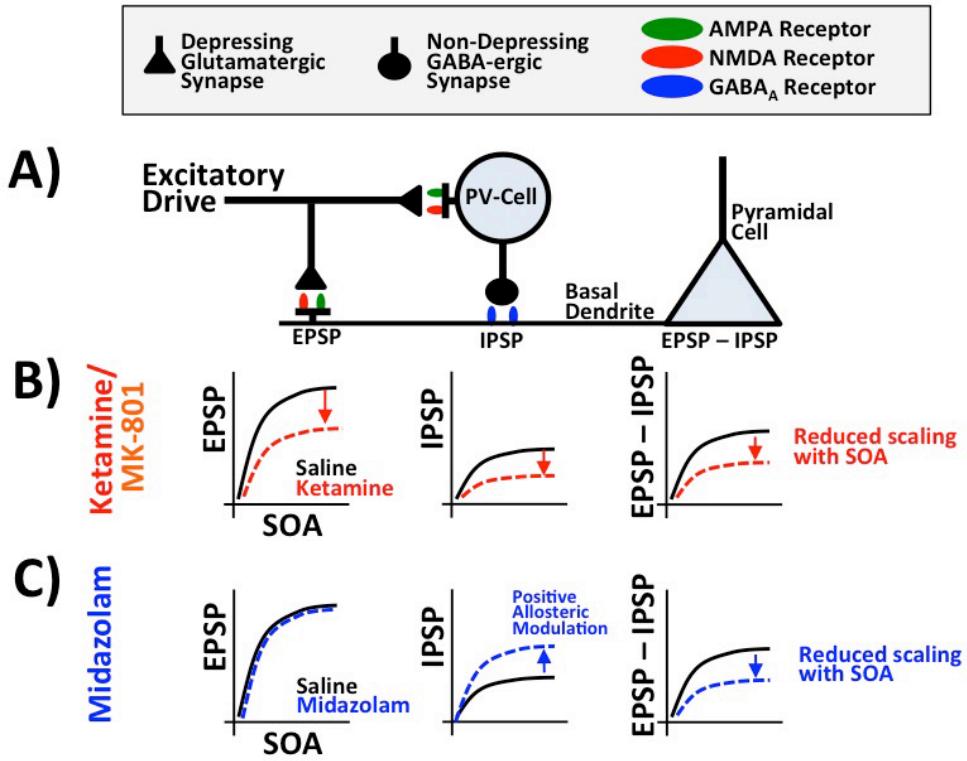
Appendix 1 to Holliday WB, Gurnsey K, Sweet RA, Teichert T. A putative electrophysiological biomarker of auditory sensory memory encoding is sensitive to pharmacological alterations of excitatory/inhibitory balance in male macaque monkeys. *J Psychiatry Neurosci* 2017. DOI: 10.1503/jpn.170093

Online appendices are unedited and posted as supplied by the authors.

1) Supplementary Figures



Supplementary Figure 1 – Conceptual model of E/I balance in a simplified neural network. *The difference of excitatory (**EPSP**) and inhibitory post-synaptic potentials (**IPSP**) of a putative pyramidal cell population determines amplitude of a hypothetical AEP. (**A)** Circuit diagram. Glutamatergic input reaches a pyramidal cell and a parvalbumin-positive interneuron (PV-Cell) via NMDA and AMPA receptors. The PV-cell inhibits the pyramidal neuron via GABA$_A$ receptors on the basal dendrite of the pyramidal cell. **(B&C)** The first column plots the EPSP of the pyramidal cell as a function of SOA; the second column plots the IPSP of the pyramidal cell caused by the PV-cell input as a function of SOA; the third column plots the difference between EPSP and IPSP as a function of SOA. This difference corresponds to the overall depolarization of the cell, and is proportional to the AEP component amplitude. **(B)** Ketamine (red) diminishes both the EPSP and IPSP relative to normal function (black). Because both signals are scaled down equally, the AEP amplitude (ESPS-ISPS) is reduced by the same fraction. **(C)** Midazolam (blue) increases the IPSP of the pyramidal cell while*

Appendix 1 to Holliday WB, Gurnsey K, Sweet RA, Teichert T. A putative electrophysiological biomarker of auditory sensory memory encoding is sensitive to pharmacological alterations of excitatory/inhibitory balance in male macaque monkeys. *J Psychiatry Neurosci* 2017. DOI: 10.1503/jpn.170093

Online appendices are unedited and posted as supplied by the authors.

leaving EPSPs unaltered. This also reduces the scaling of AEP amplitude with SOA. See Discussion for details.

Appendix 1 to Holliday WB, Gurnsey K, Sweet RA, Teichert T. A putative electrophysiological biomarker of auditory sensory memory encoding is sensitive to pharmacological alterations of excitatory/inhibitory balance in male macaque monkeys. *J Psychiatry Neurosci* 2017. DOI: 10.1503/jpn.170093

Online appendices are unedited and posted as supplied by the authors.

2) Supplementary Tables

Supplementary Table 1. Fitted values for time-constant λ_{SOA} in the 3 saline control experiments and the three active drug experiments (ket, mk, and mid). Note that the values are oftentimes not meaningful in drug conditions when the scaling with SOA is blunted or completely abolished.

		P21	P31	P55	N85	P135
Jesse	sal	1.61	0.90	0.43	1.41	0.84
	ket	1.92	1.08	0.14	3.25	1.76
	sal	1.17	0.67	0.65	0.41	1.12
	mk	1.69	0.82	0.31	1.13	1.01
	sal	0.82	0.66	0.87	0.42	0.39
	mid	0.50	0.56	1.12	0.98	14.43
Rockey	sal	1.94	1.33	0.65	1.29	1.03
	ket	14.43	0.46	12.04	1.12	1.01
	sal	0.72	1.32	0.24	0.97	1.02
	mk	1.66	0.86	0.32	9.46	0.28
	sal	1.05	1.60	0.60	0.66	1.04
	mid	0.67	0.77	0.44	0.73	0.85
Sam	sal	1.05	0.88	0.68	0.64	1.28
	ket	1.06	0.52	0.3	0.14	0.49
	sal	1.02	0.68	0.27	0.61	0.87
	mk	4.61	2.89	1.65	1.35	2.55
	sal	0.62	0.64	1.98	0.78	0.48
	mid	2.71	3.06	1.99	0.78	2.28
Walter	sal	1.22	0.63	1.11	1.14	0.75
	ket	5.98	1.34	1.51	0.78	1.10
	sal	0.64	0.76	0.96	0.44	0.41
	mk	0.14	0.49	0.14	0.7	8.31
	sal	1.31	0.58	0.81	0.76	0.44
	mid	0.63	0.38	0.76	14.43	0.71

Appendix 1 to Holliday WB, Gurnsey K, Sweet RA, Teichert T. A putative electrophysiological biomarker of auditory sensory memory encoding is sensitive to pharmacological alterations of excitatory/inhibitory balance in male macaque monkeys. *J Psychiatry Neurosci* 2017. DOI: 10.1503/jpn.170093

Online appendices are unedited and posted as supplied by the authors.

Supplementary Table 2. Fitted values for the extrapolated asymptotic component value *a* for infinitely long SOAs in the 3 saline control experiments and the three active drug experiments (ket, mk, and mid). Note that the values are oftentimes not meaningful in drug conditions when the scaling with SOA is blunted or completely abolished.

		P21	P31	P55	N85	P135
Jesse	sal	42.47	34.43	18.72	-19.14	30.17
	ket	24	22.63	-1.55	10.55	20.5
	sal	36.7	28.79	14.92	-34.73	12.81
	mk	24.87	25.83	4.75	3.88	20.66
	sal	38.19	28.42	10.95	-37.51	22.45
	mid	27.24	17.82	-6.47	-23.84	-8.12
Rockey	sal	23.62	19.57	13.87	-36.21	20.66
	ket	14.71	16.64	-7.67	-20.29	17.79
	sal	22.72	13.82	20.03	-26.64	14.32
	mk	13.67	10.65	-1.06	-4.32	12.52
	sal	20.1	12.93	10.98	-33.4	16.78
	mid	13.37	8.77	5.04	-13.69	3.18
Sam	sal	30.73	31.97	11.16	-20.36	15.95
	ket	13.78	22.58	6.7	0.63	10.92
	sal	27.88	30.85	12.78	-13.24	19.18
	mk	24.76	28.82	7.79	-7.94	16.22
	sal	33.54	33.97	9.89	-13.78	21.83
	mid	12.65	12.07	-1.11	-11.94	3.32
Walter	sal	16.72	20.67	26.56	-23.75	16.84
	ket	8.12	14.91	3.47	9.63	6.78
	sal	16.58	19.54	30.38	-19.44	20.72
	mk	17.5	24.99	24.42	-3.01	6.96
	sal	16.63	19.74	30.37	-26.06	17.89
	mid	15.95	7.27	15.81	-0.93	0.34

Appendix 1 to Holliday WB, Gurnsey K, Sweet RA, Teichert T. A putative electrophysiological biomarker of auditory sensory memory encoding is sensitive to pharmacological alterations of excitatory/inhibitory balance in male macaque monkeys. *J Psychiatry Neurosci* 2017. DOI: 10.1503/jpn.170093

Online appendices are unedited and posted as supplied by the authors.

Supplementary Table 3. Fitted values for the scaling *b* of component amplitude with SOA in the 3 saline control experiments and the three active drug experiments (ket, mk, and mid). Note that the values are related to, but no identical to the main outcome variable reported in the paper, i.e., dynamic range.

		P21	P31	P55	N85	P135
Jesse	sal	-15.94	-24.84	-16.43	16.42	-22.23
	ket	-8.61	-19.07	-2.25	-1.11	-11.02
	sal	-16.23	-22.3	-17.42	28.74	-10.09
	mk	-7.58	-18.76	-5.05	3.95	-11.14
	sal	-18.49	-21.82	-14.41	31.6	-19.25
	mid	-14.89	-13.91	3.77	20.27	1.27
Rockey	sal	-7.8	-10.19	-17.3	26.16	-18.06
	ket	-0.57	-7.68	0.55	15.58	-10.14
	sal	-11.22	-8.71	-17.51	22.39	-12.32
	mk	-4.47	-4.86	-2.91	2.17	-6.48
	sal	-8.79	-7.3	-16.31	25.51	-15.89
	mid	-6.87	-4.22	-7.43	11.03	-1.05
Sam	sal	-12.94	-19.42	-6.76	19.36	-10.66
	ket	-4.35	-12.75	-5.53	1.25	-5.87
	sal	-13.1	-19.79	-6.52	15.17	-12.66
	mk	-7.41	-16.1	-6.84	6.72	-11.32
	sal	-16.06	-21.98	-6.99	14.96	-14.38
	mid	-2.25	-2.51	0.38	12.21	0.86
Walter	sal	-7.7	-17.32	-15.75	20.59	-14.94
	ket	-1.07	-11.43	-1.79	-3.28	-3.79
	sal	-6.84	-18.17	-21.33	16.83	-17.48
	mk	-3.94	-19.27	-8.94	6.73	-3.46
	sal	-5.76	-17.54	-20.9	22.92	-16.55
	mid	-5.22	-7.37	-13.63	0.6	-2.46