**Functional brain connectomes reflect acute and chronic cannabis use.**

**Supplementary information**

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**Fig. S1. Exploration of optimal connICA parameters.**The two free parameters of the connICA methodology 1, i.e. the number of ICA components and the percentage of variance retained, were explored to maximize: 1) the number of robust components and, 2) the percentage of variance retained from the data. The optimal point at 95% retained variance in PCA and 20 independent components is indicated by an asterisk.

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**Fig. S2. NBS analysis of THC vs placebo effects in each cannabis user group.** Giant component size extracted from the T-statistic matrix obtained when comparing THC vs placebo conditions within the cannabis user groups. Note how the effect does not survive the cut-off threshold obtained by random shuffling the drug labels, in both groups

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| **Table S1.** Mean subject characteristics (SD) and history of drug use for occasional and chronic cannabis users who completed the study (N=26). |
| **Variable** | **Occasional Users** | **Chronic Users** | **Value** | **df** | ***P* value** |
| Gender (male/female), n, total | 7/7, 14 | 9/3, 12 | χ2 = 1.71‡ | 1 | 0.19 |
| Age, years | 22.14 (2.51) | 21.83 (2.25) | *t*=0.33† | 24 | 0.74 |
| History of cannabis use, years | 5.21 (2.61) | 5.33 (1.78) | *t*=.-0.13† | 24 | 0.89 |
| Frequency of cannabis use, per week | 1.12 (0.78) | 6.63 (1.40) | *t*=-12.64† | 24 | 0.00\* |
| Alcohol consumption, glasses per week | 6.68 (6.68) | 3.17 (2.32) | *t*=1.73† | 24 | 0.10 |
| Caffeine consumption (per week) | 8.07 (7.11) | 8.88 (6.05) | *t*=-0.31† | 24 | 0.76 |
| Nicotine consumption, per week | 14.00 (21.15) | 19.29 (28.23) | *t*=-1.58† | 24 | 0.13 |
| Occasional use of other drugs, n | 9 | 9 | χ2 = 0.00‡ | 1 | 1.00 |
| \*Significant *P* values†Independent *t* test‡χ2 test for frequency data  |

**Table S2** Mean (SE) subjective high, lapses of attention averaged over two time points in each treatment condition. OU=occasional users; CU=chronic users.

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|  | **Subjective High (cm)** | **Lapses of attention (#)** |
|  | Post-resting state 1 (20 min) | Post-resting state 2 (42 min) | average | Pre-resting state 1 (1 min) | Pre-resting state 2 (22 min) | Average |
| **OU** |  |  |  |  |  |  |
| Placebo | 1.21 (.38) | 0.92 (.37) | 1.07 (.31) | 3.50 (.81) | 5.35 (1.51) | 4.42 (1.08) |
| THC | 5.36 (.70) | 3.92 (.61) | 4.73 (.61) | 5.0 (1.26) | 8.07 (1.78) | 6.15 (1.38) |
| **CU** |  |  |  |  |  |  |
| Placebo  | 2.50 (.62) | 2.08 (.62) | 2.29 (.57) | 1.25 (.30) | 1.08 (.31) | 1.16 (.23) |
| THC | 4.83 (.75) | 4.08 (.73) | 4.45 (.71) | 1.83 (.34) | 1.91 (.62) | 1.87 (.35) |

**Table S3** Mean (SE) THC, THC-COOH and 11-OH-COOH concentrations at baseline and two time points prior to resting state fMRI in THC condition. OU=occasional users; CU=chronic users.

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|  | **THC****(ng/ml)** | **THC-COOH****(ng/ml)** | **11-OH-THC****(ng/ml)** |
| **OU** |  |  |  |
| Baseline | 0 | 1.54 (.61) | 0 |
| 6 min (pre-resting state 1) | 8.61 (1.46) | 8.31 (1.78) | 1.61 (.31) |
| 28 min (pre-resting state 2) | 2.88 ((0.50) | 7.78 (1.58) | .93 (.19) |
| **CU** |  |  |  |
| Baseline | 3.48 (.89) | 47.44 (14.33) | 1.55 (.38) |
| 6 min (pre-resting state 1) | 15.86 (3.48) | 48.81 (14.19) | 3.84 (1.13) |
| 28 min (pre-resting state 2) | 6.66 (1.55) | 45.53 (15.43) | 2.10 (.62) |