Supplementary Table 1. Correlation between a proxy for circulating estradiol levels and association bias, glides, transits, and gene (*neuroligin-3* and *tyrosine hydroxylase*) expression in different brain regions. ** indicates significance after correcting for multiple hypotheses; * indicates significance that does not survive multiple hypothesis testing

	LL		LS		SS		FF		HT	
	Correlation coefficient	p-value	Correlation coefficient	p-value	Correlation coefficient	p-value	Correlation coefficient	p-value	Correlation coefficient	p-value
Association Bias	-0.333	0.346	-0.018	0.959	-0.121	0.845	0.312	0.413	N/A	N/A
Glides	0.422	0.224	0.073	0.84	0.8	0.104	0.474	0.196	N/A	N/A
Transits	0.048	0.893	0.793	** (0.006)	-0.5	0.391	0.6	0.087	N/A	N/A
Neuroligin-3										
cb	-0.392	0.261	0.606	0.062	-0.286	0.64	-0.293	0.442	-0.756	0.139
Dl	-0.288	0.419	0.234	0.515	-0.374	0.534	-0.507	0.162	0.237	0.7
Dm	-0.235	0.512	0.029	0.936	-0.229	0.71	-0.49	0.18	0.671	0.214
GC	-0.276	0.471	0.533	0.111	-0.161	0.795	-0.069	0.858	-0.583	0.301
HV	-0.391	0.263	0.321	0.364	-0.328	0.589	-0.355	0.347	-0.253	0.68
POA	-0.306	0.388	0.305	0.424	0.118	0.85	-0.411	0.271	0.7	0.187
TA	-0.443	0.198	0.359	0.307	-0.414	0.487	-0.327	0.389	-0.332	0.585
Vs	-0.416	0.231	0.285	0.424	0.114	0.855	-0.436	0.239	0.785	0.115
Vv	-0.392	0.262	0.417	0.23	-0.18	0.771	-0.45	0.223	-0.766	0.233
Tyrosine Hydroxyalse										
OB	-0.327	0.389	-0.159	0.682	-0.432	0.466	-0.477	0.194	0.41	0.492
POA	-0.33	0.351	-0.376	0.318	-0.02	0.974	-0.218	0.571	0.013	0.982
TPp	-0.285	0.424	-0.015	0.967	0.019	0.975	0.056	0.885	0.633	0.251
PPv	-0.442	0.2	-0.015	0.966	-0.68	0.206	0.467	0.204	0.927	*(0.023)
PTN	-0.294	0.408	0.037	0.919	0.374	0.534	0.129	0.739	-0.088	0.887
Vc	-0.33	0.351	-0.119	0.759	-0.151	0.808	-0.349	0.356	0163	0792
Vv	0.329	0.352	-0.187	0.628	0.237	0.7	0.077	0.843	0.379	0.528

Supplementary Table 2. *Neuroligin-3* optical density (mean ± SE) comparisons between "high" (> median) and "low" (< median) glides and transits. ** indicates significance after correcting for multiple hypotheses; * indicates significance that does not survive multiple hypothesis testing; n.s., not significant

Brain Region	LL			LS			FF		
	High	Low	p-value	High	Low	p-value	High	Low	p-value
Glides									
Dm	0.012 ± 0.001	0.031 ± 0.085	**n.s.** (0.05)	0.024 ± 0.009	0.041 ± 0.015	**n.s.** (0.37)	0.024 ± 0.014	0.026 ± 0.01	**n.s.** (0.92)
Dl	0.01 ± 0.0003	0.028 ± 0.01	**n.s.** (0.1)	0.018 ± 0.005	0.027 ± 0.008	**n.s.** (0.38)	0.019 ± 0.009	0.019 ± 0.006	**n.s.** (0.99)
Cb	0.042 ± 0.014	0.074 ± 0.028	**n.s.** (0.33)	0.081 ± 0.03	0.05 ± 0.014	**n.s.** (0.38)	0.082 ± 0.035	0.038 ± 0.011	**n.s.** (0.28)
GC	0.005 ± 0.0008	0.007 ± 0.002	**n.s.** (0.44)	0.006 ± 0.002	0.005 ± 0.0007	**n.s.** (0.57)	0.009 ± 0.003	0.004 ± 0.0004	**n.s.** (0.24)
POA	0.028 ± 0.004	0.106 ± 0.055	**n.s.** (0.19)	0.111 ± 0.04	0.092 ± 0.034	**n.s.** (0.75)	0.104 ± 0.054	0.116 ± 0.053	**n.s.** (0.88)
TA	0.026 ± 0.011	0.077 ± 0.036	**n.s.** (0.22)	0.066 ± 0.017	0.066 ± 0.012	**n.s.** (0.98)	0.1 ± 0.034	0.065 ± 0.03	**n.s.** (0.46)
VH	0.054 ± 0.019	0.125 ± 0.061	**n.s.** (0.31)	0.151 ± 0.053	0.131 ± 0.028	**n.s.** (0.75)	0.197 ± 0.08	0.132 ± 0.052	**n.s.** (0.52)
Vs	0.028 ± 0.003	0.117 ± 0.038	**n.s.** (0.05)	0.073 ± 0.022	0.124 ± 0.043	**n.s.** (0.33)	0.055 ± 0.028	0.082 ± 0.043	**n.s.** (0.63)
Vv	0.022 ± 0.003	0.118 ± 0.039	***** (0.04)	0.072 ± 0.028	0.084 ± 0.014	**n.s.** (0.72)	0.06 ± 0.04	0.086 ± 0.043	**n.s.** (0.68)
Transits									
Dm	0.022 ± 0.01	0.02 ± 0.003	**n.s.** (0.8)	0.042 ± 0.015	0.022 ± 0.008	**n.s.** (0.31)	0.024 ± 0.014	0.028 ± 0.012	**n.s.** (0.84)
Dl	0.024 ± 0.011	0.014 ± 0.002	**n.s.** (0.45)	0.03 ± 0.007	0.016 ± 0.004	**n.s.** (0.14)	0.019 ± 0.009	0.024 ± 0.011	**n.s.** (0.74)
Cb	0.083 ± 0.027	0.033 ± 0.009	**n.s.** (0.11)	0.098 ± 0.025	0.033 ± 0.01	***** (0.04)	0.082 ± 0.035	0.059 ± 0.031	**n.s.** (0.63)
GC	0.006 ± 0.001	0.006 ± 0.002	**n.s.** (0.98)	0.006 ± 0.002	0.004± 0.0005	**n.s.** (0.3)	0.009 ± 0.003	0.006 ± 0.001	**n.s.** (0.48)
POA	0.098 ± 0.058	0.037 ± 0.005	**n.s.** (0.32)	0.13 ± 0.039	0.081 ± 0.033	**n.s.** (0.39)	0.104 ± 0.054	0.089 ± 0.034	**n.s.** (0.82)
TA	0.068 ± 0.039	0.036 ± 0.011	**n.s.** (0.46)	0.09 ± 0.01	0.043 ± 0.008	***** (0.009)	0.1 ± 0.034	0.058 ± 0.024	**n.s.** (0.35)
VH	0.114 ± 0.064	0.067 ± 0.019	**n.s.** (0.5)	0.18 ± 0.045	0.102 ± 0.028	**n.s.** (0.18)	0.197 ± 0.08	0.197 ± 0.08	**n.s.** (0.67)
Vs	0.082 ± 0.044	0.063 ± 0.02	**n.s.** (0.71)	0.0135 ± 0.042	0.062 ± 0.015	**n.s.** (0.14)	0.055 ± 0.028	0.058 ± 0.024	**n.s.** (0.94)
Vv	0.079 ± 0.045	0.061 ± 0.022	**n.s.** (0.73)	0.101 ± 0.022	0.055 ± 0.016	**n.s.** (0.13)	0.06 ± 0.041	0.061 ± 0.029	**n.s.** (0.97)

Supplementary Table 3. *Tyrosine Hydroxylase* optical density (mean ± SE) comparisons between "high" (> median) and "low" (< median) association bias. ** indicates significance after correcting for multiple hypotheses; * indicates significance that does not survive multiple hypothesis testing; n.s., not significant

Brain Region		LL				LS				FF		
	High	Low	t	p-value	High	Low	t	p-value	High	Low	t	p-value
OB	0.02 ± 0.004	0.019 ± 0.002	0.1	**n.s.** (0.88)	0.023 ± 0.003	0.018 ± 0.0008	1.4	**n.s.** (0.19)	0.018 ± 0.001	0.022 ± 0.004	-0.7	**n.s.** (0.45)
Vv	0.01 ± 0.004	0.011 ± 0.004	-0.1	**n.s.** (0.89)	0.019 ± 0.009	0.006 ± 0.004	1.1	**n.s.** (0.27)	0.004 ± 0.004	0.009 ± 0.005	-0.7	**n.s.** (0.46)
Vc	0.02 ± 0.002	0.019 ± 0.001	0.3	**n.s.** (0.76)	0.02 ± 0.003	0.018 ± 0.002	0.3	**n.s.** (0.7)	0.02 ± 0.002	0.017 ± 0.002	0.8	**n.s.** (0.41)
POA	0.021 ± 0.001	0.021 ± 0.001	0.06	**n.s.** (0.94)	0.02 ± 0.002	0.018 ± 0.002	0.6	**n.s.** (0.52)	0.024 ± 0.002	0.019 ± 0.002	1.1	**n.s.** (0.29)
TPp	0.048 ± 0.006	0.052 ± 0.007	-0.3	**n.s.** (0.74)	0.072 ± 0.01	0.054 ± 0.005	1.4	**n.s.** (0.18)	0.08 ± 0.019	0.05 ± 0.005	1.5	**n.s.** (0.17)
PPv	0.059 ± 0.01	0.054 ± 0.005	0.4	**n.s.** (0.64)	0.058 ± 0.012	0.063 ± 0.003	-0.3	**n.s.** (0.72)	0.064 ± 0.007	0.054 ± 0.006	1.0	**n.s.** (0.35)
PTN	0.036 ± 0.003	0.033 ± 0.002	0.6	**n.s.** (0.51)	0.036 ± 0.008	0.418 ± 0.005	-0.5	**n.s.** (0.6)	0.038 ± 0.005	0.034 ± 0.005	0.5	**n.s.** (0.62)

Supplementary Table 4: *Tyrosine Hydroxylase* optical density (mean ± SE) comparisons between "high" (> median) and "low" (< median) glides and transits. ** indicates significance after correcting for multiple hypotheses; * indicates significance that does not survive multiple hypothesis testing; n.s., not significant

Brain Region		LL				LS				FF		
	High	Low	t	p-value	High	Low	t	p-value	High	Low	t	p-value
Glides												
OB	0.019 ± 0.002	0.019 ± 0.003	-0.01	**n.s.** (0.98)	0.017 ± 0.001	0.024 ± 0.003	**-1.8**	**n.s.** (0.09)	0.016 ± 0.001	0.019 ± 0.001	-1.4	**n.s.** (0.18)
Vv	0.01 ± 0.004	0.01 ± 0.004	-0.1	**n.s.** (0.85)	0.003 ± 0.003	0.023 ± 0.008	**-2.2**	**n.s.** (0.05)	0.01 ± 0.004	0.005 ± 0.005	0.8	**n.s.** (0.44)
Vc	0.019 ± 0.001	0.02 ± 0.002	-0.4	**n.s.** (0.68)	0.185 ± 0.002	0.02 ± 0.003	**-0.5**	**n.s.** (0.61)	0.014 ± 0.001	0.021 ± 0.002	-2.4	***** (0.049)
POA	0.019 ± 0.001	0.023 ± 0.001	-2.2	**n.s.** (0.05)	0.019 ± 0.001	0.019 ± 0.002	**-0.1**	**n.s.** (0.85)	0.015 ± 0.001	0.025 ± 0.001	-3.9	***** (0.008)
TPp	0.045 ± 0.005	0.055 ± 0.007	-1.0	**n.s.** (0.34)	0.065 ± 0.012	0.061 ± 0.004	**0.3**	**n.s.** (0.75)	0.058 ± 0.01	0.083 ± 0.016	-1.3	**n.s.** (0.24)
PPv	0.057 ± 0.004	0.056 ± 0.01	0.1	**n.s.** (0.92)	0.066 ± 0.01	0.055 ± 0.007	**0.8**	**n.s. (0.42)**	0.054 ± 0.007	0.068 ± 0.005	-1.4	**n.s.** (0.2)
PTN	0.032 ± 0.002	0.036 ± 0.002	-1.0	**n.s.** (0.34)	0.043 ± 0.004	0.034 ± 0.008	**0.9**	**n.s. (0.35)**	0.034 ± 0.006	0.4 ± 0.005	-0.7	**n.s.** (0.48)
Transits												
OB	0.02 ± 0.003	0.019 ± 0.0008	0.2	**n.s.** (0.83)	0.02 ± 0.002	0.002 ± 0.002	-0.4	**n.s.** (0.65)	0.01 ± 0.001	0.02 ± 0.003	-1.6	**n.s.** (0.14)
Vv	0.01 ± 0.004	0.01 ± 0.004	0.09	**n.s.** (0.92)	0.006 ± 0.006	0.019 ± 0.008	-1.3	**n.s.** (0.22)	0.01 ± 0.004	0.005 ± 0.005	0.8	**n.s.** (0.44)
Vc	0.02 ± 0.002	0.02 ± 0.001	0.09	**n.s.** (0.92)	0.018 ± 0.002	0.02 ± 0.003	-0.3	**n.s.** (0.76)	0.014 ± 0.001	0.02 ± 0.001	-2.3	**n.s.** (0.05)
POA	0.021 ± 0.001	0.021 ± 0.001	-0.2	**n.s.** (0.77)	0.018 ± 0.002	0.02 ± 0.002	-0.5	**n.s.** (0.59)	0.015 ± 0.001	0.025 ± 0.001	-3.8	***** (0.008)
TPp	0.043 ± 0.004	0.057 ± 0.007	-1.6	**n.s.** (0.14)	0.071 ± 0.01	0.054 ± 0.006	1.3	**n.s.** (0.2)	0.058 ± 0.01	0.06 ± 0.01	-0.1	**n.s.** (0.86)
PPv	0.65 ± 0.007	0.047 ± 0.005	1.8	**n.s.** (0.09)	0.064 ± 0.012	0.057 ± 0.003	0.5	**n.s.** (0.6)	0.054 ± 0.007	0.064 ± 0.005	-1.1	**n.s.** (0.31)
PTN	0.035 ± 0.024	0.033 ± 0.003	**0.3**	**n.s. (0.7)**	0.039 ± 0.008	0.038 ± 0.005	**0.1**	**n.s. (0.9)**	0.034 ± 0.006	0.034 ± 0.001	**-0.05**	**n.s. (0.96)**