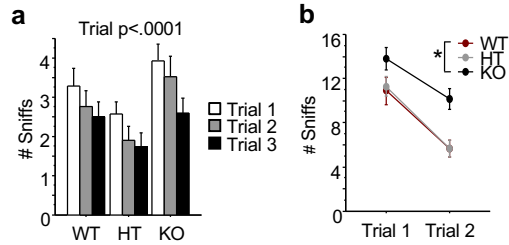
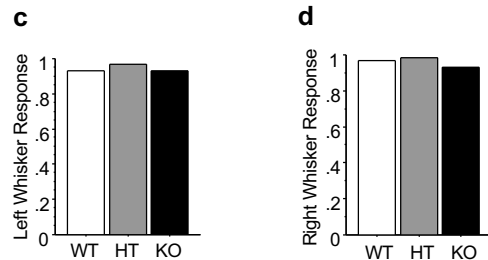


Supplementary Figure 1. Effects of *Btd3* knockout on additional behavioral measures. In the Go/No-Go paradigm ($n = 12$ WT, 11 HT, 16 KO mice, all male), there was no difference between genotypes for discrimination index d' overall (a, left) or across days (a, right). *Btd3* genotype did not affect false alarm rate overall (b, left) or across days (b, right), but did affect premature responses, with an overall reduction in *Btd3* HT and KO mice (c, left) that did not differ across days (c, right). *Btd3* genotype did not affect win-stay responses on the target port (d) or lose-shift responses on the non-target port (e) in the PLT ($n = 13$ WT, 16 HT, 17 KO mice, all male). No differences in prepulse inhibition (f) or acoustic startle amplitude (g) were identified between genotypes ($n = 14$ female/15 male WT, 15 female/14 male HT, 14 female/14 male KO mice). *Btd3* genotype did not affect spatial d' in the open field ($n = 17$ female/27 male WT, 34 female/27 male HT, and 11 female/20 male KO mice). Results are expressed as mean values \pm SEM. * $p < .05$ vs WT group as determined by ANOVA and post hoc tests. WT: wild-type HT: heterozygous KO: knockout PLT: probabilistic learning task.

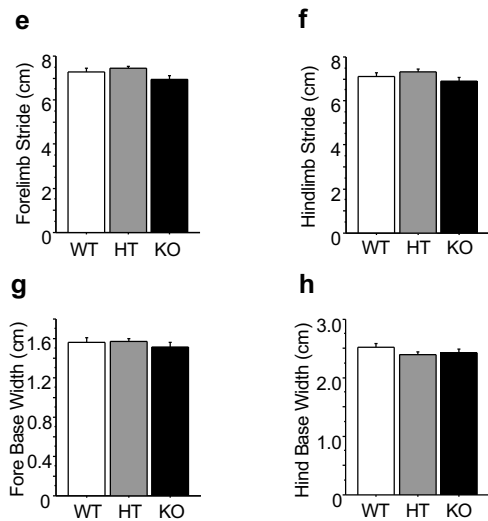
Olfactory Dishabituation & Memory



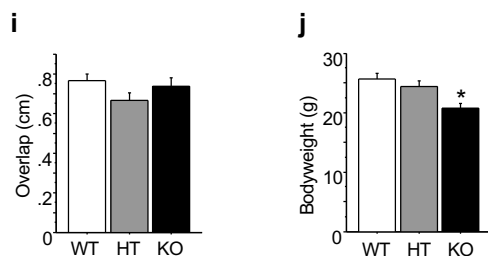
Whisker Brushing Test



Footprint Test



Bodyweight



Supplementary Figure 2. *Btbd3* knockout does not have robust effects on sensory or motor capabilities ($n = 12/\text{genotype}/\text{sex}$ except for female WT, $n = 11$ mice). In the olfactory dis/habituation test (a), no effect of *Btbd3* genotype was identified for habituation to repetition of an odor or dishabituation when a new odor was introduced. In the olfactory memory test (b), no effect of *Btbd3* genotype on olfactory memory was found, but an overall increase in instances of sniffing was seen in *Btbd3* KO mice. No effect of genotype on left (c) or right (d) whisker response was found ($n = 15/\text{genotype}/\text{sex}$). No effect of *Btbd3* genotype was identified in the footprint test (e-i). Young adult *Btbd3* KO mice had significantly reduced bodyweight relative to WT mice (j). Results are expressed as mean values \pm SEM, except for panels depicting categorical data, which does not have error. * $p < .05$ vs WT group as determined by ANOVA and post hoc tests. WT: wild-type HT: heterozygous KO: knockout.

Supplementary Figure 3. *Btbd3* knockout does not cause major alterations in limbic CSTC circuit dendritic morphology. Apical dendritic branching was unaffected by *Btbd3* genotype in granule neurons of the dentate gyrus (n = 6 WT, 5 HT, 5 KO mice, all female) (a), CA1 pyramidal neurons (c), and spiny stellate neurons in mediodorsal thalamus (e). Spine density was also unaffected by *Btbd3* genotype in the hippocampus, in both the dentate gyrus (b) and CA1 (d). Layer II/III pyramidal neurons in ACC showed a mild effect of *Btbd3* genotype on apical dendritic branching, but with no specific differences between groups (f). Spine density was elevated in *Btbd3* KO ACC layer II/III pyramidal neurons relative to WT mice (g). Representative dendritic spine images from ACC layer II/III pyramidal neurons (h). Results are expressed as mean values \pm SEM. * $p < .05$ vs WT group determined by ANOVA and post hoc tests. WT: wild-type HT: heterozygous KO: knockout ACC: anterior cingulate cortex.

