**Supplementary material**

**Table S1.** Sociodemographic and clinical background variables in healthy controls with positive and negative family history of AUD. Values are presented as percentages or mean (standard deviation).

|  |  |  |  |
| --- | --- | --- | --- |
|  | Healthy controls AUD family history positive | Healthy controls AUD family history negative | Statistical significance |
| Males | 38.3 % | 51.3 % | N.S. |
| Age | 49.0 (11.6) | 46.9 (12.0) | N.S. |
| Education level   * Did not finish primary school * Primary * Secondary * University | 0.0 %  4.3 %  47.8 %  47.8 % | 2.6 %  5.1 %  38.5 %  53.8 % | N.S. |
| Income   * Low * Medium * High | 36.2 %  44.7 %  19.1 % | 31.6 %  42.1 %  26.3 % | N.S. |
| DSM-5 criteria for alcohol dependence | 0 (0) | 0 (0) | N.S. |
| Age when alcohol became a problem | - | - |  |
| Number of years with current levels of drinking | - | - |  |
| TLFB % drinking days | 14 % (13) | 14 % (11.0) | N.S. |
| TLFB % heavy drinking days | 1.5 % (3.9) | 0.20 % (0.7) | P=0.067 |
| TLFB drinks per drinking day | 2.7 (1.9) | 2.0 (0.9) | N.S. |
| OCDS score | 2.5 (2.6) | 1.7 (2.4) | N.S. |
| Daily nicotine use | 21.7 % | 0.0 % | P=0.002 |
| MADRS-S score | 3.2 (3.9) | 2.9 (2.7) | N.S. |

AUD – Alcohol Use Disorder; TLFB – Timeline Follow-back interview; OCDS - Obsessive Compulsive Drinking Scale; MADRS-S - Montgomery-Åsberg Depression Self Rating Scale; N.S. – No statistically significant difference p>0.05.

**Table S2.** Neuropsychological test outcomes in alcohol use disorder (AUD) patients and healthy controls with positive and negative family history (FH) of AUD, in the sensitivity analysis where FH+ individuals had a definite problem drinker as a relative. Values are presented as mean (standard deviation).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | AUD patients (n=106) | Healthy controls  AUD FH +  (n=28) | Healthy controls AUD FH –  (n=58) | Statistical significance | Effect size (Cohen’s d) |
| **BIS** |  |  |  |  |  |
| Total score\*\*\* | 62.0 (11.0) | 58.6 (8.9) | 54.3 (7.7) | F(2,177) = 10.8; p < 0.001  AUD, FH+: p = 0.119  AUD, FH-: p < 0.001 FH+, FH-: p = 0.067 | d = 0.34  d = 0.81  d = 0.52 |
| Attention\*\*\* | 14.9 (3.6) | 13.3 (2.4) | 12.4 (2.3) | F(2,177) = 9.7; p < 0.001  AUD, FH+: p = 0.020  AUD, FH-: p < 0.001 FH+, FH-: p = 0.224 | d = 0.52  d = 0.83  d = 0.38 |
| Motor\*\* | 22.0 (3.9) | 21.2 (5.0) | 19.9 (3.2) | F(2,177) = 5.3; p = 0.006  AUD, FH+: p = 0.326  AUD, FH-: p = 0.001 FH+, FH-: p = 0.163 | d = 0.18  d = 0.59  d = 0.31 |
| Non-planning\*\* | 25.1 (5.7) | 24.1 (4.4) | 22.0 (4.6) | F(2,177) = 6.0; p = 0.003  AUD, FH+: p = 0.417  AUD, FH-: p = 0.001 FH+, FH-: p = 0.092 | d = 0.20  d = 0.60  d = 0.47 |
| **Stop Signal Task** |  |  |  |  |  |
| SSRT\*\* | 208.9 (67.6) | 168.7 (43.1) | 184.8 (46.5) | F(2,188) = 6.5; p = 0.002  AUD, FH+: p = 0.002  AUD, FH-: p = 0.013 FH+, FH-: p = 0.242 | d = 0.71  d = 0.42  d = 0.36 |
| Proportion successful stops | 0.53 (0.12) | 0.52 (0.06) | 0.52 (0.06) | F(2,188) = 0.1; p = 0.936 |  |
| Standard deviation response time | 174.9 (134.5) | 144.8 (66.2) | 130.2 (96.5) | F(2,188) = 2.9; p = 0.056 |  |
| **Cambridge Gambling Task** |  |  |  |  |  |
| Overall proportion bet | 0.54 (0.15) | 0.53 (0.11) | 0.52 (0.14) | F(2,185) = 0.3; p = 0.779 |  |
| Deliberation time | 2346 (620) | 2219 (587) | 2126 (627) | F(2,185) = 2.4; p = 0.093 |  |
| Risk taking | 0.58 (0.15) | 0.58 (0.15) | 0.57 (0.14) | F(2,185) = 0.1; p = 0.913 |  |
| **Stockings of Cambridge** |  |  |  |  |  |
| Mean moves (5-move problems)\*\* | 6.9 (1.4) | 7.3 (1.9) | 6.3 (1.2) | F(2,181) = 5.9; p = 0.003  AUD, FH+: p = 0.158  AUD, FH-: p = 0.009 FH+, FH-: p < 0.002 | d = 0.24  d = 0.46  d = 0.63 |
| Problems solved (5-move problems)\* | 2.2 (1.1) | 2.0 (1.4) | 2.6 (1.0) | F(2,181) = 3.1; p = 0.049  AUD, FH+: p = 0.399  AUD, FH-: p = 0.046 FH+, FH-: p = 0.027 | d = 0.16  d = 0.38  d = 0.49 |
| **Information Sampling Task** |  |  |  |  |  |
| Mean boxes opened | FW: 15.6 (6.1)  DW: 10.1 (5.0) | FW: 15.9 (5.2)  DW: 9.7 (4.6) | FW: 17.5 (6.1)  DW: 10.3 (5.2) | F(2,167) = 1.7; p = 0.179 |  |
| Pcorrect | FW: 0.83 (0.12)  DW: 0.73 (0.11) | FW: 0.82 (0.11)  DW: 0.73 (0.11) | FW: 0.86 (0.12)  DW: 0.75 (0.11) | F(2,167) = 0.5; p = 0.637 |  |
| Total correct | FW: 8.6 (1.3)  DW: 8.0 (1.5) | FW: 8.8 (1.0)  DW: 7.7 (1.9) | FW: 9.1 (1.1)  DW: 7.9 (1.6) | F(2,167) = 2.0; p = 0.142 |  |
| **Rapid Visual Processing task** |  |  |  |  |  |
| Probability of hit\* | 0.58 (0.2) | 0.62 (0.2) | 0.67 (0.2) | F(2,183) = 3.7; p = 0.026  AUD, FH+: p = 0.300  AUD, FH-: p = 0.007 FH+, FH-: p = 0.332 | d = 0.20  d = 0.45  d = 0.25 |
| Probability of false alarm | 0.005 (0.006) | 0.009 (0.014) | 0.007 (0.009) | F(2,183) = 2.5; p = 0.089 |  |
| Mean latency | 438 (90) | 429 (78) | 418 (80) | F(2,181) = 0.9; p = 0.398 |  |
| **Attention Switching Task** |  |  |  |  |  |
| Percent correct trials | 94.4 (6.6) | 93.1 (6.3) | 93.5 (8.0) | F(2,187) = 0.5; p = 0.604 |  |
| Mean latency | 694 (160) | 712 (174) | 705 (190) | F(2,187) = 0.1; p = 0.861 |  |
| **Spatial Working Memory Task** |  |  |  |  |  |
| Total errors | 23.3 (15.7) | 30.5 (20.9) | 26.6 (19.3) | F(2,185) = 1.9; p = 0.157 |  |
| Strategy | 31.0 (7.6) | 33.7 (6.4) | 31.4 (7.0) | F(2,185) = 1.4; p = 0.257 |  |
| **Digit span task** |  |  |  |  |  |
| Total score | 15.9 (3.4) | 15.2 (3.9) | 15.8 (3.4) | F(2,191) = 0.5; p =0.624 |  |
| Backward score | 6.5 (2.2) | 6.1 (2.0) | 6.4 (2.0) | F(2,191) = 0.5; p = 0.630 |  |
| **Emotional Recognition Task** |  |  |  |  |  |
| Percent correct trials | 64.1 (10.1) | 64.7 (8.1) | 63.6 (8.7) | F(2,185) = 0.1; p = 0.867 |  |
| Response latency | 1854 (573) | 1812 (696) | 1729 (524) | F(2,185) = 0.837; p = 0.435 |  |

*\* p < .05; \*\* p < .01; \*\*\* p < 0.001 for the overall ANOVA.*

*FW = Fixed Win condition. DW = Decreasing Win condition.*