**Supplementary Table 1.** Values of the significant post-hoc tests of the linear mixed model analysis.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Comparison | Mean difference (I-J) | Standard error | t | *p-value* |
| Group (I) | Group (J) |
| **Main group effect** |  |  |  |  |  |
| HC | sAUD | 1.36 | 0.20 | 6.72 | *<0.001* |
|  | sCUD | 1.69 | 0.19 | 8.68 | *<0.001* |
| **Main lateralization effect** |  |  |  |
| Left | Right | 0.22 | 0.03 | 7.22 | *<0.001* |
| **Main subregion effect** |  |  |  |
| ALG | AIC | -0.65 | 0.05 | -12.08 | *<0.001* |
|  | ASG | -0.67 | 0.05 | -12.56 | *<0.001* |
|  | MSG | -0.59 | 0.05 | -11.05 | *<0.001* |
|  | PSG | -0.38 | 0.05 | -7.17 | *<0.001* |
|  | PLG | -0.47 | 0.05 | -8.84 | *<0.001* |
| PSG | AIC | -0.26 | 0.05 | -4.91 | *<0.001* |
|  | ASG | -0.29 | 0.05 | -5.39 | *<0.001* |
|  | MSG | -0.21 | 0.05 | -3.89 | *0.002* |
| PLG | AIC | -0.17 | 0.05 | -3.24 | *0.02* |
|  | ASG | -0.20 | 0.05 | -3.72 | *0.003* |
| **Lateralization by group interaction – within sAUD** |  |  |  |
| Left | Right | 0.49 | 0.05 | 9.40 | *<0.001* |
| **Lateralization by group interaction – within sCUD** |  |  |  |
| Left | Right | 0.18 | 0.05 | 3.90 | *0.002* |
| **Lateralization by group interaction – within left insula** |  |  |  |
| HC | sAUD | 1.12 | 0.21 | 5.42 | *<0.001* |
|  | sCUD | 1.60 | 0.20 | 8.06 | *<0.001* |
| **Lateralization by group interaction – within right insula** |  |  |
| HC | sAUD | 1.61 | 0.21 | 7.77 | *<0.001* |
|  | sCUD | 1.78 | 0.20 | 8.97 | *<0.001* |
| **Subregion by group interaction – within sAUD** |  |  |  |
| ALG | AIC | -1.21 | 0.09 | -13.54 | *<0.001* |
|  | ASG | -0.94 | 0.09 | -10.47 | *<0.001* |
|  | MSG | -0.88 | 0.09 | -9.86 | *<0.001* |
|  | PSG | -0.70 | 0.09 | -7.76 | *<0.001* |
|  | PLG | -0.93 | 0.09 | -10.35 | *<0.001* |
| AIC | MSG | 0.33 | 0.09 | 3.68 | *0.04* |
|  | PSG | -0.52 | 0.09 | -5.78 | *<0.001* |
| **Subregion by group interaction – within sCUD** |  |  |  |
| ALG  | AIC | -0.72 | 0.08 | -8.93 | *<0.001* |
|  | ASG  | -1.08 | 0.08 | -13.28 | *<0.001* |
|  | MSG  | -0.89 | 0.08 | -10.98 | *<0.001* |
|  | PSG  | -0.45 | 0.08 | -5.61 | *<0.001* |
|  | PLG  | -0.49 | 0.08 | -6.05 | *<0.001* |
| AIC  | ASG | -0.35 | 0.08 | -4.35 | *0.002* |
| PSG  | ASG  | -0.62 | 0.08 | -7.68 | *<0.001* |
|  | MSG | -0.44 | 0.08 | -5.37 | *<0.001* |
| PLG  | ASG  | -0.59 | 0.08 | -7.23 | *<0.001* |
|  | MSG | -0.40 | 0.08 | -4.93 | *<0.001* |
| **Subregion by group interaction – within AIC** |  |  |  |
| HC | sAUD | 0.93 | 0.22 | 4.18 | *0.007* |
|  | sCUD | 1.57 | 0.21 | 7.39 | *<0.001* |
| **Subregion by group interaction – within ASG** |  |  |  |
| HC | sAUD | 1.20 | 0.22 | 5.42 | *<0.001* |
|  | sCUD | 1.22 | 0.21 | 5.73 | *<0.001* |
| **Subregion by group interaction – within MSG** |  |  |  |
| HC | sAUD | 1.26 | 0.22 | 5.67 | *<0.001* |
|  | sCUD | 1.41 | 0.21 | 6.61 | *<0.001* |
| **Subregion by group interaction – within PSG** |  |  |  |
| HC | sAUD | 1.44 | 0.22 | 6.52 | *<0.001* |
|  | sCUD | 1.84 | 0.21 | 8.65 | *<0.001* |
| **Subregion by group interaction – within ALG** |  |  |  |
| HC | sAUD | 2.14 | 0.22 | 9.66 | *<0.001* |
|  | sCUD | 2.30 | 0.21 | 10.79 | *<0.001* |
| **Subregion by group interaction – within PLG** |  |  |  |
| HC | sAUD | 1.21 | 0.22 | 5.47 | *<0.001* |
|  | sCUD | 1.81 | 0.21 | 8.48 | *<0.001* |
| **Subregion by group interaction – within left AIC** |  |  |  |
| sCUD | HC | -1.81 | 0.23 | -7.77 | *<0.001* |
|  | sAUD | -0.96 | 0.21 | -4.52 | *0.006* |
| **Subregion by group interaction – within right AIC** |  |  |  |
| HC | sAUD | 1.00 | 0.24 | 4.12 | *0.03* |
|  | sCUD | 1.34 | 0.23 | 5.74 | *<0.001* |
| **Subregion by group interaction – within left ASG** |  |  |  |
| HC | sAUD | 1.04 | 0.24 | 4.29 | *0.02* |
|  | sCUD | 1.13 | 0.23 | 4.85 | *0.001* |
| **Subregion by group interaction – within right ASG** |  |  |  |
| HC | sAUD | 1.36 | 0.24 | 5.62 | *<0.001* |
|  | sCUD | 1.31 | 0.23 | 5.63 | *<0.001* |
| **Subregion by group interaction – within left MSG** |  |  |  |
| HC | sAUD | 1.01 | 0.24 | 4.16 | *0.03* |
|  | sCUD | 1.11 | 0.23 | 4.75 | *0.002* |
| **Subregion by group interaction – within right MSG** |  |  |  |
| HC | sAUD | 1.50 | 0.24 | 6.21 | *<0.001* |
|  | sCUD | 1.71 | 0.23 | 7.34 | *<0.001* |
| **Subregion by group interaction – within left PSG** |  |  |  |
| HC | sAUD | 1.21 | 0.24 | 5.01 | *<0.001* |
|  | sCUD | 1.53 | 0.23 | 6.59 | *<0.001* |
| **Subregion by group interaction – within right PSG** |  |  |  |
| HC | sAUD | 1.67 | 0.24 | 6.91 | *<0.001* |
|  | sCUD | 2.15 | 0.23 | 9.24 | *<0.001* |
| **Subregion by group interaction – within left ALG** |  |  |  |
| HC | sAUD | 1.74 | 0.24 | 7.17 | *<0.001* |
|  | sCUD | 2.11 | 0.23 | 9.07 | *<0.001* |
| **Subregion by group interaction – within right ALG** |  |  |  |
| HC | sAUD | 2.54 | 0.24 | 10.50 | *<0.001* |
|  | sCUD | 2.48 | 0.23 | 10.66 | *<0.001* |
| **Subregion by group interaction – within left PLG** |  |  |  |
| sCUD | HC | -1.91 | 0.23 | -8.20 | *<0.001* |
|  | sAUD | -1.04 | 0.21 | -4.93 | *<0.001* |
| **Subregion by group interaction – within right PLG** |  |  |  |
| HC | sAUD | 1.56 | 0.24 | 6.42 | *<0.001* |
|  | sCUD | 1.70 | 0.23 | 7.32 | *<0.001* |

*Note.* AIC: Anterior Inferior Cortex; ALG: Anterior Long Gyrus; ASG: Anterior Short Gyrus; HC: Healthy Controls; MSG: Middle Short Gyrus; PLG: Posterior Long Gyrus; PSG: Posterior Short Gyrus; sAUD: severe Alcohol Use Disorder; sCUD: severe Crack/Cocaine Use Disorder.