**Supplementary Table S1.** Association between background factors and hazardous drinkingψ in male and female persons with bipolar disorder.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Male** | | | **Female** | | |
|  | **Hazardous drinking** | |  | **Hazardous drinking** | |  |
|  | **No** | **Yes** | **p-value** | **No** | **Yes** | **p-value** |
| **n** | 289 | 181 |  | 589 | 209 |  |
| **Age** | 47.06 (13.32) | 42.50 (12.06) | <0.001 | 45.51 (12.82) | 41.39 (12.09) | <0.001 |
| **Education** |  |  |  |  |  |  |
| No matriculation examination | 191 (66.1) | 121 (66.9) | 0.945 | 313 (53.1) | 126 (60.3) | 0.089 |
| Matriculation examination | 98 (33.9) | 60 (33.1) |  | 276 (46.9) | 83 (39.7) |  |
| **Household pattern** |  |  |  |  |  |  |
| with spouse | 107 (37.0) | 66 (36.5) | 0.981 | 267 (45.3) | 75 (35.9) | 0.022 |
| Other | 182 (63.0) | 115 (63.5) |  | 322 (54.7) | 134 (64.1) |  |
| **Psychotropic medication** |  |  |  |  |  |  |
| No | 15 (5.2) | 12 (6.6) | 0.653 | 29 (4.9) | 7 (3.3) | 0.446 |
| Yes | 274 (94.8) | 169 (93.4) |  | 558 (94.7) | 202 (96.7) |  |
| Missing | 0 (0.0) | 0 (0.0) |  | 2 (0.3) | 0 (0.0) |  |
| RT = Reaction time  PAL = Paired association learning  ψAUDIT-C cutoff scores for hazardous drinking were ≥6 for males and ≥5 for females  SD = Standard deviation  CI = Confidence interval  a Adjusted with age, household pattern and education  \* Analyzed with log-linear regression \*\* Analyzed with linear regression \*\*\* Analyzed with logistic regression | | | | | | |

**Supplementary Table S2.** Distribution of RT median, RT SD, PAL first trial memory scores (FTMS) and PAL total errors adjusted in study population.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Min** | **1st Qu,** | **Median** | **Mean** | **3rd Qu.** | **Max** |
| **RT Median** | 282.0 | 385.0 | 416.0 | 426.4 | 454.0 | 982.5 |
| **RT SD** | 17.44 | 35.03 | 45.09 | 55.12 | 58.39 | 1069.65 |
| **PAL FTMS** | 0.0 | 7.00 | 11.00 | 10.67 | 14.00 | 20 |
| **PAL TEA** | 0.0 | 8.00 | 17.00 | 23.76 | 41.00 | 69 |
| RT = Reaction time  PAL= Paired association learning  FTMS = First trial memory score  TEA = Total error adjusted  SD = Standard deviation | | | | | | |

**Supplementary Table S3.** RT median and RT SD *p*-values for background factors and alcohol related disorder in persons with bipolar disorder.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Male** | | | **Female** | | |  |
|  | **RT** | | **PAL** | **RT** | | **PAL** |  |
|  | median | SD | FTMS | median | SD | FTMS | Test |
| **Age** | <.001 | <.001 | <.001 | <.001 | <.001 | <.001 | Spearman |
| **Education** | 0.242 | 0.028 | <.001 | 0.031 | 0.030 | <.001 | Point biserial |
| **Alcohol related disorder** | 0.234 | 0.472 | 0.015 | 0.910 | 0.657 | 0.090 | Point biserial |
| RT = Reaction time  PAL = Paired association learning  SD = Standard deviation | | | | | | | |

**Supplementary Table S4.** PAL total error adjusted scores for background factors and alcohol use patterns in persons with bipolar disorder.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Male** | | | **Female** | | |
|  | **PAL total errors adjusted** | | **p-value** | **PAL total errors adjusted** | | **p-value** |
|  | 0 | 1 |  | 0 | 1 |  |
| **n** | 269 | 105 |  | 456 | 223 |  |
| **Age** | 47.67 (12.47) | 35.92 (10.25) | <0.001 | 45.87 (12.51) | 38.32 (10.17) | <0.001 |
| **Education** |  | | | | | |
| No matriculation examination | 190 (70.6) | 53 (50.5) | <0.001 | 266 (58.3) | 97 (43.5) | <0.001 |
| Matriculation examination | 79 (29.4) | 52 (49.5) |  | 190 (41.7) | 126 (56.5) |  |
| **Household pattern** |  | | | | | |
| with spouse | 108 (40.1) | 34 (32.4) | 0.203 | 199 (43.6) | 101 (45.3) | 0.745 |
| Other | 161 (59.9) | 71 (67.6) |  | 257 (56.4) | 122 (54.7) |  |
| **Psychotropic medication** |  | | | | | |
| No | 17 (6.3) | 7 (6.7) | 1.000 | 19 (4.2) | 15 (6.7) | 0.309 |
| Yes | 252 (93.7) | 98 (93.3) |  | 436 (95.6) | 207 (92.8) |  |
| Missing |  |  |  | 1 (0.2) | 1 (0.4) |  |
| **Hazardous drinking** |  | | | | | |
| No | 159 (59.1) | 63 (60.0) | 0.968 | 342 (75.0) | 161 (72.2) | 0.491 |
| Yes | 110 (40.9) | 42 (40.0) |  | 114 (25.0) | 62 (27.8) |  |
| **Alcohol related disorder** |  | | | | | |
| No | 164 (61.0) | 76 (72.4) | 0.051 | 331 (72.6) | 187 (83.9) | 0.002 |
| Yes | 105 (39.0) | 29 (27.6) |  | 125 (27.4) | 36 (16.1) |  |
| PAL = Paired association learning | | | | | | |

**Supplementary Table S5.** RT median and RT SD for hazardous drinking in persons with bipolar disorder.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Male** | | | **Female** | | |
|  |  | **Hazardous drinking** | |  | **Hazardous drinking** | |  |
|  |  | **0** | **1** | **p-value** | **0** | **1** | **p-value** |
| **RT** | Median | 440.50 (84.90) | 418.85 (51.30) | 0.003 | 428.10 (68.77) | 409.81 (50.42) | 0.001 |
|  | SD | 60.75 (58.09) | 49.15 (34.67) | 0.019 | 57.06 (60.99) | 47.47 (26.49) | 0.034 |
| **PAL** | FTMS | 9.82 (5.26) | 10.11 (4.93) | 0.595 | 10.92 (4.75) | 11.52 (4.52) | 0.147 |
| RT = Reaction time  PAL= Paired association learning  FTMS = First trial memory score  SD = Standard deviation | | | | | | | |

**Supplementary Table S6.** Cohen's d measure of effect.

|  |  |  |
| --- | --- | --- |
|  | Male | Female |
| **Hazardous drinking** | | |
| RT SD | 0.23 (0.04, 0.43) | 0.19 (0.02, 0.34) |
| RT Median | 0.29 (0.10, 0.49) | 0.28 (0.12, 0.45) |
| PAL FTMS | -0.05 (-0.26, 0.15) | -0.12 (-0.29, 0.04) |
| PAL TEA | 0.02 (-0.19, 0.22) | -0.07 (-0.24, 0.10) |
| **Alcohol related disorder** | | |
| RT SD | -0.10 (-0.29, 0.10) | 0.18 (0.01, 0.34) |
| RT median | 0.29 (0.10, 0.49) | 0.29 (0.12, 0.45) |
| PAL FTMS | 0.26 (0.05, 0.48) | 0.15 (-0.02, 0.33) |
| PAL TEA | 0.22 (0.01, 0.44) | 0.29 (0.12, 0.47) |
| RT = Reaction time  PAL= Paired association learning  FTMS = First trial memory score  TEA = Total error adjusted  SD = Standard deviation | | |