

90-minute Baseline Absolute Power

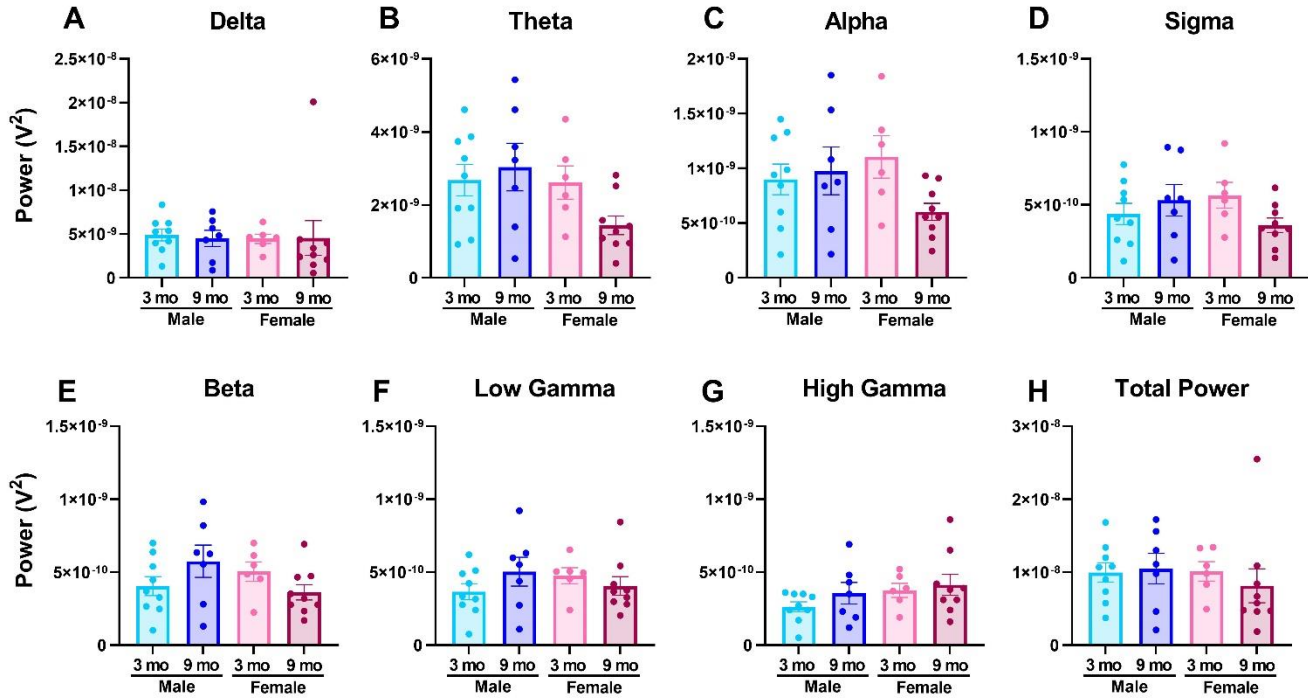


Figure S1. There were no group differences in absolute power during the baseline period. qEEG data are shown as a group mean \pm SEM of absolute (A-G) or total (H) power during the 90 minute baseline period on each individuals' respective vehicle day. Data are summed across the delta [0.5–4 Hz] (A), theta [4–8 Hz] (B), alpha [8–12 Hz] (C), sigma [12–16 Hz] (D), beta [16–24 Hz] (E), low gamma [30–50 Hz] (F), high gamma [50–100 Hz] (G) frequency bands and summed total power [0.5–100 Hz] (H) to compare 3-month-old male (n=9) and female (n=6) and 9-month-old male (n=7) and female (n=9) rats; circles represent individual datapoints.

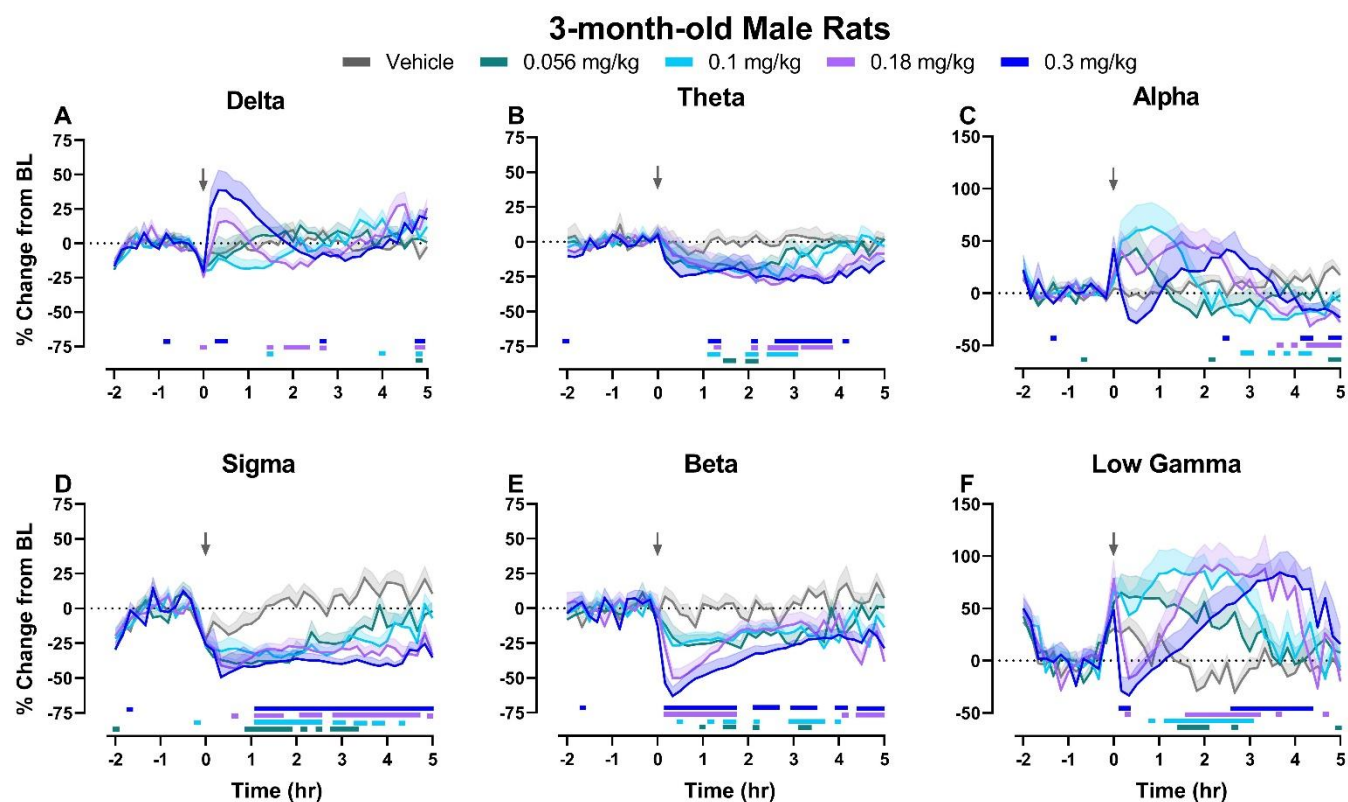


Figure S2. MK-801 significantly affects all spectral power bands in 3-month-old male rats. Time course effects of MK-801 are displayed as group means \pm SEM ($n=8-9$) as the percent change from 90-min baseline in 10-minute bins across the 7-hour recording period on delta (A) theta (B) alpha (C) sigma (D), beta (E), and low gamma (F) in 3-month-old male rats. MK-801 was administered at time point 0, represented by an arrow. On the x-axis, -2 corresponds to ZT 0 and 5 corresponds to ZT 7. Horizontal colored lines matching the respective dose color represent the 10-minute bins at which MK-801-treated groups were significantly different from vehicle-treated groups.

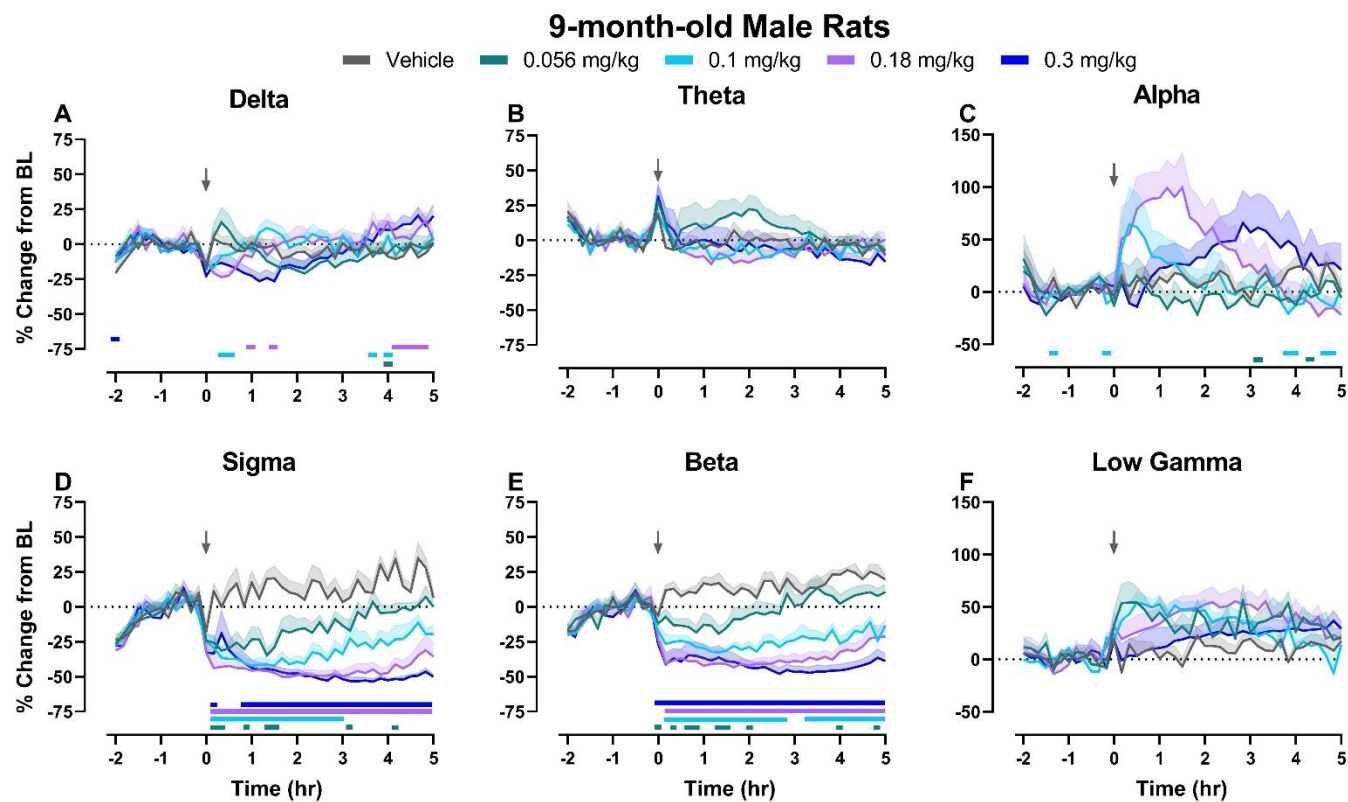


Figure S3. MK-801 differentially affects spectral power bands in 9-month-old male rats. Time course effects of MK-801 are displayed as group means \pm SEM ($n=7-8$) as the percent change from 90-min baseline in 10-minute bins across the 7-hour recording period on delta (A) theta (B) alpha (C) sigma (D), beta (E), and low gamma (F) in 9-month-old male rats. MK-801 was administered at time point 0, represented by an arrow. On the x-axis, -2 corresponds to ZT 0 and 5 corresponds to ZT 7. Horizontal colored lines matching the respective dose color represent the 10-minute bins at which MK-801-treated groups were significantly different from vehicle-treated groups.

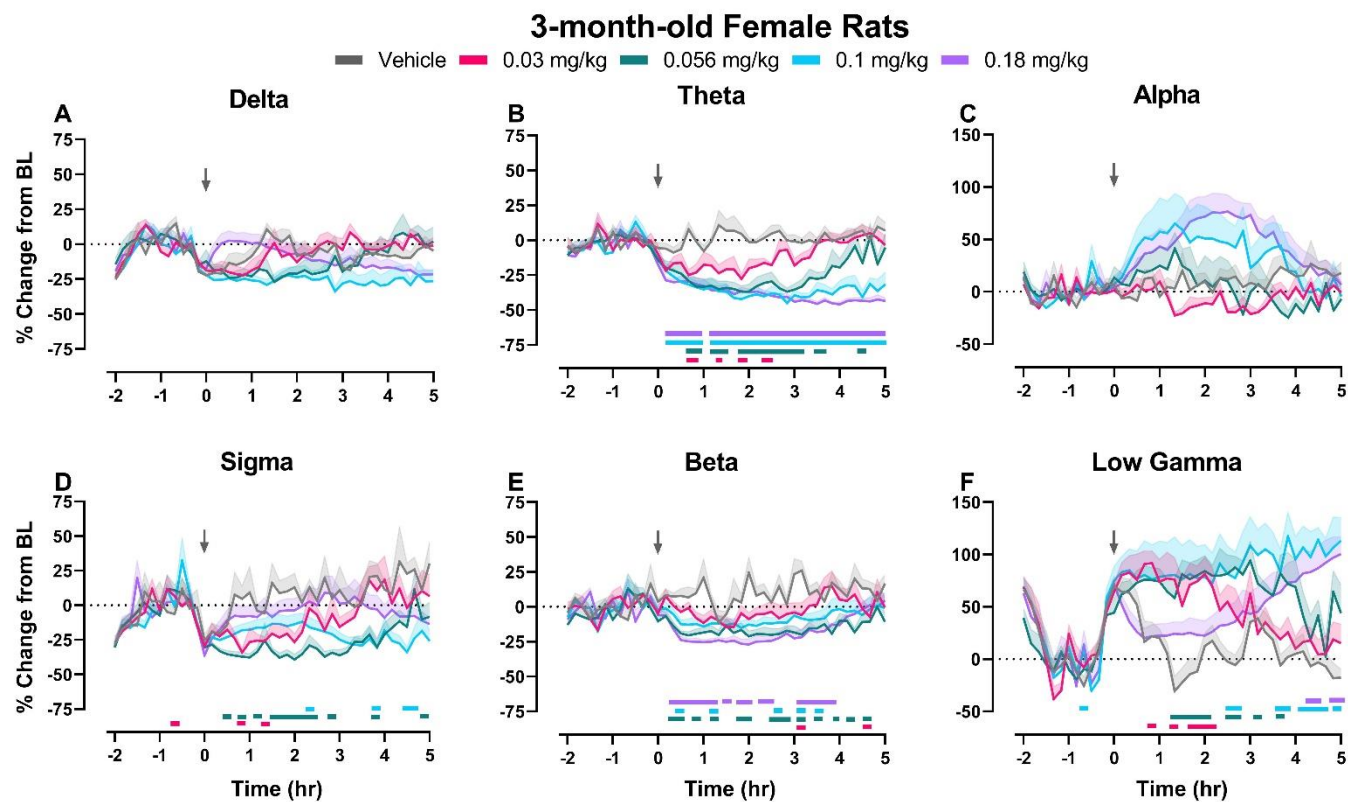


Figure S4. MK-801 differentially affects spectral power bands in 3-month-old female rats. Time course effects of MK-801 are displayed as group means \pm SEM ($n=6$) as the percent change from 90-min baseline in 10-minute bins across the 7-hour recording period on delta (A) theta (B) alpha (C) sigma (D), beta (E), and low gamma (F) in 3-month-old female rats. MK-801 was administered at time point 0, represented by an arrow. On the x-axis, -2 corresponds to ZT 0 and 5 corresponds to ZT 7. Horizontal colored lines matching the respective dose color represent the 10-minute bins at which MK-801-treated groups were significantly different from vehicle-treated groups.

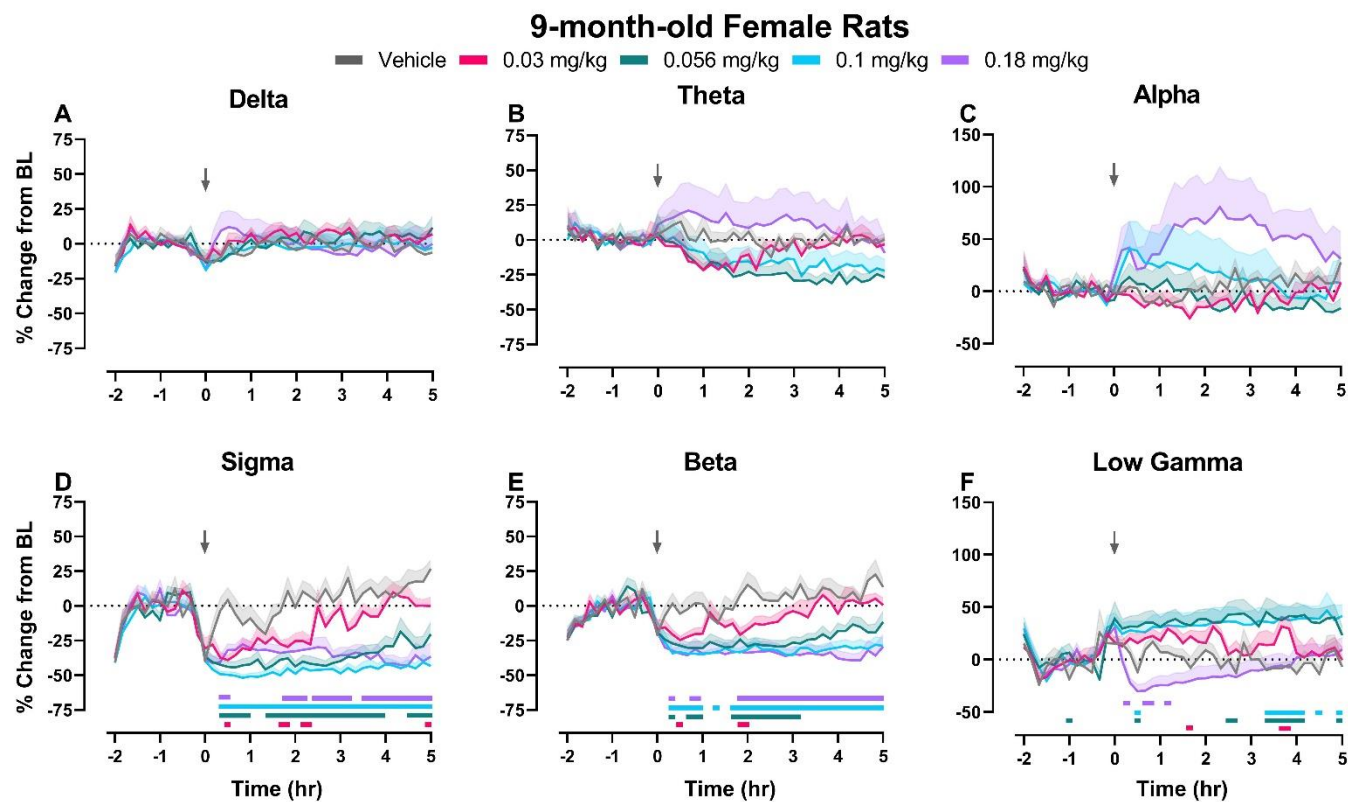


Figure S5. MK-801 affects spectral power bands in the 12-50 (sigma, beta, low gamma) Hz range in 9-month-old female rats. Time course effects of MK-801 are displayed as group means \pm SEM ($n=9$) as the percent change from 90-min baseline in 10-minute bins across the 7-hour recording period on delta (A) theta (B) alpha (C) sigma (D), beta (E), and low gamma (F) in 9-month-old female rats. MK-801 was administered at time point 0, represented by an arrow. On the x-axis, -2 corresponds to ZT 0 and 5 corresponds to ZT 7. Horizontal colored lines matching the respective dose color represent the 10-minute bins at which MK-801-treated groups were significantly different from vehicle-treated groups.

30-90 minute Average

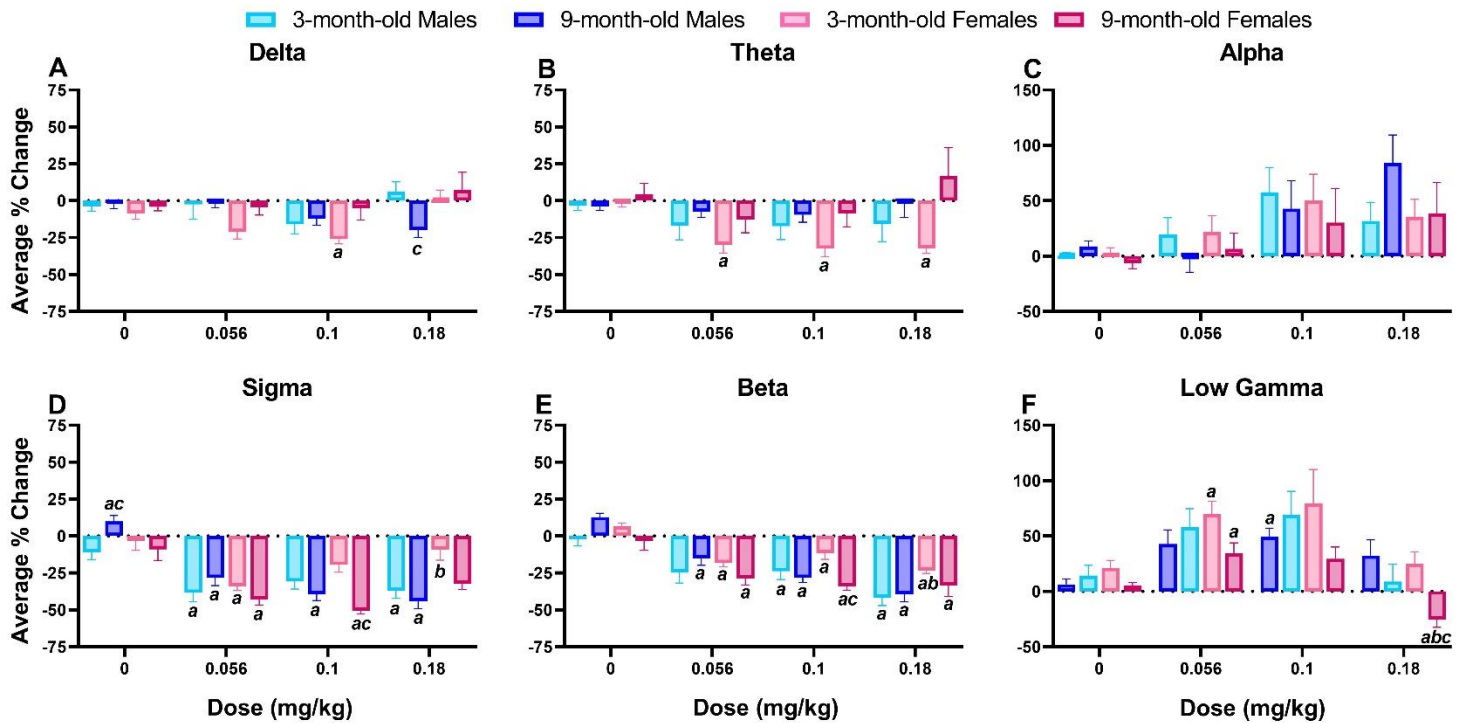


Figure S6. MK-801-induced differences in relative power. For direct group comparisons in response to MK-801, each individual's percent change from baseline in the 30-90 min post-dosing period was averaged and graphed as a group mean \pm SEM to assess the effects of MK-801 administration on delta (A), theta (B), alpha (C), sigma (D), beta (E), and low gamma power (F). A three-way ANOVA was run for each graph. For delta, there was a main effect of dose ($F_{2,522, 68.95} = 3.962$, $p < 0.05$) and an dose x age interaction ($F_{3, 82} = 2.89$, $p < 0.05$) (A). For theta, there was main effect of dose ($F_{1, 979, 54.10} = 5.516$, $p < 0.05$) and age ($F_{1, 28} = 4.501$, $p < 0.05$) and a dose x age interaction ($F_{3, 82} = 3.391$, $p < 0.05$) (B). For alpha, there was a main effect of dose ($F_{2, 351, 64.27} = 9.345$, $p = 0.0001$) (C). For sigma, there was a main effect of dose ($F_{2, 576, 70.41} = 40.89$, $p < 0.0001$) and age ($F_{1, 28} = 4.599$, $p < 0.05$) and a significant dose x sex ($F_{3, 82} = 6.284$, $p < 0.001$), dose x age ($F_{3, 82} = 7.179$, $p < 0.001$), and age x sex ($F_{1, 28} = 11.12$, $p < 0.005$) interaction (D). For beta, there was a main effect of dose ($F_{2, 716, 74.23} = 46.82$, $p < 0.0001$) and a significant age x sex interaction ($F_{1, 28} = 8.608$, $p < 0.05$) (E). Lastly, for low gamma there was a main effect of dose ($F_{2, 761, 75.47} = 19.55$, $p < 0.0001$) and age ($F_{1, 28} = 5.256$, $p < 0.05$) but no interactions (F). $p < 0.05$, *a*, compared to group's respective vehicle condition, *b*, compared to male rats of the same age and *c*, compared to 3-month-old rats of the same sex.

Supplementary Table S1. Average weights of rats in each group on first dose day

	3-month-old Males	9-month-old Males	3-month-old Females	9-month-old Females
Average Weight	325.8	776.9	224.8	288.9
Std. Deviation	9.4	168.3	8.7	10.9

Supplementary Table S2. Statistics for supplementary figures S1 and S2

Timecourse Statistics (Males)							
Figure	Source of Variation	DF	F	p	*	Post hoc results	Significant Timepoints (10-minute bin)
3-month-old Males							
S1A Delta	Dose	3.13, 25.01	2.383	0.0912	ns	Vehicle vs 0.056 mg/kg	290
	Time	3.31, 26.45	4.628	0.0083	**	Vehicle vs 0.1 mg/kg	90, 240, 290
	Interaction	4.67, 36.04	3.794	0.0083	**	Vehicle vs 0.18 mg/kg Vehicle vs 0.3 mg/kg	0, 90, 110-140, 160, 290, 300 -50, 20, 30, 160, 290, 300
S1B Theta	Dose	1.98, 15.80	10.48	0.0013	**	Vehicle vs 0.056 mg/kg	90, 100, 120, 130
	Time	1.71, 13.70	4.033	0.0471	*	Vehicle vs 0.1 mg/kg Vehicle vs 0.18 mg/kg	70, 80, 120, 130, 150-180 80, 130, 150-170, 190-230
	Interaction	4.62, 35.42	1.631	0.1813	ns	Vehicle vs 0.3 mg/kg	-120, 70, 80, 130, 160-230, 250
S1C Alpha	Dose	2.84, 22.68	0.668	0.572	ns	Vehicle vs 0.056 mg/kg	-40, 130, 290, 300
	Time	2.14, 17.08	3.603	0.047	*	Vehicle vs 0.1 mg/kg Vehicle vs 0.18 mg/kg	170, 180, 210-230, 250, 260 220, 240, 260, 270, 280-300
	Interaction	3.84, 29.54	4.296	0.008	**	Vehicle vs 0.3 mg/kg	-80, 150, 250, 260, 290, 300
S1D Sigma	Dose	3.06, 24.48	18.73	<0.0001	****	Vehicle vs 0.056 mg/kg	60-110, 130, 150, 170-200
	Time	3.74, 29.91	16.88	<0.0001	****	Vehicle vs 0.1 mg/kg Vehicle vs 0.18 mg/kg	-10, 70-150, 170, 180, 200, 210, 230, 240, 260 40, 70-100, 130-150, 170-280, 300
	Interaction	5.27, 40.49	3.10	0.017	*	Vehicle vs 0.3 mg/kg	-100, 70-300
S1E Beta	Dose	2.85, 22.82	16.11	<0.0001	****	Vehicle vs 0.056 mg/kg	60, 70, 90, 130, 190, 200
	Time	3.86, 30.84	11.86	<0.0001	****	Vehicle vs 0.1 mg/kg Vehicle vs 0.18 mg/kg	30, 70, 90, 100, 130, 180-220, 240 10-100, 250, 270-300
	Interaction	4.76, 36.63	2.90	0.0282	*	Vehicle vs 0.3 mg/kg	-100, 10-100, 130-160, 180-210, 240, 250, 270-300
S1F Low Gamma	Dose	2.63, 21.03	7.941	0.0014	**	Vehicle vs 0.056 mg/kg	90-120, 160, 300
	Time	3.83, 30.67	7.851	0.0002	***	Vehicle vs 0.1 mg/kg Vehicle vs 0.18 mg/kg	50, 70-180 20, 100-190, 220, 280
	Interaction	4.98, 38.33	4.705	0.0019	**	Vehicle vs 0.3 mg/kg	10, 20, 160-260
9-month-old Males							
S2A Delta	Dose	1.96, 13.68	1.030	0.3813	ns	Vehicle vs 0.056 mg/kg	240
	Time	3.76, 26.29	3.819	0.0156	*	Vehicle vs 0.1 mg/kg Vehicle vs 0.18 mg/kg	10, 20, 220, 240 60, 90, 250-290
	Interaction	5.38, 32.79	3.223	0.0159	*	Vehicle vs 0.3 mg/kg	-120
S2B Theta	Dose	2.15, 15.01	2.218	0.1409	ns		
	Time	2.83, 19.83	3.910	0.0257	*		
	Interaction	4.63, 28.25	1.537	0.2133	ns		
S2C Alpha	Dose	1.56, 10.91	2.131	0.17	ns	Vehicle vs 0.056 mg/kg	190, 260
	Time	2.11, 14.81	3.279	0.0641	ns	Vehicle vs 0.1 mg/kg	-80, -10, 230, 240, 280, 290
	Interaction	3.30, 20.14	3.352	0.0359	*		
S2D Sigma	Dose	2.48, 17.34	45.27	<0.0001	****	Vehicle vs 0.056 mg/kg	10, 20, 50, 80, 90, 190, 250
	Time	4.16, 29.12	18.83	<0.0001	****	Vehicle vs 0.1 mg/kg Vehicle vs 0.18 mg/kg	10-180, 200, 220-290 10-300
	Interaction	4.55, 27.73	6.013	0.0009	***	Vehicle vs 0.3 mg/kg	10, 50-300
S2E Beta	Dose	2.51, 17.54	44.04	<0.0001	****	Vehicle vs 0.056 mg/kg	0, 20, 40, 50, 80, 90, 120, 240, 290
	Time	4.10, 28.68	13.15	<0.0001	****	Vehicle vs 0.1 mg/kg Vehicle vs 0.18 mg/kg	10-170, 200-300 10-300
	Interaction	5.09, 31.03	7.211	0.0001	***	Vehicle vs 0.3 mg/kg	0-300
S2F Low Gamma	Dose	2.65, 18.52	2.495	0.0975	ns		
	Time	3.12, 21.82	9.171	0.0004	***		
	Interaction	4.19, 25.56	2.293	0.0845	ns		
*p<0.05; ** p<0.01; *** p<0.001; ****p<0.0001							

Supplementary Table S3. Statistics for supplementary figures S3 and S4

Timecourse Statistics (Females)							
Figure	Source of Variation	DF	F	p	*	Post hoc results	Significant Timepoints (10-minute bin)
3-month-old Females							
S3A Delta	Dose	1.74, 8.70	6.239	0.0729	ns		
	Time	4.04, 20.17	3.699	0.0019	**		
	Interaction	3.97, 19.52	2.737	0.0587	ns		
S3B Theta	Dose	2.42, 12.08	44.16	<0.0001	****	Vehicle vs 0.03 mg/kg	40, 50, 80, 110, 140, 150
	Time	2.85, 14.24	16.01	<0.0001	****	Vehicle vs 0.056 mg/kg	40, 50, 70-90, 110-190, 210, 220, 270
						Vehicle vs 0.1 mg/kg	10-50, 70-300
	Interaction	3.41, 16.73	5.804	0.0053	**	Vehicle vs 0.18 mg/kg	10-50, 70-300
	Dose	2.19, 10.94	3.306	0.0722	ns		
	Time	2.23, 11.16	5.002	0.0256	*		
Interaction	3.62, 17.77	2.972	0.052	ns			
S3D Sigma	Dose	1.75, 8.77	5.218	0.0351	*	Vehicle vs 0.03 mg/kg	-40, 50, 80
	Time	2.75, 13.74	5.864	0.0096	**	Vehicle vs 0.056 mg/kg	30, 50-70, 90-150, 170, 230, 300
						Vehicle vs 0.1 mg/kg	10-50, 70-300
	Interaction	3.93, 19.27	2.586	0.0704	ns	Vehicle vs 0.18 mg/kg	10-50, 70-300
	Dose	2.63, 13.12	12.26	0.0006	***	Vehicle vs 0.03 mg/kg	190, 280
	Time	2.60, 13.01	4.067	0.0344	*	Vehicle vs 0.056 mg/kg	20, 30, 50, 70, 110,120,150-170,190, 210, 230, 250, 280
						Vehicle vs 0.1 mg/kg	30, 70, 160, 190, 210
	Interaction	3.48, 17.09	1.984	0.1484	ns	Vehicle vs 0.18 mg/kg	20-70, 90, 110, 120, 140, 150, 190-230
	Dose	1.12, 5.59	5.375	0.0607	ns	Vehicle vs 0.03 mg/kg	50, 80, 100-130
S3F Low Gamma	Time	2.77, 13.87	12.86	0.0003	***	Vehicle vs 0.056 mg/kg	80-120, 150, 160, 190, 220
						Vehicle vs 0.1 mg/kg	-40, 150, 160, 220, 230, 250-280, 300
	Interaction	3.87, 18.99	3.984	0.0171	*	Vehicle vs 0.18 mg/kg	260, 270, 290, 300
9-month-old Females							
S4A Delta	Dose	2.33, 18.67	0.258	0.8072	ns		
	Time	2.46, 19.70	2.094	0.142	ns		
	Interaction	5.04, 34.76	1.188	0.3351	ns		
S4B Theta	Dose	1.48, 11.84	2.613	0.1241	ns		
	Time	1.37, 10.94	1.032	0.3586	ns		
	Interaction	2.05, 14.16	2.069	0.1621	ns		
S4C Alpha	Dose	2.43, 19.42	2.420	0.1069	ns		
	Time	2.07, 16.57	1.615	0.2286	ns		
	Interaction	3.95, 27.22	2.053	0.1156	ns		
S4D Sigma	Dose	1.74, 13.90	18.56	0.0002	***	Vehicle vs 0.03 mg/kg	30, 100, 110, 130, 140, 300
	Time	3.72, 29.78	18.35	<0.0001	****	Vehicle vs 0.056 mg/kg	20-60, 80-240, 280-300
						Vehicle vs 0.1 mg/kg	20-300
	Interaction	4.82, 33.23	3.767	0.0088	**	Vehicle vs 0.18 mg/kg	20, 30, 110-130, 150-190, 210-300
	Dose	2.35, 18.77	15.69	<0.0001	****	Vehicle vs 0.03 mg/kg	30, 110, 120
	Time	3.42, 27.33	10.68	<0.0001	****	Vehicle vs 0.056 mg/kg	20, 40-60, 100-190, 210-230, 260, 280-300
						Vehicle vs 0.1 mg/kg	20-60, 80, 100-300
	Interaction	4.46, 30.77	3.335	0.019	*	Vehicle vs 0.18 mg/kg	20, 50, 60, 110-300
	Dose	2.28, 18.22	13.05	0.0002	***	Vehicle vs 0.03 mg/kg	100, 220, 230
S4F Low Gamma	Time	2.97, 23.73	3.201	0.042	*	Vehicle vs 0.056 mg/kg	-60, 30, 150, 160, 200-250, 300
						Vehicle vs 0.1 mg/kg	30, 200-250, 270, 300
	Interaction	5.19, 35.81	3.347	0.013	*	Vehicle vs 0.18 mg/kg	20, 40, 50, 70
*p<0.05; ** p<0.01; *** p<0.001; ****p<0.0001							