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Supplemental information

Neural activation associated with outgroup helping in adolescent rats

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Supplemental Figures & Tables

Fig. S1. Individual c-Fos expression for all regions and conditions, related to Fig. 3

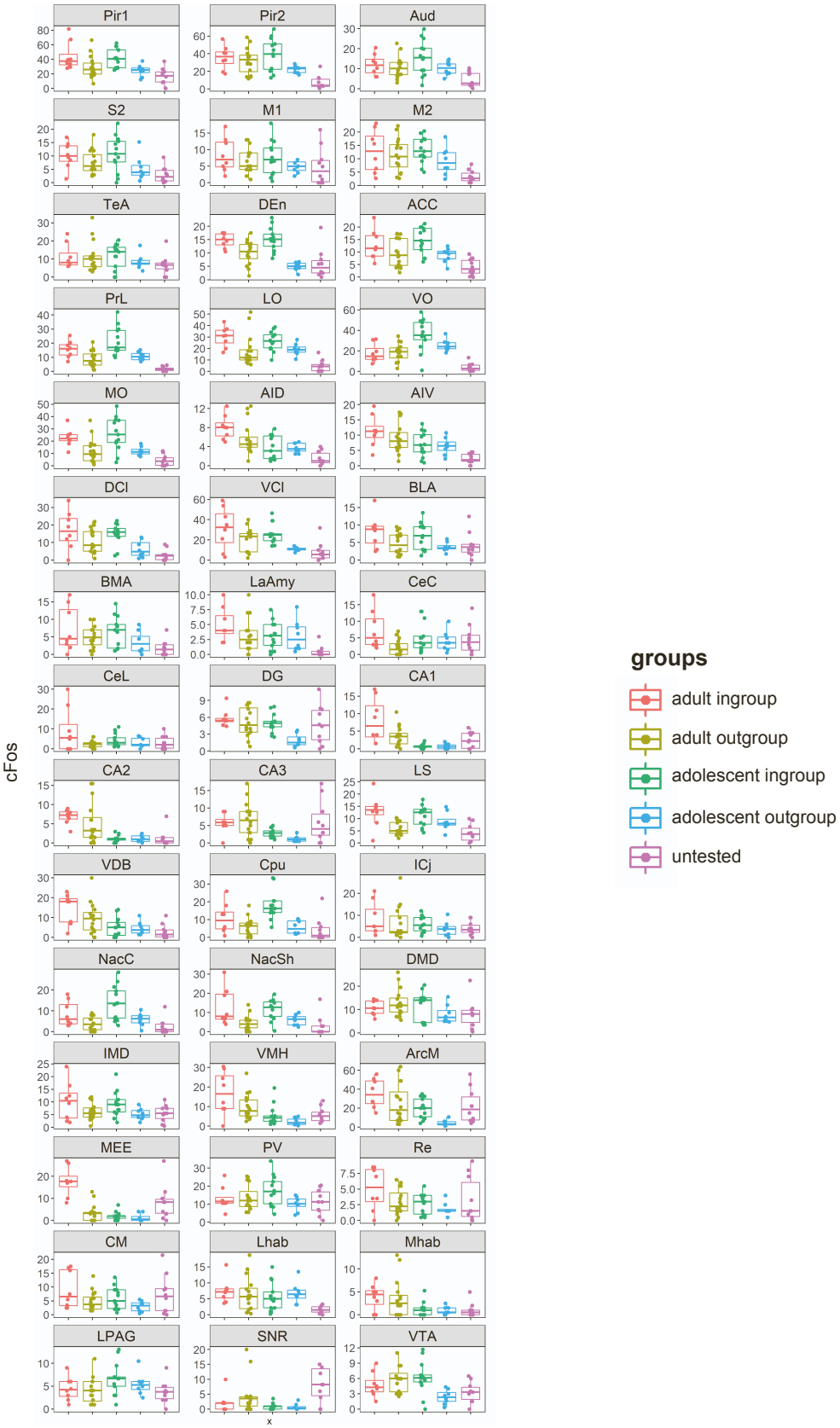

Fig S1. Individual c-Fos expression for all regions and conditions. Box plots of c-Fos data in all brain regions across all test groups. Center bars mark the median. Lower and upper edges correspond to the 25th and 75th percentiles. Descriptions of the brain region abbreviations can be found in Table S1. Data points are jittered along the x-axis to avoid overlaps. X: experimental groups; Y: c-Fos^{+} cell numbers.

Fig. S2. Central hubs for adolescent openers and non-openers, related to figure 5

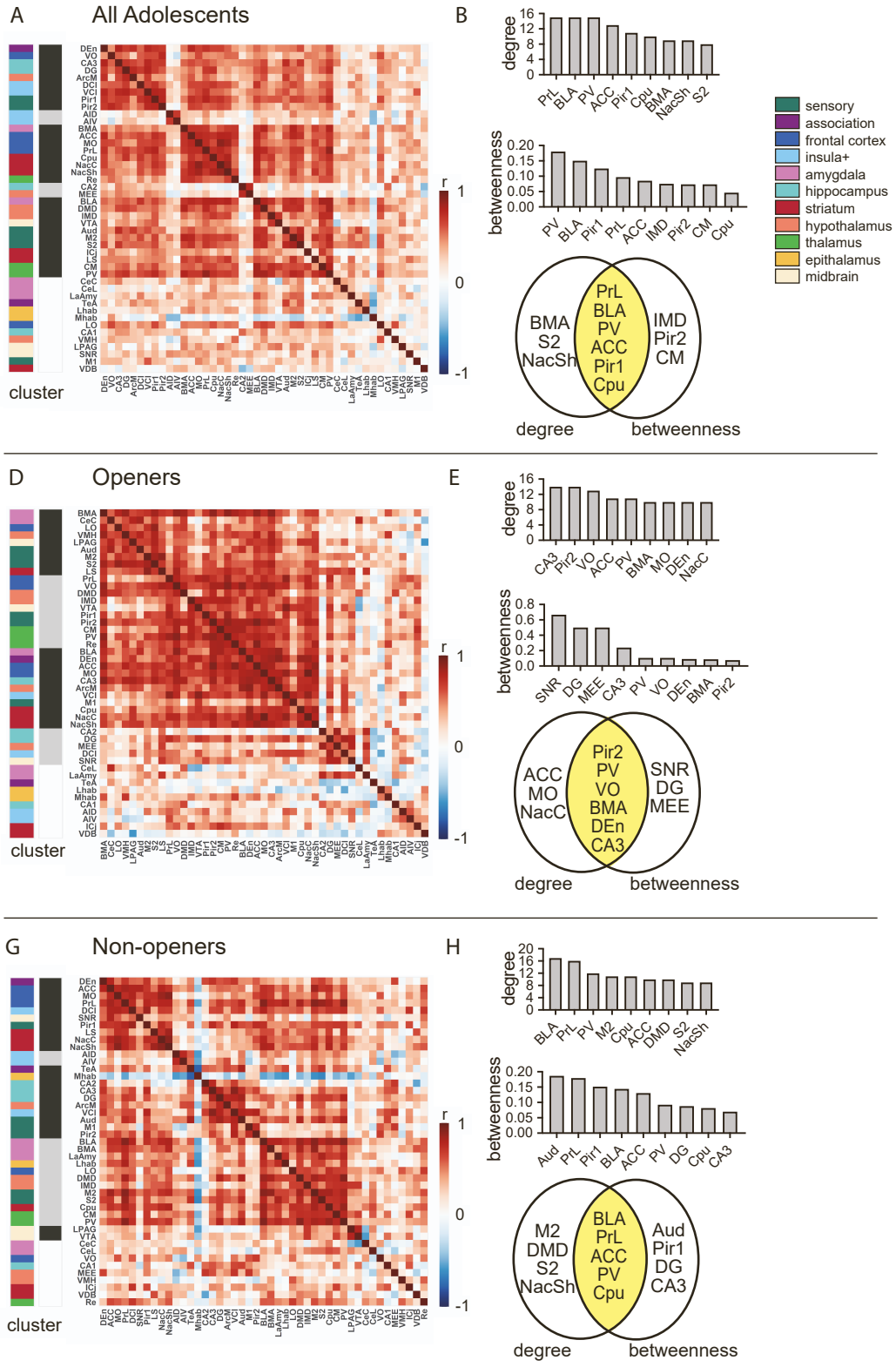

Fig S2. Pearson's correlations across all brain regions in adolescent rats tested in the HBT. Correlation matrices (A,C,E) and central hubs (B,D,F) for (A-B): All adolescent rats, (C-D): Adolescent openers, and (E-F) Adolescent non-openers. Colored bars on left indicate general brain region of each row (for color legend see Fig. 3) The grayscale bar denotes clusters determined via Louvain algorithm. The regions rated as top 20% for degree and connectivity were combined to identify central hubs.

Table S1. 2- way ANOVA results. Related to Figures 3-5

Brain Region	Group Identity	Age	Interaction
Pir1 Piriform c.	F (1, 40) = 11.63 ** **q=0.0052**	F (1, 40) = 0.8078	F (1, 40) = 0.01069
Pir2 Piriform c.	F (1, 41) = 1.946	F (1, 41) = 0.5543	F (1, 41) = 5.036
Aud Auditory c.	F (1, 39) = 2.566	F (1, 39) = 0.4879	F (1, 39) = 1.104
S2 Somatosensory c.	F (1, 39) = 5.648	F (1, 39) = 0.2088	F (1, 39) = 0.6472
M1 Motor c.	F (1, 38) = 2.608	F (1, 38) = 0.7417	F (1, 38) = 0.1015
M2 Motor c.	F (1, 42) = 2.593	F (1, 42) = 0.3220	F (1, 42) = 0.6461
TeA Temporal assoc. c.	F (1, 38) = 0.4533	F (1, 38) = 0.3985	F (1, 38) = 0.5176
Den Endopiriform	F (1, 40) = 37.94 ** **q=0.0017**	F (1, 40) = 3.677	F (1, 40) = 5.219
ACC Ant. Cingulate c.	F (1, 41) = 8.533	F (1, 41) = 0.03591	F (1, 41) = 0.8141
PrL Prelimbic c.	F (1, 40) = 16.43 ** **q=0.0017**	F (1, 40) = 2.943	F (1, 40) = 0.8072
LO Lat. Orbitofrontal c.	F (1, 39) = 9.985 ** **q=0.0086**	F (1, 39) = 0.3394	F (1, 39) = 0.2903
VO Ventral orbitofrontal	F (1, 40) = 2.031	F (1, 40) = 13.20 ****q=0.0031**	F (1, 40) = 2.549
MO Med. Orbitorfrontal	F (1, 40) = 15.36 ** **q=0.0021**	F (1, 40) = 0.2487	F (1, 40) = 0.2257
AID Dorsal ant. Insula	F (1, 40) = 1.922	F (1, 40) = 13.55 ** **q=0.0031**	F (1, 40) = 1.732
AIV Ventral ant. insual	F (1, 41) = 1.470	F (1, 41) = 5.303	F (1, 41) = 0.7340
DCl Dorsal claustrum	F (1, 41) = 12.14 ** **q=0.0046**	F (1, 41) = 1.939	F (1, 41) = 0.4127
VCl Ventral claustrum	F (1, 41) = 12.52 ** **q=0.0043**	F (1, 41) = 3.991	F (1, 41) = 0.2145

BLA Basolateral amygdala	F (1, 41) = 8.897	F (1, 41) = 0.8785	F (1, 41) = 0.03535
BMA Basomedial amygdala	F (1, 39) = 3.372	F (1, 39) = 0.5021	F (1, 39) = 0.006811
LaAmy Lateral amygdala	F (1, 40) = 0.7826	F (1, 40) = 0.9492	F (1, 40) = 1.604
CeC Central amygdala	F (1, 40) = 6.181	F (1, 40) = 0.008356	F (1, 40) = 3.237
CeL Central amygdala	F (1, 39) = 5.056	F (1, 39) = 1.232	F (1, 39) = 3.135
DG Dentate gyrus	F (1, 40) = 8.677	F (1, 40) = 10.97 **** q=0.0071**	F (1, 40) = 3.633
CA1 hippocampus	F (1, 39) = 4.987	F (1, 39) = 25.58 ***** q=0.0009**	F (1, 39) = 4.846
CA2 Hippocampus	F (1, 40) = 0.6554	F (1, 40) = 20.93 ***** q=0.0009**	F (1, 40) = 0.6074
CA3 hippocampus	F (1, 38) = 0.09875	F (1, 38) = 14.97 **** q=0.0028**	F (1, 38) = 1.473
LS Lateral septum	F (1, 39) = 11.24 **** q=0.0056**	F (1, 39) = 0.1116	F (1, 39) = 3.227
VDB Vent. Diag. band of broca	F (1, 40) = 1.589	F (1, 40) = 13.02 **** q=0.0031**	F (1, 40) = 1.414
Cpu Caudate putamen	F (1, 40) = 17.59 **** q=0.0017**	F (1, 40) = 2.950	F (1, 40) = 3.499
ICj Islands of callaja	F (1, 39) = 1.060	F (1, 39) = 1.727	F (1, 39) = 1.178e-006
NAcC Nuc. accumbens core	F (1, 40) = 12.52 **** q=0.0043**	F (1, 40) = 4.243	F (1, 40) = 0.8062
NAcSh Nuc. accumbens shell	F (1, 40) = 14.73 **** q=0.0023**	F (1, 40) = 0.001683	F (1, 40) = 0.7023
DMD Dorsomed. Hypothalamus	F (1, 40) = 0.8251	F (1, 40) = 1.978	F (1, 40) = 1.890
IMD Int. mediodorsal hypothalamus	F (1, 41) = 7.645	F (1, 41) = 0.5442	F (1, 41) = 0.002939
VMH Ventromedial hypothalamus	F (1, 41) = 6.212	F (1, 41) = 20.74 ***** q=0.0009**	F (1, 41) = 0.7902

ArcM Med. Arcuate hypothalamus	F (1, 39) = 7.110	F (1, 39) = 13.41 **** q=0.0031**	F (1, 39) = 0.2829
MEE Med. eminence	F (1, 31) = 18.03 **** q=0.0017**	F (1, 31) = 31.75 ***** q=0.0009**	F (1, 31) = 14.40
PV Paraventricular thalamic nu.	F (1, 39) = 2.405	F (1, 39) = 0.03630	F (1, 39) = 2.802
Re Reunions	F (1, 40) = 5.066	F (1, 40) = 6.502	F (1, 40) = 0.7999
CM Cent. Med thalamus	F (1, 41) = 7.399	F (1, 41) = 3.557	F (1, 41) = 0.1994
Lhab Lateral habenula	F (1, 39) = 0.002036	F (1, 39) = 0.1812	F (1, 39) = 0.4681
Mhab Medial habenula	F (1, 38) = 0.08974	F (1, 38) = 7.920	F (1, 38) = 0.001485
LPAG Lateral periaqueductal gray	F (1, 35) = 0.5708	F (1, 35) = 2.982	F (1, 35) = 0.1695
SNR Sabstantia nigra	F (1, 36) = 0.5972	F (1, 36) = 3.947	F (1, 36) = 0.8727
VTA Ventral tegmental area	F (1, 36) = 1.913	F (1, 36) = 1.437	F (1, 36) = 7.306

Table S1. 2- way ANOVA results. Main effects of group identity, age, and/or interaction between the two. The F statistic is shown for each main effect. Multiple comparisons were corrected for using a False Discovery Rate (FDR) approach. Statistically significant discoveries and their FDR adjusted p-values (q-values) are shown in bold. *q<0.05, **q<0.01, ***q<0.001.