Supplementary Table 1. Statistical analysis

All post hoc testing used the Tukey-Kramer method, controlling for multiple comparisons. All statistical tests are two-sided unless otherwise specified.

Figure	Sample Size (numbers indicate sessions unless otherwise stated)	Statistical Test	Values
Task performance (percent correct) compared to chance (11%)	Ketamine-WM 18 Saline-WM 7 Ketamine-Perception 4	Binomial test	**Pre-Injection:** Ketamine-WM sessions $p<0.001$ Saline-WM sessions $p<0.001$ Ketamine-Perception sessions $p<0.001$ **Early Post-Injection:** Ketamine-WM sessions 13 sessions, $p<0.05$ Saline-WM sessions $p<0.0001$ Ketamine-Perception sessions $p<0.0001$ **Late Post-Injection:** Ketamine-WM sessions $p<0.05$ Saline-WM sessions 6 sessions, $p<0.05$ Ketamine-Perception sessions $p<0.05$
Fig. 1g Task performance (percent correct) compared between	Ketamine-WM 18 Saline-WM 7		**Ketamine-WM:** Pre-Injection, *mean*=72, *median*=77 Early Post-Injection, *mean*=34, *median*=28 Late Post-Injection, *mean*=64, *median*=66 **Saline-WM:** Pre-Injection, *mean*=80, *median*=84 Early Post-Injection, *mean*=77, *median*=90

injection periods			Late Post-Injection, *mean*=66, *median*=76
		Two-way analysis of variance with post hoc pairwise comparisons	Drug: F=9.57, p=0.003, df=1,69 Injection Period: F=4.3, p=0.017, df=2,69 Interaction: F=4.85, p=0.011, df=2,69 Ket pre-injection, Sal pre-injection, p=0.9568 Ket pre-injection, Ket early post-injection, p=0 Ket pre-injection, Sal early post-injection, p=0.9958 Ket pre-injection, Ket late post-injection, p=0.8788 Ket pre-injection, Sal late post-injection, p=0.9893 Sal pre-injection, Ket early post-injection, p=0.0002 Sal pre-injection, Sal early post-injection, p=0.9997 Sal pre-injection, Ket late post-injection, p=0.5528 Sal pre-injection, Sal late post-injection, p=0.8236 Ket early post-injection, Sal early post-injection, p=0.0008 Ket early post-injection, Ket late post-injection, p=0.0023 Ket early post-injection, Sal late post-injection, p=0.0261 Sal early post-injection, Ket late post-injection, p=0.7666 Sal early post-injection, Sal late post-injection, p=0.9352 Ket late post-injection, Sal late post-injection, p=0.9999
	Ketamine-Perception 4	Repeated measures analysis of variance	**Ketamine-Perception:** Pre-Injection, *mean*=79, *median*=84 Early Post-Injection, *mean*=84, *median*=90 Late Post-Injection, *mean*=85, *median*=93 F=0.25, p=0.786, df=2,6
Fig. 1h Response time compared between injection periods	Ketamine-WM 18 n=126 (values calculated per target location for conditions with trials in all injection periods)	Repeated measures analysis of variance with post hoc pairwise comparisons	**Ketamine-WM:** Pre-Injection, *mean*=2.6, *median*=2.4 Early Post-Injection, *mean*=3.2, *median*=2.9 Late Post-Injection, *mean*=2.7, *median*=2.5 F=16.81, p<0.0001, df=2,250 Post Hoc Early Post-Injection, Pre-Injection p<0.0001 Late Post-Injection, Pre-Injection p=0.330 Early Post-Injection, Late Post-Injection p<0.0001

	Saline-WM 7 *n*=55 Ketamine-Perception 4 *n*=31		**Saline-WM:** Pre-Injection, *mean*=2.6, *median*=2.4 Early Post-Injection, *mean*=2.7, *median*=2.5 Late Post-Injection, *mean*=2.7, *median*=2.4 *F*=1.71, *p*=0.186, *df*=2,108 **Ketamine-Perception:** Pre-Injection, *mean*=2.5, *median*=2.3 Early Post-Injection, *mean*=2.5, *median*=2.5 Late Post-Injection, *mean*=2.5, *median*=2.5 *F*=0.22, *p*=0.800, *df*=2,60
Fig. 1l Navigation in environment (difference in cells entered)	NHP T 8 Number of cells (25) * number of target locations with trials Early post injection – pre-injection Ketamine, *n*=154 Saline, *n*=161 Late post-injection – pre-injection Ketamine, *n*=124 Saline, *n*=125 Early post-injection – late post-injection Ketamine, *n*=159	Two-way analysis of variance with interaction effect with post hoc comparisons	**NHP T:** **Ketamine** Early Post-Injection – Pre-Injection *mean*=6.9, *median*=4.2 Late Post-Injection – Pre-Injection *mean*=3.3, *median*=0.9 Early Post-Injection – Late Post-Injection *mean*=6.6, *median*=2.9 **Saline** Early Post-Injection – Pre-Injection *mean*=3.2, *median*=0 Late Post-Injection – Pre-Injection *mean*=4.8, *median*=0 Early Post-Injection – Late Post-Injection *mean*=2.5, *median*=0 **Ketamine and Saline Comparison** Epoch, *F*=0.97, *p*=0.380, *df*=2,832 Drug, *F*=12.1, *p*=0.0005, *df*=1,832 Interaction, *F*=8.73, *p*=0.0002, *df*=2,832 Post Hoc Early Post-Injection, Pre-Injection *p*=0.002 Late Post-Injection, Pre-Injection *p*=0.717

	Saline, *n*=115 NHP B 9 Number of cells (25) * number of target locations with trials Early post injection – pre-injection Ketamine, *n*=162 Saline, *n*=158 Late post-injection – pre-injection Ketamine, *n*=163 Saline, *n*=157 Early post-injection – late post-injection Ketamine, *n*=134 Saline, *n*=145 Ketamine-Perception 4 Early post injection – pre-injection Perception, *n*=197 Late post-injection –		Early Post-Injection, Late Post-Injection *p*=0.001 **NHP B:** **Ketamine** Early Post-Injection – Pre-Injection *mean*=4.6, *median*=2.1 Late Post-Injection – Pre-Injection *mean*=3.6, *median*=1.8 Early Post-Injection – Late Post-Injection *mean*=4.1, *median*=2.3 **Saline** Early Post-Injection – Pre-Injection *mean*=2.6, *median*=1.2 Late Post-Injection – Pre-Injection *mean*=3.4, *median*=1.4, Early Post-Injection – Late Post-Injection *mean*=2.4, *median*=0.8 **Ketamine and Saline Comparison** Epoch, *F*=0.51, *p*=0.604, *df*=2,913 Drug, *F*=15.16, *p*=0.0001, *df*=1,913 Interaction, *F*=3.4, *p*=0.034, *df*=2,913 Post Hoc Early Post-Injection, Pre-Injection *p*=0.004 Late Post-Injection, Pre-Injection *p*=1 Early Post-Injection, Late Post-Injection *p*=0.044 **Perception** Early Post-Injection – Pre-Injection *mean*=1.8, *median*=0 Late Post-Injection – Pre-Injection *mean*=2.2, *median*=0 Early Post-Injection – Late Post-Injection

	pre-injection Perception, *n*=194 Early post-injection – late post-injection Perception, *n*=203 Ketamine-WM 17		*mean*=2.0, *median*=0 **Ketamine-WM and Ketamine-Perception Comparison** Epoch, *F*=3.09, *p*=0.046, *df*=2,1022 Drug, *F*=25.6, *p*=0, *df*=1,1022 Interaction, *F*=5.26, *p*=0.005, *df*=2,1022 Post Hoc Early Post-Injection, Pre-Injection *p*=0 Late Post-Injection, Pre-Injection *p*=0.999 Early Post-Injection, Late Post-Injection *p*=0.007
Fig. 2c Proportion of tuned units ketamine-WM sessions compared between injection periods	17 *n*=51, selectivity proportions combined (17 per epoch)	Analysis of variance with post hoc testing Chi-Square Test	Pre-Injection, *mean*=11.36, *median*=10.93 Early Post-Injection, *mean*=6.23, *median*=5.20 Late Post-Injection, *mean*=9.62, *median*=7.79 *F*=8.73, *p*=0.0002, *df*=2,303 Post Hoc Pre-Injection, Early Post-Injection *p*=0.0001 Pre-Injection, Late Post-Injection *p*=0.342 Early Post-Injection, Late Post-Injection *p*=0.018 Pre-Injection- Early Post-Injection, *p*=0, X^2=128.67 Pre-Injection- Late Post-Injection, *p*=0.97, X^2=0.002 Early Post-Injection- Late Post-Injection, *p*=0, X^2=126.52
Fig. 2d Proportion of tuned units saline-WM sessions compared between injection periods	7 *n*=21, selectivity proportions combined (7 per epoch)	One-way analysis of variance Chi-Square Test	Pre-Injection, *mean*=11.7, *median*=13.5 Early Post-Injection, *mean*=10.04, *median*=10.26 Late Post-Injection, *mean*=8.04, *median*=8.39 *F*=1.93, *p*=0.1498, *df*=2,123 Pre-Injection- Early Post-Injection, *p*=0.231, X^2=1.44

			Pre-Injection- Late Post-Injection, p=5.26e-07, X^2=25.17 Early Post-Injection- Late Post-Injection, p=1.3e-04, X^2=14.65
Fig. 2f Change in slope magnitude between injection periods	17	Kruskal-Wallis one-way analysis of variance with post hoc testing	**Ketamine** Pre-Injection, *mean*=-0.411, *median*=-0.413 Early Post-Injection, *mean*=-0.286, *median*=-0.298 Late Post-Injection, *mean*=-0.315, *median*=-0.306 H=13.48, p=0.0012, df=2,48 Post Hoc Pre-Injection, Early Post-Injection, p=0.001 Pre-Injection, Late Post-Injection, p=0.017 Early Post-Injection, Late Post-Injection, p=0.741 **Saline** H=5.7, p= 0.058, df=2,18 Post Hoc Pre-Injection, Early Post-Injection, p=0.097 Pre-Injection, Late Post-Injection, p=0.097 Early Post-Injection, Late Post-Injection, p=1
Fig. 3a SVM decoding accuracy ketamine-WM compared between injection periods	16	Kruskal-Wallis one-way analysis of variance with post hoc testing	**Cue:** *df=2* # of Neurons p H pre-post, p *CI*- pre CI-post 1 0.013 8.76 0.012 53.4, 59.5 46.7, 53.2 2 0.008 9.74 0.007 64.1, 75.9 52.2, 62.7 3 0.008 9.61 0.008 68.0, 80.6 55.5, 66.9 4 0.015 8.37 0.016 70.1, 83.3 57.9, 70.6 5 0.016 8.25 0.018 72.0, 85.3 59.2, 72.6 6 0.024 7.42 0.023 73.1, 86.9 60.3, 74.0 7 0.046 6.15 0.039 73.1, 87.5 61.4, 75.4 8 0.050 5.99 0.042 73.6, 88.0 62.0, 76.3 9 0.052 5.91 0.046 73.8, 88.8 62.7, 77.2 10 0.049 6.03 0.043 74.1, 89.5 63.0, 77.6 11 0.069 5.36 0.062 74.9, 89.9 63.3, 78.0 12 0.075 5.17 0.067 74.5, 90.1 63.4, 78.4 13 0.069 5.36 0.062 74.7, 90.5 63.6, 78.6 14 0.067 5.4 0.060 74.6, 90.8 63.7, 78.7 15 0.108 4.45 0.099 74.2, 90.6 63.8, 78.9 16 0.076 5.15 0.072 75.1, 91.1 64.0, 79.0 **Delay:** *df=2* # of Neurons p H pre-post, p *CI*-pre *CI*-post 1 0.002 12.78 0.002 54.7, 60.2 45.6, 51.4

			2	0.004	10.86	0.006	66.9, 79.2	51.6, 62.4
			3	0.008	9.79	0.011	70.5, 83.0	55.0, 67.3
			4	0.009	9.43	0.016	73.1, 85.5	57.7, 70.1
			5	0.013	8.63	0.023	74.0, 87.0	58.9, 71.7
			6	0.006	10.21	0.013	75.5, 88.5	59.5, 72.4
			7	0.004	10.91	0.012	76.4, 89.7	60.5, 73.4
			8	0.006	10.21	0.018	76.9, 90.3	61.7, 74.5
			9	0.006	10.34	0.017	77.5, 90.7	61.7, 75.1
			10	0.004	11.06	0.010	78.5, 91.1	61.6, 75.5
			11	0.002	12.71	0.006	79.7, 91.9	62.0. 75.9
			12	0.003	11.35	0.012	79.2, 92.0	62.3, 76.3
			13	0.004	11.08	0.015	79.4, 92.1	62.4, 76.6
			14	0.004	11.07	0.013	79.1, 92.1	62.3, 76.6
			15	0.004	11.07	0.014	79.2, 92.4	62.5, 77.0
			16	0.004	11.26	0.015	79.4, 92.3	62.4, 77.1
			Response: *df=2*					
			# of Neurons	*p*	*H*	pre-post, *p*	*CI*-pre	*CI*-post
			1	0.007	10.03	0.007	53.6, 60.7	46.6, 52.5
			2	0.014	8.48	0.010	65.4, 79.5	53.1, 63.3
			3	0.010	9.32	0.007	70.3, 84.1	55.4, 67.0
			4	0.007	9.94	0.005	72.8, 86.3	56.8, 68.9
			5	0.009	9.42	0.007	74.0, 87.8	58.0, 71.0
			6	0.009	9.46	0.007	75.8, 88.6	58.5, 72.2
			7	0.006	10.18	0.006	77.5, 89.5	59.1, 72.9
			8	0.011	9.08	0.013	78.1, 89.9	60.0, 74,1
			9	0.011	8.96	0.014	78.7, 90.6	60.5, 74.9
			10	0.010	9.15	0.014	79.5, 90.8	61.0, 75.4
			11	0.010	9.25	0.014	79.5, 91.1	61.4, 75.7

			12	0.010	9.3	0.016	79.3, 91.3	61.7, 75.9
			13	0.013	8.68	0.020	78.8, 91.3	62.0, 75.9
			14	0.014	8.54	0.018	78.9, 91.3	61.9, 75.8
			15	0.013	8.75	0.017	78.9, 91.4	62.0, 76.0
			16	0.018	8	0.023	78.8, 91.6	62.1, 76.3
Fig. 3b SVM decoding accuracy saline-WM compared between injection periods	7	Kruskal-Wallis one-way analysis of variance	Ensemble of 16 neurons: **Cue:** Pre-Injection, *mean*=82.6, *median*=89.7 Early Post-Injection, *mean*=74.4, *median*=91.0 Late Post-Injection, *mean*=76.0, *median*=88.6 *H*=0.54, *p*=0.763, *df*=2,18 **Delay:** Pre-Injection, *mean*=83.6, *median*=92.5 Early Post-Injection, *mean*=77.3, *median*=90.9 Late Post-Injection, *mean*=73.6, *median*=89.2 *H*=1.12, *p*=0.571, *df*=2,18 **Response:** Pre-Injection, *mean*=83.9, *median*=94.1 Early Post-Injection, *mean*=79.3, *median*=91.1 Late Post-Injection, *mean*=76.9, *median*=85.9 *H*=1.36, *p*=0.507, *df*=2,18 All other neuron ensemble sizes, *p*>0.05					
Fig. 3c LDA decoding accuracy ketamine-WM compared between injection periods	17	Kruskal-Wallis one-way analysis of variance with post hoc testing	Pre-Injection, *mean*=78.0, *median*=78.9 Early Post-Injection, *mean*=66.0, *median*=63.6 Late Post-Injection, *mean*=69.0, *median*=64.7 *H*=13.37, *p*=0.001, *df*=2,48 Post Hoc Pre-Injection, Early Post-Injection, *p*=0.001 Pre-Injection, Late Post-Injection, *p*=0.038 Early Post-Injection, Late Post-Injection, *p*=0.495					

Fig. 3c LDA decoding accuracy ketamine-WM compared to chance (50%)	17	One sample t-test, 2-tailed	Pre-Injection, *T*=13.10, *p*=5.70e-10, *df*=16 Early Post-Injection, *T*=9.22, *p*=8.42e-08, *df*=16 Last Post-Injection, *T*=10.58, *p*=1.24e-08, *df*=16
Fig. 3d Theoretical decoding accuracy ketamine-WM compared between injection periods	17	Kruskal-Wallis one-way analysis of variance with post hoc testing	Pre-Injection, *mean*=80.5, *median*=82.9 Early Post-Injection, *mean*=67.4, *median*=65.6 Late Post-Injection, *mean*=69.8, *median*=66 *H*=17.96, *p*=0.0001, *df*=2,48 Post Hoc Pre-Injection, Early Post-Injection, *p*=0.0002 Pre-Injection, Late Post-Injection, *p*=0.004 Early Post-Injection, Late Post-Injection, *p*=0.684
Fig. 3e Population signal compared between injection periods	Ketamine-WM 17 Saline-WM 7	Kruskal-Wallis one-way analysis of variance with post hoc testing	**Ketamine-WM** Pre-Injection, *mean*=4.8, *median*=5.1 Early Post-Injection, *mean*=2.8, *median*=2.6 Late Post-Injection, *mean*=3.8, *median*=3.5 *H*=8.13, *p*=0.017, *df*=2,48 Post Hoc Pre-Injection, Early Post-Injection, *p*=0.012 Pre-Injection, Late Post-Injection, *p*=0.374 Early Post-Injection, Late Post-Injection, *p*=0.286 **Saline-WM** Pre-Injection, *mean*=5.2, *median*=6.3 Early Post-Injection, *mean*=4.0, *median*=5.0 Late Post-Injection, *mean*=3.3, *median*=3.9 *H*=3.44, *p*=0.179, *df*=2,18
Fig. 3f Projected precision ketamine-WM compared between	Ketamine-WM 17 Saline-WM 7	Kruskal-Wallis one-way analysis of variance with post hoc testing	**Ketamine-WM** Pre-Injection, *mean*=0.49, *median*=0.44 Early Post-Injection, *mean*=0.43, *median*=0.39 Late Post-Injection, *mean*=0.38, *median*=0.34 *H*=8.2, *p*=0.017, *df*=2,48

injection periods			Post Hoc Pre-Injection, Early Post-Injection, p=0.380 Pre-Injection, Late Post-Injection, p=0.012 Early Post-Injection, Late Post-Injection, p=0.275 **Saline-WM** Pre-Injection, *mean*=0.44, *median*=0.42 Early Post-Injection, *mean*=0.42, *median*=0.42 Late Post-Injection, *mean*=0.42, *median*=0.37 H=0.36, p=0.834, df=2,18
Fig. 4d Change in FR between injection periods for narrow spiking neurons	17 n=13 (arrays per session containing selective neurons)	Wilcoxon signed-ranks test, 1-tailed	**Preferred Location,** Pre-Injection, *mean*=0.45, *median*=0.47 Post-Injection, *mean*=0.28, *median*=0.21 Z=1.66, p=0.049 **Least-Preferred Location,** Pre-Injection, *mean*=0.21, *median*=0.13 Post-Injection, *mean*=0.24, *median*=0.09 Z=-0.116, p=0.546
Fig. 4f Change in FR between injection periods for broad spiking neurons	17 n=27 (arrays per session containing selective neurons)	Wilcoxon signed-ranks test, 1-tailed	**Preferred Location,** Pre-Injection, *mean*=0.43, *median*=0.43 Post-Injection, *mean*=0.42, *median*=0.43 Z=0.383, p=0.649 **Least-Preferred Location,** Pre-Injection, *mean*=0.23, *median*=0.25 Post-Injection, *mean*=0.34, *median*=0.36 Z=-2.50, p=0.006
Fig. 5b Percent of fixation time on target	Ketamine 18 Saline 7	Two-way analysis of variance with interaction	**Ketamine:** Pre-Injection, *mean*=6.97, *median*=3.64 Early Post-Injection, *mean*=16.92, *median*=13.07 Late Post-Injection, *mean*=6.98, *median*=4.25 **Saline:** Pre-Injection, *mean*=7.28, *median*=1.85

			Early Post-Injection, *mean*=6.65, *median*=2.15 Late Post-Injection, *mean*=5.73, *median*=2.86 Drug: *F*=1.73, *p*=0.193, *df*=1,69 Injection Period: *F*=1.42, *p*=0.248, *df*=2,69 Interaction: *F*=1.35, *p*=0.267, *df*=2,69
Fig. 5c Eye data SVM decoding compared between injection periods	16	Kruskal-Wallis one-way analysis of variance	**Cue:** Pre-Injection, *mean*=53.9, *median*=57.6 Early Post-Injection, *mean*=52.2, *median*=52.0 Late Post-Injection, *mean*=57.7, *median*=59.3 *H*=4.01, *p*=0.135, *df*=2,45 **Delay:** Pre-Injection, *mean*=47.8, *median*=47.8 Early Post-Injection, *mean*=46.5, *median*=46.7 Late Post-Injection, *mean*=52.1, *median*=51.8 *H*=4.59, *p*=0.101, *df*=2,45
Fig. 5c Eye data SVM decoding accuracy compared between cue and delay epochs	16 *n*=48, data combined between injection periods	Wilcoxon signed-ranks test, 2-tailed	*Z*=3.18, *p*=0.002
Fig. 5d SVM decoding accuracy for eye data compared to decoding accuracy for neural ensembles	16	Kruskal-Wallis one-way analysis of variance	**Cue:** Eye data *mean*=53.9, *median*=57.6 Neural data *mean*=83.6, *median*=91 *H*=14.78, *p*=0.0001, *df*=1,30 **Delay:** Eye data *mean*=47.8, *median*=47.8 Neural data *mean*=86.2, *median*=91.9

			H=22.91, *p*=1.69e-06, *df*=1,30
Fig. 5d Eye data decoding accuracy compared to chance (33%)	16	One sample t-test, 2-tailed	**Cue:** *T*=8.38, *p*=4.82e-07, *df*=15 **Delay:** *T*=8.53, *p*=3.87e-07, *df*=15
Extended Data 1a, b Task performance (percent correct) compared between injection periods	NHP B Ketamine-WM 9 Saline-WM 4 NHP T Ketamine-WM 9 Saline-WM 3	Repeated measures analysis of variance with post hoc pairwise comparisons	**NHP B** **Ketamine-WM:** Pre-Injection, *mean*=89, *median*=90 Early Post-Injection, *mean*=39, *median*=43 Late Post-Injection, *mean*=80, *median*=83 *F*=22.49, *p*<0.0001, *df*=2,16 Post Hoc Pre-Injection, Early Post-Injection, *p*<0.0001 Pre-Injection, Late Post-Injection, *p*=0.442 Early Post-Injection, Late Post-Injection, *p*=0.0003 **Saline-WM:** Pre-Injection, *mean*=91, *median*=90 Early Post-Injection, *mean*=93, *median*=92 Late Post-Injection, *mean*=84, *median*=84 *F*=3.88, *p*=0.083, *df*=2,6
		Two-way analysis of variance	Drug: *F*=12.95, *p*=0.001, *df*=1,33 Injection Period: *F*=6.78, *p*=0.0034, *df*=2,33 Interaction: *F*=9.57, *p*=0.0005, *df*=2,33 Ket pre-injection, Sal pre-injection, *p*=1 Ket pre-injection, Ket early post-injection, *p*=0 Ket pre-injection, Sal early post-injection, *p*=0.999 Ket pre-injection, Ket late post-injection, *p*=0.763 Ket pre-injection, Sal late post-injection, p=0.988 Sal pre-injection, Ket early post-injection, *p*=0.0001 Sal pre-injection, Sal early post-injection, *p*=1 Sal pre-injection, Ket late post-injection, *p*=0.827 Sal pre-injection, Sal late post-injection, *p*=0.984

			Ket early post-injection, Sal early post-injection, p=0 Ket early post-injection, Ket late post-injection, p=0.0001 Ket early post-injection, Sal late post-injection, p=0.0006 Sal early post-injection, Ket late post-injection, p=0.735 Sal early post-injection, Sal late post-injection, p=0.962 Ket late post-injection, Sal late post-injection, p=0.998
		Repeated measures analysis of variance with post hoc pairwise comparisons	**NHP T** **Ketamine-WM:** Pre-Injection, *mean*=54, *median*=60 Early Post-Injection, *mean*=30, *median*=24 Late Post-Injection, *mean*=47, *median*=56 F=6.19, p=0.010, df=2,16 Post Hoc Pre-Injection, Early Post-Injection, p=0.0099 Pre-Injection, Late Post-Injection, p=0.662 Early Post-Injection, Late Post-Injection, p=0.057 **Saline-WM:** Pre-Injection, *mean*=65, *median*=70 Early Post-Injection, *mean*=55, *median*=56 Late Post-Injection, *mean*=42, *median*=57 F=1.55, p=0.318, df=2,4
		Two-way analysis of variance	Drug: F=2.76, p=0.107, df=1,30 Injection Period: F=2.99, p=0.066, df=2,30 Interaction: F=2.15, p=0.135, df=2,30 Ket pre-injection, Sal pre-injection, p=0.894 Ket pre-injection, Ket early post-injection, p=0.037 Ket pre-injection, Sal early post-injection, p=1 Ket pre-injection, Ket late post-injection, p=0.961 Ket pre-injection, Sal late post-injection, p=0.864 Sal pre-injection, Ket early post-injection, p=0.027 Sal pre-injection, Sal early post-injection, p=0.972 Sal pre-injection, Ket late post-injection, p=0.581 Sal pre-injection, Sal late post-injection, p=0.487

			Ket early post-injection, Sal early post-injection, p=0.198 Ket early post-injection, Ket late post-injection, p=0.205 Ket early post-injection, Sal late post-injection, p=0.873 Sal early post-injection, Ket late post-injection, p=0.980 Sal early post-injection, Sal late post-injection, p=0.904 Ket late post-injection, Sal late post-injection, p=0.993
Extended Data 1c, d Response time compared between injection periods	NHP B 9 n=64 NHP T 9 n=62	Repeated measures analysis of variance with post hoc pairwise comparisons	**NHP B:** Pre-Injection, *mean*=2.6, *median*=2.4 Early Post-Injection, *mean*=3.5, *median*=3.0 Late Post-Injection, *mean*=2.7, *median*=2.5 F=19.73, p=3.50e-08, df=2,126 Post Hoc Pre-Injection, Early Post-Injection, p<0.0001 Pre-Injection, Late Post-Injection, p=0.553 Early Post-Injection, Late Post-Injection, p<0.0001 **NHP T:** Pre-Injection, *mean*=2.7, *median*=2.3 Early Post-Injection, *mean*=2.9, *median*=2.8 Late Post-Injection, *mean*=2.8, *median*=2.4 F=1.5, p=0.226, df=2,122
Extended Data 2a, b Proportion of tuned units ketamine-WM compared between injection periods	NHP B 9 n=27 NHP T 8 n=24	Analysis of variance with post hoc testing Chi-Square Test Analysis of variance with	**NHP B:** F=9.9, p<0.0001, df=2,159 Post Hoc Pre-Injection, Early Post-Injection, p=0.0001 Pre-Injection, Late Post-Injection, p=0.820 Early Post-Injection, Late Post-Injection, p=0.0013 Pre-Injection, Early Post-Injection, p=0, X^2=133.83 Pre-Injection, Late Post-Injection, p=0.62, X^2=0.25 Early Post-Injection, Late Post-Injection, p=0, X^2=143.7 **NHP T:** F=3.96, p=0.021, df=2,141 Post Hoc Pre-Injection, Early Post-Injection, p=0.019

		post hoc testing Chi-Square Test	Pre-Injection, Late Post-Injection, p=0.108 Early Post-Injection, Late Post-Injection, p=0.769 Pre-Injection, Early Post-Injection, p=0.14, X^2=2.22 Pre-Injection, Late Post-Injection, p=0.105, X^2=2.63 Early Post-Injection, Late Post-Injection, p=0.89, X^2=0.018
Extended Data 2c Overall change in FR between injection periods	17 Cue, n=604 neurons Delay, n=475 neurons Response, n=671 neurons	One-way analysis of variance	**Cue:** Pre-Injection, *mean*=8.7, *median*=6.1 Post-Injection, *mean*=9.7, *median*=6.5 F=3.28, p=0.073, df=1,1206 **Delay:** Pre-Injection, *mean*=8.2, *median*=5.6 Post-Injection, *mean*=8.8, *median*=5.7 F=1.21, p=0.272, df=1,948 **Response:** Pre-Injection, *mean*=8.4, *median*=5.6 Post-Injection, *mean*=9.0, *median*=5.7 F=1.56, p=0.212, df=1,1340
Extended Data 3c, d SVM decoding accuracy ketamine-WM compared between injection periods	NHP T 7 NHP B 9	Kruskal-Wallis one-way analysis of variance with post hoc testing	**NHP T: Ensembles of 16 neurons** **Cue:** H=1.9, p=0.387, df=2,18 **Delay:** H=8.22, p=0.016, df=2,18 Post Hoc Pre-Injection, Early Post-Injection, p=0.021 Pre-Injection, Late Post-Injection, p=0.065 Early Post-Injection, Late Post-Injection, p=0.903 **Response:** H=6.24, p=0.044, df=2,18 Post Hoc Pre-Injection and Early Post-Injection, p=0.033 Pre-Injection and Late Post-Injection, p=0.424 Early Post-Injection and Late Post-Injection, p=0.424

			NHP B: Ensembles of 16 neurons **Cue:** *H*=9.76, *p*=0.008, *df*=2,24 Post Hoc Pre-Injection and Early Post-Injection, *p*=0.008 Pre-Injection and Late Post-Injection, *p*=0.062 Early Post-Injection and Late Post-Injection, *p*=0.738 **Delay:** *H*=12.67, *p*=0.002, *df*=2,24 Post Hoc Pre-Injection, Early Post-Injection, *p*=0.009 Pre-Injection, Late Post-Injection, *p*=0.004 Early Post-Injection, Late Post-Injection, *p*=0.961 **Response:** *H*=6.43, *p*=0.040, *df*=2,24 Post Hoc Pre-Injection, Early Post-Injection, *p*=0.054 Pre-Injection, Late Post-Injection, *p*=0.100 Early Post-Injection, Late Post-Injection, *p*=0.961
Extended Data 3c, d SVM decoding accuracy ketamine-WM compared to chance (33%)	NHP T 7 NHP B 9	One sample t-test, 2-tailed	**NHP T: Ensembles of 16 neurons** **Cue:** Pre: *T*=5.5, *p*=0.002, *df*=6 Early-Post: *T*=14.3, *p*=7.39e-06, *df*=6 Late-Post: *T*=8.32, *p*=0.0002, *df*=6 **Delay:** Pre: *T*=8.42, *p*=0.0002, *df*=6 Early-Post: *T*=7.9, *p*=0.0002, *df*=6 Late-Post: *T*=14.8, *p*=5.97e-06, *df*=6 **Response:** Pre: *T*=8.65, *p*=0.0001, *df*=6 Early-Post: *T*=8.04, *p*=0.0002, *df*=6 Late-Post: *T*=12.18, *p*=1.86e-05, *df*=6 **NHP B: Ensembles of 16 neurons** **Cue:** Pre: *T*=74.78, *p*=1.14e-12, *df*=8 Early-Post: *T*=17.15, *p*=1.36e-07, *df*=8 Late-Post: *T*=17.05, *p*=1.42e-07, *df*=8

			Delay: Pre: *T*=53.21, *p*=1.73e-11, *df*=8 Early-Post: *T*=11.88, *p*=2.32e-06, *df*=8 Late-Post: *T*=8.21, *p*=3.62e-05, *df*=8 **Response:** Pre: *T*=37.13, *p*=3.04e-10, *df*=8 Early-Post: *T*=9.81, *p*=9.79e-06, *df*=8 Late-Post: *T*=7.67, *p*=5.90e-05, *df*=8
Extended Data 3e Decoding accuracy compared to shuffled results	16	Kruskal-Wallis one-way analysis of variance	Pre-Injection: *H*=71.26, *p*=3.13e-17, *df*=1,94 Early Post-Injection: *H*=71.26, *p*=3.13e-17, *df*=1,94 Late Post-Injection: *H*=71.26, *p*=3.13e-17, *df*=1,94
Extended Data 4a Correct trial SVM decoding accuracy compared between injection periods	Pre-injection 13 Early Post-Injection 12 Late Post-Injection 16	Kruskal-Wallis one-way analysis of variance with post hoc testing	**Cue:** Pre-Injection, *mean*=94.5, *median*=95.8 Early Post-Injection, *mean*=76.9, *median*=71.4 Late Post-Injection, *mean*=82.4, *median*=88.3 *H*=11.11, *p*=0.004, *df*=2,38 Post Hoc Pre-Injection, Early Post-Injection, *p*=0.004 Pre-Injection, Late Post-Injection, *p*=0.031 Early Post-Injection, Late Post-Injection, *p*=0.671 **Delay:** Pre-Injection, *mean*=93.4, *median*=95.2 Early Post-Injection, *mean*=80.5, *median*=79.5 Late Post-Injection, *mean*=86.6, *median*=90.9 *H*=8.35, *p*=0.015, *df*=2,38 Post Hoc Pre-Injection and Early Post-Injection, *p*=0.012 Pre-Injection and Late Post-Injection, *p*=0.139 Early Post-Injection and Late Post-Injection, *p*=0.499

			Response: Pre-Injection, *mean*=95.8, *median*=96.3 Early Post-Injection, *mean*=87.6, *median*=92.9 Late Post-Injection, *mean*=90.4, *median*=94 *H*=5.5, *p*=0.064, *df*=2,38 Post Hoc Pre-Injection and Early Post-Injection, *p*=0.062 Pre-Injection and Late Post-Injection, *p*=0.201 Early Post-Injection and Late Post-Injection, *p*=0.768
Extended Data 4a Correct trial SVM decoding accuracy compared to chance (33%)	Pre-injection 13 Early Post-Injection 12 Late Post-Injection 16	One sample t-test, 2-tailed	**Cue:** Pre: *T*=40.61, *p*=3.21e-14, *df*=12 Early-Post: *T*=10.19, *p*=6.1e-07, *df*=11 Late-Post: *T*=13.38, *p*=9.65e-10, *df*=15 **Delay:** Pre: *T*=28.01, *p*=2.66e-12, *df*=12 Early-Post: *T*=12.88, *p*=5.6e-08, *df*=11 Late-Post: *T*=18.84, *p*=7.46e-12, *df*=15 **Response:** Pre: *T*=52.63, *p*=1.46e-15, *df*=12 Early-Post: *T*=15.05, *p*=1.1e-08, *df*=11 Late-Post: *T*=24.81, *p*=1.36e-13, *df*=15
Extended Data 4b SVM decoding accuracy compared between correct and all trials	Pre-injection 13 Early Post-Injection 12 Late Post-Injection 16	Wilcoxon signed-ranks test, 1-tailed	**Pre-Injection Period:** Cue: *Z*=1.38, *p*=0.083 Delay: *Z*=0.719, *p*=0.236 Response: *Z*=1.44, *p*=0.075 **Early Post-Injection Period:** Cue: *Z*=1.53, *p*=0.063 Delay: *Z*=1.76, *p*=0.039 Response: *Z*=2.80, *p*=0.003 **Late Post-Injection Period** Cue: *Z*=1.52, *p*=0.063 Delay: *Z*=3.07, *p*=0.001

			Response: Z=3.41, p=0.0003
Extended Data 5b LDA decoding accuracy compared to theoretical decoding accuracy	17 n=51 (values combined between trial epochs for pre-injection period)	Kruskal-Wallis one-way analysis of variance	H=1.87, p=0.171, df=1,100
Extended Data 5c, e LDA decoding accuracy ketamine-WM compared between injection periods	NHP B 9 NHP T 8	Kruskal-Wallis one-way analysis of variance with post hoc testing	**NHP B:** Pre-Injection, *mean*=84.3, *median*=85.6 Early Post-Injection, *mean*=69.8, *median*=66.5 Late Post-Injection, *mean*=73.4, *median*=77.7 H=13.24, p=0.001, df=2,24 Pre-Injection, Early Post-Injection, p=0.002 Pre-Injection, Late Post-Injection, p=0.021 Early Post-Injection, Late Post-Injection, p=0.702 **NHP T:** Pre-Injection, *mean*=70.8, *median*=70.9 Early Post-Injection, *mean*=61.6, *median*=62.0 Late Post-Injection, *mean*=64.0, *median*=63.7 H=8.42, p=0.015, df=2,21 Post Hoc Pre-Injection, Early Post-Injection, p=0.011 Pre-Injection, Late Post-Injection, p=0.265 Early Post-Injection, Late Post-Injection, p=0.371
Extended Data 5c, e LDA decoding accuracy ketamine-WM compared to chance (50%)	NHP B 9 NHP T 8	One sample t-test, 2-tailed	**NHP B** Pre-Injection: T=25.15, p=6.68e-09, df=8 Early Post-Injection: T=7.63, p=6.12e-05, df=8 Late Post-Injection: T=9.11, p=1.70e-05, df=8 **NHP T** Pre-Injection: T=8.49, p=6.21e-05, df=7 Early Post-Injection: T=12.75, p=4.23e-06, df=7 Late Post-Injection: T=18.28, p=3.63e-07, df=7

Extended Data 5d, f Theoretical decoding accuracy ketamine-WM compared between injection periods	NHP B 9 NHP T 8	Kruskal-Wallis one-way analysis of variance with post hoc testing	**NHP B:** Pre-Injection, *mean*=85.1, *median*=85.9 Early Post-Injection, *mean*=71.3, *median*=67.9 Late Post-Injection, *mean*=73.3, *median*=76.9 *H*=13.36, *p*=0.001, *df*=2,24 Post Hoc Pre-Injection, Early Post-Injection, *p*=0.004 Pre-Injection, Late Post-Injection, *p*=0.006 Early Post-Injection, Late Post-Injection, *p*=0.988 **NHP T:** Pre-Injection, *mean*=75.3, *median*=77.4 Early Post-Injection, *mean*=63.0, *median*=62.8 Late Post-Injection, *mean*=65.9, *median*=65.2 *H*=11.54, *p*=0.003, *df*=2,21 Post Hoc Pre-Injection, Early Post-Injection, *p*=0.002 Pre-Injection, Late Post-Injection, *p*=0.169 Early Post-Injection, Late Post-Injection, *p*=0.250
Extended Data 5g LDA decoding accuracy saline-WM compared between injection periods	7	Kruskal-Wallis one-way analysis of variance	Pre-Injection, *mean*=77.0, *median*=79.5 Early Post-Injection, *mean*=72.9, *median*=77.3 Late Post-Injection, *mean*=68.9, *median*=73.5 *H*=2.43, *p*=0.297, *df*=2,18
Extended Data 5h Theoretical decoding accuracy saline-WM compared between injection periods	7	Kruskal-Wallis one-way analysis of variance	Pre-Injection, *mean*=79.6, *median*=81.2 Early Post-Injection, *mean*=73.4, *median*=77.1 Late Post-Injection, *mean*=70.2, *median*=73.1 *H*=3.95, *p*=0.139, *df*=2,18

Extended Data 5i, k Population signal ketamine-WM compared between injection periods	NHP B 9 NHP T 8	Kruskal-Wallis one-way analysis of variance with post hoc testing	**NHP B:** Pre-Injection, *mean*=6.4, *median*=6.3 Early Post-Injection, *mean*=3.8, *median*=3.9 Late Post-Injection, *mean*=5.2, *median*=5.4 *H*=12.91, *p*=0.001, *df*=2,24 Post Hoc Pre-Injection, Early Post-Injection, *p*=0.001 Pre-Injection, Late Post-Injection, *p*=0.186 Early Post-Injection, Late Post-Injection, *p*=0.156 **NHP T:** Pre-Injection, *mean*=2.9, *median*=2.5 Early Post-Injection, *mean*=1.7, *median*=1.6 Late Post-Injection, *mean*=2.1, *median*=2.0 *H*=4.82, *p*=0.090, *df*=2,21 Post Hoc Pre-Injection, Early Post-Injection, *p*=0.073 Pre-Injection, Late Post-Injection, *p*=0.583 Early Post-Injection, Late Post-Injection, *p*=0.452
Extended Data 5j, l Projected precision ketamine-WM compared between injection periods	NHP B 9 NHP T 8	Kruskal-Wallis one-way analysis of variance with post hoc testing	**NHP B:** Pre-Injection, *mean*=0.40, *median*=0.40 Early Post-Injection, *mean*=0.39, *median*=0.37 Late Post-Injection, *mean*=0.30, *median*=0.32 *H*=14.51, *p*=0.0007, *df*=2,24 Post Hoc Pre-Injection, Early Post-Injection, *p*=0.646 Pre-Injection, Late Post-Injection, *p*=0.0008 Early Post-Injection, Late Post-Injection, *p*=0.016 **NHP T:** Pre-Injection, *mean*=0.60, *median*=0.58 Early Post-Injection, *mean*=0.48, *median*=0.52 Late Post-Injection, *mean*=0.47, *median*=0.48 *H*=3.86, *p*=0.145, *df*=2,21 Post Hoc Pre-Injection, Early Post-Injection, *p*=0.235 Pre-Injection, Late Post-Injection, *p*=0.181 Early Post-Injection, Late Post-Injection, *p*=0.989

Extended Data 6a, b Change in FR for narrow and broad spiking neurons saline-WM	7 Narrow, *n*=5 (arrays per session containing selective neurons) Broad, *n*=11	Wilcoxon signed-ranks test, 1-sided	**Narrow:** **Preferred Location,** Pre-Injection, *mean*=0.43, *median*=0.47 Post-Injection, *mean*=0.42, *median*=0.48 *p*=0.500 **Least-Preferred Location,** Pre-Injection, *mean*=0.32, *median*=0.35 Post-Injection, *mean*=0.26, *median*=0.33 *p*=0.500 **Broad:** **Preferred Location,** Pre-Injection, *mean*=0.52, *median*=0.51 Post-Injection, *mean*=0.42, *median*=0.45 *p*=0.803 **Least-Preferred Location,** Pre-Injection, *mean*=0.29, *median*=0.29 Post-Injection, *mean*=0.32, *median*=0.28 *p*=0.422
Extended Data 6c Narrow spiking ranked target location responses	Narrow, *n*=13	Wilcoxon signed-ranks test, 1-sided	**Rank 1** Pre-Injection, *mean*=0.343, *median*=0.363 Post-Injection, *mean*=0.212, *median*=0.161 *Z=1.66, p*=0.049 **Rank 2** Pre-Injection, *mean*=0.302, *median*=0.383 Post-Injection, *mean*=0.245, *median*=0.255 *Z=0.843, p*=0.120 **Rank 3** Pre-Injection, *mean*=0.264, *median*=0.323 Post-Injection, *mean*=0.278, *median*=0.282 *Z*=-0.217, *p*=0.586 **Rank 4**

			Pre-Injection, *mean*=0.246, *median*=0.224 Post-Injection, *mean*=0.254, *median*=0.164 *Z=0.232, p*=0.592 **Rank 5** Pre-Injection, *mean*=0.219, *median*=0.242 Post-Injection, *mean*=0.230, *median*=0.234 *Z=0.027, p*=0.511 **Rank 6** Pre-Injection, *mean*=0.210, *median*=0.213 Post-Injection, *mean*=0.246, *median*=0.194 *Z=-0.299, p*=0.382 **Rank 7** Pre-Injection, *mean*=0.196, *median*=0.147 Post-Injection, *mean*=0.274, *median*=0.298 *Z=-0.708, p*=0.240 **Rank 8** Pre-Injection, *mean*=0.204, *median*=0.184 Post-Injection, *mean*=0.312, *median*=0.278 *Z=-0.380, p*=0.352 **Rank 9** Pre-Injection, *mean*=0.158, *median*=0.102 Post-Injection, *mean*=0.182, *median*=0.072 *Z=0, p*=0.500
Extended Data 6d Broad spiking ranked target location responses	Broad, *n*=27	Wilcoxon signed-ranks test, 1-sided	**Rank 1** Pre-Injection, *mean*=0.388, *median*=0.388 Post-Injection, *mean*=0.375, *median*=0.383 *Z=0.436, p*=0.332 **Rank 2** Pre-Injection, *mean*=0.348, *median*=0.366 Post-Injection, *mean*=0.323, *median*=0.325 *Z=0.779, p*=0.218 **Rank 3** Pre-Injection, *mean*=0.343, *median*=0.331 Post-Injection, *mean*=0.358, *median*=0.395 *Z=-0.621, p*=0.733 **Rank 4** Pre-Injection, *mean*=0.320, *median*=0.312

			Post-Injection, *mean*=0.341, *median*=0.357 *Z=-0.349, p*=0.364 **Rank 5** Pre-Injection, *mean*=0.299, *median*=0.298 Post-Injection, *mean*=0.350, *median*=0.358 *Z=-1.34, p*=0.09 **Rank 6** Pre-Injection, *mean*=0.284, *median*=0.280 Post-Injection, *mean*=0.341, *median*=0.323 *Z=-1.01, p*=0.156 **Rank 7** Pre-Injection, *mean*=0.242, *median*=0.249 Post-Injection, *mean*=0.273, *median*=0.290 *Z=-0.711, p*=0.238 **Rank 8** Pre-Injection, *mean*=0.229, *median*=0.244 Post-Injection, *mean*=0.268, *median*=0.301 *Z=-1.318, p*=0.094 **Rank 9** Pre-Injection, *mean*=0.211, *median*=0.223 Post-Injection, *mean*=0.299, *median*=0.321 *Z=-2.30, p*=0.011
Extended Data 6i,j,k,l Change in FR for narrow and broad spiking neurons ketamine-WM	NHP T 8 Narrow, *n*=3 (arrays per session containing selective neurons) Broad, *n*=9 NHP B 9 Narrow, *n*=10 (arrays per session containing selective neurons)	Wilcoxon signed-ranks test, 1-sided	**NHP T, Narrow:** **Preferred Location,** Pre-Injection, *mean*=0.65, *median*=0.85 Post-Injection, *mean*=0.09, *median*=0.12 *p*=0.200 **Least-Preferred Location,** Pre-Injection, *mean*=0.05, *median*=0.04 Post-Injection, *mean*=0.19, *median*=0.11 *p*=0.900 **NHP T, Broad:** **Preferred Location,**

	Broad, *n*=18		Pre-Injection, *mean*=0.40, *median*=0.47 Post-Injection, *mean*=0.38, *median*=0.39 *p*=0.697 **Least-Preferred Location,** Pre-Injection, *mean*=0.20, *median*=0.22 Post-Injection, *mean*=0.34, *median*=0.33 *p*=0.081 **NHP B, Narrow:** **Preferred Location,** Pre-Injection, *mean*=0.55, *median*=0.59 Post-Injection, *mean*=0.36, *median*=0.36 *p*=0.039 **Least-Preferred Location,** Pre-Injection, *mean*=0.26, *median*=0.22 Post-Injection, *mean*=0.31, *median*=0.33 *p*=0.552 **NHP B, Broad:** **Preferred Location,** Pre-Injection, *mean*=0.46, *median*=0.43 Post-Injection, *mean*=0.45, *median*=0.44 *p*=0.654 **Least-Preferred Location,** Pre-Injection, *mean*=0.26, *median*=0.26 Post-Injection, *mean*=0.35, *median*=0.36 *p*=0.003
Extended Data 7a, c Theoretical decoding for	Broad 17 sessions	Kruskal-Wallis one-way analysis of variance	**Broad:** Pre-Injection, *mean*=81.5, *median*=84.7 Post-Injection, *mean*=67.9, *median*=66.4

broad and narrow spiking neurons compared between injection periods	Narrow 12 sessions		*H*=13.71, *p*=0.0002, *df*=1,32 **Narrow:** Pre-Injection, *mean*=79.7, *median*=77.8 Post-Injection, *mean*=69.1, *median*=66.1 *H*=5.07, *p*=0.024, *df*=1,22
Extended Data 7b, d Population signal for broad and narrow spiking neurons compared between injection periods	Broad 17 sessions Narrow 12 sessions	Kruskal-Wallis one-way analysis of variance	**Broad:** Pre-Injection, *mean*=5.13, *median*=5.36 Post-Injection, *mean*=3.16, *median*=2.79 *H*=7.5, *p*=0.006, *df*=1,32 **Narrow:** Pre-Injection, *mean*=4.89, *median*=4.04 Post-Injection, *mean*=3.05, *median*=2.82 *H*=1.33, *p*=0.248, *df*=1,22
Extended Data 9c Decoding accuracy compared to chance (25%)	Cue 11 Delay 7	One sample t-test, 2-tailed	**Cue:** *mean*=31.7, *CI*=24.3, 39.0, *median*=30.0 *T*=1.72, *p*=0.117, *df*=10 **Delay:** *mean*=23.3, *CI*=17.6, 32.6, *median*=22.4 *T*=-0.48, *p*=0.646, *df*=6
Extended Data 10a-f Eyes on screen time compared between injection periods	Ketamine-WM 18 Saline-WM 7 Ketamine-Perception 4	Kruskal-Wallis one-way analysis of variance with post hoc testing	**Ketamine-WM** **Cue:** Pre-Injection, *mean*=1382.60, *median*=1388.31 Early Post-Injection, *mean*=1434.18, *median*=1439.26 Late Post-Injection, *mean*=1412.15, *median*=1411.39 *H*=14.16, *p*=0.0008, *df*=2,51 Post Hoc Pre-Injection, Early Post-Injection, *p*=0.0005 Pre-Injection, Late Post-Injection, *p*=0.180 Early Post-Injection, Late Post-Injection, *p*=0.114

			Delay: Pre-Injection, *mean*=866.65, *median*=890.28 Early Post-Injection, *mean*=939.50, *median*=946.17 Late Post-Injection, *mean*=901.11, *median*=938.40 *H*=11.15, *p*=0.004, *df*=2,51 Post Hoc Pre-Injection, Early Post-Injection, *p*=0.003 Pre-Injection, Late Post-Injection, *p*=0.176 Early Post-Injection, Late Post-Injection, *p*=0.264 **Saline-WM** **Cue:** Pre-Injection, *mean*=1399.29, *median*=1407.69 Early Post-Injection, *mean*=1386.25, *median*=1377.65 Late Post-Injection, *mean*=1383.77, *median*=1380.16 *H*=0.27, *p*=0.872, *df*=2,18 **Delay:** Pre-Injection, *mean*=875.11, *median*=863.25 Early Post-Injection, *mean*=873.23, *median*=839.04 Late Post-Injection, *mean*=890.06, *median*=892.58 *H*=0.14, *p*=0.932, *df*=2,18 **Ketamine-Perception** **Cue:** Pre-Injection, *mean*=1397.99, *median*=1397.98 Early Post-Injection, *mean*=1448.03, *median*=1447.44 Late Post-Injection, *mean*=1436.54, *median*=1443.50 *H*=3.85, *p*=0.146, *df*=2,9 **Delay:** Pre-Injection, *mean*=879.42, *median*=896.63 Early Post-Injection, *mean*=954.42, *median*=953.70 Late Post-Injection, *mean*=942.55, *median*=945.68 *H*=1.5, *p*=0.472, *df*=2,9

Extended Data 10g-l Percent of fixations on target location compared between injection periods	Ketamine-WM 18 *n*=9 target locations Saline-WM 7 *n*=9 target locations Ketamine-Perception 4 *n*=9 target locations	Kruskal-Wallis one-way analysis of variance	**Ketamine-WM** **Cue:** Pre-Injection, *mean*=22.5, *median*=24.2 Early Post-Injection, *mean*=26.9, *median*=24.6 Late Post-Injection, *mean*=24.0, *median*=24.9 *H*=0.84, *p*=0.658, *df*=2,24 **Delay:** Pre-Injection, *mean*=26.9, *median*=26.2 Early Post-Injection, *mean*=24.9, *median*=20.8 Late Post-Injection, *mean*=28.2, *median*=26.5 *H*=1.03, *p*=0.598, *df*=2,24 **Saline-WM** **Cue:** Pre-Injection, *mean*=21.5, *median*=22.9 Early Post-Injection, *mean*=20.0, *median*=21.1 Late Post-Injection, *mean*=23.0, *median*=25.2 *H*=0.79, *p*=0.673, *df*=2,24 **Delay:** Pre-Injection, *mean*=22.0, *median*=22.5 Early Post-Injection, *mean*=27.2, *median*=27.6 Late Post-Injection, *mean*=35.4, *median*=36.1 *H*=3.65, *p*=0.161, *df*=2,24 **Ketamine-Perception** **Cue:** Pre-Injection, *mean*=28.9, *median*=30.0 Early Post-Injection, *mean*=22.6, *median*=21.7 Late Post-Injection, *mean*=23.1, *median*=26.9 *H*=1.03, *p*=0.599, *df*=2,24 **Delay:** Pre-Injection, *mean*=21.7, *median*=17.3 Early Post-Injection, *mean*=21.9, *median*=22.0

			Late Post-Injection, *mean*=20.6, *median*=20.3 *H*=0.7, *p*=0.704, *df*=2,24