

Table S1. Statistical results

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Figure 1				
Number	Comparison	N	Parameter	Statistical tests and significance
c	WT vs KO	16, 14	distribution of all behaviors	Chi-square; $p=0.0002$
d	WT vs KO	16, 14	social interaction time	Mann Whitney, $p<0.0001$
	Trial type (WT-WT, WT-KO, KO-KO, KO-WT)	WT-WT: 70, WT-KO:73, KO-KO:80, KO-WT: 73	social interaction time	Two-way ANOVA; Main effect of self-genotype $p<0.001$; Main effect of the other genotype $p<0.001$; Main effect of self x other $p=0.111$
	WT-WT vs WT-KO	70, 73	social interaction time	Mann Whitney, $p=0.0002$
	WT-KO vs KO-WT	73, 73	social interaction time	Mann Whitney, $p=0.7058$
	KO-WT vs KO-KO	73, 80	social interaction time	Mann Whitney, $p=0.7058$
e	KO-WT vs KO-KO	73, 80	approach frequency	Mann Whitney, $p<0.0001$
	KO-WT vs KO-KO	73, 80	chasing frequency	Mann Whitney, $p=0.0442$
	KO-WT vs KO-KO	73, 80	uni-sniffing frequency	Mann Whitney, $p=0.0035$
Figure 2				
Number	Comparison	N	Parameter	Statistical tests and significance
b.Left	Trial type (WT-WT, WT-KO, KO-KO)	WT-WT: 35, WT-KO:66, KO-KO:34)	Theta Pearson correlation coefficient	Kruskal Wallis; $p=0.0061$
	WT-WT vs WT-KO	35, 66	Theta Pearson correlation coefficient	Dunn's multiple comparisons; $p>0.9999$
	WT-WT vs KO-KO	35, 34	Theta Pearson correlation coefficient	Dunn's multiple comparisons; $p=0.0072$
	WT-KO vs KO-KO	66, 34	Theta Pearson correlation coefficient	Dunn's multiple comparisons; $p=0.031$
b.Middle	Trial type (WT-WT, WT-KO, KO-KO)	WT-WT: 35, WT-KO:66, KO-KO:34)	Beta Pearson correlation coefficient	Kruskal Wallis; $p=0.0161$
	WT-WT vs WT-KO	35, 66	Beta Pearson correlation coefficient	Dunn's multiple comparisons; $p=0.4236$
	WT-WT vs KO-KO	35, 34	Beta Pearson correlation coefficient	Dunn's multiple comparisons; $p=0.0124$
	WT-KO vs KO-KO	66, 34	Beta Pearson correlation coefficient	Dunn's multiple comparisons; $p=0.2092$
b.Right	Trial type (WT-WT, WT-KO, KO-KO)	WT-WT: 35, WT-KO:66, KO-KO:34)	Low gamma Pearson correlation coefficient	Kruskal Wallis; $p=0.0432$
	WT-WT vs WT-KO	35, 66	Low gamma Pearson correlation coefficient	Dunn's multiple comparisons; $p=0.4975$
	WT-WT vs KO-KO	35, 34	Low gamma Pearson correlation coefficient	Dunn's multiple comparisons; $p=0.0366$
	WT-KO vs KO-KO	66, 34	Low gamma Pearson correlation coefficient	Dunn's multiple comparisons; $p=0.4119$
c	WT-WT	70	Social interaction time vs Theta Pearson correlation coefficient	Simple linear regression; $p=0.0223$, $r^2=0.074$
	WT-KO	132	Social interaction time vs Theta Pearson correlation coefficient	Simple linear regression; $p=0.0316$, $r^2=0.035$
	KO-KO	68	Social interaction time vs Theta Pearson correlation coefficient	Simple linear regression; $p=0.3294$, $r^2=0.014$
d	WT-WT Within vs Between	35	Theta Pearson correlation coefficient	Wilcoxon; $p<0.0001$
	WT-KO Within vs Between	66	Theta Pearson correlation coefficient	Wilcoxon; $p<0.0001$
	KO-KO Within vs Between	34	Theta Pearson correlation coefficient	Wilcoxon; $p=0.5965$
e	WT-WT Direct Interaction vs Solitary	24	Theta Pearson correlation coefficient	Wilcoxon; $p=0.002$
	WT-KO Direct Interaction vs Solitary	24	Theta Pearson correlation coefficient	Paired t-test; $p=0.001$
	KO-KO Direct Interaction vs Solitary	8	Theta Pearson correlation coefficient	Paired t-test; $p=0.712$
f	WT-WT Social vs Non-social vs Rest vs Velocity	33	Theta Pearson correlation coefficient	Repeated measures one-way ANOVA, At the 0.001 level, the population means are significantly different, $p<0.0001$, $F(2.435, 77.91)=25.73$, Tukey posthoc comparisons; Social vs NonSocial $p=0.0099$, Social vs Rest $p=0.0043$, Social vs Velocity $p<0.0001$; NonSocial vs Rest = 0.9996, NonSocial vs Velocity $p<0.0001$, Rest vs Velocity $p<0.0001$
	WT-KO Social vs Non-social vs Rest vs Velocity	61	Theta Pearson correlation coefficient	Friedman; $p<0.0001$, Dunn's multiple comparisons; Social vs NonSocial $p=0.1239$, Social vs Rest $p=0.0302$, Social vs Velocity $p<0.0001$; NonSocial vs Rest $p>0.9999$, NonSocial vs Velocity $p<0.0001$, Rest vs Velocity $p=0.0001$
	KO-KO Social vs Non-social vs Rest vs Velocity	26	Theta Pearson correlation coefficient	Friedman; $p=0.0123$, Dunn's multiple comparisons; Social vs NonSocial $p=0.5140$, Social vs Rest $p>0.999$, Social vs Velocity $p=0.0076$; NonSocial vs Rest $p>0.9999$, NonSocial vs Velocity $p=0.7957$, Rest vs Velocity $p=0.1901$
Figure 3				
Number	Comparison	N	Parameter	Statistical tests and significance
b	WT vs KO	16, 14	social gaze time	unpaired t-test, $p=0.085$
	Trial type (WT-WT, WT-KO, KO-KO, KO-WT)	WT-WT: 70, WT-KO:73, KO-KO:80, KO-WT: 73	social interaction time	Two-way ANOVA; Main effect of self-genotype $p=0.0091$ Main effect of the other genotype $p=0.0941$; Main effect of self x other $p=0.0479$, Tukey posthoc comparisons; WT>WT vs WT>KO $p=0.9700$, WT>WT vs KO>WT $p=0.9965$, WT>WT vs KO>KO $p=0.0127$, WT>KO vs KO>WT $p=0.9102$, WT>KO vs KO>KO $p=0.0455$, KO>WT vs KO>KO $p=0.0061$

c	WT-WT	35	Theta Pearson correlation coefficient vs time	Simple linear regression; $p=0.368$ $r^2=0.102$
	WT-WT	35	Social behavior time vs time	Simple linear regression; $p=0.001$ $r^2=0.769$
	WT-WT	35	Social gaze time vs time	Simple linear regression; $p=0.007$ $r^2=0.621$
	WT-KO	66	Theta Pearson correlation coefficient vs time	Simple linear regression; $p=0.041$ $r^2=0.425$
	WT-KO	66	Social behavior time vs time	Simple linear regression; $p<0.001$ $r^2=0.813$
	WT-KO	66	Social gaze time vs time	Simple linear regression; $p<0.001$ $r^2=0.818$
	KO-KO	34	Theta Pearson correlation coefficient vs time	Simple linear regression; $p=0.046$ $r^2=0.410$
	KO-KO	34	Social behavior time vs time	Simple linear regression; $p=0.004$ $r^2=0.670$
	KO-KO	34	Social gaze time vs time	Simple linear regression; $p=0.203$ $r^2=0.194$
d	Trial type (WT-WT, WT-KO, KO-KO, KO-WT)	WT-WT: 70, WT-KO:73, KO-KO:80, KO-WT: 73	first two minutes of Pearson correlation coefficient	Kruskal Wallis; $p=0.5823$
	Trial type (WT-WT, WT-KO, KO-KO, KO-WT)	WT-WT: 70, WT-KO:73, KO-KO:80, KO-WT: 73	last two minutes of Pearson correlation coefficient	Kruskal Wallis; $p=0.0167$, Dunn's multiple comparisons; WT-WT vs WT-KO $p=0.0691$, WT-WT vs KO-KO $p=0.02$, WT-KO vs KO-KO $p>0.999$
e	KO-WT vs KO-KO	14	entire 10 minutes of Pearson correlation coefficient	Wilcoxon; $p=0.5703$
f	KO-WT	14	first two minutes vs last two minutes of Pearson correlation coefficient	Paired t-test; $p=0.0576$
	KO-KO	14	first two minutes vs last two minutes of Pearson correlation coefficient	Wilcoxon; $p=0.0245$
Figure 4				
Number	Comparison	N	Parameter	Statistical tests and significance
a	WT neurons vs KO neurons	WT(882, 138) KO(831, 42)	Distribution of social vs non-social neuron	Fisher's exact test; $p<0.0001$
b	WT neurons vs KO neurons	WT(969, 51) KO(839, 34)	Distribution of social vs non-social neuron	Fisher's exact test; $p=0.2667$
c	WT social cell vs non-social cell	Social=138, NonSocial = 882	Pearson correlation coefficient of spike density functions	Mann-Whitney; $p=0.0012$
	KO social cell vs non-social cell	Social = 42, NonSocial = 831	Pearson correlation coefficient of spike density functions	Mann-Whitney; $p=0.0498$
d	WT social cell vs non-social cell	Social=51, NonSocial=969	Pearson correlation coefficient of spike density functions	Mann-Whitney; $p=0.005$
	KO social cell vs non-social cell	Social=34, NonSocial=839	Pearson correlation coefficient of spike density functions	Mann-Whitney; $p=0.0262$
e	WT Regress out	74	Pearson correlation coefficient	Friedman; $p=0.0104$, Dunn's multiple comparisons; Social vs NonSocial $p=0.6686$, Social vs Random $p>0.999$, Social vs Original $p=0.0070$; NonSocial vs Random $p>0.9999$, NonSocial vs Original $p=0.5870$, Random vs Original $p=0.1551$, Wilcoxon test; Social vs Non Social $p=0.0659$, Social vs Random $p=0.0506$
	KO Regress out	52	Pearson correlation coefficient	Friedman; $p=0.2339$
f	WT vs KO	WT(self = 116, other = 29, overlap = 22), KO(self = 37, other = 29, overlap = 5)	Number of neurons	Chi square; $p=0.0005$
h	WT Theta vs Beta vs Low gamma	Theta=62, Beta=12, LowGamma=17	Unit vector lengths of WT social neurons	Kruskal Wallis; $p<0.0001$, Dunn's multiple comparisons; Theta vs Beta $p=0.0071$, Theta vs Low Gamma $p=0.0004$, Beta vs Low Gamma $p>0.999$
	KO Theta vs Beta vs Low gamma	Theta=16, Beta=6, LowGamma=16	Unit vector lengths of KO social neurons	Kruskal Wallis; $p=0.0081$, Dunn's multiple comparisons; Theta vs Beta $p>0.999$, Theta vs Low Gamma $p=0.0070$, Beta vs Low Gamma $p=0.2831$
ij	WT Theta vs Beta vs Low gamma	Theta=23, Beta=6, LowGamma=8	Unit vector lengths of WT social neurons	Kruskal Wallis; $p=0.775$
	KO Theta vs Beta vs Low gamma	Theta=7, Beta=5, LowGamma=4	Unit vector lengths of KO social neurons	Kruskal Wallis; $p=0.0592$
k	WT vs KO	WT(self=68, other=14, overlap=23), KO(self=33, other=11, overlap = 5)	Distribution of self vs other phase locked neuron	Chi square; $p=0.0363$

Figure 5				
Number	Comparison	N	Parameter	Statistical tests and significance
b	WT	4	Behavior distribution across epochs	Chi square; $p < 0.0001$
	KO	4	Behavior distribution across epochs	Chi square; $p < 0.0001$
c	Epoch condition, Genotype	WT 4, KO 4	Social interaction times	Repeated measuresTwo-way ANOVA; Main effect of genotype $p = 0.6877$, $F(1,84) = 0.1627$, Main effect of the epoch condition $p < 0.0001$, $F(1.543, 129.6) = 79.15$, Main effect of genotype and epoch condition $p < 0.0001$, $F(2, 168) = 11.85$, Main effect of subject $p = 0.0001$, $F(84, 168) = 1.942$, Tukey posthoc comparisons; WT: NoStim vs Sync $p = 0.0129$, NoStim vs Desync $p = 0.0117$, Sync vs Desync $p < 0.0001$, KO: NoStim vs Sync $p < 0.0001$, NoStim vs Desync $p = 0.0013$, Sync vs Desync $p < 0.0001$, NoStim: WT vs KO $p = 0.0089$, Sync: WT vs KO $p = 0.0185$, Desync: WT vs KO $p = 0.0152$)
d	Sync condition, Genotype	WT 4, KO 4	Social interaction times	Repeated measuresTwo-way ANOVA; Main effect of genotype $p = 0.9533$, $F(1,41) = 0.00034$, Main effect of the sync condition $p < 0.0001$, $F(2,82) = 35.79$, Main effect of genotype and epoch condition $p = 0.0005$, $F(2,82) = 8.464$, Main effect of subject $p = 0.1047$, $F(41,82) = 0.1047$, Uncorrected Fisher's LSD; WT: NoStim vs Sync $p = 0.0291$, NoStim vs Desync $p = 0.3744$, Sync vs Desync $p = 0.0025$, KO: NoStim vs Sync $p < 0.0001$, NoStim vs Desync $p = 0.1400$, Sync vs Desync $p < 0.0001$, NoStim: WT vs KO $p = 0.2003$, Sync: WT vs KO $p = 0.0024$, Desync: WT vs KO $p = 0.0562$)
e	WT-WT NoStim vs Sync vs Desync	24	Bi-sniffing time	Friedman; $p = 0.0281$, Dunn's multiple comparisons; NoStim vs Sync $p = 0.5443$, NoStim vs Desync $p = 0.5443$, Sync vs Desync $p = 0.0226$
	KO-KO NoStim vs Sync vs Desync	24	Bi-sniffing time	Friedman; $p < 0.0001$, Dunn's multiple comparisons; NoStim vs Sync $p = 0.0166$, NoStim vs Desync $p = 0.0043$, Sync vs Desync $p < 0.0001$
	WT-KO NoStim vs Sync vs Desync	15	Bi-sniffing time	Friedman; $p = 0.0007$, Dunn's multiple comparisons; NoStim vs Sync $p = 0.0240$, NoStim vs Desync $p = 0.8865$, Sync vs Desync $p = 0.0006$
	KO-WT NoStim vs Sync vs Desync	15	Bi-sniffing time	Friedman; $p = 0.0011$, Dunn's multiple comparisons; NoStim vs Sync $p = 0.0080$, NoStim vs Desync $p > 0.9999$, Sync vs Desync $p = 0.0023$
f	WT-WT NoStim vs Sync vs Desync	24	Pearson correlation coefficient	Friedman; $p = 0.0003$, Dunn's multiple comparisons; NoStim vs Sync $p = 0.999$, NoStim vs Desync $p = 0$, Sync vs Desync $p = 0.0226$
	KO-KO NoStim vs Sync vs Desync	24	Pearson correlation coefficient	Friedman; $p < 0.0001$, Dunn's multiple comparisons; NoStim vs Sync $p = 0.0166$, NoStim vs Desync $p = 0.0005$, Sync vs Desync $p < 0.0045$
	WT-KO NoStim vs Sync vs Desync	30	Pearson correlation coefficient	Friedman; $p = 0.8752$
Extended Data Figure 1				
Number	Comparison	N	Parameter	Statistical tests and significance
b	WT-WT Within vs Between	35	Beta Pearson correlation coefficient	Wilcoxon; $p < 0.0001$
	WT-KO Within vs Between	66	Beta Pearson correlation coefficient	Wilcoxon; $p < 0.0001$
	KO-KO Within vs Between	34	Beta Pearson correlation coefficient	Wilcoxon; $p = 0.3765$
c	WT-WT Direct Interaction vs Solitary	24	Beta Pearson correlation coefficient	Wilcoxon; $p = 0.2643$
	WT-KO Direct Interaction vs Solitary	24	Beta Pearson correlation coefficient	Wilcoxon; $p = 0.128$
	KO-KO Direct Interaction vs Solitary	8	Beta Pearson correlation coefficient	Wilcoxon; $p = 0.1484$
d	WT-WT Social vs Non-social vs Rest vs Velocity	33	Beta Pearson correlation coefficient	Friedman; $p < 0.0001$, Dunn's multiple comparisons; Social vs NonSocial $p > 0.9999$, Social vs Rest $p > 0.9999$, Social vs Velocity $p < 0.0001$; NonSocial vs Rest $p > 0.9999$, NonSocial vs Velocity $p < 0.0001$; Rest vs Velocity $p < 0.0001$
	WT-KO Social vs Non-social vs Rest vs Velocity	61	Beta Pearson correlation coefficient	Friedman; $p < 0.0001$, Dunn's multiple comparisons; Social vs NonSocial $p = 0.4095$, Social vs Rest $p = 0.1489$, Social vs Velocity $p < 0.0001$; NonSocial vs Rest $p > 0.9999$, NonSocial vs Velocity $p < 0.0001$; Rest vs Velocity $p = 0.0001$
	KO-KO Social vs Non-social vs Rest vs Velocity	26	Beta Pearson correlation coefficient	Friedman; $p < 0.0001$, Dunn's multiple comparisons; Social vs NonSocial $p > 0.9999$, Social vs Rest $p > 0.9999$, Social vs Velocity $p < 0.0001$; NonSocial vs Rest $p > 0.9999$, NonSocial vs Velocity $p = 0.0114$, Rest vs Velocity $p = 0.0012$
e	WT-WT Within vs Between	35	Low gamma Pearson correlation coefficient	Wilcoxon; $p < 0.0001$
	WT-KO Within vs Between	66	Low gamma Pearson correlation coefficient	Wilcoxon; $p < 0.0001$
	KO-KO Within vs Between	34	Low gamma Pearson correlation coefficient	Wilcoxon; $p = 0.1716$
f	WT-WT Direct Interaction vs Solitary	24	Low gamma Pearson correlation coefficient	Wilcoxon; $p = 0.3305$
	WT-KO Direct Interaction vs Solitary	24	Low gamma Pearson correlation coefficient	Wilcoxon; $p = 0.16$
	KO-KO Direct Interaction vs Solitary	8	Low gamma Pearson correlation coefficient	Wilcoxon; $p = 0.8438$

g	WT-WT Social vs Non-social vs Rest vs Velocity	33	Low gamma Pearson correlation coefficient	Friedman; $p<0.0001$, Dunn's multiple comparisons; Social vs NonSocial $p=0.916$, Social vs Rest $p>0.9999$, Social vs Velocity $p<0.0001$; NonSocial vs Rest $p>0.9999$, NonSocial vs Velocity $p<0.0001$, Rest vs Velocity $p<0.0001$
	WT-KO Social vs Non-social vs Rest vs Velocity	61	Low gamma Pearson correlation coefficient	Friedman; $p<0.0001$, Dunn's multiple comparisons; Social vs NonSocial $p>0.9999$, Social vs Rest $p=0.1489$, Social vs Velocity $p<0.0001$; NonSocial vs Rest $p=0.845$, NonSocial vs Velocity $p<0.0001$, Rest vs Velocity $p<0.0001$
	KO-KO Social vs Non-social vs Rest vs Velocity	26	Low gamma Pearson correlation coefficient	Friedman; $p<0.0001$, Dunn's multiple comparisons; Social vs NonSocial $p>0.9999$, Social vs Rest $p>0.9999$, Social vs Velocity $p=0.0008$; NonSocial vs Rest $p>0.9999$, NonSocial vs Velocity $p=0.0114$, Rest vs Velocity $p=0.0008$
h.Left	Trial type (WT-WT, WT-KO, KO-KO)	WT-WT: 33, WT-KO:61, KO-KO:26)	Theta Pearson correlation coefficient	Kruskal Wallis; $p=0.0422$; Dunn's multiple comparisons; WT-WT vs WT-KO $p=0.5024$, WT-WT vs KO-KO $p=0.0356$, WT-KO vs KO-KO $p=0.3717$
h.Middle	Trial type (WT-WT, WT-KO, KO-KO)	WT-WT: 33, WT-KO:61, KO-KO:26)	Beta Pearson correlation coefficient	Kruskal Wallis; $p=0.0302$; Dunn's multiple comparisons; WT-WT vs WT-KO $p>0.9999$, WT-WT vs KO-KO $p=0.0606$, WT-KO vs KO-KO $p=0.0606$
h.Right	Trial type (WT-WT, WT-KO, KO-KO)	WT-WT: 33, WT-KO:61, KO-KO:26)	Low gamma Pearson correlation coefficient	Brown-Forsythe; $p=0.0746$, $F(2, 119) = 0.7893$, Ordinary one way ANOVA; $p=0.0696$, $F(2, 61.75) = 2.725$,
i	WT-WT	70	Social interaction time vs 4-100 Pearson correlation coefficient	Simple linear regression; $p=0.0284$, $r^2=0.0687$
	WT-KO	132	Social interaction time vs 4-100 Pearson correlation coefficient	Simple linear regression; $p=0.0474$, $r^2=0.029$
	KO-KO	68	Social interaction time vs 4-100 Pearson correlation coefficient	Simple linear regression; $p=0.35$, $r^2=0.0132$
j	WT-WT	70	Bi-sniffing time vs 4-100 Pearson correlation coefficient	Simple linear regression; $p=0.0404$, $r^2=0.06031$
	WT-KO	132	Bi-sniffing time vs 4-100 Pearson correlation coefficient	Simple linear regression; $p=0.6147$, $r^2=0.002$
	KO-KO	68	Bi-sniffing time vs 4-100 Pearson correlation coefficient	Simple linear regression; $p=0.015$, $r^2=0.0858$
Extended Data Figure 2				
Number	Comparison	N	Parameter	Statistical tests and significance
a	WT-WT	70	Social interaction time vs Social gaze time	Simple linear regression; $p=0.0368$, $r^2=0.0644$
	WT-KO	132	Social interaction time vs Social gaze time	Simple linear regression; $p=0.07$, $r^2=0.0266$
	KO-KO	68	Social interaction time vs Social gaze time	Simple linear regression; $p=0.9803$, $r^2<0.0001$
b	WT-WT Gaze vs NoGaze vs Angle	33	Theta Pearson correlation coefficient	Friedman; $p<0.0001$, Dunn's multiple comparisons; Gaze vs NoGaze $p<0.0001$, Gaze vs Angle $p=0.058$, NoGaze vs Angle $p=0.1467$
	WT-KO Gaze vs NoGaze vs Angle	61	Theta Pearson correlation coefficient	Friedman; $p<0.0001$, Dunn's multiple comparisons; Gaze vs NoGaze $p<0.0001$, Gaze vs Angle $p=0.1718$, NoGaze vs Angle $p=0.0198$
	KO-KO Gaze vs NoGaze vs Angle	26	Theta Pearson correlation coefficient	Friedman; $p=0.0052$, Dunn's multiple comparisons; Gaze vs NoGaze $p=0.004$, Gaze vs Angle $p=0.6873$, NoGaze vs Angle $p=0.1351$
c	WT-WT Gaze vs NoGaze vs Angle	33	Beta Pearson correlation coefficient	Friedman; $p<0.0001$, Dunn's multiple comparisons; Gaze vs NoGaze $p<0.0001$, Gaze vs Angle $p<0.0001$, NoGaze vs Angle $p>0.9999$
	WT-KO Gaze vs NoGaze vs Angle	61	Beta Pearson correlation coefficient	Friedman; $p<0.0001$, Dunn's multiple comparisons; Gaze vs NoGaze $p<0.0001$, Gaze vs Angle $p=0.0557$, NoGaze vs Angle $p=0.0002$
	KO-KO Gaze vs NoGaze vs Angle	26	Beta Pearson correlation coefficient	Friedman; $p<0.0001$, Dunn's multiple comparisons; Gaze vs NoGaze $p<0.0001$, Gaze vs Angle $p=0.0063$, NoGaze vs Angle $p=0.4247$
d	WT-WT Gaze vs NoGaze vs Angle	33	Low gamma Pearson correlation coefficient	Friedman; $p<0.0001$, Dunn's multiple comparisons; Gaze vs NoGaze $p=0.0007$, Gaze vs Angle $p<0.0001$, NoGaze vs Angle $p>0.9999$
	WT-KO Gaze vs NoGaze vs Angle	61	Low gamma Pearson correlation coefficient	Friedman; $p<0.0001$, Dunn's multiple comparisons; Gaze vs NoGaze $p<0.0001$, Gaze vs Angle $p=0.0017$, NoGaze vs Angle $p=0.0017$
	KO-KO Gaze vs NoGaze vs Angle	26	Low gamma Pearson correlation coefficient	Friedman; $p<0.0001$, Dunn's multiple comparisons; Gaze vs NoGaze $p<0.0001$, Gaze vs Angle $p=0.015$, NoGaze vs Angle $p=0.1351$
Extended Data Figure 3				
Number	Comparison	N	Parameter	Statistical tests and significance
b	WT Baseline vs Solitary vs Direct Interaction	835	Putative excitatory neuron firing rates	Friedman; $p<0.0001$, Dunn's multiple comparisons; Baseline vs Solitary $p<0.0001$, Baseline vs Direct Interaction $p<0.0001$, Solitary vs Direct Interaction $p=0.0017$
	KO Baseline vs Solitary vs Direct Interaction	555	Putative excitatory neuron firing rates	Friedman; $p=0.0267$, Dunn's multiple comparisons; Baseline vs Solitary $p>0.9999$, Baseline vs Direct Interaction $p=0.0248$, Solitary vs Direct Interaction $p=0.2297$
	WT Baseline vs Solitary vs Direct Interaction	87	Putative inhibitory neuron firing rates	Friedman; $p=0.0029$, Dunn's multiple comparisons; Baseline vs Solitary $p=0.0073$, Baseline vs Direct Interaction $p=0.0119$, Solitary vs Direct Interaction $p>0.9999$
	KO Baseline vs Solitary vs Direct Interaction	37	Putative inhibitory neuron firing rates	Friedman; $p=0.0002$, Dunn's multiple comparisons; Baseline vs Solitary $p=0.7351$, Baseline vs Direct Interaction $p=0.0001$, Solitary vs Direct Interaction $p=0.011$

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