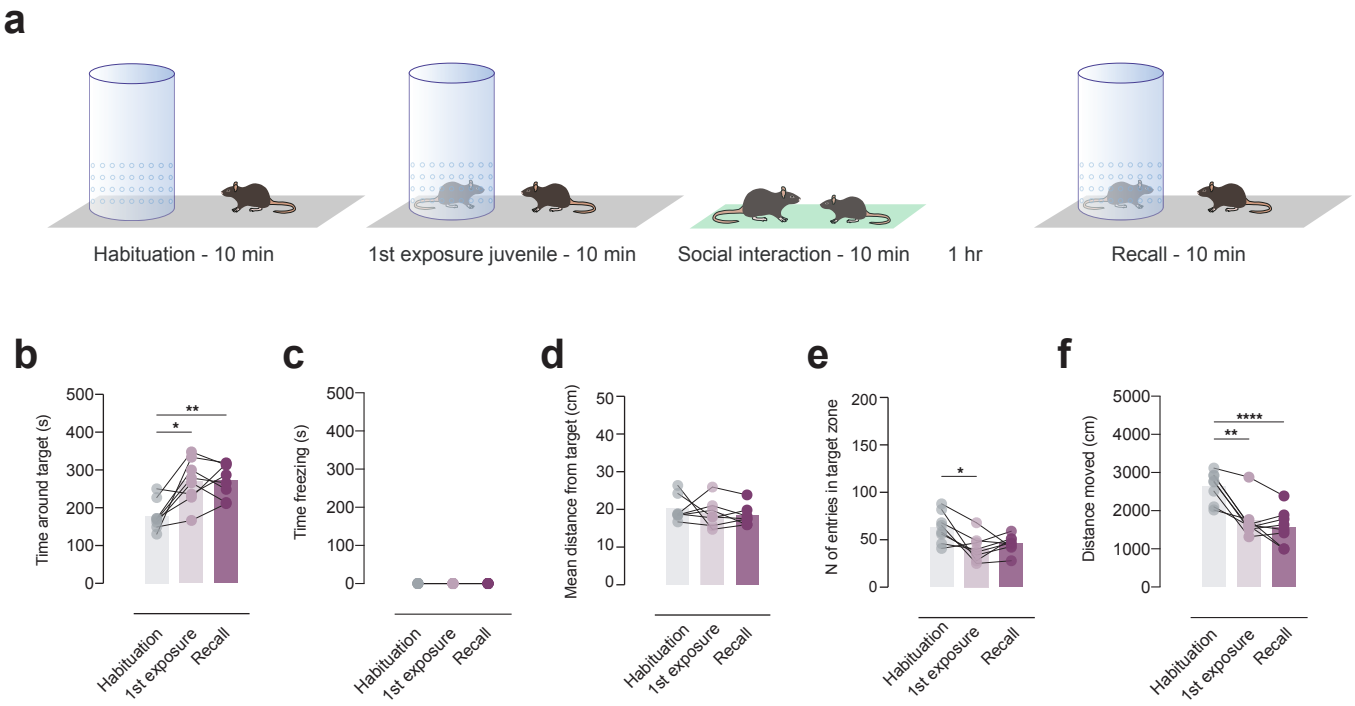
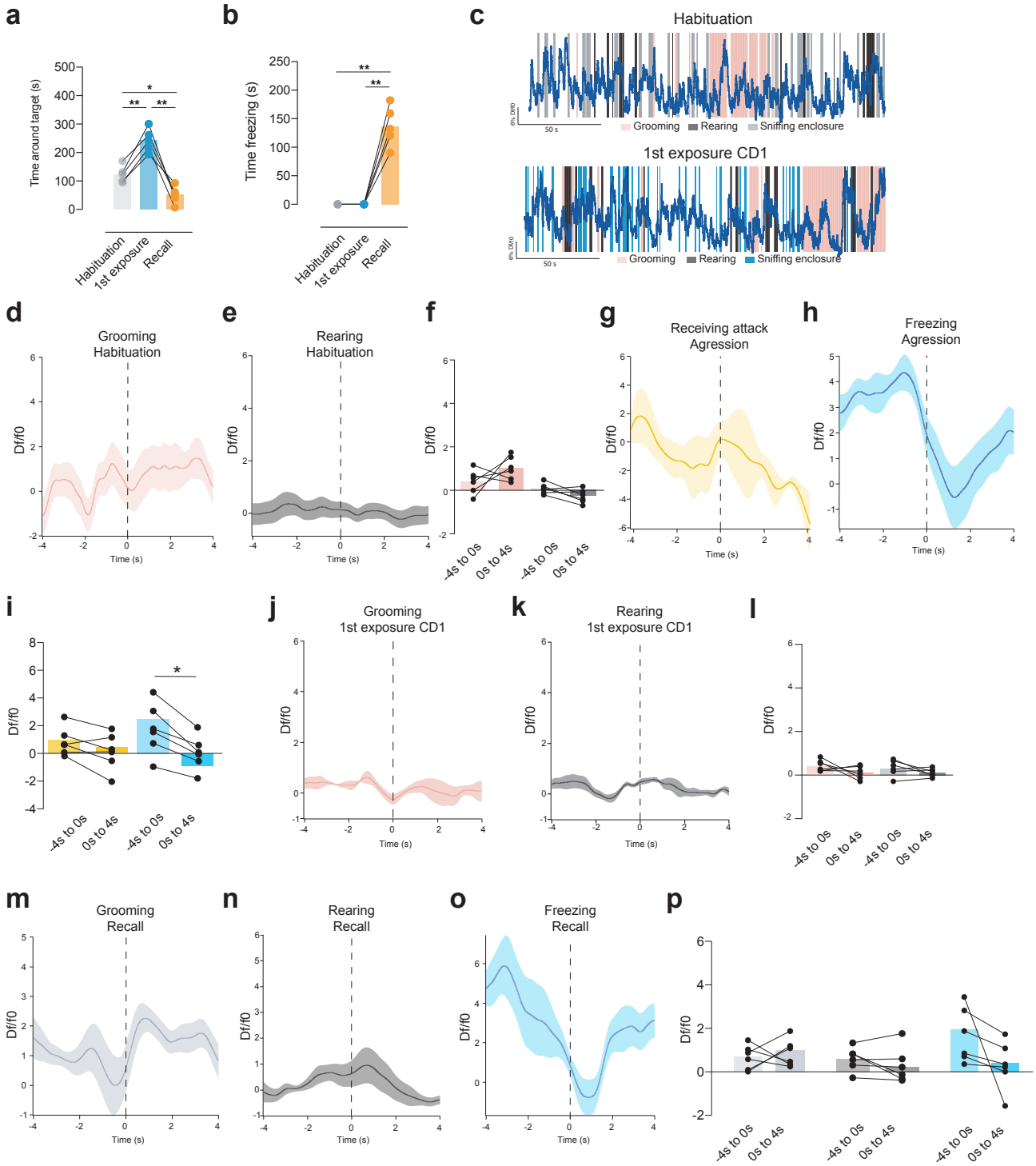
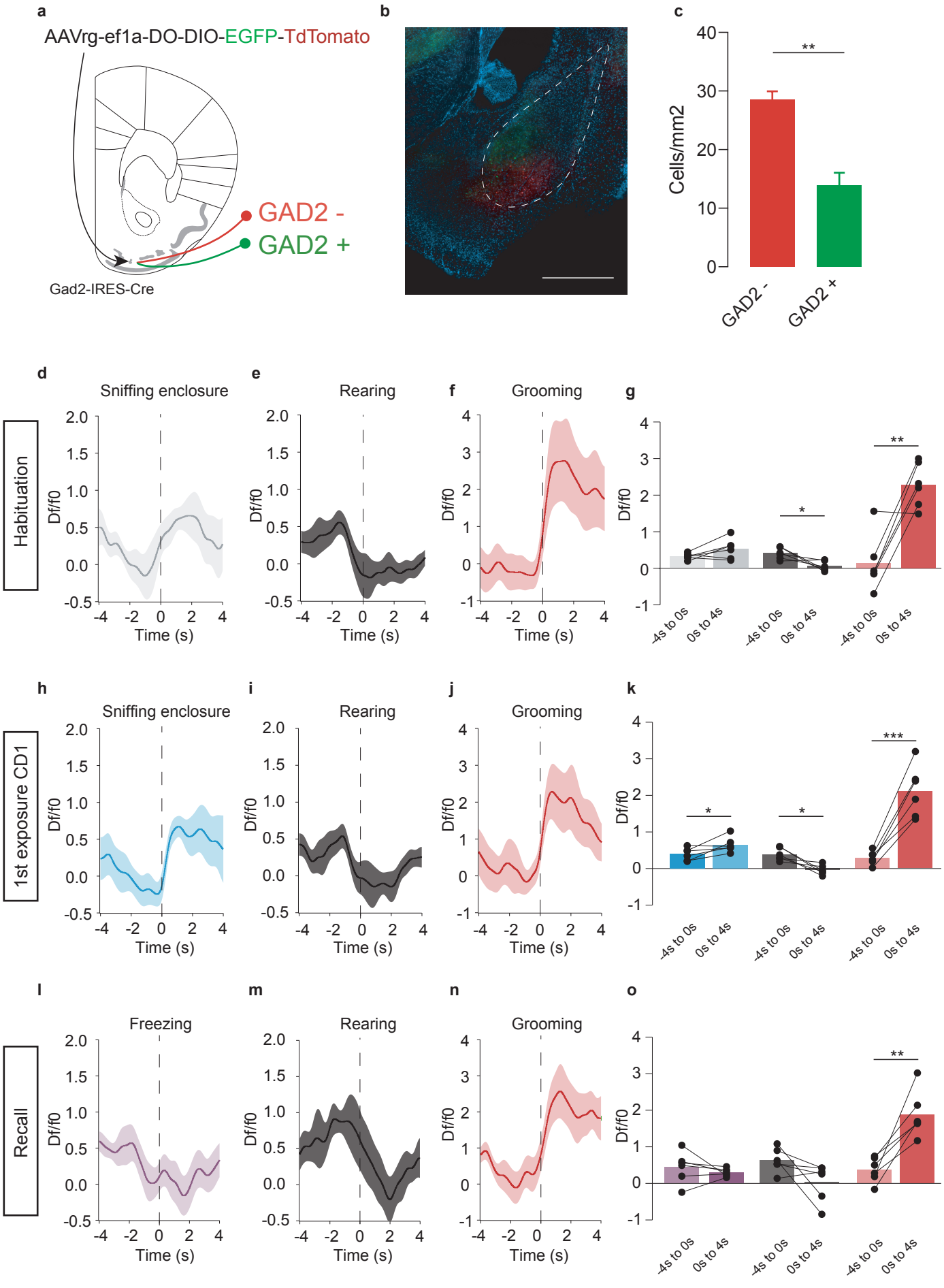


Supplementary Figure 1. (a) Schematic representation of experimental test. **(b)** Time around enclosure containing stimulus (RM one-way ANOVA: F1.703, 11.92 = 13.40, p = 0.0012, followed by Bonferroni multiple comparison post hoc test). **(c)** Time freezing during the test. **(d)** Mean distance between nose point of the experimental mouse and the center of the target during the test (RM one-way ANOVA: F1.220, 7.321 = 0.5453, p = 0.5177, followed by Bonferroni multiple comparison post hoc test). **(e)** Number of entries in target zone during the test (RM one-way ANOVA: F1.691, 11.83 = 6.290, p = 0.0166, followed by Bonferroni multiple comparison post hoc test). **(f)** Distance moved in apparatus (RM one-way ANOVA: F1.234, 8.641 = 36.72, p = 0.0001, followed by Bonferroni multiple comparison post hoc test).



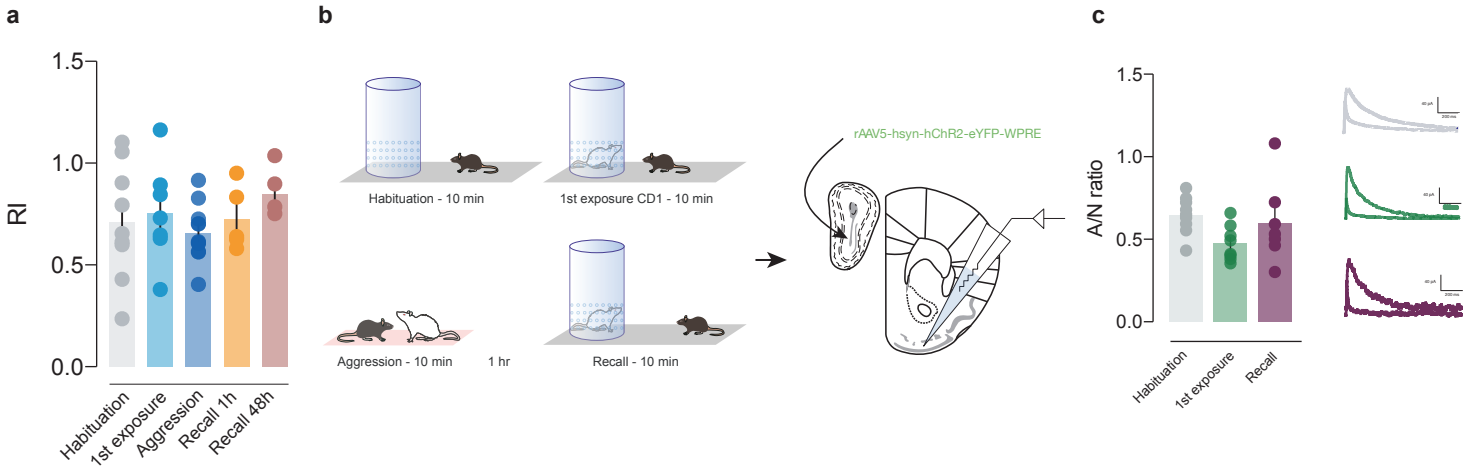
Supplementary fig. 2, Casarotto et al, 2024

Supplementary Figure 2. (a) Time around enclosure containing stimulus (RM one-way ANOVA: F1.391, 5.566 = 45.67, p = 0.0005, followed by Bonferroni multiple comparison post hoc test). **(b)** Time freezing during the test (RM one-way ANOVA: F1.000, 4.000 = 74.36, p = 0.0010, followed by Bonferroni multiple comparison post hoc test). **(c)** Example traces of photometry signals (reported as DF/F0, see Methods) during habituation. Colored boxes above the traces indicate sniffing enclosure, freezing, grooming and rearing bouts. **(d)** Mean DF/F0 signal ±4s around grooming initiation (indicated by dashed line, 0s) during habituation. **(e)** Mean DF/F0 signal ±4s around rearing initiation (indicated by dashed line, 0s) during habituation. **(f)** Quantification of DF/F0 difference before and after grooming (pink) and rearing (gray) start for the different phases of the test (Left: paired t-test, t1.466 = 5, p = 0.2026. Right: paired t-test t2.396 = 5, p = 0.0619). **(g)** Mean DF/F0 signal ±4s around receiving attack initiation (indicated by dashed line, 0s) during the aggression phase of the test. **(h)** Mean DF/F0 signal ±4s around freezing initiation (indicated by dashed line, 0s) during the aggresion phase of the test. **(i)** Quantification of DF/F0 difference before and after receiving attack (yellow) and freezing (blue) start for the different phases of the test (Left: paired t-test, t1.777 = 5, p = 0.1357. Right: paired t-test t3.201 = 5, p = 0.0240). **(j)** Mean DF/F0 signal ±4s around grooming initiation (indicated by dashed line, 0s) during 1st exposure to CD1. **(k)** Mean DF/F0 signal ±4s around rearing initiation (indicated by dashed line, 0s) during 1st exposure to CD1. **(l)** Quantification of DF/F0 difference before and after grooming (pink) and rearing (gray) start for the different phases of the test (Left: paired t-test, t1.915 = 5, p = 0.1137. Right: paired t-test t1.382 = 5, p = 0.2255). **(m)** Mean DF/F0 signal ±4s around grooming initiation (indicated by dashed line, 0s) during thethreat recall. **(n)** Mean DF/F0 signal ±4s around rearing initiation (indicated by dashed line, 0s) during the threat recall. **(o)** Mean DF/F0 signal ±4s around freezing initiation (indicated by dashed line, 0s) during the threat recall. **(p)** Quantification of DF/F0 difference before and after grooming (light gray), rearing (dark gray) and freezing (blue) start for the different phases of the test (Left: paired t-test, t1.777 = 5, p = 0.1357. Middle: paired t-test, t1.196 = 5, p = 0.2855. Right: paired t-test t1.822 = 5, p = 0.1281).

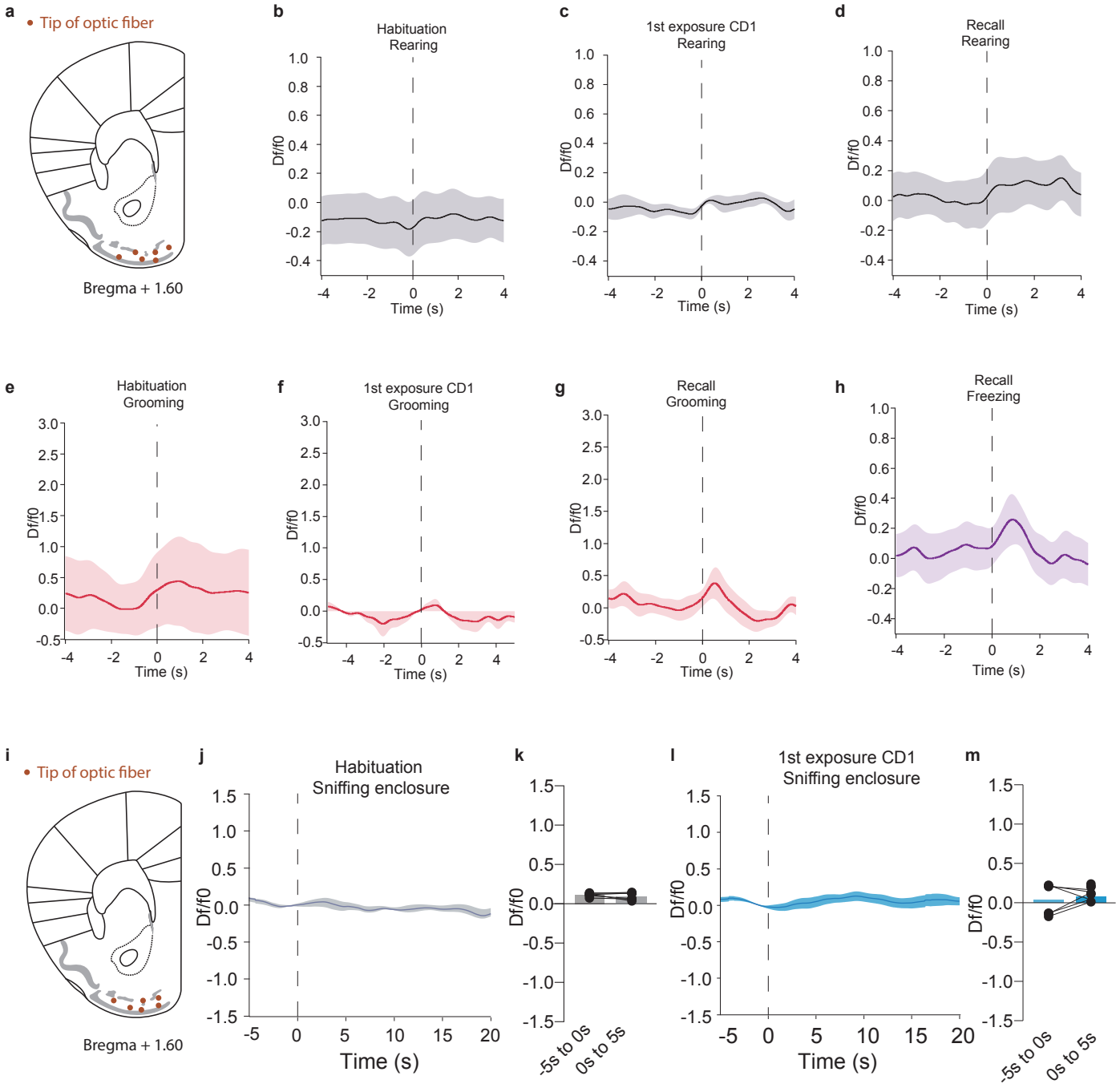


Supplementary Fig 3, Casarotto et al, 2024

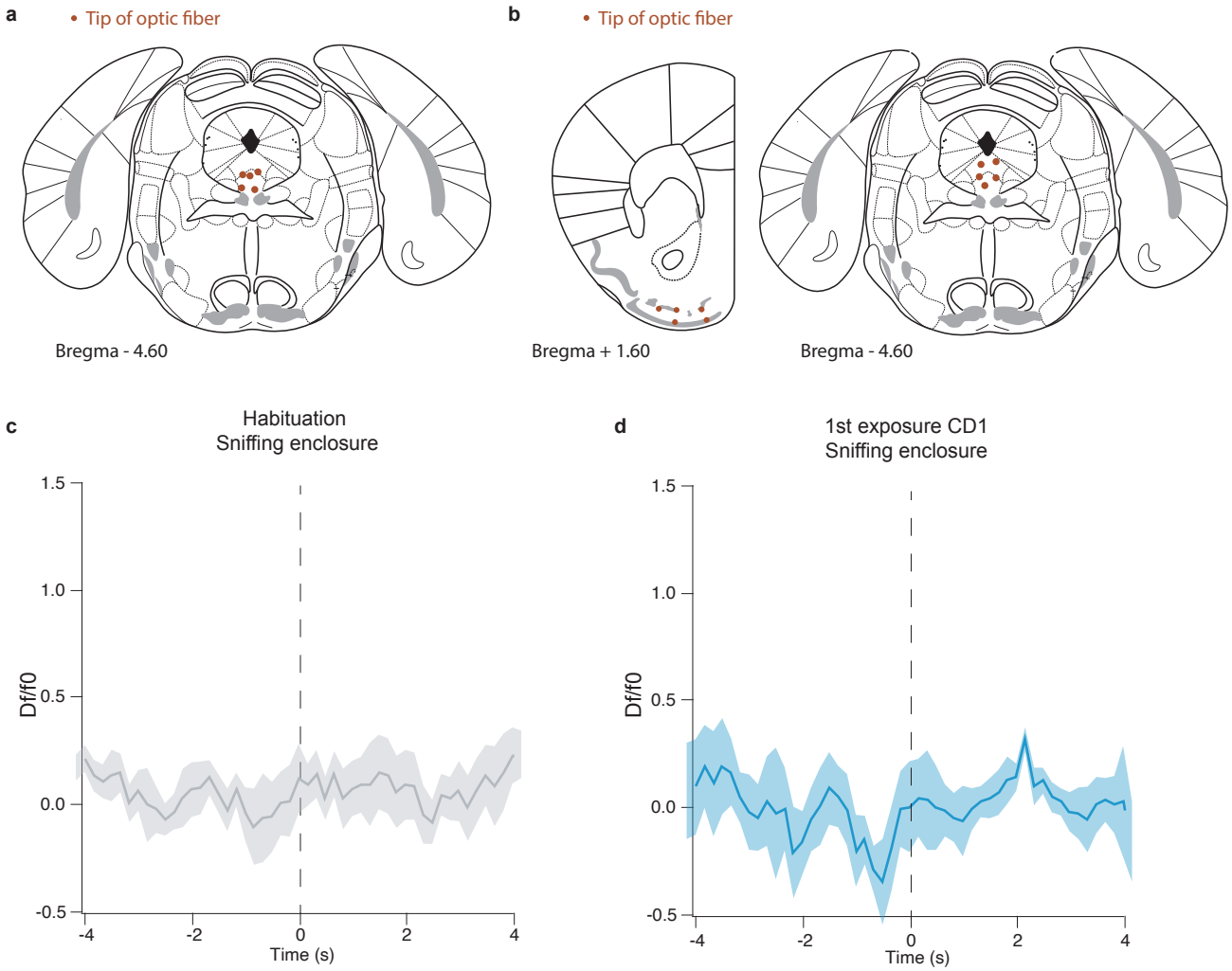
Supplementary Figure 3. (A) Schematic of the viral injection. (B) Representative pictures of inputs from basolateral amygdala. (C) Quantification of GAD - and GAD + cells projecting to OT (unpaired t-test: t5.598 = 2, p = 0.005). (D) Mean DF/F0 signal ±4s around sniffing enclosure initiation (indicated by dashed line, 0s) during habituation. (E) Mean DF/F0 signal ±4s around rearing initiation (indicated by dashed line, 0s) during habituation. (F) Mean DF/F0 signal ±4s around grooming initiation (indicated by dashed line, 0s) during habituation. (G) Quantification of DF/F0 difference before and after sniffing enclosure (gray), rearing (black) and grooming (red) start for the different phases of the test (Left: paired t-test, t1.932 = 5, p = 0.1113. Middle: paired t-test t3.163 = 5, p = 0.0250. Right: paired t-test, t4.703 = 5, p = 0.0053). (H) Mean DF/F0 signal ±4s around sniffing enclosure initiation (indicated by dashed line, 0s) during 1st exposure to CD1. (I) Mean DF/F0 signal ±4s around rearing initiation (ind cated by dashed line, 0s) during 1st exposure to CD1. (J) Mean DF/F0 signal ±4s around grooming initiation (indicated by dashed line, 0s) during 1st exposure to CD1. (K) Quantification of DF/F0 diff rence before and after sniffing enclosure (blue), rearing (black) and grooming (red) start for the different phases of the test (Left: paired t-test, t2.826 = 5, p = 0.0369. Middle: paired t-test t4.002 = 5, p = 0.0103. Right: paired t-test, t7.568 = 5, p = 0.0006). (L) Mean DF/F0 signal ±4s around freezing initition (indicated by dashed line, 0s) during threat recall. (M) Mean DF/F0 signal ±4s around rearing initiation (indicated by dashed line, 0s) during threat recall. (N) Mean DF/F0 signal ±4s around grooming initiation (indicated by dashed line, 0s) during threat recall. (O) Quantification of DF/F0 difference before and after freezing (purple), rearing (black) and grooming (red) start for the different phases of the test (Left: paired t-test, t0.8689 = 5, p = 0.4247. Middle: paired t-test t2.090 = 5, p = 0.0909. Right: paired t-test, t4.967 = 5, p = 0.0042).



Supplementary Figure 4. (a) Bar graph representing rectification index (RI) recorded after different phases of the test (Ordinary one-way ANOVA: F(4, 31) = 0.6817. p = 0.6099). **(b)** Schematic of the experimental timeline and viral injection. **(c)** Left: Bar graph representing AMPAR/NMDAR ratio recorded after different phases of the test (Ordinary one-way ANOVA: F(2, 21) = 2.472. p = 0.1086). Right: Representative traces of AMPAR/NMDAR currents.



Supplementary Figure 5. (a) Optic fibers' tips localization after post-hoc validation. **(b)** Mean DF/F0 signal ±4s around rearing initiation (indicated by dashed line, 0s) during habituation. **(c)** Mean DF/F0 signal ±4s around rearing initiation (indicated by dashed line, 0s) during 1st exposure to CD1. **(d)** Mean DF/F0 signal ±4s around rearing initiation (indicated by dashed line, 0s) during recall. **(e)** Mean DF/F0 signal ±4s around grooming initiation (indicated by dashed line, 0s) during habituation. **(f)** Mean DF/F0 signal ±4s around grooming initiation (indicated by dashed line, 0s) during 1st exposure to CD1. **(g)** Mean DF/F0 signal ±4s around grooming initiation (indicated by dashed line, 0s) during recall. **(h)** Mean DF/F0 signal ±4s around freezing initiation (indicated by dashed line, 0s) during recall. **(i)** Optic fibers' tips localization after post-hoc validation. **(j)** Mean DF/F0 signal ±4s around sniffing enclosure initiation (indicated by dashed line, 0s) during habituation. **(k)** Quantification of DF/F0 difference before and after sniffing the enclosure start for the habituation phase (paired t-test, t1.181 = 5, p = 0.2908). **(l)** Mean DF/F0 signal ±4s around sniffing enclosure initiation (indicated by dashed line, 0s) during the 1st exposure to CD1. **(m)** Quantification of DF/F0 difference before and after sniffing the enclosure start for the 1st exposure to CD1 (paired t-test, t0.5973 = 5, p = 0.5764).



Supplementary Figure 6. (a) Optic fibers's tips localization after post-hoc validation. **(b)** Examples of optic fibers's tips localization after post-hoc validation. **(c)** Mean DF/F0 signal ±4s around sniffing enclosure initiation (indicated by dashed line, 0s) during habituation. **(d)** Mean DF/F0 signal ±4s around sniffing enclosure initiation (indicated by dashed line, 0s) during 1st exposure to CD1. 0.5764).