvents | 1 | 0.97 | 0.11 | 0.95 | 0.00 | 0.06 | 0.95 |
| complete | Fatigue | Social | 1 | 0.67 | 0.37 | 0.50 | 0.16 | 0.34 | 0.50 |
| complete | Fatigue | Depression | 1 | 0.72 | 0.27 | 0.46 | 0.02 | 0.51 | 0.46 |
| complete | Fatigue | Pain | 1 | 0.86 | 0.23 | 0.72 | 0.00 | 0.28 | 0.72 |
| complete | Fatigue | SleepDstr | 1 | 0.87 | 0.22 | 0.75 | 0.00 | 0.25 | 0.75 |
| complete | Fatigue | ConHx | 1 | 0.86 | 0.22 | 0.73 | 0.00 | 0.27 | 0.73 |
| complete | Fatigue | Education | 1 | 0.88 | 0.21 | 0.76 | 0.00 | 0.24 | 0.76 |
| complete | Fatigue | LifeEvents | 1 | 0.88 | 0.22 | 0.75 | 0.00 | 0.25 | 0.75 |
| complete | Social | Depression | 0.5 | 0.54 | 0.21 | 0.13 | 0.05 | 0.82 | 0.82 |
| complete | Social | Pain | 1 | 0.82 | 0.24 | 0.65 | 0.01 | 0.34 | 0.65 |
| complete | Social | SleepDstr | 1 | 0.80 | 0.25 | 0.59 | 0.00 | 0.41 | 0.59 |
| complete | Social | ConHx | 1 | 0.78 | 0.25 | 0.57 | 0.00 | 0.44 | 0.57 |
| complete | Social | Education | 1 | 0.80 | 0.25 | 0.59 | 0.00 | 0.41 | 0.59 |
| complete | Social | LifeEvents | 1 | 0.79 | 0.25 | 0.57 | 0.00 | 0.43 | 0.57 |
| complete | Depression | Pain | 0.5 | 0.55 | 0.15 | 0.10 | 0.00 | 0.90 | 0.90 |
| complete | Depression | SleepDstr | 0.5 | 0.60 | 0.20 | 0.19 | 0.00 | 0.81 | 0.81 |
| complete | Depression | ConHx | 0.5 | 0.60 | 0.20 | 0.19 | 0.00 | 0.81 | 0.81 |
| complete | Depression | Education | 0.5 | 0.61 | 0.21 | 0.22 | 0.00 | 0.78 | 0.78 |
| complete | Depression | LifeEvents | 0.5 | 0.60 | 0.20 | 0.20 | 0.00 | 0.80 | 0.80 |
| complete | Pain | SleepDstr | 0.5 | 0.49 | 0.11 | 0.02 | 0.03 | 0.95 | 0.95 |
| complete | Pain | ConHx | 0.5 | 0.51 | 0.05 | 0.01 | 0.00 | 0.99 | 0.99 |
| complete | Pain | Education | 0.5 | 0.51 | 0.08 | 0.03 | 0.00 | 0.97 | 0.97 |
| complete | Pain | LifeEvents | 0.5 | 0.50 | 0.08 | 0.02 | 0.01 | 0.98 | 0.98 |
| complete | SleepDstr | ConHx | 0.5 | 0.57 | 0.19 | 0.15 | 0.01 | 0.84 | 0.84 |
| complete | SleepDstr | Education | 0.5 | 0.58 | 0.21 | 0.18 | 0.02 | 0.80 | 0.80 |
| complete | SleepDstr | LifeEvents | 0.5 | 0.57 | 0.21 | 0.16 | 0.03 | 0.80 | 0.80 |
| complete | ConHx | Education | 0.5 | 0.49 | 0.15 | 0.04 | 0.05 | 0.91 | 0.91 |
| complete | ConHx | LifeEvents | 0.5 | 0.48 | 0.13 | 0.01 | 0.06 | 0.93 | 0.93 |
| complete | Education | LifeEvents | 0.5 | 0.48 | 0.18 | 0.04 | 0.08 | 0.88 | 0.88 |
| conditional | Anxiety | Fatigue | 1 | 0.70 | 0.41 | 0.63 | 0.22 | 0.15 | 0.63 |
| conditional | Anxiety | Social | 1 | 0.86 | 0.30 | 0.78 | 0.07 | 0.14 | 0.78 |
| conditional | Anxiety | Depression | 1 | 0.93 | 0.22 | 0.89 | 0.03 | 0.08 | 0.89 |
| conditional | Anxiety | Pain | 1 | 0.98 | 0.09 | 0.97 | 0.00 | 0.03 | 0.97 |
| conditional | Anxiety | SleepDstr | 1 | 0.99 | 0.09 | 0.97 | 0.00 | 0.03 | 0.97 |
| conditional | Anxiety | ConHx | 1 | 0.99 | 0.08 | 0.97 | 0.00 | 0.03 | 0.97 |
| conditional | Anxiety | Education | 1 | 0.99 | 0.08 | 0.98 | 0.00 | 0.02 | 0.98 |
| conditional | Anxiety | LifeEvents | 1 | 0.99 | 0.08 | 0.97 | 0.00 | 0.03 | 0.97 |
| conditional | Fatigue | Social | 1 | 0.68 | 0.41 | 0.58 | 0.22 | 0.20 | 0.58 |
| conditional | Fatigue | Depression | 1 | 0.76 | 0.35 | 0.63 | 0.12 | 0.25 | 0.63 |
| conditional | Fatigue | Pain | 1 | 0.92 | 0.19 | 0.85 | 0.00 | 0.15 | 0.85 |
| conditional | Fatigue | SleepDstr | 1 | 0.93 | 0.18 | 0.86 | 0.00 | 0.14 | 0.86 |
| conditional | Fatigue | ConHx | 1 | 0.93 | 0.18 | 0.85 | 0.00 | 0.15 | 0.85 |
| conditional | Fatigue | Education | 1 | 0.93 | 0.17 | 0.86 | 0.00 | 0.14 | 0.86 |
| conditional | Fatigue | LifeEvents | 1 | 0.93 | 0.18 | 0.85 | 0.00 | 0.15 | 0.85 |
| conditional | Social | Depression | 0.5 | 0.57 | 0.34 | 0.31 | 0.17 | 0.52 | 0.52 |
| conditional | Social | Pain | 1 | 0.88 | 0.23 | 0.77 | 0.01 | 0.23 | 0.77 |
| conditional | Social | SleepDstr | 1 | 0.89 | 0.21 | 0.78 | 0.00 | 0.22 | 0.78 |
| conditional | Social | ConHx | 1 | 0.88 | 0.21 | 0.77 | 0.00 | 0.23 | 0.77 |
| conditional | Social | Education | 1 | 0.91 | 0.19 | 0.82 | 0.00 | 0.18 | 0.82 |
| conditional | Social | LifeEvents | 1 | 0.89 | 0.21 | 0.78 | 0.00 | 0.22 | 0.78 |
| conditional | Depression | Pain | 0.5 | 0.72 | 0.26 | 0.45 | 0.01 | 0.54 | 0.54 |
| conditional | Depression | SleepDstr | 1 | 0.75 | 0.25 | 0.51 | 0.00 | 0.49 | 0.51 |
| conditional | Depression | ConHx | 0.5 | 0.76 | 0.25 | 0.51 | 0.00 | 0.49 | 0.49 |
| conditional | Depression | Education | 1 | 0.78 | 0.25 | 0.55 | 0.00 | 0.45 | 0.55 |
| conditional | Depression | LifeEvents | 1 | 0.77 | 0.25 | 0.54 | 0.00 | 0.46 | 0.54 |
| conditional | Pain | SleepDstr | 1 | 0.67 | 0.29 | 0.40 | 0.06 | 0.54 | 0.40 |
| conditional | Pain | ConHx | 1 | 0.71 | 0.25 | 0.42 | 0.00 | 0.58 | 0.42 |
| conditional | Pain | Education | 1 | 0.74 | 0.25 | 0.48 | 0.00 | 0.53 | 0.48 |
| conditional | Pain | LifeEvents | 1 | 0.73 | 0.26 | 0.46 | 0.01 | 0.53 | 0.46 |
| conditional | SleepDstr | ConHx | 0.5 | 0.67 | 0.26 | 0.37 | 0.03 | 0.60 | 0.60 |
| conditional | SleepDstr | Education | 1 | 0.71 | 0.26 | 0.43 | 0.02 | 0.56 | 0.43 |
| conditional | SleepDstr | LifeEvents | 0.5 | 0.65 | 0.31 | 0.38 | 0.08 | 0.54 | 0.54 |
| conditional | ConHx | Education | 0.5 | 0.55 | 0.30 | 0.23 | 0.14 | 0.63 | 0.63 |
| conditional | ConHx | LifeEvents | 0.5 | 0.43 | 0.26 | 0.08 | 0.22 | 0.70 | 0.70 |
| conditional | Education | LifeEvents | 0 | 0.39 | 0.30 | 0.10 | 0.31 | 0.59 | 0.31 |
| general | Anxiety | Fatigue | 1 | 0.71 | 0.45 | 0.71 | 0.29 | 0.00 | 0.71 |
| general | Anxiety | Social | 1 | 0.88 | 0.32 | 0.88 | 0.12 | 0.00 | 0.88 |
| general | Anxiety | Depression | 1 | 0.93 | 0.25 | 0.93 | 0.07 | 0.00 | 0.93 |
| general | Anxiety | Pain | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | SleepDstr | 1 | 1.00 | 0.03 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | ConHx | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | Education | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | LifeEvents | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | Social | 1 | 0.69 | 0.46 | 0.69 | 0.31 | 0.00 | 0.69 |
| general | Fatigue | Depression | 1 | 0.74 | 0.44 | 0.74 | 0.26 | 0.00 | 0.74 |
| general | Fatigue | Pain | 1 | 0.98 | 0.13 | 0.98 | 0.02 | 0.00 | 0.98 |
| general | Fatigue | SleepDstr | 1 | 0.99 | 0.11 | 0.99 | 0.01 | 0.00 | 0.99 |
| general | Fatigue | ConHx | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | Education | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | LifeEvents | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Social | Depression | 0 | 0.47 | 0.50 | 0.47 | 0.53 | 0.00 | 0.53 |
| general | Social | Pain | 1 | 0.98 | 0.15 | 0.98 | 0.02 | 0.00 | 0.98 |
| general | Social | SleepDstr | 1 | 0.98 | 0.14 | 0.98 | 0.02 | 0.00 | 0.98 |
| general | Social | ConHx | 1 | 1.00 | 0.03 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Social | Education | 1 | 1.00 | 0.03 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Social | LifeEvents | 1 | 1.00 | 0.07 | 1.00 | 0.01 | 0.00 | 1.00 |
| general | Depression | Pain | 1 | 0.98 | 0.15 | 0.98 | 0.02 | 0.00 | 0.98 |
| general | Depression | SleepDstr | 1 | 0.98 | 0.13 | 0.98 | 0.02 | 0.00 | 0.98 |
| general | Depression | ConHx | 1 | 1.00 | 0.03 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Depression | Education | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Depression | LifeEvents | 1 | 1.00 | 0.03 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Pain | SleepDstr | 1 | 0.84 | 0.37 | 0.84 | 0.16 | 0.00 | 0.84 |
| general | Pain | ConHx | 1 | 0.99 | 0.12 | 0.99 | 0.02 | 0.00 | 0.99 |
| general | Pain | Education | 1 | 0.98 | 0.14 | 0.98 | 0.02 | 0.00 | 0.98 |
| general | Pain | LifeEvents | 1 | 0.96 | 0.20 | 0.96 | 0.04 | 0.00 | 0.96 |
| general | SleepDstr | ConHx | 1 | 0.90 | 0.29 | 0.90 | 0.10 | 0.00 | 0.90 |
| general | SleepDstr | Education | 1 | 0.91 | 0.28 | 0.91 | 0.09 | 0.00 | 0.91 |
| general | SleepDstr | LifeEvents | 1 | 0.81 | 0.39 | 0.81 | 0.19 | 0.00 | 0.81 |
| general | ConHx | Education | 1 | 0.59 | 0.49 | 0.59 | 0.41 | 0.00 | 0.59 |
| general | ConHx | LifeEvents | 0 | 0.34 | 0.47 | 0.34 | 0.66 | 0.00 | 0.66 |
| general | Education | LifeEvents | 0 | 0.28 | 0.45 | 0.28 | 0.72 | 0.00 | 0.72 |

Dij= reflects the original dominance analysis result (1=factori dominates factorj, 0=factorj dominates factori, 0.5=dominance cannot be established); mDij =mean of dominance for Dij for bootstrap samples (1=perfect agreement with expected level of dominance where factori dominates factorj; SE.Dij=standard error for bootstrap samples; Pij=proportion of bootstrap samples where factori dominates factorj); Pji(proportion of bootstrap samples where factorj dominates factori); Pnoij=proportion of bootstrap samples where dominance cannot be established; Rep=proportion of bootstrap samples in which original dominance is replicated. ConHx=concussion history; LifeEvents= Stress-related events from the Social Readjustment Rating Scale; SleepDstr=Sleep Disturbance

Supplemental Table 4. Bootstrap dominance analysis results of SCD-associated factors and self-report general cognition in non-MCI group

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| dominance | Factor i | k Di | j m | Dij SE | .Dij P | ij P | ji Pn | oij R | ep |
| complete | Anxiety | Fatigue | 0.5 | 0.39 | 0.22 | 0.01 | 0.24 | 0.75 | 0.75 |
| complete | Anxiety | Social | 0.5 | 0.68 | 0.24 | 0.37 | 0.00 | 0.64 | 0.64 |
| complete | Anxiety | Depression | 1 | 0.97 | 0.11 | 0.95 | 0.00 | 0.05 | 0.95 |
| complete | Anxiety | Pain | 1 | 0.75 | 0.25 | 0.51 | 0.00 | 0.49 | 0.51 |
| complete | Anxiety | SleepDstr | 1 | 0.98 | 0.10 | 0.95 | 0.00 | 0.05 | 0.95 |
| complete | Anxiety | ConHx | 1 | 0.91 | 0.19 | 0.82 | 0.00 | 0.18 | 0.82 |
| complete | Anxiety | Education | 1 | 0.94 | 0.16 | 0.88 | 0.00 | 0.12 | 0.88 |
| complete | Anxiety | LifeEvents | 1 | 1.00 | 0.02 | 1.00 | 0.00 | 0.00 | 1.00 |
| complete | Fatigue | Social | 1 | 1.00 | 0.05 | 0.99 | 0.00 | 0.01 | 0.99 |
| complete | Fatigue | Depression | 1 | 0.91 | 0.19 | 0.82 | 0.00 | 0.18 | 0.82 |
| complete | Fatigue | Pain | 1 | 1.00 | 0.04 | 0.99 | 0.00 | 0.01 | 0.99 |
| complete | Fatigue | SleepDstr | 1 | 1.00 | 0.02 | 1.00 | 0.00 | 0.00 | 1.00 |
| complete | Fatigue | ConHx | 1 | 0.99 | 0.07 | 0.98 | 0.00 | 0.02 | 0.98 |
| complete | Fatigue | Education | 1 | 1.00 | 0.05 | 0.99 | 0.00 | 0.01 | 0.99 |
| complete | Fatigue | LifeEvents | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| complete | Social | Depression | 0.5 | 0.50 | 0.03 | 0.00 | 0.00 | 1.00 | 1.00 |
| complete | Social | Pain | 1 | 0.71 | 0.25 | 0.43 | 0.01 | 0.57 | 0.43 |
| complete | Social | SleepDstr | 0.5 | 0.66 | 0.23 | 0.32 | 0.00 | 0.69 | 0.69 |
| complete | Social | ConHx | 0.5 | 0.53 | 0.13 | 0.07 | 0.00 | 0.93 | 0.93 |
| complete | Social | Education | 0.5 | 0.57 | 0.18 | 0.15 | 0.00 | 0.85 | 0.85 |
| complete | Social | LifeEvents | 1 | 0.82 | 0.24 | 0.64 | 0.00 | 0.36 | 0.64 |
| complete | Depression | Pain | 0.5 | 0.50 | 0.04 | 0.01 | 0.00 | 1.00 | 1.00 |
| complete | Depression | SleepDstr | 0.5 | 0.59 | 0.19 | 0.19 | 0.00 | 0.82 | 0.82 |
| complete | Depression | ConHx | 0.5 | 0.51 | 0.07 | 0.02 | 0.00 | 0.98 | 0.98 |
| complete | Depression | Education | 0.5 | 0.52 | 0.09 | 0.03 | 0.00 | 0.97 | 0.97 |
| complete | Depression | LifeEvents | 1 | 0.65 | 0.23 | 0.29 | 0.00 | 0.71 | 0.29 |
| complete | Pain | SleepDstr | 0.5 | 0.53 | 0.13 | 0.07 | 0.01 | 0.92 | 0.92 |
| complete | Pain | ConHx | 0.5 | 0.50 | 0.04 | 0.01 | 0.00 | 0.99 | 0.99 |
| complete | Pain | Education | 0.5 | 0.53 | 0.11 | 0.06 | 0.00 | 0.95 | 0.95 |
| complete | Pain | LifeEvents | 1 | 0.70 | 0.24 | 0.39 | 0.00 | 0.61 | 0.39 |
| complete | SleepDstr | ConHx | 0.5 | 0.53 | 0.14 | 0.07 | 0.01 | 0.92 | 0.92 |
| complete | SleepDstr | Education | 0.5 | 0.55 | 0.14 | 0.09 | 0.00 | 0.91 | 0.91 |
| complete | SleepDstr | LifeEvents | 1 | 0.77 | 0.25 | 0.55 | 0.00 | 0.46 | 0.55 |
| complete | ConHx | Education | 1 | 0.72 | 0.26 | 0.46 | 0.02 | 0.53 | 0.46 |
| complete | ConHx | LifeEvents | 1 | 0.93 | 0.18 | 0.85 | 0.00 | 0.15 | 0.85 |
| complete | Education | LifeEvents | 0.5 | 0.61 | 0.21 | 0.22 | 0.00 | 0.78 | 0.78 |
| conditional | Anxiety | Fatigue | 0 | 0.22 | 0.35 | 0.12 | 0.69 | 0.20 | 0.69 |
| conditional | Anxiety | Social | 1 | 0.99 | 0.10 | 0.97 | 0.01 | 0.02 | 0.97 |
| conditional | Anxiety | Depression | 1 | 1.00 | 0.05 | 0.99 | 0.00 | 0.01 | 0.99 |
| conditional | Anxiety | Pain | 1 | 1.00 | 0.03 | 1.00 | 0.00 | 0.00 | 1.00 |
| conditional | Anxiety | SleepDstr | 1 | 0.99 | 0.08 | 0.98 | 0.00 | 0.02 | 0.98 |
| conditional | Anxiety | ConHx | 1 | 0.93 | 0.18 | 0.85 | 0.00 | 0.15 | 0.85 |
| conditional | Anxiety | Education | 1 | 0.95 | 0.15 | 0.90 | 0.00 | 0.10 | 0.90 |
| conditional | Anxiety | LifeEvents | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| conditional | Fatigue | Social | 1 | 1.00 | 0.03 | 1.00 | 0.00 | 0.00 | 1.00 |
| conditional | Fatigue | Depression | 1 | 1.00 | 0.05 | 0.99 | 0.00 | 0.01 | 0.99 |
| conditional | Fatigue | Pain | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| conditional | Fatigue | SleepDstr | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| conditional | Fatigue | ConHx | 1 | 0.99 | 0.06 | 0.99 | 0.00 | 0.01 | 0.99 |
| conditional | Fatigue | Education | 1 | 1.00 | 0.04 | 0.99 | 0.00 | 0.01 | 0.99 |
| conditional | Fatigue | LifeEvents | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| conditional | Social | Depression | 0.5 | 0.45 | 0.32 | 0.16 | 0.26 | 0.59 | 0.59 |
| conditional | Social | Pain | 1 | 0.79 | 0.27 | 0.59 | 0.02 | 0.39 | 0.59 |
| conditional | Social | SleepDstr | 1 | 0.79 | 0.25 | 0.58 | 0.00 | 0.42 | 0.58 |
| conditional | Social | ConHx | 0.5 | 0.57 | 0.17 | 0.14 | 0.00 | 0.86 | 0.86 |
| conditional | Social | Education | 0.5 | 0.60 | 0.20 | 0.19 | 0.00 | 0.81 | 0.81 |
| conditional | Social | LifeEvents | 1 | 0.90 | 0.20 | 0.79 | 0.00 | 0.21 | 0.79 |
| conditional | Depression | Pain | 0.5 | 0.67 | 0.24 | 0.34 | 0.01 | 0.65 | 0.65 |
| conditional | Depression | SleepDstr | 0.5 | 0.67 | 0.24 | 0.34 | 0.00 | 0.66 | 0.66 |
| conditional | Depression | ConHx | 0.5 | 0.52 | 0.09 | 0.03 | 0.00 | 0.97 | 0.97 |
| conditional | Depression | Education | 0.5 | 0.53 | 0.11 | 0.05 | 0.00 | 0.95 | 0.95 |
| conditional | Depression | LifeEvents | 1 | 0.78 | 0.25 | 0.55 | 0.00 | 0.45 | 0.55 |
| conditional | Pain | SleepDstr | 0.5 | 0.72 | 0.28 | 0.47 | 0.04 | 0.49 | 0.49 |
| conditional | Pain | ConHx | 0.5 | 0.54 | 0.13 | 0.08 | 0.00 | 0.93 | 0.93 |
| conditional | Pain | Education | 0.5 | 0.56 | 0.17 | 0.13 | 0.00 | 0.88 | 0.88 |
| conditional | Pain | LifeEvents | 1 | 0.85 | 0.23 | 0.70 | 0.00 | 0.30 | 0.70 |
| conditional | SleepDstr | ConHx | 0.5 | 0.54 | 0.16 | 0.09 | 0.01 | 0.90 | 0.90 |
| conditional | SleepDstr | Education | 0.5 | 0.57 | 0.17 | 0.13 | 0.00 | 0.87 | 0.87 |
| conditional | SleepDstr | LifeEvents | 1 | 0.86 | 0.23 | 0.72 | 0.00 | 0.28 | 0.72 |
| conditional | ConHx | Education | 1 | 0.79 | 0.27 | 0.60 | 0.02 | 0.38 | 0.60 |
| conditional | ConHx | LifeEvents | 1 | 0.95 | 0.15 | 0.91 | 0.00 | 0.09 | 0.91 |
| conditional | Education | LifeEvents | 0.5 | 0.61 | 0.21 | 0.22 | 0.01 | 0.77 | 0.77 |
| general | Anxiety | Fatigue | 0 | 0.24 | 0.43 | 0.24 | 0.76 | 0.00 | 0.76 |
| general | Anxiety | Social | 1 | 0.99 | 0.08 | 0.99 | 0.01 | 0.00 | 0.99 |
| general | Anxiety | Depression | 1 | 1.00 | 0.04 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | Pain | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | SleepDstr | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | ConHx | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | Education | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | LifeEvents | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | Social | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | Depression | 1 | 1.00 | 0.05 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | Pain | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | SleepDstr | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | ConHx | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | Education | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | LifeEvents | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Social | Depression | 0 | 0.25 | 0.43 | 0.25 | 0.75 | 0.00 | 0.75 |
| general | Social | Pain | 1 | 0.90 | 0.29 | 0.90 | 0.10 | 0.00 | 0.90 |
| general | Social | SleepDstr | 1 | 0.99 | 0.08 | 0.99 | 0.01 | 0.00 | 0.99 |
| general | Social | ConHx | 1 | 1.00 | 0.05 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Social | Education | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Social | LifeEvents | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Depression | Pain | 1 | 0.97 | 0.17 | 0.97 | 0.03 | 0.00 | 0.97 |
| general | Depression | SleepDstr | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Depression | ConHx | 1 | 1.00 | 0.03 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Depression | Education | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Depression | LifeEvents | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Pain | SleepDstr | 1 | 0.90 | 0.30 | 0.90 | 0.10 | 0.00 | 0.90 |
| general | Pain | ConHx | 1 | 0.98 | 0.16 | 0.98 | 0.03 | 0.00 | 0.98 |
| general | Pain | Education | 1 | 1.00 | 0.05 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Pain | LifeEvents | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | SleepDstr | ConHx | 1 | 0.72 | 0.45 | 0.72 | 0.28 | 0.00 | 0.72 |
| general | SleepDstr | Education | 1 | 0.96 | 0.21 | 0.96 | 0.04 | 0.00 | 0.96 |
| general | SleepDstr | LifeEvents | 1 | 1.00 | 0.03 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | ConHx | Education | 1 | 0.87 | 0.34 | 0.87 | 0.13 | 0.00 | 0.87 |
| general | ConHx | LifeEvents | 1 | 0.99 | 0.12 | 0.99 | 0.02 | 0.00 | 0.99 |
| general | Education | LifeEvents | 1 | 0.76 | 0.42 | 0.76 | 0.24 | 0.00 | 0.76 |

Dij= reflects the original dominance analysis result (1=factori dominates factorj, 0=factorj dominates factori, 0.5=dominance cannot be established); mDij =mean of dominance for Dij for bootstrap samples (1=perfect agreement with expected level of dominance where factori dominates factorj; SE.Dij=standard error for bootstrap samples; Pij=proportion of bootstrap samples where factori dominates factorj); Pji(proportion of bootstrap samples where factorj dominates factori); Pnoij=proportion of bootstrap samples where dominance cannot be established; Rep=proportion of bootstrap samples in which original dominance is replicated. ConHx=concussion history; LifeEvents= Stress-related events from the Social Readjustment Rating Scale; SleepDstr=Sleep Disturbance

Supplemental Table 5. Bootstrap dominance analysis results of SCD-associated factors and self-report emotional and behavioral dyscontrol in MCI group

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| dominance | Factori | Factork | Dij | mDij | SE.Dij | Pij | Pji | Pnoij | Rep |
| complete | Anxiety | Fatigue | 1 | 0.94 | 0.17 | 0.88 | 0.00 | 0.12 | 0.88 |
| complete | Anxiety | Social | 1 | 0.94 | 0.17 | 0.87 | 0.00 | 0.13 | 0.87 |
| complete | Anxiety | Depression | 1 | 0.97 | 0.12 | 0.95 | 0.00 | 0.05 | 0.95 |
| complete | Anxiety | Pain | 1 | 0.97 | 0.12 | 0.94 | 0.00 | 0.06 | 0.94 |
| complete | Anxiety | SleepDstr | 1 | 0.99 | 0.07 | 0.98 | 0.00 | 0.02 | 0.98 |
| complete | Anxiety | ConHx | 1 | 0.99 | 0.08 | 0.98 | 0.00 | 0.02 | 0.98 |
| complete | Anxiety | Education | 1 | 0.91 | 0.19 | 0.82 | 0.00 | 0.18 | 0.82 |
| complete | Anxiety | LifeEvents | 1 | 0.99 | 0.06 | 0.99 | 0.00 | 0.02 | 0.99 |
| complete | Fatigue | Social | 0.5 | 0.55 | 0.34 | 0.29 | 0.19 | 0.52 | 0.52 |
| complete | Fatigue | Depression | 0.5 | 0.53 | 0.20 | 0.10 | 0.05 | 0.84 | 0.84 |
| complete | Fatigue | Pain | 1 | 0.67 | 0.24 | 0.33 | 0.00 | 0.67 | 0.33 |
| complete | Fatigue | SleepDstr | 1 | 0.69 | 0.24 | 0.38 | 0.00 | 0.62 | 0.38 |
| complete | Fatigue | ConHx | 1 | 0.69 | 0.24 | 0.38 | 0.00 | 0.62 | 0.38 |
| complete | Fatigue | Education | 0.5 | 0.53 | 0.13 | 0.07 | 0.00 | 0.93 | 0.93 |
| complete | Fatigue | LifeEvents | 1 | 0.71 | 0.25 | 0.41 | 0.00 | 0.59 | 0.41 |
| complete | Social | Depression | 0.5 | 0.50 | 0.13 | 0.03 | 0.04 | 0.93 | 0.93 |
| complete | Social | Pain | 1 | 0.72 | 0.26 | 0.44 | 0.01 | 0.54 | 0.44 |
| complete | Social | SleepDstr | 1 | 0.70 | 0.25 | 0.40 | 0.00 | 0.60 | 0.40 |
| complete | Social | ConHx | 1 | 0.67 | 0.24 | 0.34 | 0.00 | 0.66 | 0.34 |
| complete | Social | Education | 0.5 | 0.55 | 0.15 | 0.10 | 0.00 | 0.90 | 0.90 |
| complete | Social | LifeEvents | 1 | 0.70 | 0.25 | 0.40 | 0.00 | 0.60 | 0.40 |
| complete | Depression | Pain | 0.5 | 0.53 | 0.13 | 0.07 | 0.00 | 0.93 | 0.93 |
| complete | Depression | SleepDstr | 0.5 | 0.56 | 0.16 | 0.12 | 0.00 | 0.88 | 0.88 |
| complete | Depression | ConHx | 0.5 | 0.57 | 0.17 | 0.14 | 0.00 | 0.87 | 0.87 |
| complete | Depression | Education | 0.5 | 0.51 | 0.06 | 0.02 | 0.00 | 0.98 | 0.98 |
| complete | Depression | LifeEvents | 0.5 | 0.56 | 0.17 | 0.13 | 0.00 | 0.88 | 0.88 |
| complete | Pain | SleepDstr | 0.5 | 0.52 | 0.16 | 0.07 | 0.03 | 0.89 | 0.89 |
| complete | Pain | ConHx | 0.5 | 0.52 | 0.13 | 0.06 | 0.01 | 0.93 | 0.93 |
| complete | Pain | Education | 0.5 | 0.51 | 0.06 | 0.01 | 0.00 | 0.99 | 0.99 |
| complete | Pain | LifeEvents | 0.5 | 0.52 | 0.12 | 0.05 | 0.01 | 0.94 | 0.94 |
| complete | SleepDstr | ConHx | 0.5 | 0.53 | 0.20 | 0.12 | 0.05 | 0.83 | 0.83 |
| complete | SleepDstr | Education | 0.5 | 0.50 | 0.08 | 0.02 | 0.01 | 0.97 | 0.97 |
| complete | SleepDstr | LifeEvents | 0.5 | 0.53 | 0.22 | 0.13 | 0.06 | 0.81 | 0.81 |
| complete | ConHx | Education | 0.5 | 0.46 | 0.16 | 0.01 | 0.09 | 0.90 | 0.90 |
| complete | ConHx | LifeEvents | 0.5 | 0.51 | 0.22 | 0.10 | 0.09 | 0.81 | 0.81 |
| complete | Education | LifeEvents | 0.5 | 0.51 | 0.12 | 0.04 | 0.02 | 0.94 | 0.94 |
| conditional | Anxiety | Fatigue | 1 | 0.97 | 0.14 | 0.96 | 0.01 | 0.03 | 0.96 |
| conditional | Anxiety | Social | 1 | 0.98 | 0.11 | 0.96 | 0.00 | 0.03 | 0.96 |
| conditional | Anxiety | Depression | 1 | 0.99 | 0.09 | 0.97 | 0.00 | 0.02 | 0.97 |
| conditional | Anxiety | Pain | 1 | 1.00 | 0.02 | 1.00 | 0.00 | 0.00 | 1.00 |
| conditional | Anxiety | SleepDstr | 1 | 1.00 | 0.04 | 1.00 | 0.00 | 0.01 | 1.00 |
| conditional | Anxiety | ConHx | 1 | 1.00 | 0.04 | 0.99 | 0.00 | 0.01 | 0.99 |
| conditional | Anxiety | Education | 1 | 0.92 | 0.18 | 0.84 | 0.00 | 0.16 | 0.84 |
| conditional | Anxiety | LifeEvents | 1 | 1.00 | 0.03 | 1.00 | 0.00 | 0.00 | 1.00 |
| conditional | Fatigue | Social | 0.5 | 0.58 | 0.40 | 0.41 | 0.26 | 0.33 | 0.33 |
| conditional | Fatigue | Depression | 0.5 | 0.51 | 0.35 | 0.25 | 0.23 | 0.52 | 0.52 |
| conditional | Fatigue | Pain | 1 | 0.78 | 0.25 | 0.56 | 0.01 | 0.44 | 0.56 |
| conditional | Fatigue | SleepDstr | 1 | 0.80 | 0.24 | 0.60 | 0.00 | 0.40 | 0.60 |
| conditional | Fatigue | ConHx | 1 | 0.79 | 0.25 | 0.58 | 0.00 | 0.42 | 0.58 |
| conditional | Fatigue | Education | 0.5 | 0.56 | 0.16 | 0.11 | 0.00 | 0.89 | 0.89 |
| conditional | Fatigue | LifeEvents | 1 | 0.82 | 0.24 | 0.64 | 0.00 | 0.36 | 0.64 |
| conditional | Social | Depression | 0.5 | 0.46 | 0.31 | 0.16 | 0.23 | 0.61 | 0.61 |
| conditional | Social | Pain | 1 | 0.80 | 0.30 | 0.66 | 0.06 | 0.29 | 0.66 |
| conditional | Social | SleepDstr | 1 | 0.84 | 0.24 | 0.69 | 0.01 | 0.30 | 0.69 |
| conditional | Social | ConHx | 1 | 0.83 | 0.24 | 0.67 | 0.00 | 0.33 | 0.67 |
| conditional | Social | Education | 0.5 | 0.57 | 0.18 | 0.15 | 0.00 | 0.85 | 0.85 |
| conditional | Social | LifeEvents | 1 | 0.85 | 0.24 | 0.70 | 0.01 | 0.30 | 0.70 |
| conditional | Depression | Pain | 1 | 0.72 | 0.27 | 0.45 | 0.02 | 0.53 | 0.45 |
| conditional | Depression | SleepDstr | 1 | 0.74 | 0.25 | 0.48 | 0.00 | 0.52 | 0.48 |
| conditional | Depression | ConHx | 1 | 0.75 | 0.25 | 0.49 | 0.00 | 0.51 | 0.49 |
| conditional | Depression | Education | 0.5 | 0.52 | 0.10 | 0.05 | 0.00 | 0.96 | 0.96 |
| conditional | Depression | LifeEvents | 1 | 0.76 | 0.25 | 0.53 | 0.00 | 0.47 | 0.53 |
| conditional | Pain | SleepDstr | 0.5 | 0.67 | 0.30 | 0.40 | 0.06 | 0.54 | 0.54 |
| conditional | Pain | ConHx | 1 | 0.68 | 0.26 | 0.38 | 0.01 | 0.61 | 0.38 |
| conditional | Pain | Education | 0.5 | 0.52 | 0.10 | 0.04 | 0.00 | 0.96 | 0.96 |
| conditional | Pain | LifeEvents | 0.5 | 0.70 | 0.27 | 0.42 | 0.03 | 0.55 | 0.55 |
| conditional | SleepDstr | ConHx | 0.5 | 0.60 | 0.30 | 0.30 | 0.10 | 0.60 | 0.60 |
| conditional | SleepDstr | Education | 0.5 | 0.51 | 0.11 | 0.04 | 0.01 | 0.95 | 0.95 |
| conditional | SleepDstr | LifeEvents | 0.5 | 0.58 | 0.33 | 0.31 | 0.15 | 0.54 | 0.54 |
| conditional | ConHx | Education | 0.5 | 0.47 | 0.17 | 0.03 | 0.09 | 0.88 | 0.88 |
| conditional | ConHx | LifeEvents | 0 | 0.48 | 0.34 | 0.22 | 0.25 | 0.53 | 0.25 |
| conditional | Education | LifeEvents | 0.5 | 0.50 | 0.14 | 0.04 | 0.04 | 0.92 | 0.92 |
| general | Anxiety | Fatigue | 1 | 0.98 | 0.14 | 0.98 | 0.02 | 0.00 | 0.98 |
| general | Anxiety | Social | 1 | 0.99 | 0.08 | 0.99 | 0.01 | 0.00 | 0.99 |
| general | Anxiety | Depression | 1 | 0.99 | 0.12 | 0.99 | 0.01 | 0.00 | 0.99 |
| general | Anxiety | Pain | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | SleepDstr | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | ConHx | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | Education | 1 | 1.00 | 0.03 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | LifeEvents | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | Social | 1 | 0.62 | 0.49 | 0.62 | 0.38 | 0.00 | 0.62 |
| general | Fatigue | Depression | 0 | 0.39 | 0.49 | 0.39 | 0.61 | 0.00 | 0.61 |
| general | Fatigue | Pain | 1 | 0.96 | 0.19 | 0.96 | 0.04 | 0.00 | 0.96 |
| general | Fatigue | SleepDstr | 1 | 0.99 | 0.08 | 0.99 | 0.01 | 0.00 | 0.99 |
| general | Fatigue | ConHx | 1 | 0.99 | 0.08 | 0.99 | 0.01 | 0.00 | 0.99 |
| general | Fatigue | Education | 1 | 0.92 | 0.27 | 0.92 | 0.08 | 0.00 | 0.92 |
| general | Fatigue | LifeEvents | 1 | 0.99 | 0.08 | 0.99 | 0.01 | 0.00 | 0.99 |
| general | Social | Depression | 0 | 0.28 | 0.45 | 0.28 | 0.72 | 0.00 | 0.72 |
| general | Social | Pain | 1 | 0.89 | 0.32 | 0.89 | 0.11 | 0.00 | 0.89 |
| general | Social | SleepDstr | 1 | 0.96 | 0.19 | 0.96 | 0.04 | 0.00 | 0.96 |
| general | Social | ConHx | 1 | 0.99 | 0.12 | 0.99 | 0.02 | 0.00 | 0.99 |
| general | Social | Education | 1 | 0.87 | 0.34 | 0.87 | 0.13 | 0.00 | 0.87 |
| general | Social | LifeEvents | 1 | 0.97 | 0.17 | 0.97 | 0.03 | 0.00 | 0.97 |
| general | Depression | Pain | 1 | 0.95 | 0.22 | 0.95 | 0.05 | 0.00 | 0.95 |
| general | Depression | SleepDstr | 1 | 1.00 | 0.05 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Depression | ConHx | 1 | 0.99 | 0.09 | 0.99 | 0.01 | 0.00 | 0.99 |
| general | Depression | Education | 1 | 0.95 | 0.23 | 0.95 | 0.06 | 0.00 | 0.95 |
| general | Depression | LifeEvents | 1 | 1.00 | 0.06 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Pain | SleepDstr | 1 | 0.85 | 0.36 | 0.85 | 0.15 | 0.00 | 0.85 |
| general | Pain | ConHx | 1 | 0.92 | 0.27 | 0.92 | 0.08 | 0.00 | 0.92 |
| general | Pain | Education | 1 | 0.71 | 0.45 | 0.71 | 0.29 | 0.00 | 0.71 |
| general | Pain | LifeEvents | 1 | 0.90 | 0.30 | 0.90 | 0.10 | 0.00 | 0.90 |
| general | SleepDstr | ConHx | 1 | 0.73 | 0.44 | 0.73 | 0.27 | 0.00 | 0.73 |
| general | SleepDstr | Education | 0 | 0.45 | 0.50 | 0.45 | 0.55 | 0.00 | 0.55 |
| general | SleepDstr | LifeEvents | 1 | 0.66 | 0.47 | 0.66 | 0.34 | 0.00 | 0.66 |
| general | ConHx | Education | 0 | 0.27 | 0.44 | 0.27 | 0.73 | 0.00 | 0.73 |
| general | ConHx | LifeEvents | 0 | 0.41 | 0.49 | 0.41 | 0.59 | 0.00 | 0.59 |
| general | Education | LifeEvents | 1 | 0.68 | 0.47 | 0.68 | 0.32 | 0.00 | 0.68 |

Dij= reflects the original dominance analysis result (1=factori dominates factorj, 0=factorj dominates factori, 0.5=dominance cannot be established); mDij =mean of dominance for Dij for bootstrap samples (1=perfect agreement with expected level of dominance where factori dominates factorj; SE.Dij=standard error for bootstrap samples; Pij=proportion of bootstrap samples where factori dominates factorj); Pji(proportion of bootstrap samples where factorj dominates factori); Pnoij=proportion of bootstrap samples where dominance cannot be established; Rep=proportion of bootstrap samples in which original dominance is replicated. ConHx=concussion history; LifeEvents= Stress-related events from the Social Readjustment Rating Scale; SleepDstr=Sleep Disturbance

Supplemental Table 6. Bootstrap dominance analysis results of SCD-associated factors and self-report emotional and behavioral dyscontrol in non-MCI group

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| dominance | Factori | Factork | Dij | mDij | SE.Dij | Pij | Pji P | noij | Rep |
| complete | Anxiety | Fatigue | 0.5 | 0.51 | 0.14 | 0.05 | 0.02 | 0.93 | 0.93 |
| complete | Anxiety | Social | 0.5 | 0.64 | 0.23 | 0.28 | 0.00 | 0.72 | 0.72 |
| complete | Anxiety | Depression | 1 | 0.83 | 0.29 | 0.70 | 0.05 | 0.25 | 0.70 |
| complete | Anxiety | Pain | 1 | 0.76 | 0.25 | 0.52 | 0.00 | 0.48 | 0.52 |
| complete | Anxiety | SleepDstr | 1 | 0.99 | 0.09 | 0.97 | 0.00 | 0.03 | 0.97 |
| complete | Anxiety | ConHx | 1 | 0.98 | 0.11 | 0.95 | 0.00 | 0.05 | 0.95 |
| complete | Anxiety | Education | 1 | 0.99 | 0.07 | 0.98 | 0.00 | 0.02 | 0.98 |
| complete | Anxiety | LifeEvents | 1 | 0.96 | 0.13 | 0.93 | 0.00 | 0.07 | 0.93 |
| complete | Fatigue | Social | 1 | 0.90 | 0.20 | 0.81 | 0.00 | 0.19 | 0.81 |
| complete | Fatigue | Depression | 0.5 | 0.55 | 0.16 | 0.11 | 0.00 | 0.89 | 0.89 |
| complete | Fatigue | Pain | 1 | 0.98 | 0.11 | 0.95 | 0.00 | 0.05 | 0.95 |
| complete | Fatigue | SleepDstr | 1 | 0.99 | 0.06 | 0.98 | 0.00 | 0.02 | 0.98 |
| complete | Fatigue | ConHx | 1 | 0.99 | 0.06 | 0.98 | 0.00 | 0.02 | 0.98 |
| complete | Fatigue | Education | 1 | 0.99 | 0.06 | 0.99 | 0.00 | 0.01 | 0.99 |
| complete | Fatigue | LifeEvents | 1 | 0.97 | 0.11 | 0.95 | 0.00 | 0.05 | 0.95 |
| complete | Social | Depression | 0.5 | 0.49 | 0.09 | 0.00 | 0.03 | 0.97 | 0.97 |
| complete | Social | Pain | 1 | 0.82 | 0.24 | 0.64 | 0.00 | 0.36 | 0.64 |
| complete | Social | SleepDstr | 1 | 0.79 | 0.25 | 0.59 | 0.00 | 0.41 | 0.59 |
| complete | Social | ConHx | 1 | 0.76 | 0.25 | 0.52 | 0.00 | 0.48 | 0.52 |
| complete | Social | Education | 1 | 0.86 | 0.22 | 0.73 | 0.00 | 0.27 | 0.73 |
| complete | Social | LifeEvents | 0.5 | 0.73 | 0.25 | 0.46 | 0.00 | 0.54 | 0.54 |
| complete | Depression | Pain | 0.5 | 0.56 | 0.16 | 0.12 | 0.00 | 0.88 | 0.88 |
| complete | Depression | SleepDstr | 1 | 0.88 | 0.21 | 0.76 | 0.00 | 0.24 | 0.76 |
| complete | Depression | ConHx | 1 | 0.83 | 0.24 | 0.66 | 0.00 | 0.34 | 0.66 |
| complete | Depression | Education | 1 | 0.86 | 0.22 | 0.73 | 0.00 | 0.28 | 0.73 |
| complete | Depression | LifeEvents | 1 | 0.77 | 0.25 | 0.55 | 0.00 | 0.45 | 0.55 |
| complete | Pain | SleepDstr | 0.5 | 0.52 | 0.11 | 0.05 | 0.00 | 0.95 | 0.95 |
| complete | Pain | ConHx | 0.5 | 0.54 | 0.14 | 0.08 | 0.00 | 0.92 | 0.92 |
| complete | Pain | Education | 0.5 | 0.64 | 0.22 | 0.27 | 0.00 | 0.73 | 0.73 |
| complete | Pain | LifeEvents | 0.5 | 0.53 | 0.12 | 0.06 | 0.00 | 0.94 | 0.94 |
| complete | SleepDstr | ConHx | 0.5 | 0.62 | 0.21 | 0.24 | 0.00 | 0.76 | 0.76 |
| complete | SleepDstr | Education | 0.5 | 0.64 | 0.22 | 0.28 | 0.00 | 0.72 | 0.72 |
| complete | SleepDstr | LifeEvents | 0.5 | 0.58 | 0.19 | 0.16 | 0.00 | 0.84 | 0.84 |
| complete | ConHx | Education | 1 | 0.70 | 0.26 | 0.41 | 0.01 | 0.58 | 0.41 |
| complete | ConHx | LifeEvents | 0.5 | 0.42 | 0.31 | 0.12 | 0.28 | 0.60 | 0.60 |
| complete | Education | LifeEvents | 0 | 0.23 | 0.25 | 0.00 | 0.55 | 0.45 | 0.55 |
| conditional | Anxiety | Fatigue | 0.5 | 0.60 | 0.38 | 0.41 | 0.21 | 0.38 | 0.38 |
| conditional | Anxiety | Social | 1 | 0.95 | 0.16 | 0.91 | 0.01 | 0.09 | 0.91 |
| conditional | Anxiety | Depression | 1 | 0.86 | 0.31 | 0.82 | 0.10 | 0.09 | 0.82 |
| conditional | Anxiety | Pain | 1 | 0.99 | 0.06 | 0.98 | 0.00 | 0.02 | 0.98 |
| conditional | Anxiety | SleepDstr | 1 | 0.99 | 0.07 | 0.98 | 0.00 | 0.02 | 0.98 |
| conditional | Anxiety | ConHx | 1 | 0.98 | 0.10 | 0.96 | 0.00 | 0.04 | 0.96 |
| conditional | Anxiety | Education | 1 | 0.99 | 0.06 | 0.99 | 0.00 | 0.01 | 0.99 |
| conditional | Anxiety | LifeEvents | 1 | 0.97 | 0.12 | 0.94 | 0.00 | 0.07 | 0.94 |
| conditional | Fatigue | Social | 1 | 0.95 | 0.19 | 0.91 | 0.02 | 0.07 | 0.91 |
| conditional | Fatigue | Depression | 0.5 | 0.72 | 0.30 | 0.49 | 0.06 | 0.45 | 0.45 |
| conditional | Fatigue | Pain | 1 | 1.00 | 0.05 | 0.99 | 0.00 | 0.01 | 0.99 |
| conditional | Fatigue | SleepDstr | 1 | 1.00 | 0.04 | 0.99 | 0.00 | 0.01 | 0.99 |
| conditional | Fatigue | ConHx | 1 | 0.99 | 0.06 | 0.99 | 0.00 | 0.01 | 0.99 |
| conditional | Fatigue | Education | 1 | 0.99 | 0.05 | 0.99 | 0.00 | 0.01 | 0.99 |
| conditional | Fatigue | LifeEvents | 1 | 0.98 | 0.09 | 0.96 | 0.00 | 0.04 | 0.96 |
| conditional | Social | Depression | 0 | 0.25 | 0.29 | 0.04 | 0.54 | 0.42 | 0.54 |
| conditional | Social | Pain | 1 | 0.87 | 0.22 | 0.75 | 0.01 | 0.24 | 0.75 |
| conditional | Social | SleepDstr | 1 | 0.92 | 0.18 | 0.84 | 0.00 | 0.16 | 0.84 |
| conditional | Social | ConHx | 1 | 0.87 | 0.22 | 0.73 | 0.00 | 0.27 | 0.73 |
| conditional | Social | Education | 1 | 0.89 | 0.21 | 0.78 | 0.00 | 0.23 | 0.78 |
| conditional | Social | LifeEvents | 1 | 0.81 | 0.24 | 0.62 | 0.00 | 0.38 | 0.62 |
| conditional | Depression | Pain | 1 | 0.90 | 0.20 | 0.80 | 0.00 | 0.20 | 0.80 |
| conditional | Depression | SleepDstr | 1 | 0.92 | 0.18 | 0.85 | 0.00 | 0.15 | 0.85 |
| conditional | Depression | ConHx | 1 | 0.88 | 0.22 | 0.75 | 0.00 | 0.25 | 0.75 |
| conditional | Depression | Education | 1 | 0.89 | 0.21 | 0.78 | 0.00 | 0.22 | 0.78 |
| conditional | Depression | LifeEvents | 1 | 0.83 | 0.24 | 0.66 | 0.00 | 0.34 | 0.66 |
| conditional | Pain | SleepDstr | 1 | 0.75 | 0.29 | 0.55 | 0.05 | 0.41 | 0.55 |
| conditional | Pain | ConHx | 0.5 | 0.71 | 0.25 | 0.43 | 0.00 | 0.57 | 0.57 |
| conditional | Pain | Education | 0.5 | 0.75 | 0.25 | 0.50 | 0.00 | 0.50 | 0.50 |
| conditional | Pain | LifeEvents | 0.5 | 0.66 | 0.23 | 0.32 | 0.00 | 0.68 | 0.68 |
| conditional | SleepDstr | ConHx | 0.5 | 0.65 | 0.23 | 0.30 | 0.00 | 0.69 | 0.69 |
| conditional | SleepDstr | Education | 0.5 | 0.70 | 0.24 | 0.39 | 0.00 | 0.61 | 0.61 |
| conditional | SleepDstr | LifeEvents | 0.5 | 0.61 | 0.23 | 0.24 | 0.02 | 0.75 | 0.75 |
| conditional | ConHx | Education | 1 | 0.76 | 0.27 | 0.53 | 0.02 | 0.45 | 0.53 |
| conditional | ConHx | LifeEvents | 0 | 0.32 | 0.40 | 0.20 | 0.57 | 0.23 | 0.57 |
| conditional | Education | LifeEvents | 0 | 0.17 | 0.24 | 0.00 | 0.66 | 0.34 | 0.66 |
| general | Anxiety | Fatigue | 1 | 0.71 | 0.45 | 0.71 | 0.29 | 0.00 | 0.71 |
| general | Anxiety | Social | 1 | 0.98 | 0.14 | 0.98 | 0.02 | 0.00 | 0.98 |
| general | Anxiety | Depression | 1 | 0.87 | 0.34 | 0.87 | 0.13 | 0.00 | 0.87 |
| general | Anxiety | Pain | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | SleepDstr | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | ConHx | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | Education | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Anxiety | LifeEvents | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | Social | 1 | 0.95 | 0.22 | 0.95 | 0.05 | 0.00 | 0.95 |
| general | Fatigue | Depression | 1 | 0.61 | 0.49 | 0.61 | 0.39 | 0.00 | 0.61 |
| general | Fatigue | Pain | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | SleepDstr | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | ConHx | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | Education | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Fatigue | LifeEvents | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Social | Depression | 0 | 0.08 | 0.27 | 0.08 | 0.92 | 0.00 | 0.92 |
| general | Social | Pain | 1 | 0.97 | 0.18 | 0.97 | 0.03 | 0.00 | 0.97 |
| general | Social | SleepDstr | 1 | 1.00 | 0.05 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Social | ConHx | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Social | Education | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Social | LifeEvents | 1 | 1.00 | 0.03 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Depression | Pain | 1 | 1.00 | 0.03 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Depression | SleepDstr | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Depression | ConHx | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Depression | Education | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Depression | LifeEvents | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Pain | SleepDstr | 1 | 0.90 | 0.30 | 0.90 | 0.10 | 0.00 | 0.90 |
| general | Pain | ConHx | 1 | 1.00 | 0.05 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Pain | Education | 1 | 1.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | Pain | LifeEvents | 1 | 0.99 | 0.12 | 0.99 | 0.02 | 0.00 | 0.99 |
| general | SleepDstr | ConHx | 1 | 0.95 | 0.22 | 0.95 | 0.05 | 0.00 | 0.95 |
| general | SleepDstr | Education | 1 | 1.00 | 0.03 | 1.00 | 0.00 | 0.00 | 1.00 |
| general | SleepDstr | LifeEvents | 1 | 0.90 | 0.30 | 0.90 | 0.10 | 0.00 | 0.90 |
| general | ConHx | Education | 1 | 0.89 | 0.32 | 0.89 | 0.11 | 0.00 | 0.89 |
| general | ConHx | LifeEvents | 0 | 0.30 | 0.46 | 0.30 | 0.70 | 0.00 | 0.70 |
| general | Education | LifeEvents | 0 | 0.05 | 0.21 | 0.05 | 0.95 | 0.00 | 0.95 |

 Dij= reflects the original dominance analysis result (1=factori dominates factorj, 0=factorj dominates factori, 0.5=dominance cannot be established); mDij =mean of dominance for Dij for bootstrap samples (1=perfect agreement with expected level of dominance where factori dominates factorj; SE.Dij=standard error for bootstrap samples; Pij=proportion of bootstrap samples where factori dominates factorj); Pji(proportion of bootstrap samples where factorj dominates factori); Pnoij=proportion of bootstrap samples where dominance cannot be established; Rep=proportion of bootstrap samples in which original dominance is replicated. ConHx=concussion history; LifeEvents= Stress-related events from the Social Readjustment Rating Scale; SleepDstr=Sleep Disturbance