Supplemental Material for

Individual differences in interoception and autistic traits share altered facial emotion perception, but not recognition per se

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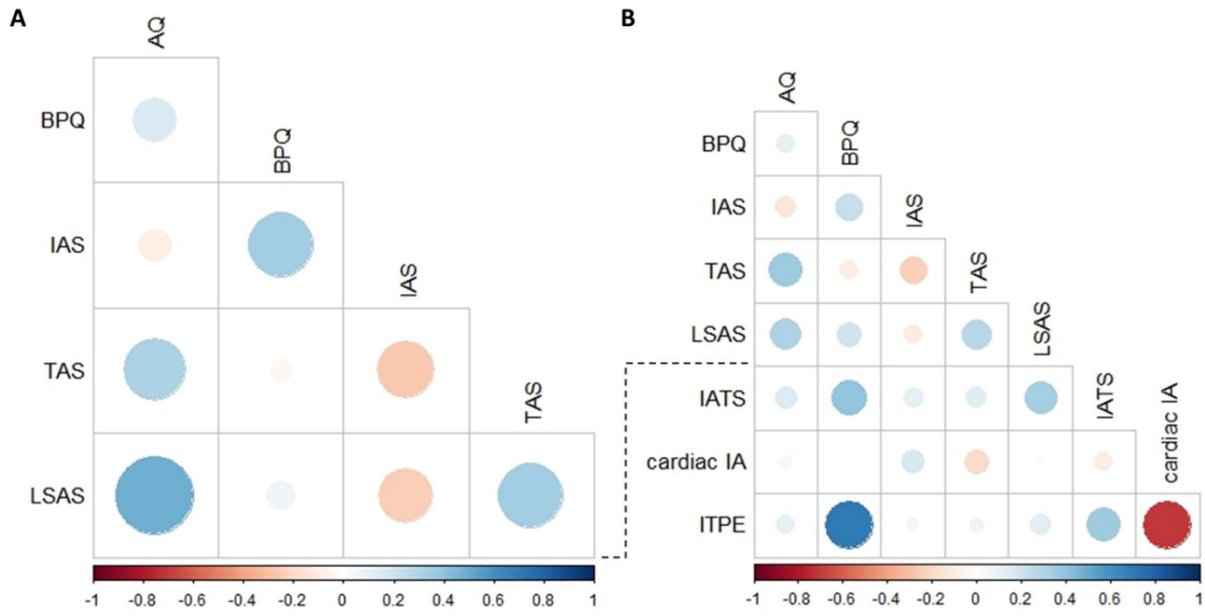
Visualization: Relation of Measures in Online versus Lab study

Figure S1

Links between the Self-Report Measures, as well as Measures from the Interoception Task, in the Online Study (Experiment 1, A) and the Lab Study (Experiment 2, B)



Note. AQ = Autism Quotient (Autistic traits), BPQ = Body Perception Questionnaire (Interoceptive sensibility), IAS = Interoceptive Accuracy Scale (Trait interoceptive accuracy), TAS = Toronto Alexithymia Scale (Alexithymia), LSAS = Liebowitz Social Anxiety Scale (Social anxiety traits), IATS = Interoceptive Attention Scale (Trait interoceptive attention), cardiac IA = Cardiac interoceptive accuracy, ITPE = Interoception trait prediction error

Online Study

First Model: Emotion Recognition Predicted by Autistic Traits (Controlled for Social Anxiety Traits and Alexithymia)

Table S1

Results of the Binomial Generalized Linear Mixed-Effects Model Predicting Emotion Recognition Accuracy by a two-way interaction between Emotion category and Autistic traits as well as by a two-way interaction between Emotion category and Social anxiety traits, and Alexithymia as control predictors (including all main effects)

Predictors	*Odds Ratios*	*CI*	*χ2*	*z*	*p*
Intercept	7.79	5.60 – 10.83	148.64	12.19	**<0.001**
Emotion category			40.34		**<0.001**
Angry	0.60	0.32 – 1.11		-1.63	0.103
Fearful	1.68	0.89 – 3.18		1.60	0.109
Happy	5.88	2.99 – 11.56		5.14	**<0.001**
Sad	0.27	0.15 – 0.49		-4.22	**<0.001**
Neutral†	0.63	0.34 – 1.16		-1.48	0.139
Autistic traits	0.96	0.83 – 1.12	0.25	-0.50	0.619
Social anxiety traits	0.89	0.77 – 1.04	2.13	-1.46	0.145
Alexithymia	0.96	0.84 – 1.09	0.38	-0.61	0.539
Emotion category*Autistic traits			11.04		**0.026**
Angry	0.77	0.64 – 0.92		-2.82	**0.005**
Fearful	1.06	0.86 – 1.32		0.57	0.566
Happy	1.00	0.72 – 1.39		0.03	0.979
Sad	1.02	0.86 – 1.21		0.23	0.817
Neutral†	1.20	0.99 – 1.45		1.83	0.067
Emotion category*Social anxiety traits			5.48		0.241
Angry	1.11	0.93 – 1.33		1.15	0.252
Fearful	1.07	0.86 – 1.32		0.60	0.549
Happy	0.85	0.62 – 1.16		-1.01	0.314
Sad	1.13	0.95 – 1.34		1.39	0.164
Neutral†	0.88	0.73 – 1.05		-1.39	0.165
Random Effects					
σ^2	3.29				
$\tau_{00\ ID}$	0.19				
$\tau_{00\ Stimulus}$	1.12				
ICC	0.29				
$N_{\ ID}$	99				
$N_{\ Stimulus}$	50				
Observations	4912				
Marginal R^2 / Conditional R^2	0.203 / 0.431				

Table S2

Results of the Binomial Generalized Linear Mixed-Effects Model Predicting Emotion Recognition accuracy by a two-way interaction between Emotion category and Autistic traits as well as by a two-way interaction between Emotion category and Social anxiety traits (including all main effects), without Alexithymia as control predictor

Predictors	*Odds Ratios*	*CI*	*χ2*	*z*	*p*
Intercept	7.79	5.60 – 10.83		12.19	**<0.001**
Emotion category			40.34		**<0.001**
Angry	0.60	0.32 – 1.11		-1.63	0.103
Fearful	1.68	0.89 – 3.18		1.60	0.109
Happy	5.88	2.99 – 11.56		5.14	**<0.001**
Sad	0.27	0.15 – 0.49		-4.22	**<0.001**
Neutral†	0.63	0.34 – 1.16		-1.48	**0.139**
Social anxiety traits	0.88	0.76 – 1.03	2.66	-1.63	0.103
Autistic traits	0.95	0.82 – 1.11	0.37	-0.61	0.542
Emotion category*Social anxiety traits			5.49		0.241
Angry	1.11	0.93 – 1.33		1.15	0.252
Fearful	1.07	0.86 – 1.32		0.60	0.550
Happy	0.85	0.62 – 1.16		-1.01	0.314
Sad	1.13	0.95 – 1.34		1.39	0.163
Neutral†	0.88	0.73 – 1.05		-1.39	0.165
Emotion category*Autistic traits			11.04		**0.026**
Angry	0.77	0.64 – 0.92		-2.82	**0.005**
Fearful	1.06	0.86 – 1.32		0.58	0.565
Happy	1.00	0.72 – 1.39		0.02	0.982
Sad	1.02	0.86 – 1.21		0.23	0.814
Neutral†	1.20	0.99 – 1.45		1.84	0.067

Random Effects	
σ^2	3.29
$\tau_{00\ ID}$	0.19
$\tau_{00\ Stimulus}$	1.12
ICC	0.29
$N_{\ ID}$	99
$N_{\ Stimulus}$	50
Observations	4912
Marginal R^2 / Conditional R^2	0.203 / 0.430

Second Model: Interoceptive Accuracy Predicted by Autistic Traits (Controlled for Social Anxiety Traits and Alexithymia)

Table S3

Results of the Linear Model Predicting Self-Reported Interoceptive Accuracy by Autistic Traits, as well as Alexithymia and Social Anxiety Traits as Control Predictors

Predictors	*β*	*CI*	*F*	*t*	*p*
Intercept	0.00	-0.19 – 0.19	0.00	0.00	1.000
Autistic traits	0.09	-0.14 – 0.31	0.60	0.78	0.440
Social anxiety traits	-0.21	-0.44 – 0.02	3.30	-1.82	0.073
Alexithymia	-0.22	-0.43 – -0.01	4.24	-2.10	**0.038**
Observations	99				
R^2 / R^2 adjusted	0.102 / 0.074				

Table S4

Results of the Linear Model Predicting Self-Reported Interoceptive Accuracy by Autistic Traits and Social Anxiety Traits, without Alexithymia as Control Predictor

Predictors	*β*	*CI*	*F*	*t*	*p*
Intercept	0.00	-0.20 – 0.20	0.00	0.00	1.000
Social anxiety traits	-0.26	-0.49 – -0.04	5.43	-2.33	**0.022**
Autistic traits	0.05	-0.18 – 0.27	0.16	0.40	0.688
Observations	99				
R^2 / R^2 adjusted	0.060 / 0.041				

Third Model: Emotion Recognition Predicted by Autistic Traits (Controlled for Social Anxiety Traits and Alexithymia) with Trait Interoceptive Accuracy as Mediator

Table S5

Results of the Binomial Generalized Linear Mixed-Effects Model Predicting Emotion Recognition Accuracy by a two-way interaction between Emotion category and Autistic traits, a two-way interaction between Emotion category and Self-reported Interoceptive Accuracy, as well as by a two-way interaction between Emotion category and Social anxiety traits, and Alexithymia as control predictors (including all main effects)

Predictors	*Odds Ratios*	*CI*	*χ2*	*z*	*p*
Intercept	7.86	5.64 – 10.94	149.13	12.21	**<0.001**
Emotion category			40.84		**<0.001**

Angry	0.59	0.32 – 1.10		-1.65	0.098
Fearful	1.68	0.89 – 3.18		1.60	0.111
Happy	6.03	3.06 – 11.91		5.18	**<0.001**
Sad	0.27	0.14 – 0.49		-4.25	**<0.001**
Neutral†	0.63	0.33 – 1.15		-1.50	0.133
Trait interoceptive accuracy	0.96	0.83 – 1.10	0.32	-0.57	0.569
Autistic traits	0.96	0.82 – 1.12	0.32	-0.56	0.572
Social anxiety traits	0.88	0.76 – 1.03	2.46	-1.57	0.117
Alexithymia	0.96	0.84 – 1.10	0.37	-0.61	0.543
Emotion category*Trait interoceptive accuracy			4.29		0.368
Angry	0.98	0.83 – 1.16		-0.19	0.847
Fearful	1.19	0.98 – 1.44		1.79	0.073
Happy	0.78	0.57 – 1.06		-1.57	0.116
Sad	1.05	0.90 – 1.22		0.57	0.572
Neutral†	1.05	0.89 – 1.25		0.55	0.580
Emotion category*Autistic traits			10.92		**0.027**
Angry	0.77	0.64 – 0.93		-2.75	**0.006**
Fearful	1.06	0.86 – 1.32		0.57	0.567
Happy	0.99	0.71 – 1.37		-0.08	0.939
Sad	1.03	0.86 – 1.22		0.29	0.770
Neutral†	1.20	0.99 – 1.45		1.89	0.059
Emotion category*Social anxiety traits			6.14		0.189
Angry	1.10	0.92 – 1.33		1.05	0.293
Fearful	1.12	0.90 – 1.39		1.00	0.316
Happy	0.80	0.58 – 1.09		-1.40	0.161
Sad	1.14	0.96 – 1.36		1.49	0.137
Neutral†	0.87	0.73 – 1.27		-1.23	0.219

Random Effects	
σ^2	3.29
$\tau_{00\ ID}$	0.19
$\tau_{00\ Stimulus}$	1.12
ICC	0.29
$N_{\ ID}$	99
$N_{\ Stimulus}$	50
Observations	4912
Marginal R^2 / Conditional R^2	0.210 / 0.435

Table S6

Results of the Linear Mixed-Effects Models Predicting Each Individual's Average Emotion Recognition Accuracy by a two-way interaction between Emotion category and Autistic traits (Model 1), and an additional two-way interaction between Emotion category and Self-reported Interoceptive (Model 2). All main effects are included and, as control predictors, a two-way interaction between Emotion category and Social anxiety traits, and Alexithymia were added

	Model 1				**Model 2**			
Predictors	*β*	*CI*	*t*	*p*	*β*	*CI*	*t*	*p*
Intercept	0.81	0.79 – 0.82	110.36	**<0.001**	0.81	0.79 – 0.82	109.78	**<0.001**
Emotion category								
Angry	-0.05	-0.07 – -0.02	-3.98	**<0.001**	-0.05	-0.07 – -0.02	-3.96	**<0.001**
Fearful	0.07	0.05 – 0.09	5.98	**<0.001**	0.07	0.05 – 0.09	5.96	**<0.001**
Happy	0.16	0.14 – 0.18	13.39	**<0.001**	0.16	0.14 – 0.18	13.35	**<0.001**
Sad	-0.16	-0.18 – -0.14	-13.59	**<0.001**	-0.16	-0.18 – -0.14	-13.54	**<0.001**
Autistic traits	-0.01	-0.02 – 0.01	-0.70	0.482	-0.01	-0.02 – 0.01	-0.70	0.483
Social anxiety traits	-0.01	-0.03 – 0.01	-1.05	0.292	-0.01	-0.03 – 0.01	-1.02	0.308
Alexithymia	-0.00	-0.02 – 0.01	-0.61	0.543	-0.00	-0.02 – 0.01	-0.58	0.562
Emotion category* Autistic traits								
Angry	-0.04	-0.07 – -0.01	-2.85	**0.005**	-0.04	-0.07 – -0.01	-2.82	**0.005**
Fearful	0.01	-0.02 – 0.04	0.62	0.538	0.01	-0.02 – 0.03	0.57	0.567
Happy	0.00	-0.02 – 0.03	0.34	0.734	0.01	-0.02 – 0.03	0.37	0.713
Sad	0.00	-0.02 – 0.03	0.14	0.886	0.00	-0.03 – 0.03	0.14	0.889
Emotion category* Social anxiety traits								
Angry	0.01	-0.02 – 0.04	0.60	0.549	0.01	-0.02 – 0.03	0.47	0.642
Fearful	0.01	-0.02 – 0.03	0.37	0.709	0.01	-0.02 – 0.04	0.59	0.557
Happy	0.00	-0.02 – 0.03	0.15	0.880	-0.00	-0.03 – 0.03	-0.02	0.983
Sad	0.01	-0.02 – 0.04	0.67	0.503	0.01	-0.02 – 0.04	0.67	0.505
Trait interoceptive accuracy					0.00	-0.01 – 0.02	0.05	0.956
Emotion category* Trait interoceptive accuracy								
Angry					-0.01	-0.03 – 0.02	-0.50	0.617
Fearful					0.01	-0.01 – 0.04	0.98	0.328
Happy					-0.01	-0.03 – 0.02	-0.73	0.469
Sad					0.00	-0.02 – 0.03	0.08	0.939
Random Effects								
σ^2	0.02				0.02			
τ_{00}	0.00 $_{ID}$				0.00 $_{ID}$			
ICC	0.09				0.10			
N	99 $_{ID}$				99 $_{ID}$			
Observations	495				495			
Marginal R^2 / Conditional R^2	0.394 / 0.451				0.393 / 0.451			

Perceived Emotional Intensity Ratings Predicted by Trait Scores (Interoception + Autism)

Table S7

Results of the Linear Mixed-Effects Model Predicting Perceived Emotional Intensity of Facial Expressions by a Two-Way Interaction Between Emotion Category and Autistic traits, a Two-Way Interaction Between Emotion Category and Interoceptive Accuracy and a Two-Way Interaction Between Emotion Category and Interoceptive Sensibility, as well as by a Two-Way Interaction Between Emotion Category and Social anxiety traits, and Alexithymia as Control Predictors (Including all Main Effects)

Predictors	*β*	*CI*	*F*	*t*	*p*
Intercept	-0.00	-0.13 – 0.13	0.00	-0.00	1.000
Emotion category			16.94		**<0.001**
Angry	-0.11	-0.31 – 0.10		-1.03	0.307
Fearful	0.17	-0.03 – 0.38		1.70	0.096
Happy	0.73	0.52 – 0.93		7.10	**<0.001**
Sad	-0.37	-0.57 – -0.16		-3.57	**0.001**
Neutral†	-0.43	-0.63 - -0.23		-4.19	**<0.001**
Social anxiety traits	-0.04	-0.14 – 0.06	0.54	-0.74	0.463
Autistic traits	0.07	-0.03 – 0.17	2.18	1.48	0.143
Alexithymia	-0.02	-0.11 – 0.07	0.24	-0.48	0.629
Trait interoceptive accuracy	0.01	-0.08 – 0.11	0.08	0.28	0.780
Interoceptive sensibility	0.09	0.00 – 0.18	4.01	2.00	**0.048**
Emotion category*Social anxiety traits			2.45		**0.044**
Angry	0.06	0.01 – 0.11		2.49	**0.013**
Fearful	-0.01	-0.06 – 0.04		-0.27	0.785
Happy	-0.03	-0.07 – 0.02		-1.01	0.313
Sad	0.02	-0.03 – 0.07		0.85	0.393
Neutral†	-0.05	-0.10 – -0.00		-2.06	**0.039**
Emotion category*Autistic traits			1.26		0.285
Angry	-0.05	-0.10 – -0.01		-2.20	**0.028**
Fearful	0.00	-0.04 – 0.05		0.16	0.870
Happy	0.01	-0.03 – 0.06		0.55	0.585
Sad	0.02	-0.03 – 0.07		0.79	0.430
Neutral†	0.02	-0.03 – 0.06		0.70	0.483
Emotion category*Trait interoceptive accuracy			3.28		**0.011**
Angry	-0.04	-0.09 – 0.00		-1.80	0.072
Fearful	-0.05	-0.10 – -0.01		-2.32	**0.021**
Happy	0.02	-0.03 – 0.06		0.70	0.486
Sad	0.02	-0.03 – 0.07		0.85	0.393
Neutral†	0.06	0.01 – 0.11		2.57	**0.010**
Emotion category*Interoceptive sensibility			4.72		**0.001**
Angry	0.00	-0.04 – 0.05		0.08	0.935
Fearful	-0.01	-0.06 – 0.03		-0.48	0.630

Happy	-0.09	-0.13 – -0.04	-3.80	**<0.001**
Sad	0.04	-0.00 – 0.09	1.92	0.055
Neutral†	0.06	0.01 – 0.10	2.29	0.022

Random Effects	
σ^2	0.54
$\tau_{00\ ID}$	0.16
$\tau_{00\ Stimulus}$	0.12
ICC	0.35
$N_{\ ID}$	99
$N_{\ Stimulus}$	50
Observations	4950
Marginal R^2 / Conditional R^2	0.194 / 0.473

Table S8

Estimated Slope of the Linear Relation Between Interoception Self-Report Measures and Perceived Emotional Intensity by Emotion Category, and Results of the Slope Comparisons against Zero

Self-report measure		Estimated slope	95% CI	df	t-ratio	p-value
Interoceptive accuracy (IAS)	*Emotion category*					
	Angry	-0.03	-0.17, 0.11	143	-0.54	1
	Fearful	-0.04	-0.18, 0.10	143	-0.77	1
	Happy	0.03	-0.11, 0.17	143	0.56	1
	Sad	0.03	-0.10, 0.17	143	0.63	1
	Neutral	0.07	-0.06, 0.21	143	1.39	.840
Interoceptive sensibility (BPQ)	*Emotion category*					
	Angry	0.09	-0.04, 0.23	145	1.83	.209
	Fearful	0.08	-0.05, 0.21	145	1.58	.235
	Happy	0.00	-0.13, 0.14	145	0.09	.932
	Sad	0.14	0.00, 0.27	145	2.65	**.036**
	Neutral	0.14	0.01, 0.28	145	2.82	**.028**

Note. Confidence intervals are adjusted for multiple comparisons using the Bonferroni-method, and p-values are adjusted using the Holm-method.

Table S9

Results of the Linear Mixed-Effects Model Predicting Perceived Emotional Intensity of Facial Expressions by a Two-Way Interaction Between Emotion Category and Autistic traits, a Two-Way Interaction Between Emotion Category and Interoceptive Accuracy and a Two-Way Interaction Between Emotion Category and Interoceptive Sensibility, as well as by a Two-Way Interaction Between Emotion Category and Social anxiety traits (Including all Main Effects), Without Alexithymia as Control Predictor

Predictors	*β*	*CI*	*F*	*t*	*p*
Intercept	-0.00	-0.13 – 0.13		-0.00	1.000

Emotion category			16.94		**<0.001**
Angry	-0.11	-0.31 – 0.10		-1.03	0.307
Fearful	0.17	-0.03 – 0.38		1.70	0.096
Happy	0.73	0.52 – 0.93		7.10	**<0.001**
Sad	-0.37	-0.57 – -0.16		-3.57	**0.001**
Neutral†	-0.43	-0.63 - -0.23		-4.19	**<0.001**
Social anxiety traits	-0.04	-0.14 – 0.06	0.72	-0.85	0.400
Autistic traits	0.07	-0.03 – 0.16	2.01	1.42	0.160
Trait interoceptive accuracy	0.02	-0.07 – 0.11	0.15	0.38	0.704
Interoceptive sensibility	0.09	0.00 – 0.18	4.08	2.02	**0.046**
Emotion category *Social anxiety traits			2.45		**0.043**
Angry	0.06	0.01 – 0.11		2.49	**0.013**
Fearful	-0.01	-0.06 – 0.04		-0.27	0.785
Happy	-0.03	-0.07 – 0.02		-1.01	0.313
Sad	0.02	-0.03 – 0.07		0.85	0.393
Neutral†	-0.05	-0.10 - -0.00		-2.06	**0.039**
Emotion category*Autistic traits			1.26		0.285
Angry	-0.05	-0.10 – -0.01		-2.20	**0.028**
Fearful	0.00	-0.04 – 0.05		0.16	0.870
Happy	0.01	-0.03 – 0.06		0.55	0.585
Sad	0.02	-0.03 – 0.07		0.79	0.430
Neutral†	0.02	-0.03 – 0.06		0.70	0.483
Emotion category*Trait interoceptive accuracy			3.28		0.011
Angry	-0.04	-0.09 – 0.00		-1.80	0.072
Fearful	-0.05	-0.10 – -0.01		-2.32	**0.021**
Happy	0.02	-0.03 – 0.06		0.70	0.486
Sad	0.02	-0.03 – 0.07		0.85	0.393
Neutral†	0.06	0.01 – 0.11		2.57	**0.010**
Emotion category*Interoceptive sensibility			4.72		**0.001**
Angry	0.00	-0.04 – 0.05		0.08	0.935
Fearful	-0.01	-0.06 – 0.03		-0.48	0.630
Happy	-0.09	-0.13 – -0.04		-3.80	**<0.001**
Sad	0.04	-0.00 – 0.09		1.92	0.055
Neutral†	0.05	0.01 – 0.10		2.29	0.022

Random Effects

σ^2	0.54
$\tau_{00\ ID}$	0.16
$\tau_{00\ Stimulus}$	0.12
ICC	0.35
$N_{\ ID}$	99
$N_{\ Stimulus}$	50
Observations	4950
Marginal R^2 / Conditional R^2	0.194 / 0.473

Confidence in Emotion Recognition Predicted by Trait Scores (Interoception + Autism): Bayesian Analysis

Table S10

Integrated Posterior Estimates of the Generalized Linear Mixed Model with a zero-one-inflated family for the slopes of the relation between Confidence in Emotion Recognition and Self-Report Measures at three different values (mean -1SD, mean, mean +1SD)

Self-report measure		Mean – 1SD Estimated slope [95% HPD]	Mean Estimated slope [95% HPD]	Mean + 1SD Estimated slope [95% HPD]
Autistic traits (AQ)		-0.01 [-0.03, 0.02]	-0.01 [-0.03, 0.02]	-0.01 [-0.03, 0.02]
	Emotion category			
	Angry	-0.01 [-0.04, 0.02]	-0.01 [-0.04, 0.02]	-0.01 [-0.04, 0.02]
	Fearful	-0.02 [-0.04, 0.01]	-0.02 [-0.05, 0.01]	-0.02 [-0.05, 0.01]
	Happy	-0.00 [-0.02, 0.01]	-0.00 [-0.02, 0.02]	-0.00 [-0.03, 0.02]
	Sad	-0.01 [-0.04, 0.02]	-0.01 [-0.04, 0.03]	-0.01 [-0.04, 0.03]
	Neutral	0.01 [-0.02, 0.04]	0.01 [-0.02, 0.04]	0.01 [-0.02, 0.05]
Interoceptive accuracy (IAS)		0.01 [-0.01, 0.04]	0.01 [-0.01, 0.04]	0.01 [-0.01, 0.04]
	Emotion category			
	Angry	0.01 [-0.02, 0.04]	0.01 [-0.02, 0.04]	0.01 [-0.02, 0.04]
	Fearful	0.02 [-0.01, 0.04]	0.02 [-0.01, 0.04]	0.02 [-0.01, 0.04]
	Happy	0.00 [-0.02, 0.03]	0.01 [-0.01, 0.02]	0.01 [-0.01, 0.02]
	Sad	0.01 [-0.02, 0.04]	0.01 [-0.02, 0.04]	0.01 [-0.02, 0.04]
	Neutral	0.01 [-0.03, 0.06]	**0.03 [0.00, 0.06]**	**0.03 [0.00, 0.06]**
Interoceptive sensibility (BPQ)		0.01 [-0.01, 0.03]	0.01 [-0.01, 0.03]	0.01 [-0.01, 0.03]
	Emotion category			
	Angry	0.01 [-0.02, 0.04]	0.01 [-0.02, 0.04]	0.01 [-0.02, 0.04]
	Fearful	0.01 [-0.02, 0.03]	0.01 [-0.01, 0.03]	0.01 [-0.01, 0.04]
	Happy	0.00 [-0.02, 0.02]	0.00 [-0.02, 0.02]	0.00 [-0.02, 0.02]
	Sad	0.02 [-0.01, 0.06]	0.02 [-0.01, 0.05]	0.02 [-0.01, 0.05]
	Neutral	-0.01 [-0.03, 0.02]	-0.01 [-0.03, 0.02]	-0.00 [-0.03, 0.03]

Interoceptive Sensibility Predicted by Autistic Traits

Table S11

Results of the Linear Model Predicting Interoceptive Sensibility by Autistic Traits, as well as Alexithymia and Social Anxiety Traits as Control Predictors

Predictors	*β*	*CI*	*F*	*t*	*p*
Intercept	0.00	-0.20 – 0.20	0.00	0.00	1.000
Social anxiety traits	0.01	-0.23 – 0.24	0.00	0.06	0.951
Autistic traits	0.19	-0.05 – 0.42	2.55	1.60	0.113
Alexithymia	-0.10	-0.32 – 0.12	0.83	-0.91	0.364
Observations	99				
R^2 / R^2 adjusted	0.034 / 0.004				

Table S12

Results of the Linear Model Predicting Interoceptive Sensibility by Autistic Traits and Social Anxiety Traits, without Alexithymia as Control Predictor

Predictors	*β*	*CI*	*F*	*t*	*p*
Intercept	0.00	-0.20 – 0.20	0.00	0.00	1.000
Social anxiety traits	-0.02	-0.25 – 0.21	0.02	-0.16	0.877
Autistic traits	0.17	-0.06 – 0.40	2.13	1.46	0.147
Observations	99				
R^2 / R^2 adjusted	0.026 / 0.006				

Table S13

Results of the Binomial Generalized Linear Mixed-Effects Model Predicting Emotion Recognition Accuracy by a two-way interaction between Emotion category and Interoceptive Accuracy and a two-way interaction between Emotion category and Interoceptive Sensibility (including all main effects)

Predictors	*Odds Ratios*	*CI*	*χ2*	*z*	*p*
Intercept	7.77	5.58 – 10.80	148.36	12.18	**<0.001**
Emotion category			40.81		**<0.001**
Angry	0.59	0.32 – 1.09		-1.69	0.091
Fearful	1.71	0.90 – 3.22		1.65	0.100
Happy	5.85	2.98 – 11.48		5.14	**<0.001**
Sad	0.27	0.15 – 0.50		-4.21	**<0.001**
Neutral†	0.63	0.34 – 1.16		-1.48	0.140
Trait interoceptive accuracy	1.06	0.92 – 1.21	0.57	0.76	0.449
Interoceptive sensibility	0.89	0.77 – 1.03	2.37	-1.54	0.124
Emotion category*Trait interoceptive accuracy			3.75		0.440
Angry	0.90	0.76 – 1.07		-1.18	0.237
Fearful	1.13	0.93 – 1.37		1.26	0.206
Happy	0.90	0.66 – 1.21		-0.71	0.480
Sad	1.01	0.86 – 1.18		0.06	0.950
Neutral†	1.08	0.91 – 1.28		0.93	0.352
Emotion catecory*Interoceptive sensibility			7.69		0.104
Angry	1.26	1.06 – 1.49		2.59	**0.010**
Fearful	1.01	0.83 – 1.24		0.13	0.897
Happy	0.88	0.64 – 1.20		-0.82	0.410
Sad	0.98	0.84 – 1.16		-0.20	0.844
Neutral†	0.91	0.76 – 1.08		-1.02	0.307

Random Effects	
σ^2	3.29
$\tau_{00\ ID}$	0.20
$\tau_{00\ Stimulus}$	1.12
ICC	0.29
$N_{\ ID}$	99
$N_{\ Stimulus}$	50
Observations	4912
Marginal R^2 / Conditional R^2	0.200 / 0.429

Lab study

Detailed Description of the Physiological Recordings

Facial Electromyography (fEMG) Recording and Preprocessing (Emotion Recognition Task)

The fEMG signal was recorded at a sampling rate of 1000 Hz, using a Biopac MP150 system combined with a BioNomadix 2 channel wireless EMG amplifier and AcqKnowledge 5.0.6 (Biopac Systems Inc.) as software. To log the onset of the fixation cross and the stimuli, digital event markers were defined in the E-Prime task (Psychology Software Tools, Pittsburg, PA) and sent via a parallel port to the BIOPAC system. All fEMG data recordings were visually inspected and preprocessed in PhysioData Toolbox (Sjak-Shie, 2019). Already during data acquisition, we noticed technical disturbances in the zygomaticus signal of 5 participants who were therefore entirely excluded from the data analysis. The raw data was inspected for irregularities by two trained raters, rectified and filtered with a 28 Hz high cut-off filter, a 500 Hz low cut-off filter, and a 50 Hz notch filter. For each trial, separate epochs were defined for the first 500ms of each video with a neutral expression and the 1.5s in which the emotional expression was shown. Within these epochs, the EMG signal was downsampled to 10Hz (100ms time bins).

The preprocessed data was then exported into MATLAB for an automated artifact detection as well as a baseline correction. For each subject and each muscle region, the distribution of the EMG signal was examined for extreme values (+/- 3.5 SDs) in the time bins regarding the absolute value of each time bin and the relative differences between subsequent bins. If there was an extreme value in the distribution of all time bins belonging to one trial (5 baseline time bins and 15 response time bins) or of the baseline time bins in the same position across, the respective time bin was replaced with a missing value. If more than 50% of all time bins belonging to one trial (10/20) or more than 50% of the respective baseline time bins (2/5) had extreme values, a trial was entirely excluded from the analysis. The exclusion of those trials was confirmed by manual coding. In total, we excluded 41 trials of preprocessed corrugator data (1%) and 149 trials of the preprocessed zygomaticus data (3%). A baseline correction was performed as a next step by subtracting the mean EMG activity of all baseline time bins belonging to one trial from the respective response time bins. To account for individual

differences in the variability of facial muscle responses, the baseline-corrected EMG data was z-scored for each participant and each muscle region. Lastly, to obtain a trial level estimate, the last second of each trial's response window (last 10 time bins) was averaged.

Electrocardiography (Heartbeat Discrimination Task)

We recorded the participants' electrocardiograms to provide (delayed) auditory feedback about heartbeats in the heartbeat discrimination task (see Procedure section). Three disposable 35mm AG/AgCl electrodes were attached to the participants' upper bodies. The negative electrode (Vin-) was placed under the right collarbone, the positive electrode (Vin+) on the left bottom rib, and the ground electrode below the right ribs. The data was recorded with a sampling rate of 1000Hz, a gain of 2000, a low-pass filter of 35Hz and a high-pass filter of 1Hz using a BIOPAC MP150 system together with a BIOPAC ECG100C module. In order to provide the real-time feedback on five consecutive heartbeats to the participants, R-peaks in the continuously recorded ECG signal were detected using AcqKnowledge software, which was directly propagated to an Arduino. For each trial, a randomly selected delay of either 200ms or 500ms, as defined by the task, was added to the timing of each of the five relevant R-peaks. The result was immediately played back as a tone to the participant via headphones. The recorded data was inspected for irregularities that might have resulted in imprecise heartbeat feedback in the PhysioData Toolbox (Sjak-Shie, 2019), after it was filtered with a 1Hz highpass filter and a 50Hz lowpass filter. Similar to the emotion recognition task, the end of the count down, the start of the start of the decision on synchrony as well as the confidence rating were logged via that digital event markers were defined in the PsychoPy task and sent via a parallel port to the BIOPAC system. Epochs of interest (i.e., all trials when heartbeat feedback was provided) could thus be identified based on these event markers. Trials in which irregularities were observed were noted down and excluded from calculating objective interoception measures.

Reference:

Sjak-Shie, E. E. PhysioData Toolbox (Version 0.5) [Computer software]. Retrieved from https://PhysioDataToolbox.leidenuniv.nl (2019).

First Model: Emotion Recognition Predicted by Autistic Traits (Controlled for Social Anxiety Traits and Alexithymia)

Table S14

Results of the Binomial Generalized Linear Mixed-Effects Model Predicting Emotion Recognition Accuracy by a two-way interaction between Emotion category and Autistic traits as well as by a two-way interaction between Emotion category and Social anxiety traits, and Alexithymia as control predictors (including all main effects)

Predictors	*Odds Ratios*	*CI*	*χ2*	*z*	*p*
Intercept	15.61	10.17 – 23.96	157.98	12.57	**<0.001**
Emotion category			44.04		**<0.001**
Angry	0.63	0.29 – 1.37		-1.16	0.245
Fearful	1.53	0.69 – 3.39		1.04	0.296
Happy	17.87	6.41 – 49.85		5.51	**<0.001**
Sad	0.18	0.09 – 0.39		-4.38	**<0.001**
Neutral†	0.32	0.15 – 0.68		-2.96	0.003
Autistic traits	0.88	0.73 – 1.07	1.71	-1.31	0.191
Social anxiety traits	0.83	0.68 – 1.00	3.75	-1.94	0.053
Alexithymia	1.15	1.01 – 1.31	4.14	2.03	**0.042**
Emotion category*Autistic traits			27.74		**<0.001**
Angry	0.99	0.79 – 1.24		-0.08	0.938
Fearful	0.90	0.69 – 1.16		-0.84	0.399
Happy	0.82	0.45 – 1.47		-0.68	0.497
Sad	0.86	0.69 – 1.06		-1.42	0.155
Neutral†	1.62	1.30 – 2.01		4.22	**<0.001**
Emotion category*Social anxiety traits			13.93		**0.008**
Angry	0.92	0.73 – 1.16		-0.67	0.502
Fearful	1.01	0.78 – 1.31		0.05	0.958
Happy	0.83	0.46 – 1.51		-0.60	0.549
Sad	1.39	1.12 – 1.72		3.01	**0.003**
Neutral†	-0.08	-0.30 – 0.15		-0.66	0.507
Random Effects					
σ^2	3.29				
$\tau_{00\ ID}$	0.16				
$\tau_{00\ Stimulus}$	1.66				
ICC	0.36				
N_{ID}	100				
$N_{Stimulus}$	50				
Observations	4991				
Marginal R^2 / Conditional R^2	0.347 / 0.580				

Table S15

Estimated Slope of the Linear Relation Between Autistic Traits and Emotion Recognition by Emotion Category, and Results of the Slope Comparisons against Zero

Self-report measure		Estimated slope [SE]	95% CI	z-ratio	p-value
Autistic traits (AQ)	*Emotion category*				
	Angry	-0.14 [0.11]	-0.43, 0.15	-1.21	.454
	Fearful	-0.24 [0.14]	-0.59, 0.12	-1.72	.254
	Happy	-0.33 [0.37]	-1.29, 0.52	-0.89	.454
	Sad	-0.28 [0.10]	-0.54, -0.03	-2.86	**.017**
	Neutral	0.35 [0.11]	0.08, 0.62	3.29	**.005**

Note. Confidence intervals are adjusted for multiple comparisons using the Bonferroni-method, and p-values are adjusted using the Holm-method.

Table S16

Results of the Binomial Generalized Linear Mixed-Effects Model Predicting Emotion Recognition accuracy by a two-way interaction between Emotion category and Autistic traits as well as by a two-way interaction between Emotion category and Social anxiety traits (including all main effects), without Alexithymia as control predictor

Predictors	*Odds Ratios*	*CI*	*χ2*	*z*	*p*
Intercept	15.60	10.16 – 23.96	157.45	12.55	**<0.001**
Emotion category			44.02		**<0.001**
Angry	0.63	0.29 – 1.37		-1.16	0.246
Fearful	1.53	0.69 – 3.39		1.04	0.296
Happy	17.86	6.40 – 49.81		5.51	**<0.001**
Sad	0.18	0.09 – 0.39		-4.38	**<0.001**
Neutral†	0.32	0.15 – 0.68		-2.96	**0.003**
Social anxiety traits	0.85	0.70 – 1.03	2.75	-1.66	0.097
Autistic traits	0.92	0.76 – 1.11	0.79	-0.89	0.375
Emotion category*Social anxiety traits			13.87		0.008
Angry	0.92	0.73 – 1.16		-0.68	0.499
Fearful	1.01	0.78 – 1.31		0.05	0.958
Happy	0.84	0.46 – 1.51		-0.59	0.554
Sad	1.39	1.12 – 1.72		3.00	**0.003**
Neutral†	0.92	0.74 – 1.16		-0.67	0.500
Emotion category*Autistic traits			27.63		**<0.001**
Angry	0.99	0.79 – 1.24		-0.08	0.936
Fearful	0.90	0.69 – 1.16		-0.84	0.401
Happy	0.82	0.46 – 1.47		-0.67	0.503
Sad	0.86	0.69 – 1.06		-1.44	0.151
Neutral†	1.62	1.28 – 2.01		4.21	**<0.001**

Random Effects	
σ^2	3.29
$\tau_{00\ ID}$	0.18
$\tau_{00\ Stimulus}$	1.66
ICC	0.36
$N_{\ ID}$	100
$N_{\ Stimulus}$	50
Observations	4991
Marginal R^2 / Conditional R^2	0.345 / 0.580

Second Model: Interoceptive Accuracy Predicted by Autistic Traits (Controlled for Social Anxiety Traits and Alexithymia)

Table S17

Results of the Linear Model Predicting Self-Reported Interoceptive Accuracy by Autistic Traits, as well as Alexithymia and Social Anxiety Traits as Control Predictors

Predictors	*β*	*CI*	*F*	*t*	*p*
Intercept	-0.00	-0.20 – 0.20	0.00	-0.00	1.000
Autistic traits	-0.06	-0.27 – 0.16	0.27	-0.52	0.604
Social anxiety traits	-0.03	-0.24 – 0.18	0.10	-0.32	0.748
Alexithymia	-0.21	-0.42 – 0.01	3.66	-1.91	0.059
Observations	100				
R^2 / R^2 adjusted	0.060 / 0.031				

Table S18

Results of the Linear Model Predicting Self-Reported Interoceptive Accuracy by Autistic Traits and Social Anxiety Traits, without Alexithymia as Control Predictor

Predictors	*β*	*CI*	*F*	*t*	*p*
Intercept	-0.00	-0.20 – 0.20	0.00	-0.00	1.000
Social anxiety traits	-0.07	-0.28 – 0.14	0.48	-0.69	0.489
Autistic traits	-0.12	-0.33 – 0.09	1.26	-1.12	0.265
Observations	100				
R^2 / R^2 adjusted	0.024 / 0.004				

Third Model: Emotion Recognition Predicted by Autistic Traits (Controlled for Social Anxiety Traits and Alexithymia) with Trait Interoceptive Accuracy as Mediator

Table S19

Results of the Binomial Generalized Linear Mixed-Effects Model Predicting Emotion Recognition Accuracy by a two-way interaction between Emotion category and Autistic traits, a two-way interaction between Emotion category and Self-reported Interoceptive Accuracy, as well as by a two-way interaction between Emotion category and Social anxiety traits, and Alexithymia as control predictors (including all main effects)

Predictors	*Odds Ratios*	*CI*	*χ2*	*z*	*p*
Intercept	15.73	10.23 – 24.20	157.46	12.55	**<0.001**
Emotion category			43.80		**<0.001**
Angry	0.63	0.29 – 1.37		-1.17	0.242
Fearful	1.52	0.68 – 3.38		1.03	0.303
Happy	18.27	6.47 – 51.59		5.49	**<0.001**
Sad	0.18	0.08 – 0.39		-4.39	**<0.001**
Neutral†	0.31	0.15 – 0.68		-2.97	**0.003**
Trait interoceptive accuracy	0.99	0.82 – 1.20	0.00	-0.06	0.953
Autistic traits	0.87	0.72 – 1.06	1.80	-1.34	0.179
Social anxiety traits	0.82	0.68 – 1.00	3.83	-1.96	0.050
Alexithymia	1.16	1.01 – 1.32	4.44	2.11	**0.035**
Emotion category*Trait interoceptive accuracy			3.33		0.504
Angry	0.93	0.74 – 1.16		-0.66	0.512
Fearful	1.13	0.87 – 1.46		0.92	0.357
Happy	0.83	0.46 – 1.49		-0.63	0.527
Sad	1.01	0.82 – 1.25		0.10	0.923
Neutral†	1.15	0.92 – 1.42		1.23	0.220
Emotion category*Autistic traits			28.62		**<0.001**
Angry	0.99	0.78 – 1.24		-0.12	0.901
Fearful	0.91	0.70 – 1.19		-0.68	0.494
Happy	0.79	0.43 – 1.45		-0.76	0.446
Sad	0.86	0.69 – 1.07		-1.35	0.177
Neutral†	1.63	1.31 – 2.05		4.28	**<0.001**
Emotion category*Social anxiety traits			13.81		**0.008**
Angry	0.92	0.73 – 1.16		-0.70	0.481
Fearful	1.02	0.78 – 1.33		0.14	0.889
Happy	0.81	0.44 – 1.50		-0.66	0.509
Sad	1.39	1.12 – 1.73		3.00	**0.003**
Neutral†	0.94	0.75 – 1.17		-0.55	0.584

Random Effects

σ^2	3.29
$\tau_{00\ ID}$	0.16
$\tau_{00\ Stimulus}$	1.66

ICC	0.36
N_{ID}	100
$N_{Stimulus}$	50
Observations	4991
Marginal R^2 / Conditional R^2	0.352 / 0.583

Table S20

Results of the Linear Mixed-Effects Models Predicting Each Individual's Average Emotion Recognition Accuracy by a two-way interaction between Emotion category and Autistic traits (Model 1), and an additional two-way interaction between Emotion category and Self-reported Interoceptive (Model 2). All main effects are included and, as control predictors, a two-way interaction between Emotion category and Social anxiety traits, and Alexithymia were added

	Model 1				**Model 1**			
Predictors	*β*	*CI*	*t*	*p*	*β*	*CI*	*t*	*p*
Intercept	0.84	0.83 – 0.85	143.04	**<0.001**	0.84	0.83 – 0.85	142.53	**<0.001**
Emotion category								
Angry	0.01	-0.01 – 0.03	0.90	0.369	0.01	-0.01 – 0.03	0.90	0.370
Fearful	0.08	0.06 – 0.10	7.62	**<0.001**	0.08	0.06 – 0.10	7.61	**<0.001**
Happy	0.15	0.13 – 0.17	15.22	**<0.001**	0.15	0.13 – 0.17	15.19	**<0.001**
Sad	-0.17	-0.19 – -0.15	-16.89	**<0.001**	-0.17	-0.19 – -0.15	-16.86	**<0.001**
Autistic traits	-0.01	-0.02 – 0.01	-0.93	0.353	-0.01	-0.02 – 0.01	-0.90	0.371
Social anxiety traits	-0.01	-0.02 – 0.00	-1.75	0.080	-0.01	-0.02 – 0.00	-1.73	0.085
Alexithymia	0.01	-0.00 – 0.03	1.92	0.055	0.01	0.00 – 0.03	1.99	**0.047**
Emotion category*								
Autistic traits								
Angry	-0.01	-0.03 – 0.01	-0.82	0.415	-0.01	-0.03 – 0.01	-0.94	0.345
Fearful	-0.01	-0.03 – 0.01	-1.04	0.299	-0.01	-0.03 – 0.01	-0.97	0.331
Happy	0.00	-0.02 – 0.02	0.00	0.997	-0.00	-0.02 – 0.02	-0.02	0.981
Sad	-0.03	-0.05 – -0.01	-3.15	**0.002**	-0.03	-0.05 – -0.01	-3.16	**0.002**
Emotion category*								
Social anxiety traits								
Angry	-0.02	-0.04 – 0.00	-1.57	0.116	-0.02	-0.04 – 0.00	-1.65	0.099
Fearful	-0.00	-0.02 – 0.02	-0.12	0.901	-0.00	-0.02 – 0.02	-0.09	0.930
Happy	0.01	-0.01 – 0.03	0.58	0.560	0.01	-0.01 – 0.03	0.56	0.573
Sad	0.03	0.01 – 0.05	3.10	**0.002**	0.03	0.01 – 0.05	3.06	**0.002**
Trait interoceptive accuracy					0.00	-0.01 – 0.02	0.56	0.576
Emotion category*								
Trait interoceptive accuracy								
Angry					-0.01	-0.03 – 0.01	-1.19	0.233
Fearful					0.01	-0.01 – 0.03	0.51	0.613
Happy					-0.00	-0.02 – 0.02	-0.25	0.804
Sad					-0.00	-0.02 – 0.02	-0.33	0.739
Random Effects								
σ^2	0.01				0.01			
τ_{00}	0.00 $_{ID}$				0.00 $_{ID}$			
ICC	0.07				0.07			
N	100 $_{ID}$				100 $_{ID}$			
Observations	500				500			
Marginal R^2 / Conditional R^2	0.503 / 0.539				0.503 / 0.540			

Perceived Emotional Intensity Ratings Predicted by Trait Scores (Interoception + Autism)

Table S21

Results of the Linear Mixed-Effects Model Predicting Perceived Emotional Intensity of Facial Expressions by a Two-Way Interaction Between Emotion Category and Autistic traits, a Two-Way Interaction Between Emotion Category and Interoceptive Accuracy and a Two-Way Interaction Between Emotion Category and Interoceptive Sensibility, as well as by a Two-Way Interaction Between Emotion Category and Social anxiety traits, and Alexithymia as Control Predictors (Including all Main Effects)

Predictors	*β*	*CI*	*F*	*t*	*p*
Intercept	-0.00	-0.13 – 0.13	0.00	-0.00	1.000
Emotion category			27.06		**<0.001**
Angry	-0.04	-0.25 – 0.18		-0.35	0.727
Fearful	0.23	0.01 – 0.44		2.15	**0.037**
Happy	0.91	0.69 – 1.12		8.53	**<0.001**
Sad	-0.39	-0.61 – -0.18		-3.70	**0.001**
Neutral†	-0.70	-0.91 - -0.50		-6.64	**<0.001**
Social anxiety traits	0.07	-0.02 – 0.15	2.50	1.58	0.117
Autistic traits	0.04	-0.05 – 0.12	0.81	0.90	0.371
Alexithymia	0.04	-0.05 – 0.12	0.74	0.86	0.390
Trait interoceptive accuracy	0.05	-0.03 – 0.13	1.64	1.28	0.203
Interoceptive sensibility	0.00	-0.08 – 0.08	0.00	0.04	0.970
Emotion category*Social anxiety traits			1.70		**0.148**
Angry	0.05	0.01 – 0.08		2.27	**0.023**
Fearful	-0.01	-0.05 – 0.03		-0.57	0.567
Happy	-0.01	-0.05 – 0.03		-0.52	0.603
Sad	0.01	-0.03 – 0.05		0.42	0.674
Neutral†	-0.03	-0.07 – 0.01		-1.60	0.110
Emotion category*Autistic traits			17.26		**<0.001**
Angry	-0.05	-0.09 – -0.02		-2.77	**0.006**
Fearful	-0.02	-0.06 – 0.01		-1.26	0.208
Happy	-0.06	-0.10 – -0.02		-3.07	**0.002**
Sad	-0.02	-0.06 – 0.02		-1.05	0.293
Neutral†	0.16	0.12 – 0.20		8.45	**<0.001**
Emotion category*Trait interoceptive accuracy			14.28		**<0.001**
Angry	-0.03	-0.07 – 0.01		-1.64	0.101
Fearful	-0.06	-0.10 – -0.02		-3.10	**0.002**
Happy	-0.06	-0.10 – -0.02		-3.01	**0.003**
Sad	0.01	-0.02 – 0.05		0.72	0.472
Neutral†	0.14	0.10 – 0.18		7.04	**<0.001**
Emotion category*Interoceptive sensibility			1.83		0.119
Angry	0.01	-0.03 – 0.05		0.63	0.529
Fearful	0.01	-0.02 – 0.05		0.72	0.471
Happy	-0.01	-0.05 – 0.03		-0.52	0.601
Sad	0.03	-0.01 – 0.07		1.54	0.123

Neutral†	-0.05	-0.09 - -0.01	-2.37	**0.018**
Random Effects				
σ^2	0.43			
$\tau_{00\ ID}$	0.13			
$\tau_{00\ Stimulus}$	0.14			
ICC	0.39			
$N_{\ ID}$	100			
$N_{\ Stimulus}$	50			
Observations	5000			
Marginal R^2 / Conditional R^2	0.319 / 0.582			

Table S22

Results of the Linear Mixed-Effects Model Predicting Perceived Emotional Intensity of Facial Expressions by a Two-Way Interaction Between Emotion Category and Autistic traits, a Two-Way Interaction Between Emotion Category and Interoceptive Accuracy and a Two-Way Interaction Between Emotion Category and Interoceptive Sensibility, as well as by a Two-Way Interaction Between Emotion Category and Social anxiety traits (Including all Main Effects), Without Alexithymia as Control Predictor

Predictors	*β*	*CI*	*F*	*t*	*p*
Intercept	-0.00	-0.13 – 0.13		-0.00	1.000
Emotion category			27.06		**<0.001**
Angry	-0.04	-0.25 – 0.18		-0.35	0.727
Fearful	0.23	0.01 – 0.44		2.15	**0.037**
Happy	0.91	0.69 – 1.12		8.53	**<0.001**
Sad	-0.39	-0.61 – -0.18		-3.70	**0.001**
Neutral†	-0.70	-0.91 - -0.50		-6.64	**<0.001**
Social anxiety traits	0.07	-0.01 – 0.15	3.25	1.80	0.075
Autistic traits	0.05	-0.03 – 0.13	1.45	1.20	0.231
Trait interoceptive accuracy	0.05	-0.03 – 0.13	1.36	1.17	0.246
Interoceptive sensibility	-0.00	-0.08 – 0.08	0.01	-0.08	0.934
Emotion category*Social anxiety traits			1.70		0.148
Angry	0.05	0.01 – 0.08		2.27	**0.023**
Fearful	-0.01	-0.05 – 0.03		-0.57	0.567
Happy	-0.01	-0.05 – 0.03		-0.52	0.603
Sad	0.01	-0.03 – 0.05		0.42	0.674
Neutral†	-0.03	-0.07 – 0.01		-1.60	0.110
Emotion category*Autistic traits			17.26		**<0.001**
Angry	-0.05	-0.09 – -0.02		-2.77	**0.006**
Fearful	-0.02	-0.06 – 0.01		-1.26	0.208
Happy	-0.06	-0.10 – -0.02		-3.07	**0.002**
Sad	-0.02	-0.06 – 0.02		-1.05	0.293
Neutral†	0.16	0.12 – 0.20		8.15	**<0.001**
Emotion category*Trait interoceptive accuracy			14.28		**<0.001**
Angry	-0.03	-0.07 – 0.01		-1.64	0.101

Fearful	-0.06	-0.10 – -0.02	-3.10	**0.002**
Happy	-0.06	-0.10 – -0.02	-3.01	**0.003**
Sad	0.01	-0.02 – 0.05	0.72	0.472
Neutral†	0.14	0.10 – 0.18	7.04	**<0.001**
Emotion category*Interoceptive sensibility			1.83	
Angry	0.01	-0.03 – 0.05	0.63	0.529
Fearful	0.01	-0.02 – 0.05	0.72	0.471
Happy	-0.01	-0.05 – 0.03	-0.52	0.601
Sad	0.03	-0.01 – 0.07	1.54	0.123
Neutral†	-0.05	-0.09 - -0.01	-2.37	**0.018**

Random Effects	
σ^2	0.43
$\tau_{00\ ID}$	0.13
$\tau_{00\ Stimulus}$	0.14
ICC	0.39
$N_{\ ID}$	100
$N_{\ Stimulus}$	50
Observations	5000
Marginal R^2 / Conditional R^2	0.319 / 0.581

Relation Between Cardiac Interoceptive Accuracy and Trait Scores (interoception + autism) and Emotion Recognition Accuracy

Table S23

Spearman's Rank Correlations Between Cardiac Interoceptive Accuracy and Self-Report Measures, as well as between the Interoception Trait Prediction Error (ITPE) and Autistic Traits

	Trait interoceptive accuracy	Trait interoceptive attention	Autistic traits
Cardiac interoceptive accuracy	r_s = .00, p = .99 N = 93	r_s = -.16, p = .38 N = 94	r_s = -.16, p = .38 N = 94
Interoception trait prediction error	x	x	r_s = 0.20, p = .20 N = 95

Note. P-values are corrected for multiple comparisons using the Holm method.

Table S24

Results of the Binomial Generalized Linear Mixed-Effects Model Predicting Emotion Recognition Accuracy by a two-way interaction between Emotion category and Objective Interoceptive Accuracy (including all main effects)

Predictors	*Odds Ratios*	*CI*	*χ2*	*z*	*p*
Intercept	14.91	9.80 – 22.69	159.12	12.61	**<0.001**
Emotion category					
Angry	0.65	0.30 – 1.38		-1.13	0.260
Fearful	1.57	0.72 – 3.45		1.13	0.259
Happy	16.29	6.11 – 43.44		5.58	**<0.001**
Sad	0.19	0.09 – 0.40		-4.35	**<0.001**
Neutral†	0.32	0.15 – 0.68		-2.99	**0.003**
Cardiac interoceptive accuracy	0.96	0.81 – 1.15	0.16	-0.40	0.690
Emotion category*Cardiac interoceptive accuracy			4.83		0.30
Angry	1.13	0.91 – 1.40		1.09	0.276
Fearful	0.84	0.66 – 1.07		-1.43	0.152
Happy	1.04	0.60 – 1.81		0.15	0.879
Sad	0.94	0.77 – 1.15		-0.56	0.573
Neutral†	1.06	0.86 - 1.30		0.56	0.576
Random Effects					
σ^2	3.29				
$\tau_{00\ ID}$	0.18				
$\tau_{00\ Stimulus}$	1.63				
ICC	0.35				
N_{ID}	100				
$N_{Stimulus}$	50				
Observations	4991				
Marginal R^2 / Conditional R^2	0.326 / 0.565				

Expansion of the First Emotion Recognition Model By Adding Facial Muscle Activity as Potential Moderator

Table S25

Results of the Binomial Generalized Linear Mixed-Effects Model Predicting Emotion Recognition Accuracy by a three-way interaction between Emotion category, Autistic traits and baseline-corrected, z-scored Corrugator activity, a three-way interaction between Emotion category, Autistic traits and baseline-corrected, z-scored Zygomaticus activity, and a two-way interaction between Emotion category and Social anxiety traits, and Alexithymia as control predictors

Predictors	*Odds Ratios*	*CI*	*χ2*	*z*	*p*
Intercept	15.60	9.79 – 24.88	133.23	11.54	**<0.001**
Emotion category			32.45		**<0.001**
Angry	0.77	0.34 – 1.72		-0.65	0.519
Fearful	1.50	0.65 – 3.46		0.95	0.340
Happy	14.52	4.38 – 48.16		4.37	**<0.001**
Sad	0.18	0.08 – 0.39		-4.25	**<0.001**
Neutral†	0.33	0.15 – 0.75		-2.68	**0.007**
Corrugator activity	0.93	0.71 – 1.21	0.33	-0.57	0.568
Autistic traits	0.90	0.70 – 1.16	0.61	-0.78	0.434
Zygomaticus activity	0.93	0.76 – 1.13	0.58	-0.76	0.446
Social anxiety traits	0.87	0.71 – 1.07	1.76	-1.33	0.185
Alexithymia	1.15	0.99 – 1.33	3.43	1.85	0.064
Emotion category*Corrugator activity			7.25		0.123
Angry	0.89	0.64 – 1.24		-0.69	0.491
Fearful	1.33	0.86 – 2.04		1.29	0.196
Happy	0.69	0.27 – 1.77		-0.76	0.445
Sad	1.33	0.95 – 1.85		1.67	0.094
Neutral†	0.91	0.64 – 1.31		-0.48	0.632
Emotion category*Autistic traits			25.82		**<0.001**
Angry	0.87	0.65 – 1.17		-0.89	0.373
Fearful	0.92	0.67 – 1.26		-0.53	0.595
Happy	0.91	0.39 – 2.12		-0.22	0.829
Sad	0.84	0.64 – 1.10		-1.28	0.202
Neutral†	1.63	1.23 – 2.16		3.42	**0.001**
Corrugator activity*Autistic traits	1.10	0.85 – 1.41	0.52	0.72	0.472
Emotion category*Zygomaticus activity			8.89		0.064
Angry	1.22	0.92 – 1.62		1.37	0.172
Fearful	0.86	0.61 – 1.22		-0.84	0.401
Happy	1.42	0.74 – 2.71		1.07	0.286
Sad	0.92	0.72 – 1.18		-0.63	0.528
Neutral†	0.73	0.55 – 0.95		-2.29	**0.022**
Autistic traits*Zygomaticus activity	0.98	0.82 – 1.17	0.05	-0.22	0.823
Emotion category*Social anxiety traits			14.64		**0.006**
Angry	0.89	0.69 – 1.14		-0.94	0.346
Fearful	0.94	0.72 – 1.24		-0.42	0.675

Happy	1.00	0.53 – 1.87		0.00	0.999
Sad	1.37	1.09 – 1.72		2.73	**0.006**
Neutral†	0.87	0.68 – 1.11		-1.15	0.251
Emotion category*Corrugator activity*Autistic traits			1.73		0.785
Angry	0.92	0.66 – 1.27		-0.53	0.599
Fearful	0.94	0.63 – 1.41		-0.30	0.761
Happy	1.41	0.58 – 3.39		0.76	0.447
Sad	0.82	0.59 – 1.12		-1.25	0.211
Neutral†	1.01	0.70 – 1.46		0.06	0.951
Emotion category*Zygomaticus activity*Autistic traits			0.89		0.926
Angry	0.89	0.68 – 1.18		-0.79	0.429
Fearful	1.09	0.80 – 1.49		0.53	0.593
Happy	1.01	0.58 – 1.76		0.02	0.982
Sad	0.99	0.79 – 1.25		-0.04	0.965
Neutral†	1.02	0.77 – 1.36		0.17	0.863

Random Effects

σ^2	3.29
$\tau_{00\ ID}$	0.19
$\tau_{00\ Stimulus}$	1.75
ICC	0.37
$N_{\ ID}$	95
$N_{\ Stimulus}$	50
Observations	4578
Marginal R^2 / Conditional R^2	0.374 / 0.606

Expansion of the Perceived Emotional Intensity Model By Adding Facial Muscle Activity as Potential Moderator

Table S26

Results of the Linear Mixed-Effects Model Predicting Prceived Emotional Intensity by a three-way interaction between Emotion category, Autistic traits and baseline-corrected, z-scored Corrugator activity, a three-way interaction between Emotion category, Autistic traits and baseline-corrected, z-scored Zygomaticus activity, a three-way interaction between Emotion category, Interoceptive Accuracy and baseline-corrected, z-scored Corrugator activity, a three-way interaction between Emotion category, Interoceptive Accuracy and baseline-corrected, z-scored Zygomaticus activity, and a two-way interaction between Emotion category and Social anxiety traits, and Alexithymia as control predictors

Predictors	*β*	*CI*	*F*	*t*	*p*
Intercept	-0.00	-0.13 – 0.13	0.00	-0.03	0.979
Emotion category			26.96		**<0.001**
Angry	-0.02	-0.24 – 0.19		-0.23	0.822
Fearful	0.25	0.04 – 0.47		2.39	**0.021**
Happy	0.89	0.67 – 1.10		8.27	**<0.001**
Sad	-0.39	-0.60 – -0.17		-3.65	**0.001**
Neutral†	-0.73	-0.94 - -0.52		-6.91	**<0.001**
Social anxiety traits	0.07	-0.01 – 0.16	3.14	1.77	0.080
Corrugator activity	-0.01	-0.03 – 0.02	0.19	-0.44	0.663
Autistic traits	0.05	-0.04 – 0.14	1.29	1.14	0.258
Zygomaticus activity	0.00	-0.02 – 0.02	0.02	0.13	0.893
Alexithymia	0.02	-0.07 – 0.10	0.13	0.36	0.719
Interoceptive sensibility	0.00	-0.08 – 0.08	0.01	0.07	0.941
Trait interoceptive accuracy	0.05	-0.04 – 0.13	1.15	1.07	0.286
Emotion category*Social anxiety traits			1.65		0.159
Angry	0.05	0.01 – 0.09		2.38	**0.017**
Fearful	-0.01	-0.05 – 0.03		-0.65	0.514
Happy	-0.02	-0.06 – 0.02		-1.00	0.316
Sad	0.01	-0.03 – 0.05		0.31	0.755
Neutral†	-0.02	-0.06 – 0.02		-1.03	0.303
Emotion category*Corrugator activity			0.42		0.796
Angry	0.00	-0.05 – 0.05		0.05	0.958
Fearful	-0.01	-0.07 – 0.05		-0.39	0.698
Happy	-0.03	-0.08 – 0.02		-1.00	0.318
Sad	0.02	-0.03 – 0.08		0.87	0.383
Neutral†	0.01	-0.05 – 0.07		0.35	0.725
Emotion category*Autistic traits			20.68		**<0.001**
Angry	-0.06	-0.10 – -0.01		-2.52	**0.012**
Fearful	-0.04	-0.08 – 0.00		-1.87	0.061
Happy	-0.07	-0.13 – -0.02		-2.49	**0.013**
Sad	-0.03	-0.07 – 0.01		-1.36	0.175

Neutral†	0.20	0.16 – 0.24		9.05	**<0.001**
Corrugator activity*Autistic traits	-0.03	-0.06 – -0.01	5.35	-2.31	**0.021**
Emotion category*Zygomaticus activity			1.49		0.201
Angry	0.01	-0.04 – 0.06		0.51	0.613
Fearful	0.05	-0.00 – 0.10		1.79	0.074
Happy	0.01	-0.03 – 0.05		0.48	0.628
Sad	-0.02	-0.07 – 0.02		-1.05	0.295
Neutral†	-0.01	-0.07 – 0.06		-0.19	0.847
Autistic traits*Zygomaticus activity	-0.02	-0.05 – -0.00	4.13	-2.03	**0.042**
Emotion category*Interoceptive sensibility			1.13		0.342
Angry	0.01	-0.03 – 0.05		0.27	0.785
Fearful	0.02	-0.02 – 0.05		0.76	0.448
Happy	-0.01	-0.05 – 0.03		-0.42	0.676
Sad	0.02	-0.01 – 0.06		1.23	0.220
Neutral†	-0.04	-0.08 – 0.00		-1.82	0.069
Emotion category*Trait interoceptive accuracy			7.36		**<0.001**
Angry	-0.03	-0.07 – 0.02		-1.29	0.197
Fearful	-0.04	-0.09 – -0.00		-1.97	**0.049**
Happy	-0.06	-0.11 – -0.01		-2.20	**0.028**
Sad	0.02	-0.02 – 0.07		0.98	0.329
Neutral†	0.11	0.07 – 0.15		4.99	**<0.001**
Corrugator activity*Trait interoceptive accuracy	-0.00	-0.03 – 0.03	0.02	-0.16	0.875
Zygomaticus activity*Trait interoceptive accuracy	0.02	-0.00 – 0.05	3.79	1.95	0.052
Emotion category*Corrugator activity*Autistic traits			1.26		0.285
Angry	0.01	-0.04 – 0.07		0.51	0.614
Fearful	-0.01	-0.07 – 0.05		-0.30	0.761
Happy	0.03	-0.02 – 0.08		1.13	0.261
Sad	0.04	-0.02 – 0.09		1.22	0.222
Neutral†	-0.07	-0.14 – 0.00		-1.93	0.053
Emotion category*Zygomaticus activity*Autistic traits			1.09		0.360
Angry	-0.01	-0.06 – 0.04		-0.49	0.627
Fearful	-0.02	-0.07 – 0.03		-0.84	0.403
Happy	0.02	-0.02 – 0.06		1.15	0.250
Sad	0.04	-0.01 – 0.08		1.61	0.108
Neutral†	-0.02	-0.08 – 0.03		-0.88	0.381
Emotion category*Corrugator activity*Interoceptive accuracy			1.17		0.321
Angry	0.04	-0.01 – 0.09		1.51	0.132
Fearful	-0.04	-0.10 – 0.02		-1.20	0.231
Happy	0.02	-0.03 – 0.07		0.78	0.434
Sad	0.02	-0.04 – 0.08		0.58	0.564
Neutral†	-0.04	-0.10 – 0.03		-1.17	0.241

Emotion category*Zygomaticus activity*Interoceptive accuracy			0.64	0.637
Angry	0.01	-0.04 – 0.07	0.54	0.586
Fearful	-0.03	-0.08 – 0.02	-1.02	0.308
Happy	-0.01	-0.05 – 0.03	-0.58	0.559
Sad	-0.01	-0.06 – 0.03	-0.60	0.549
Neutral†	0.04	-0.02 – 0.10	1.20	0.230

Random Effects	
σ^2	0.41
$\tau_{00\ ID}$	0.13
$\tau_{00\ Stimulus}$	0.13
ICC	0.39
$N_{\ ID}$	95
$N_{\ Stimulus}$	50
Observations	4587
Marginal R^2 / Conditional R^2	0.330 / 0.592

Sensitivity Analyses:

Models Including Facial Muscle Activity as Predictor with Gaussianized Distributions

Table S27

Results of the Binomial Generalized Linear Mixed-Effects Model Predicting Emotion Recognition Accuracy by a three-way interaction between Emotion category, Autistic traits and gaussianized baseline-corrected, z-scored Corrugator activity, a three-way interaction between Emotion category, Autistic traits and gaussianized baseline-corrected, z-scored Zygomaticus activity, and a two-way interaction between Emotion category and Social anxiety traits, and Alexithymia as control predictors

Predictors	*Odds Ratios*	*CI*	*χ2*	*z*	*p*
Intercept	15.71	9.77 – 25.25	129.20	11.37	**<0.001**
Emotion category			32.06		**<0.001**
Angry	0.75	0.33 – 1.70		-0.69	0.489
Fearful	1.48	0.64 – 3.44		0.91	0.361
Happy	15.76	4.53 – 54.78		4.34	**<0.001**
Sad	0.18	0.08 – 0.39		-4.25	**<0.001**
Corrugator activity	0.94	0.67 – 1.32	0.12	-0.35	0.726
Autistic traits	0.92	0.71 – 1.18	0.46	-0.68	0.499
Zygomaticus activity	0.86	0.49 – 1.51	0.28	-0.53	0.598
Social anxiety traits	0.87	0.71 – 1.07	1.79	-1.34	0.181
Alexithymia	1.14	0.99 – 1.32	3.39	1.84	0.066
Emotion category*Corrugator activity			5.67		**<0.001**
Angry	0.87	0.57 – 1.34		-0.62	0.538
Fearful	1.37	0.81 – 2.32		1.19	0.236
Happy	0.70	0.21 – 2.31		-0.59	0.558

Sad	1.36	0.89 – 2.06		1.42	0.154
Emotion category*Autistic traits			25.11		**<0.001**
Angry	0.87	0.65 – 1.17		-0.91	0.364
Fearful	0.91	0.66 – 1.25		-0.59	0.556
Happy	0.94	0.40 – 2.21		-0.15	0.879
Sad	0.83	0.63 – 1.10		-1.30	0.193
Corrugator activity*Autistic traits	1.14	0.84 – 1.55	0.72	0.85	0.395
Emotion category*Zygomaticus activity			11.85		**0.019**
Angry	1.65	0.74 – 3.69		1.22	0.224
Fearful	0.73	0.29 – 1.81		-0.68	0.494
Happy	3.35	0.49 – 23.00		1.23	0.219
Sad	0.79	0.38 – 1.66		-0.62	0.533
Autistic traits*Zygomaticus activity	1.26	0.76 – 2.10	0.81	0.90	0.367
Emotion category*Social anxiety traits			15.00		**0.005**
Angry	0.89	0.69 – 1.13		-0.96	0.335
Fearful	0.94	0.72 – 1.24		-0.42	0.672
Happy	1.01	0.54 – 1.90		0.05	0.964
Sad	1.37	1.09 – 1.71		2.72	**0.007**
Emotion category*Corrugator activity*Autistic traits			2.06		0.724
Angry	0.88	0.59 – 1.33		-0.60	0.552
Fearful	0.91	0.56 – 1.48		-0.37	0.714
Happy	1.58	0.55 – 4.55		0.84	0.399
Sad	0.77	0.52 – 1.13		-1.34	0.180
Emotion category*Zygomaticus activity*Autistic traits			3.96		0.412
Angry	0.67	0.32 – 1.43		-1.03	0.304
Fearful	0.85	0.38 – 1.93		-0.38	0.705
Happy	1.46	0.27 – 8.03		0.44	0.662
Sad	0.73	0.37 – 1.46		-0.88	0.378

Random Effects	
σ^2	3.29
$\tau_{00\ ID}$	0.18
$\tau_{00\ Stimulus}$	1.76
ICC	0.37
$N_{\ ID}$	95
$N_{\ Stimulus}$	50
Observations	4578
Marginal R^2 / Conditional R^2	0.371 / 0.604

Table S28

Results of the Linear Mixed-Effects Model Predicting Perceived Emotional Intensity by a three-way interaction between Emotion category, Autistic traits and gaussianized baseline-corrected, z-scored Corrugator activity, a three-way interaction between Emotion category, Autistic traits and

gaussianized baseline-corrected, z-scored Zygomaticus activity, a three-way interaction between Emotion category, Interoceptive Accuracy and gaussianized baseline-corrected, z-scored Corrugator activity, a three-way interaction between Emotion category, Interoceptive Accuracy and gaussianized baseline-corrected, z-scored Zygomaticus activity, and a two-way interaction between Emotion category and Social anxiety traits, and Alexithymia as control predictors

Predictors	*β*	*CI*	*F*	*t*	*p*
Intercept	-0.00	-0.13 – 0.12	0.00	-0.07	0.945
Emotion category			26.57		**<0.001**
Angry	-0.02	-0.24 – 0.19		-0.20	0.840
Fearful	0.25	0.04 – 0.47		2.40	**0.020**
Happy	0.88	0.67 – 1.10		8.18	**<0.001**
Sad	-0.39	-0.60 – -0.17		-3.64	**0.001**
Social anxiety traits	0.08	-0.01 – 0.16	3.38	1.84	0.069
Corrugator activity	-0.01	-0.04 – 0.03	0.28	-0.53	0.598
Autistic traits	0.05	-0.04 – 0.14	1.33	1.15	0.253
Zygomaticus activity	-0.00	-0.07 – 0.06	0.01	-0.11	0.909
Alexithymia	0.01	-0.07 – 0.10	0.12	0.34	0.734
Interoceptive sensibility	0.00	-0.08 – 0.08	0.00	0.04	0.969
Trait interoceptive accuracy	0.05	-0.04 – 0.14	1.25	1.12	0.267
Emotion category*Social anxiety traits			1.68		0.152
Angry	0.05	0.01 – 0.09		2.39	**0.017**
Fearful	-0.01	-0.05 – 0.03		-0.73	0.468
Happy	-0.02	-0.06 – 0.02		-1.13	0.260
Sad	0.01	-0.03 – 0.05		0.33	0.739
Emotion category*Corrugator activity			0.40		0.81
Angry	0.00	-0.06 – 0.07		0.15	0.882
Fearful	-0.01	-0.09 – 0.06		-0.38	0.704
Happy	-0.03	-0.10 – 0.04		-0.90	0.371
Sad	0.04	-0.04 – 0.11		1.00	0.318
Emotion category*Autistic traits			19.57		**<0.001**
Angry	-0.05	-0.10 – -0.01		-2.26	**0.024**
Fearful	-0.04	-0.09 – 0.00		-1.93	0.054
Happy	-0.07	-0.13 – -0.01		-2.31	**0.021**
Sad	-0.03	-0.08 – 0.01		-1.45	0.146
Corrugator activity*Autistic traits	-0.05	-0.08 – -0.01	6.15	-2.48	**0.013**
Emotion category*Zygomaticus activity			1.56		0.182
Angry	0.05	-0.09 – 0.18		0.65	0.514
Fearful	0.07	-0.07 – 0.21		1.00	0.318
Happy	0.09	-0.04 – 0.21		1.37	0.170
Sad	-0.08	-0.21 – 0.06		-1.11	0.269
Autistic traits*Zygomaticus activity	-0.08	-0.14 – -0.01	4.90	-2.21	**0.027**
Emotion category*Interoceptive sensibility			1.11		0.348
Angry	0.00	-0.04 – 0.04		0.15	0.880
Fearful	0.01	-0.02 – 0.05		0.74	0.460

Happy	-0.01	-0.05 – 0.03		-0.34	0.736
Sad	0.03	-0.01 – 0.06		1.28	0.202
Emotion category*Trait interoceptive accuracy			7.48		**<0.001**
Angry	-0.03	-0.07 – 0.01		-1.33	0.184
Fearful	-0.04	-0.09 – -0.00		-2.00	**0.045**
Happy	-0.06	-0.11 – -0.00		-2.07	**0.039**
Sad	0.02	-0.02 – 0.07		0.92	0.357
Corrugator activity*Trait interoceptive accuracy	0.00	-0.04 – 0.04	0.00	0.05	0.960
Zygomaticus activity*Trait interoceptive accuracy	0.10	0.03 – 0.18	8.06	2.84	**0.005**
Emotion category*Corrugator activity*Autistic traits			1.19		0.314
Angry	0.00	-0.07 – 0.07		0.03	0.972
Fearful	-0.00	-0.07 – 0.07		-0.07	0.947
Happy	0.03	-0.04 – 0.10		0.93	0.350
Sad	0.05	-0.02 – 0.12		1.34	0.179
Emotion category*Zygomaticus activity*Autistic traits			0.75		0.557
Angry	0.05	-0.08 – 0.18		0.75	0.452
Fearful	-0.03	-0.16 – 0.10		-0.40	0.689
Happy	0.02	-0.11 – 0.14		0.28	0.782
Sad	0.06	-0.07 – 0.19		0.92	0.359
Emotion category*Corrugator activity*Interoceptive accuracy			1.14		0.338
Angry	0.05	-0.02 – 0.11		1.38	0.167
Fearful	-0.05	-0.13 – 0.02		-1.39	0.164
Happy	0.02	-0.05 – 0.10		0.64	0.525
Sad	0.02	-0.05 – 0.10		0.64	0.523
Emotion category*Zygomaticus activity*Interoceptive accuracy			1.17		0.323
Angry	0.06	-0.09 – 0.21		0.76	0.450
Fearful	-0.09	-0.23 – 0.04		-1.35	0.176
Happy	-0.07	-0.21 – 0.06		-1.05	0.296
Sad	-0.01	-0.15 – 0.13		-0.11	0.909

Random Effects

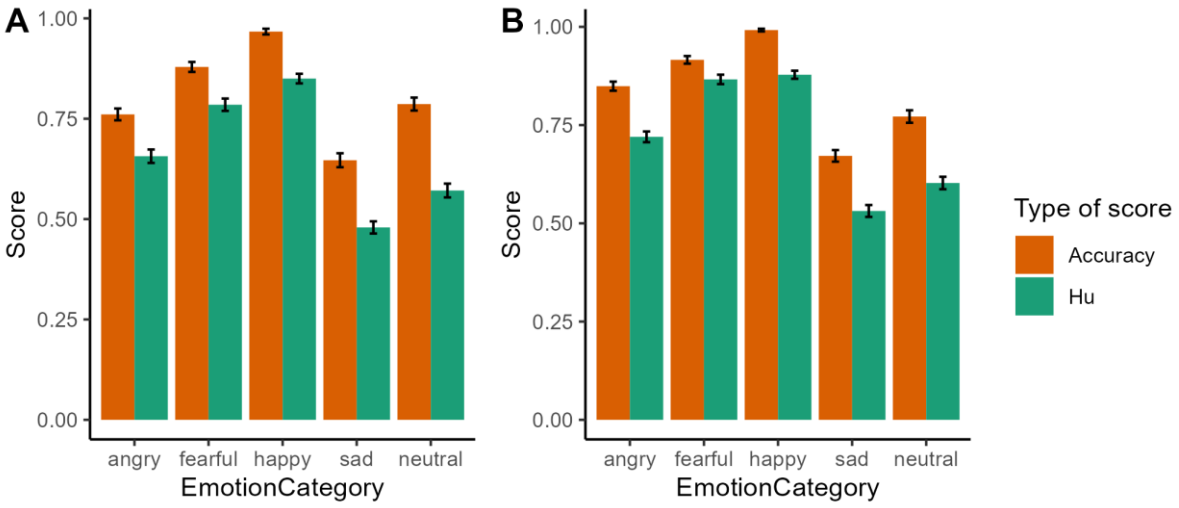
σ^2	0.41
$\tau_{00\ ID}$	0.13
$\tau_{00\ Stimulus}$	0.14
ICC	0.39
N_{ID}	95
$N_{Stimulus}$	50
Observations	4587
Marginal R^2 / Conditional R^2	0.331 / 0.594

Response Biases in the Prediction of Emotion Recognition Accuracy

Individual response biases in categorical judgments, such as on emotional facial expressions, can have a systematic influence on performance evaluations for the involved categories (Wagner, 1993). In order to investigate potential systematic effects of response biases in evaluating emotion recognition accuracy in the two current experiments, we calculated each participant's H_u scores (i.e., Wagner's Unbiased Hit Rate) for each emotion category, as well as mean accuracy scores for each emotion category (as subject-level reference to the H_u scores, see Figure S2 for a visualization). We then fitted two separate linear mixed-effects models with the respective score as outcome, the same fixed effects structure as in the original analysis in which we examined the relation between autistic traits and emotion recognition accuracy, and a random intercept for Participant ID (i.e., Score ~ EmotionCategory*Autistic traits + EmotionCategory*Social anxiety traits + Alexithymia + (1|Participant ID)). To compare the coefficients for specific emotion categories, we obtained standardized betas.

Figure S2

Mean Accuracy Scores and Unbiased Hit Rate Scores (H_u) by Emotion Category in the Online Study (Experiment 1, A) and the Lab Study (Experiment 2, B)



Experiment 1 (online): The effect of interest, namely the interaction between *Emotion category* and *Autistic traits*, was only close to significance ($p = .055$) in the prediction of mean accuracy scores. This could reflect the reduced power by taking average scores. The standardized beta coefficient for the recognition of angry facial expression was negative and robustly below 0, β = -0.22, CI [-0.37,-0.07], comparable to the main analysis. While the interaction between *Emotion category* and *Autistic traits* was not significant in the prediction of H_u scores ($p = .197$), the standardized beta coefficient for the recognition of angry facial expression was still negative and robustly below 0, β = -0.12, CI [-0.24,-0.01].

Experiment 2 (lab): The interaction between *Emotion category* and *Autistic traits* significantly predicted mean accuracy scores, $F(4,388) = 7.33$, $p < .001$. The standardized coefficient for sad facial expressions was negative and robustly below 0, β = -0.20, CI [-0.33,-0.08], indicating worse recognition of sad faces with higher autistic traits. The standardized coefficient for neutral facial expressions was positive and robustly above 0, β = 0.32, CI [0.19,0.45], indicating better recognition of neutral faces with higher autistic traits. In the model predicting H_u scores, the interaction between *Emotion category* and *Autistic traits* was only close to significance (p = .067). Similarly to the main analysis and the mean accuracy analysis, the standardized coefficient for neutral facial expressions was positive and robustly above 0, β = 0.14, CI [0.04,0.24]. The standardized beta coefficient for the recognition of sad facial expression was, however, close to 0, β = -0.01, CI [-0.12,-0.09], whereas the standardized beta coefficient for the recognition of fearful facial expression was negative, β = -0.20, CI [-0.20, 0.00].

References:

Wagner, H. L. (1993). On measuring performance in category judgment studies on nonverbal behavior. *Journal of Nonverbal Behavior, 17*(1), 3–28. https://doi.org/10.1007/BF00987006