**Fig. S1. Postnatal modifications in the size of glutamate and GABA synaptic afferents to the DRN.** Violin plots illustrating global sizes (in voxels) of synaptic boutons identified with array tomography during postnatal life. (**A**) VGLUT1 (Kruskal-Wallis statistic = -505.2, p<0.0001): *p<0.0001 for P4 vs. P21, P28 and P60; *p<0.0001 for P7 vs. P21, P28 and P60; *p<0.0001 for P14 vs. P21, P28 and P60; *p<0.0001 for P60 vs. P21 and P28. P4 (n=1363), P7 (n=870), P14 (n=1722), P21 (n=2760), P28 (n=2760) and P60 (n=1795). (**B**) VGLUT2 (Kruskal-Wallis statistic = -289.5, p<0.0001): *p<0.0001 for P4 vs. P14, P21, P28 and P60; *p<0.0001 for P7 vs. P14, P21, P28 and P60; *p< 0.0006 for P14 vs. P28 and P60; *p<0.0001 for P21 vs. P28 and P60; *p<0.006 for P28 vs. P60. P4 (n=2049), P7 (n=1079), P14 (n=3132), P21 (n=4321), P28 (n=2036) and P60 (n=3964). (**C**) GAD2 (Kruskal-Wallis statistic = -864.0, p<0.0001): *p<0.006 for P4 vs. P21, P28 and P60; *p<0.0001 for P7 vs. P21, P28 and P60; *p=0.0126 for P14 vs. P21 and *p<0.0001 for P14 vs. P28 and P60; *p<0.0001 for P21 vs. P28 and P60, and for P28 vs. P60. P4 (n=1600), P7 (n=925), P14 (n=2990), P21 (n=3239), P28 (n=3353) and P60 (n=2717). Multiple comparisons were done by Dunn's test. Medians and quartiles are shown.
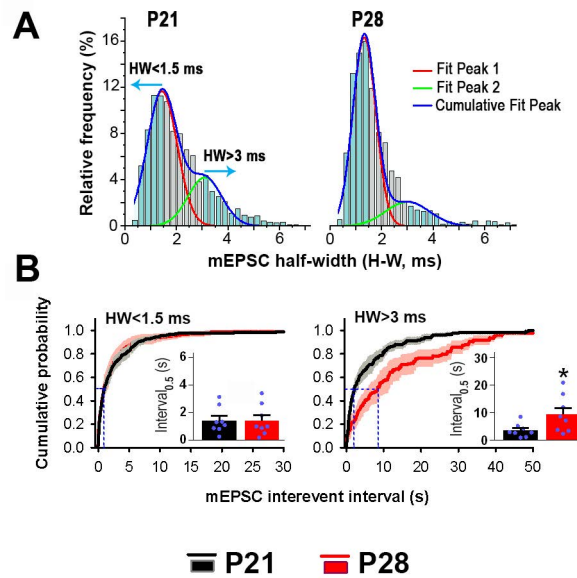
Fig. S2. Kinetic analysis of mEPSCs at P21 and P28.

(**A**) To further study kinetic properties of mEPSCs, half-width (HW) durations were defined as the time between the rising and decay phases of each mEPSC at 50% of the peak amplitude. Histograms of mEPSC HW duration were fitted to a double-peak Gaussian distribution at both P21 and P28 (n=8 neurons from 3 mice/age):

$$y = y_0 + \left(A_1/w_1 * \sqrt{\pi/2}\right) * exp(-2 * ((x - x_{C_1})/w_1)^2) + \left(A_2/w_2 * \sqrt{\pi/2}\right) * exp(-$$

$2 * ((x - x_{C_2})/w_2)^2)$, where y_0, x_c, w and A represent offset, center, width, and area, respectively. For P21: $y_0 = 1.04\,exp-4 \pm 0.00$, $x_{C_1} = 1.43 \pm 0.02$, $A_1 = 0.17 \pm 0.01$, $w_1 = 1.35 \pm 0.05$, $x_{C_2} = 3.09 \pm 0.00$, $A_2 = 0.07 \pm 0.01$, $w_2 = 1.55 \pm 0.00$, $R^2 = 0.96$. For P28: $y_0 = -3.42\,exp-5 \pm 0.00$, $x_{C_1} = 1.32 \pm 0.02$, $A_1 = 0.18 \pm 0.01$, $w_1 = 1.05 \pm 0.05$, $x_{C_2} = 3.00 \pm 0.01$, $A_2 = 0.04 \pm 0.00$, $w_2 = 2.00 \pm 0.00$. $R^2 = 0.94$.

Akaike's Information Criterion test (AIC) was used to compare single vs. double-peak

Gaussian models. For P21, a double-peak Gaussian model was 8.69 X 10^{15} times more likely to be correct (AIC = -527. 55, Akaike weight = 1) than a single-peak Gaussian model (AIC = -454.14, Akaike weight = 1.15 X 10^{-16}). For P28, a double-peak Gaussian model was 119588 times more likely to be correct (AIC = -401.94, Akaike weight = 0.99) than a single-peak Gaussian model (AIC = -378.45, Akaike weight = 8.36 X 10^{-6}). (**B**) mEPSCs were sorted in two distinct groups according to their H-W duration: i) mEPSCs that had a HW duration shorter than 1.5 ms ($\sim x_{C_1}$) and ii) mEPSCs that had a HW duration longer than 3 ms ($\sim x_{C_2}$). The relative frequency of both groups is shown in light blue in the histogram (**A**). Cumulative probability distribution of the inter-event interval for each group of mEPSCs was calculated at P21 and P28 (n=8 neurons from 3 mice/age). The mean inter-event interval at a cumulative probability of 0.5 was calculated using a single exponential function $y = y_0 + a * exp(-b * t)$, where y_0, a, b and t represent offset, pre-exponential coefficient, time constant and time, respectively) (Interval$_{0.5}$, blue dashed lines, inset). *P<0.05, T-test with Welch's correction, t=2.303, df=8.832 (HW >3ms P21 vs. P28). P=0.9957, T-test, t=0.005, df=14 (HW <1.5ms P21 vs. P28).

Table S1. Analysis of bursts in mIPSCs.

	P21	P28	
Events in burst	30.0 ± 8.4 (7)	19.1 ± 1.9 (5)	Mann-Whitney U = 13.0, p = 0.5
Burst duration (s)	3.1 ± 0.4 (7)	4.1 ± 1.4 (5)	Mann-Whitney U = 17.0, p = 0.1
Mean intraburst interval (ms)	151.0 ± 42.0 (7)	252.2 ± 95.1 (5)	Mann-Whitney U = 10.0, p = 0.3
Frequency (Hz)	34.3 ± 5.1 (7)	18.8 ± 3.8 (5)*	T-test t_{10} = 2.3, p = 0.046
Mean intraburst amplitude (-pA)	18.9 ± 3.8 (7)	23.8 ± 5.1 (5)	T-test t_{10} = 1.1, p = 0.3
Mean amplitude outside the burst (-pA)	16.7 ± 1.7 (7)	21.6 ± 4.4 (5)	Mann-Whitney U = 10.0, p = 0.3

Values are expressed as mean±s.e.m. (n). There were no differences between the mean amplitude inside vs. outside of the burst for both P21 and P28. In P21: t_{12}= 0.494, p = 0.630; In P28: Mann-Whitney U = 11, p = 0.841.