

Supplementary Materials

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SM1. Supplementary Materials for Study 1: “Is Smiling the key?”

Table S1: Correlations between IQ, Gender and all dependent variables in the ASD group.

Variable		IQ	Gender
SO Duration (sec.)	rho	0.187	-0.215
	p value	0.458	0.39
SI Duration (sec.)	rho	-0.145	-0.158
	p value	0.955	0.531
SO Frequency	rho	0.336	-0.115
	p value	0.173	0.649
SI Frequency	rho	-0.361	-0.101
	p value	0.142	0.691
SO AU12 Intensity	rho	0.383	-0.33
	p value	0.116	0.181
SO AU06 Intensity	rho	0.363	-0.445
	p value	0.139	0.064
SI AU12 intensity	rho	0.141	-0.417
	p value	0.578	0.085

Note: SO: Social Smile; SI: Simple Smile; AU12, AU06: Action Unit 12, 6.

Table S2: Correlations between IQ, Gender and all dependent variables in the ASD group.

Variable	ASD	TD	F	p	Effect Size
	Mean (SD)	Mean (SD)			
SO Duration (sec.)	81.6 (33.6)	86.1 (23.6)	0.219	0.644	0.008
SI Duration (sec.)	63.9 (21.8)	56.7 (16.4)	0.992	0.328	0.035
SO Frequency	5.5 (3.4)	9.3 (3.7)	11.526	<0.01** _a	0.299
SI Frequency	3.1 (2.4)	2.3 (1.7)	3.133	0.088	0.104
SO AU12 Intensity	1.6 (0.4)	3.0 (0.6)	66.925	<0.0001**** _a	0.713
SO AU6 Intensity	1.5 (0.3)	2.9 (0.8)	80.293	<0.0001**** _a	0.748
SI AU12 intensity	1.4 (0.2)	2.9 (0.8)	70.528	<0.0001**** _a	0.723

Note: SO: Social Smile; SI: Simple Smile; AU12, AU06: Action Unit 12, 6.

One-way Analysis of Variance; Effect sizes expressed as Eta-squared;

_a Denotes comparisons that remained significant following Bonferroni correction.

*p<0.01; **p<0.001; ****p<0.0001

Table S3: Results of Pairwise Comparisons.

Variable	conf. high	p adj.
SO Duration (sec.)	18.368	0.644
SI Duration (sec.)	21.982	0.328
SO Frequency	-1.753	<0.01** _a
SI Frequency	2.655	0.088
SO AU12 Intensity	-1.091	<0.0001**** _a
SO AU6 Intensity	-1.251	<0.0001**** _a
SI AU12 intensity	0.463	<0.0001**** _a

Note: SO: Social Smile; SI: Simple Smile; AU12, AU06: Action Unit 12, 6.

Tukey's Honestly Significant Difference Test.

a Denotes comparisons that remained significant following Bonferroni correction.

*p<0.01; **p<0.001; ****p<0.0001

SM2. Supplementary Materials for Study 2: “EYE-C”

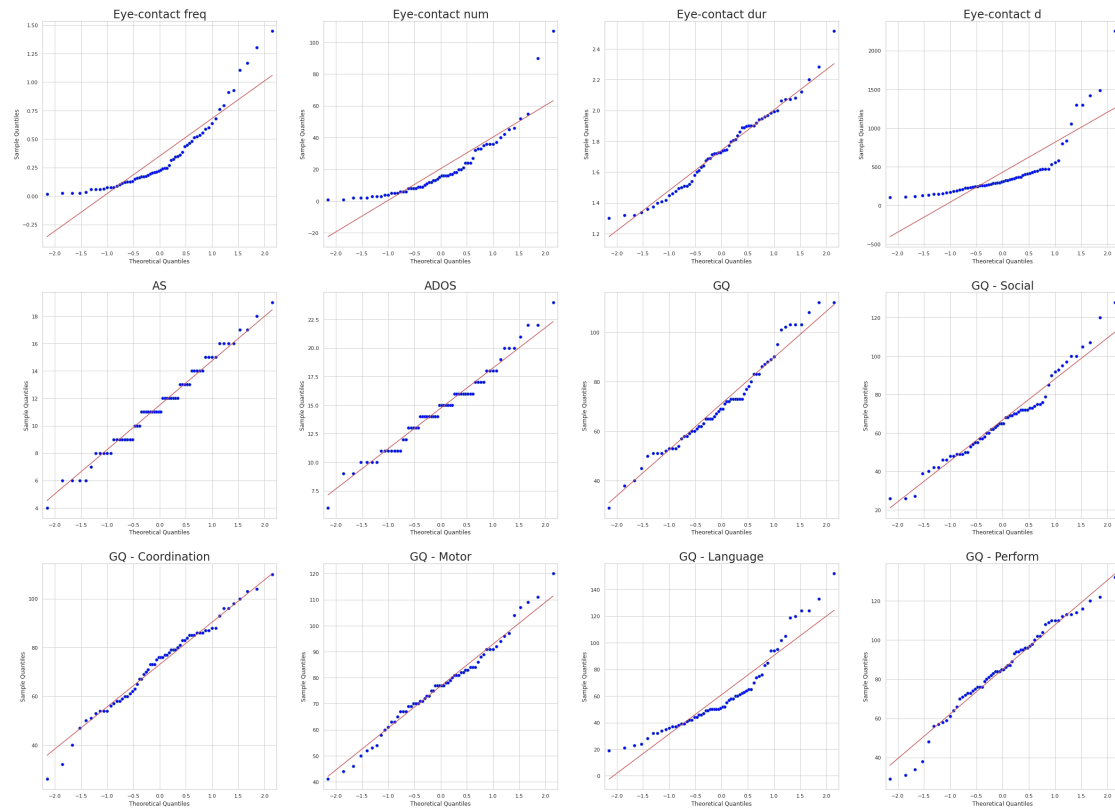


Figure S1: Q-Q Plots for normality of distributions diagnostics.

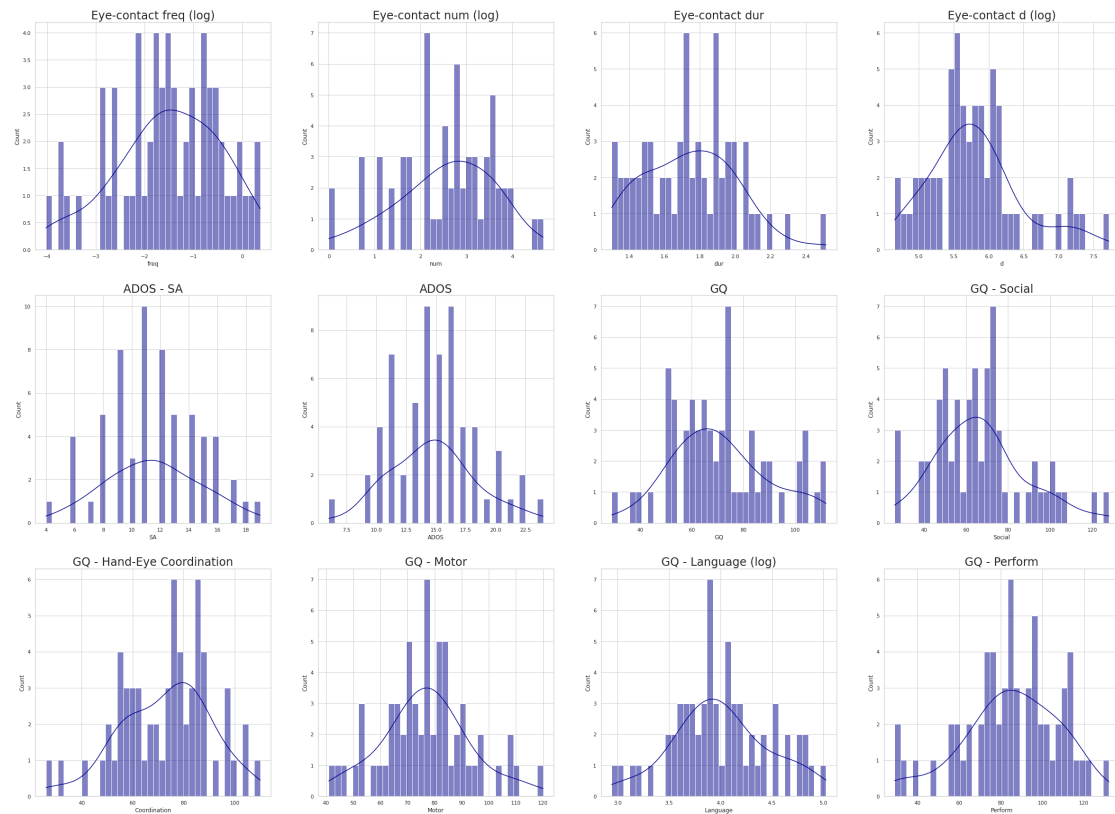


Figure S2: Distributions of variables after logarithmic transformation.

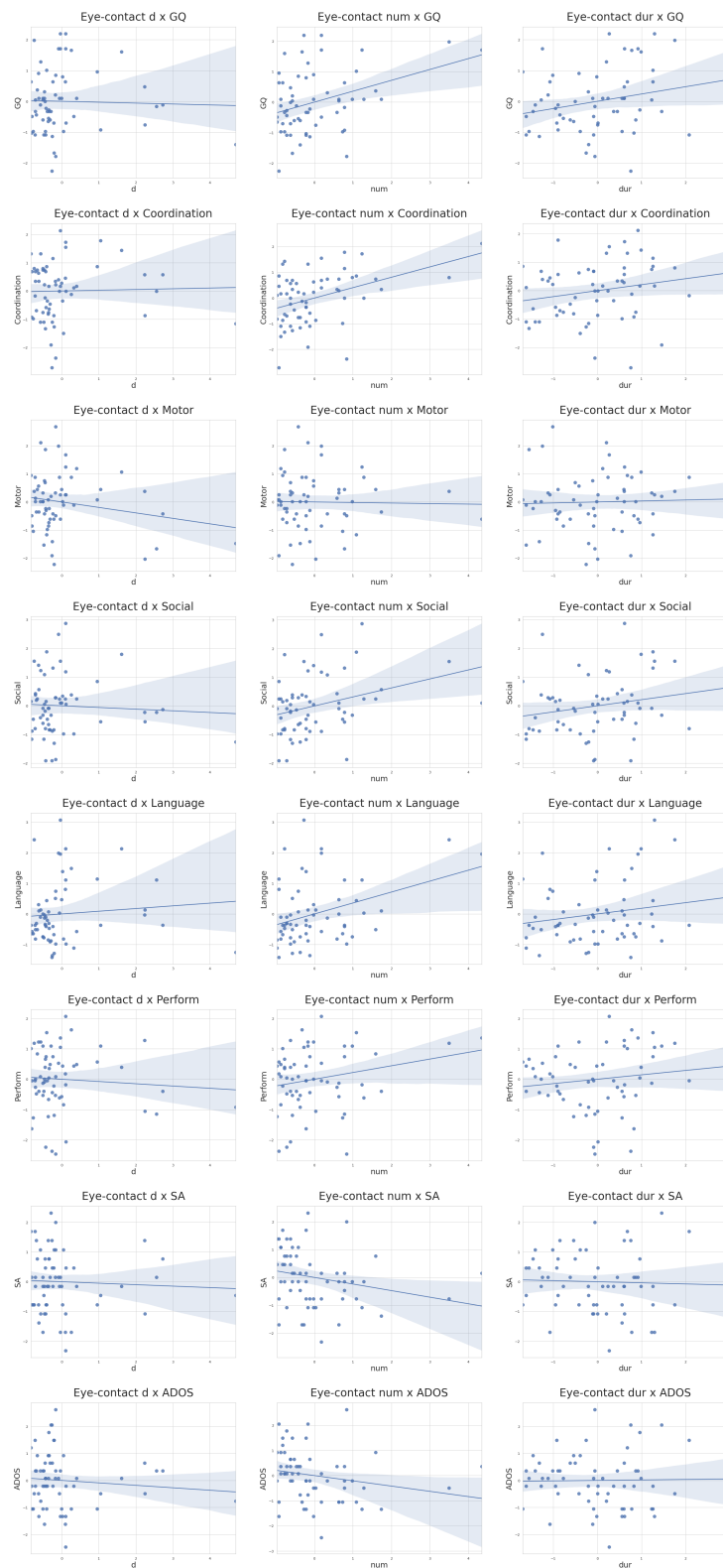


Figure S3: Linear regressions of candidate predictors with the EYE-C feature as dependent variable.

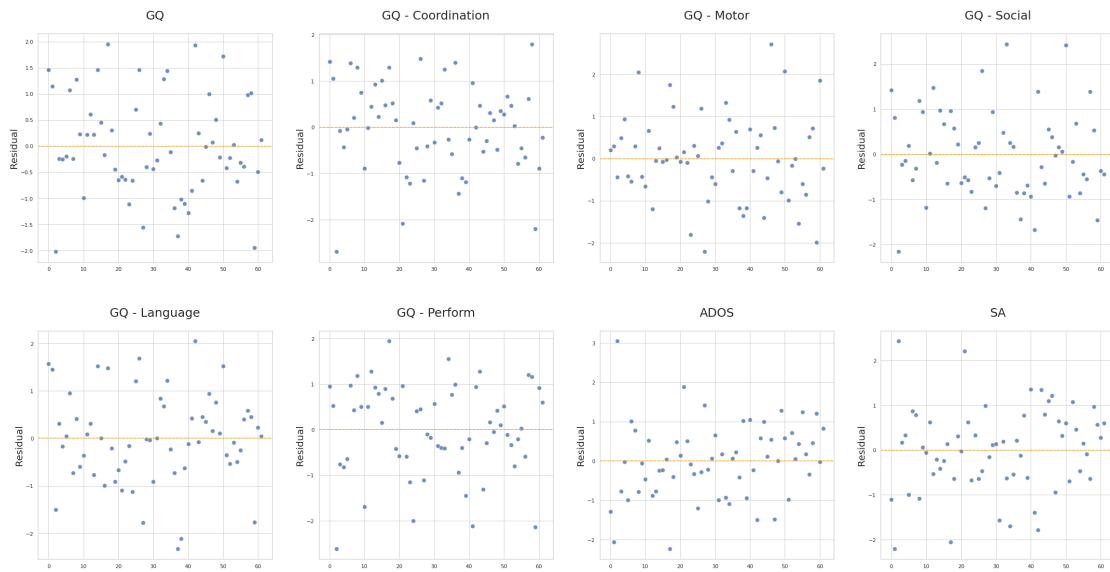


Figure S4: Homoscedasticity of residuals.

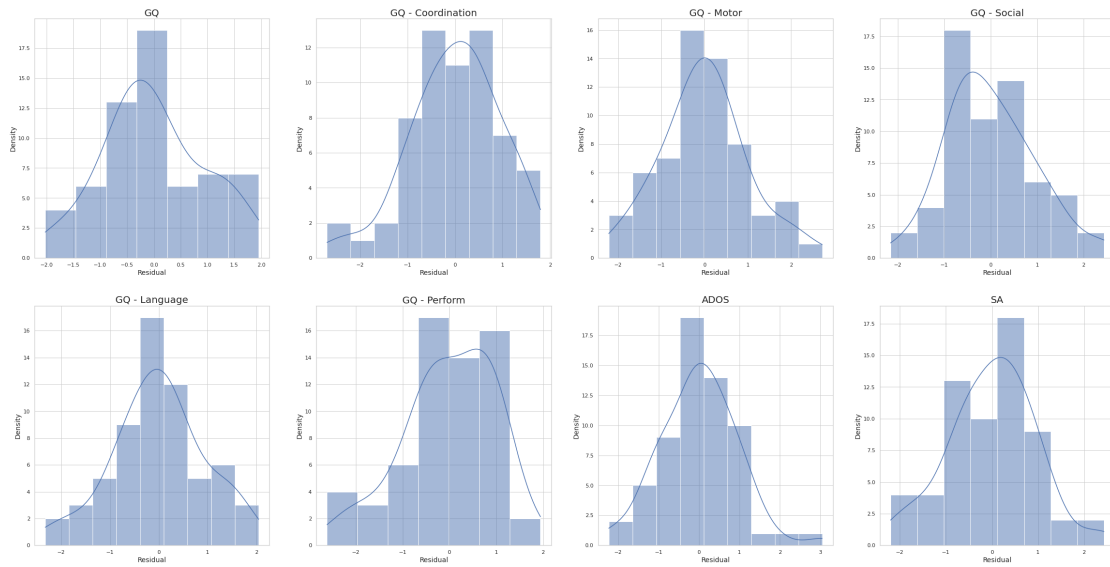


Figure S5: Residuals distributions.

Table S4: Multiple Linear Regressions summaries for all dependent variables.

Variable	R ²	Adj. R ²	F	F - prob.	coef.	t	t - prob.
ADOS	0.123	0.078	2.718	*			
const					0.000	0.000	1
num					-0.391	-2.758	**
d					-0.108	-0.865	0.391
dur					0.191	1.336	0.187
SA	0.129	0.084	2.866	*			
const					0.000	0.000	1
num					-0.4	-2.83	**
d					-0.106	-0.849	0.399
dur					0.141	0.991	0.326
GQ	0.108	0.062	2.349	0.082			
const					0.000	0.000	1
num					0.233	1.631	0.108
d					0.12	0.952	0.345
dur					0.143	0.994	0.324
Coordination	0.126	0.081	2.783	*			
const					0.000	0.000	1
num					0.315	2.22	*
d					0.099	0.79	0.432
dur					0.074	0.515	0.609
Motor	0.011	-0.04	0.218	0.884			
const					0.000	0.000	1
num					-0.03	-0.198	0.844
d					-0.099	-0.746	0.459
dur					0.031	0.204	0.839
Language	0.126	0.081	2.795	*			
const					0.000	0.000	1
num					0.309	2,184	*
d					0.187	1.492	0.141
dur					0.042	0.297	0.767
Social	0.109	0.063	2.376	0.079			
const					0.000	0.000	1
num					0.286	2	0.05
d					0.066	0.525	0.602
dur					0.084	0.58	0.564
Perform	0.04	-0.01	0.798	0.5			
const					0.000	0.000	1
num					0.158	1.062	0.293
d					0.011	0.084	0.833
dur					0.069	0.458	0.649

Note: freq: eye-contact periods frequency; num: eye-contact periods total number; d: average child gaze distance d; dur; average eye-contact periods duration. GQ: Global Developmental Quotient; SA: Social Abilities subscale.

p<0.05; **p<0.01; ***p<0.001

Table S5: Results of Pairwise Comparisons.

Sub-groups		Mean diff.	SE	t	p
0 vs 1					
Eye-contact	num	-31.7	4.287	-7.387	***
	freq	-0.58	0.059	-9.615	***
	dur	-0.25	0.074	-3.36	**
	d	7.8	97.858	0.08	0.9
Clinical	ADOS	2.6	1.044	2.452	*
	Coordination	-12.6	4.951	-2.541	*
	Social	-11.2	6.362	-1.753	0.195
	Perform	1.9	6.691	0.272	0.9
	Age	-6	3.15	-1.887	0.152
0 vs 2					
Eye-contact	num	-2.6	4.624	-0.568	0.82
	freq	-0.02	0.065	-0.376	0.9
	dur	-0.08	0.08	-0.965	0.595
	d	-340.6	105.548	-3.226	**
Clinical	ADOS	0.171	1.126	0.152	0.9
	Coordination	4.9	5.34	0.91	0.626
	Social	5.9	6.862	0.863	0.653
	Perform	17.2	7.217	2.39	0.052
	Age	-23	3.397	-6.759	***
1 vs 2					
Eye-contact	num	29.0	4.713	6.162	***
	freq	0.55	0.066	8.377	***
	dur	0.17	0.082	2.11	0.097
	d	-348.4	107.591	-3.238	**
Clinical	ADOS	-2.4	1.148	-2.082	0.103
	Coordination	17.4	5.443	3.204	**
	Social	17.1	6.994	2.441	*
	Perform	15.4	7.357	2.096	0.1
	Age	-17.0	3.463	-4.914	***

Note: freq: eye-contact periods frequency; num: eye-contact periods total number; d: average child gaze distance; dur: average eye-contact periods duration.

p<0.05; **p<0.01; ***p<0.001