van Zessen et al., Supplementary Figure 1

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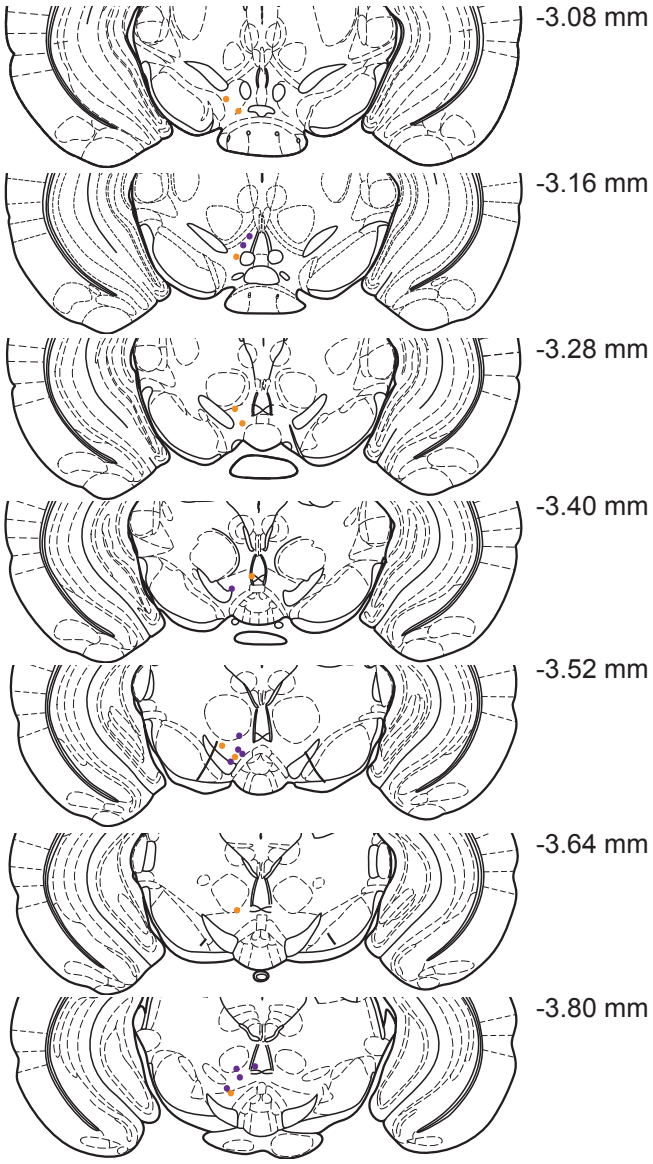
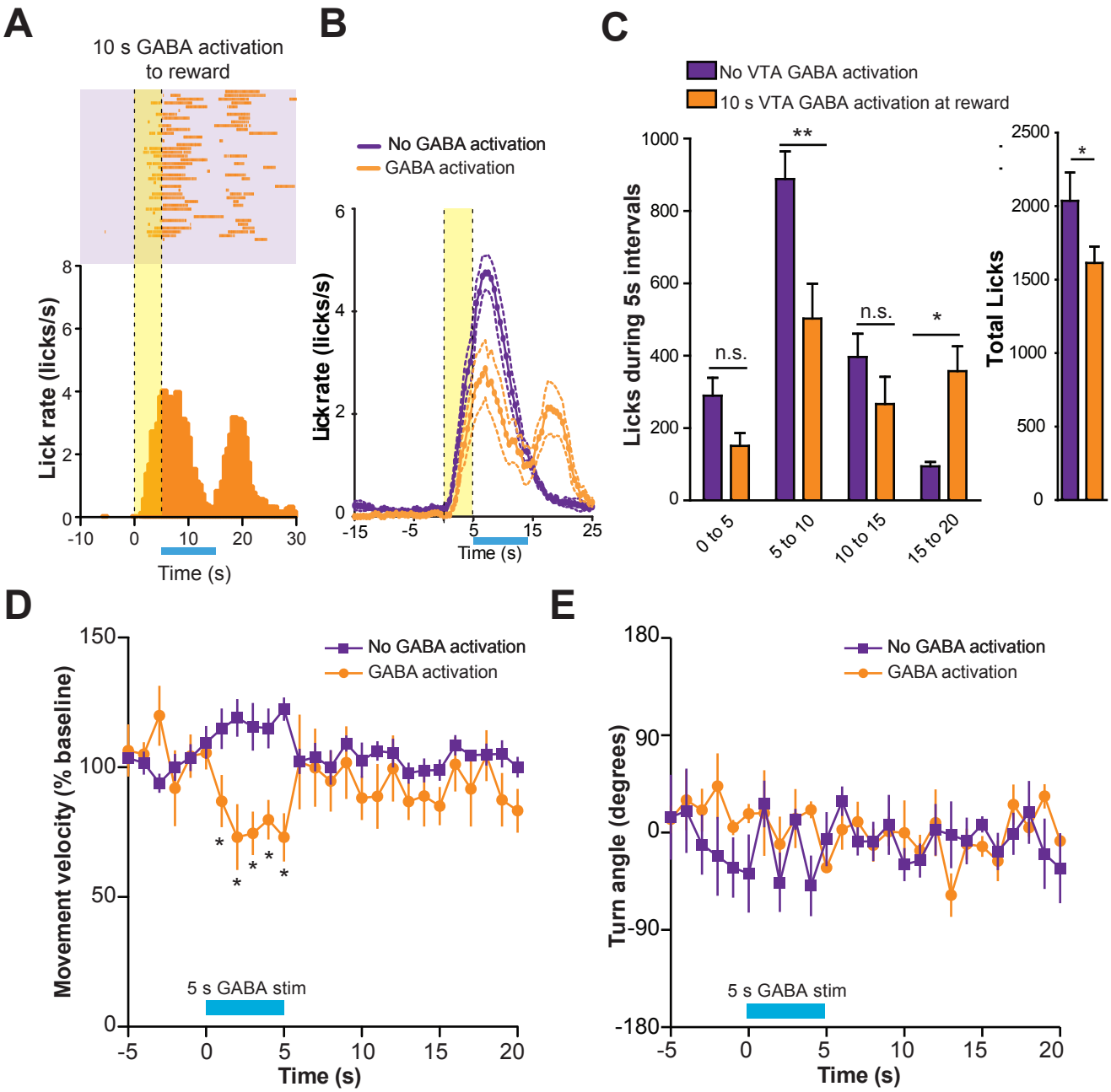


- Fiber placement for mice used in cue-reward conditioning experiments
- Fiber placement for mice used in free sucrose drinking experiments

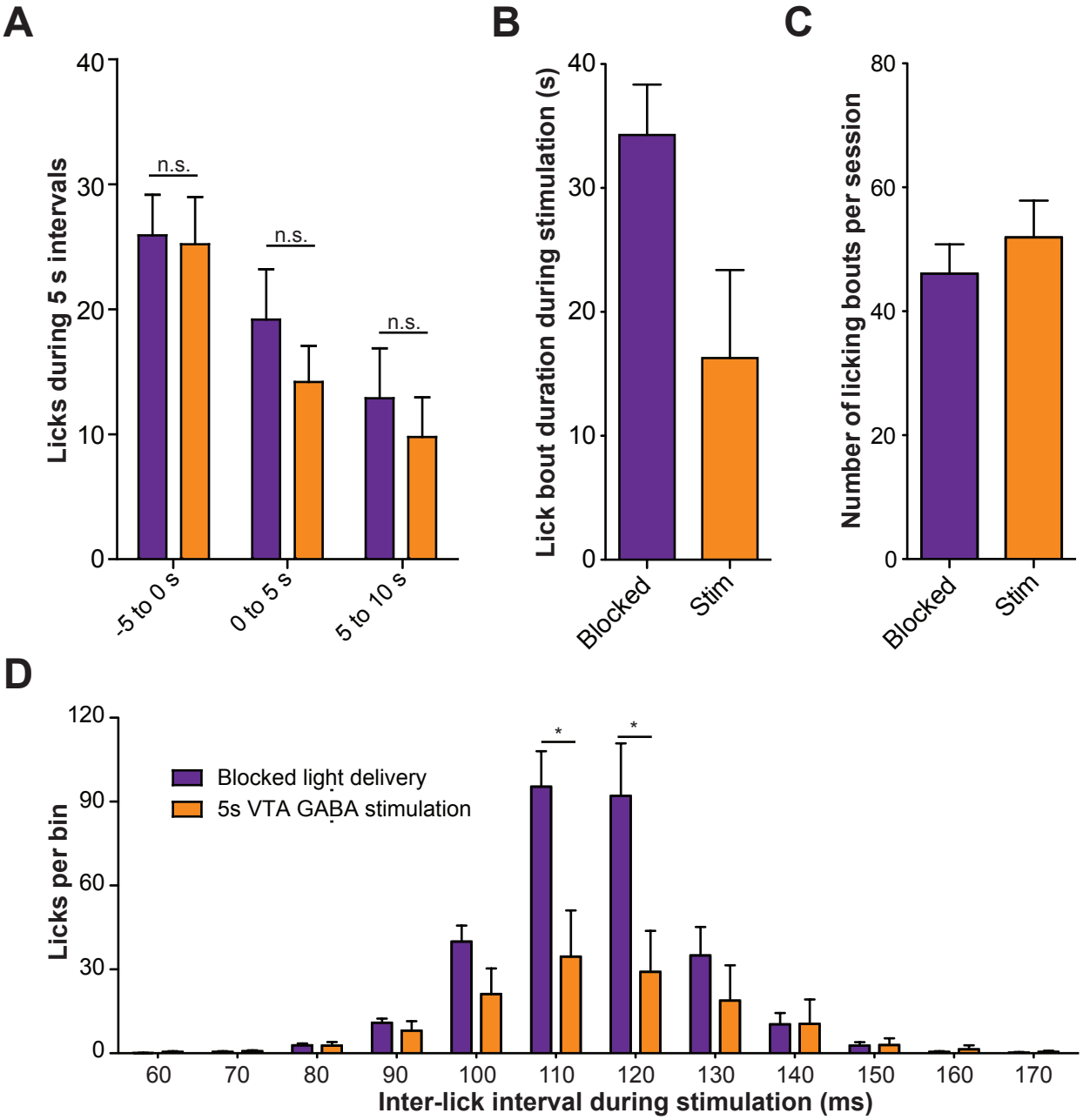
Supplementary Figure 1: Optical fiber stimulation sites within the VTA. (A) The location of optical fiber stimulation sites based on histological examination of brain tissue following the experiments.

van Zessen et al., Supplementary Figure 2



Supplementary Figure 2: Activation of VTA GABA neurons following reward delivery disrupts reward consumption and decreases movement velocity. (A) Example perievent histogram showing data from a single mouse when VTA GABA neurons where activated (blue bar) immediately following reward delivery (t = 5 – 15 s). (B) Average histogram data across all mice tested showing the change in the average lick rate when VTA GABA neurons where activated for 10 s following reward delivery compared to sessions where mice did not receive optical stimulation. (C) Average data from (B) broken into 5 s time bins surrounding cue presentation (0 – 5 s) and reward consumption (5 – 10 s) periods (ANOVA for interaction: $F(3,48) = 8.57$, $p = 0.0001$, $n = 7$ session per condition). Inset graph shows the average total session licks made during stimulation and nonstimulation sessions timelocked to cues ($t(6) = 2.9$, $p = 0.02$, $n = 7$ session per condition). (D) Periodic 5 s VTA GABA activation reduces movement velocity in an open field chamber (ANOVA for interaction: $F(1,29) = 1.7$, $p = 0.02$, $n = 6$ mice). (E) Periodic 5 s VTA GABA activation did no induce changes in rotation in an open field chamber (ANOVA for interaction: $F(1,29) = 0.9$, $p = 0.62$).

van Zessen et al., Supplementary Figure 3



Supplementary Figure 3: Light delivery to the VTA does not alter reward consumption in wild type littermates of VGat-ires-Cre mice, but terminates licking when VTA GABA neurons are activated in VGat-ires-Cre mice expressing ChR2 in the free reward task. (A) Average data showing that light delivery to the VTA does not effect reward consumption in wildtype littermates of VGat-ires-Cre mice ($F(2,18) = 0.83$, $p = 0.83$, $n = 4$ session per condition). (B) Optical stimulation of VTA GABA neurons produced a trend to attenuate the duration of licking occuring within a bout while the stimulation was on ($t(10) = 2.2$, $p = 0.053$, $n = 6$ sessions per condition). (C) Optical stimulation of VTA GABA neurons did not alter the total number of lick bouts (1 bout was defined as ≥ 4 licks occuring within 1 s) over the entire session ($t(10) = 0.77$. $p = 0.46$, $n = 6$ session per condition). (D) Optical stimulation of VTA GABA neurons reduced the total number of licks during the time when the laser was on, but did not alter the distribution of high frequency licks ($F(11,120) = 4.47$, $p < 0.0001$, $n = 6$ sessions per condition, asterisks denote post-hoc significance at $p < 0.001$).

van Zessen et al., Supplementary Figure 4

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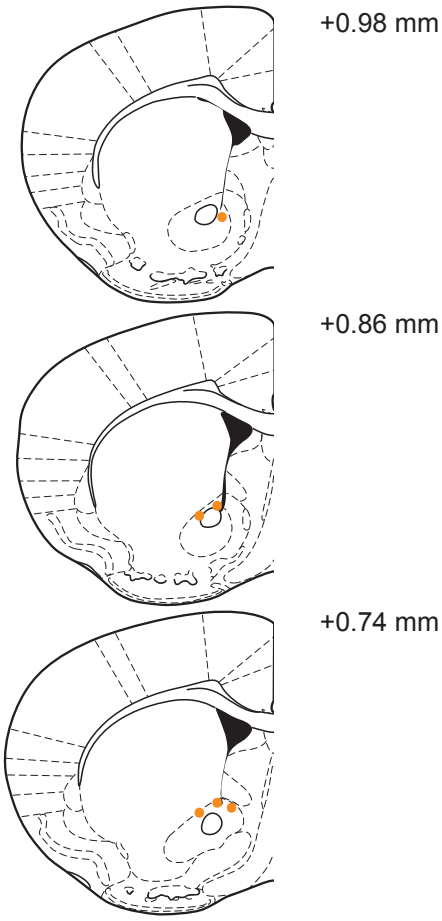

Supplementary Figure 4: Optical fiber stimulation sites within the NAc. (A) The location of optical fiber stimulation sites in the NAc based on histological examination of brain tissue following the experiments.