Table S1. Model specification details for separate models of each response variable. Note that separate models were created for Field L and NCM, and any differences between these models are indicated in parentheses.

Response Variable	Model Distribution	Fixed Effects	Random Effects	Other notes
Baseline firing rate	Negative binomial 1 (NCM) or 2 (Field L)	Treatment+UnitType+ Mass+Hemisphere	Unit ID and Age (Field L model did not include Age)	One data point per presentation of each stimulus to each unit, duration of baseline period is 1s prior to stimulus onset
Stimulus-evoked firing rate	Negative binomial 1	Treatment* StimulusType+ UnitType (Field L model also included DaysPostFledge)	Unit ID and Bird ID (Field L model did not include Bird ID)	One data point per presentation of each stimulus to each unit, Offset term added to correct for duration of each stimulus
Latency	Gamma	Treatment* StimulusType+ UnitType	Unit ID (Field L model included Mass)	One data point per unit-stimulus combination, Dispersion correction factor added
Z-score	Gaussian	Treatment* StimulusType+ UnitType+Hemisphere	Unit ID and Bird ID (Field L model included Mass instead of Bird ID)	One data point per unit-stimulus combination, removed outliers with scaled residuals <0 or >1
Proportion responsive	Binomial	Treatment* StimulusType+ UnitType+DaysPostFledge (Field L model did not include DaysPostFledge, but	Unit ID and Age (Field L model also included Mass)	One data point per unit-stimulus combination

		did include Hemisphere)		
d'	Gaussian	Treatment* StimulusType+ UnitType+Hemisphere	Unit ID and Bird ID (Field L model included Mass and Clutch ID instead of Bird ID)	One data point per unit-song stimulus combination, removed outliers with scaled residuals <0 or >1 for Field L model
R_{corr} accuracy (normalized)	Gaussian	Treatment* StimulusType+ UnitType+Hemisphere	Unit ID and Mass	One data point per unit-stimulus combination, removed outliers with scaled residuals <0 or >1

Table S2. Baseline firing rate results from negative binomial models and post hoc tests for Field L and NCM. Estimates are reported on the log link scale.

Field L			
	Coefficient estimate ± SE	Z	P
Conditional model			
Mass	**0.12 ± 0.04**	**3.65**	**<0.001**
Hemisphere.Right	**-0.26 ± 0.10**	**-2.79**	**<0.01**
UnitType.NS	0.14 ± 0.10	1.48	0.14
Post hoc tests		t_{11506}	
Normal - isolate	**-0.66 ± 0.13**	**-5.11**	**<0.0001**
Normal - xfostered	**-0.82 ± 0.11**	**-7.23**	**<0.0001**
Isolate - xfostered	-0.15 ± 0.12	-1.30	0.40
NCM			
	Coefficient estimate ± SE	Z	P
Conditional model			
Hemisphere.Right	**-0.25 ± 0.10**	**-2.51**	**0.01**
Post hoc tests		t_{9768}	
Normal - isolate	**-0.71 ± 0.16**	**-4.49**	**<0.001**
Normal - xfostered	**-0.35 ± 0.14**	**-2.52**	**0.03**
Isolate - xfostered	0.36 ± 0.18	2.00	0.11
BS - NS1	**-0.32 ± 0.13**	**-2.39**	**0.04**
BS - NS2	**-0.49 ± 0.13**	**-3.88**	**<0.001**
NS1 - NS2	-0.18 ± 0.17	-1.03	0.56

Table S3. Stimulus-evoked firing rate results from negative binomial models and post hoc tests for Field L and NCM. Estimates are reported on the log link scale.

Field L			
	Coefficient estimate ± SE	Z	P
Conditional model			
Days Post Fledge	**0.15 ± 0.04**	**3.95**	**<0.0001**
UnitType.NS	**0.45 ± 0.08**	**5.46**	**<0.0001**
Post hoc tests		Z ratio	
Normal - isolate	-0.20 ± 0.13	-1.85	0.16
Normal - xfostered	**-0.23 ± 0.09**	**-2.46**	**0.04**
Isolate - xfostered	-0.03 ± 0.15	0.65	0.80
Normal			
Father ZEFI - Unfamiliar BEFI	**0.22 ± 0.02**	**12.16**	**<0.0001**
Father ZEFI - Unfamiliar ZEFI	0.01 ± 0.02	0.38	0.98
Father ZEFI - White Noise	**0.58 ± 0.02**	**23.90**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	**-0.21 ± 0.02**	**-11.18**	**<0.0001**
Unfamiliar BEFI - White Noise	**0.36 ± 0.02**	**15.96**	**<0.0001**
Unfamiliar ZEFI - White Noise	**0.57 ± 0.02**	**23.00**	**<0.0001**
Xfostered			
Father ZEFI - Unfamiliar BEFI	**0.06 ± 0.02**	**2.53**	**0.05**
Father ZEFI - Unfamiliar ZEFI	**0.11 ± 0.02**	**5.00**	**<0.0001**
Father ZEFI - White Noise	**0.54 ± 0.02**	**22.98**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	**0.06 ± 0.01**	**4.41**	**0.0001**
Unfamiliar BEFI - White Noise	**0.48 ± 0.02**	**30.29**	**<0.0001**
Unfamiliar ZEFI - White Noise	**0.43 ± 0.02**	**28.48**	**<0.0001**
Isolate			
Father ZEFI - Unfamiliar BEFI	0.02 ± 0.02	0.88	0.81
Father ZEFI - Unfamiliar ZEFI	**-0.14 ± 0.02**	**-5.80**	**<0.0001**
Father ZEFI - White Noise	**0.45 ± 0.03**	**16.71**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	**-0.16 ± 0.02**	**-7.71**	**<0.0001**
Unfamiliar BEFI - White Noise	**0.43 ± 0.02**	**18.06**	**<0.0001**
Unfamiliar ZEFI - White Noise	**0.58 ± 0.03**	**22.21**	**<0.0001**

NCM			
Post hoc tests	Coefficient estimate ± SE	Z ratio	P
Normal - isolate	**-0.52 ± 0.21**	**-2.52**	**0.03**
Normal - xfostered	-0.17 ± 0.16	-1.06	0.54
Isolate - xfostered	0.35 ± 0.20	1.71	0.20
BS - NS1	**-0.36 ± 0.11**	**-3.22**	**<0.01**
BS - NS2	**-0.41 ± 0.11**	**-3.81**	**<0.001**

NS1 - NS2	-0.05 ± 0.15	-0.37	0.93
Normal			
Father ZEFI - Unfamiliar BEFI	0.02 ± 0.02	0.94	0.78
Father ZEFI - Unfamiliar ZEFI	**-0.08 ± 0.02**	**-3.48**	**<0.01**
Father ZEFI - White Noise	**0.93 ± 0.03**	**32.15**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	**-0.10 ± 0.02**	**-4.87**	**<0.0001**
Unfamiliar BEFI - White Noise	**0.91 ± 0.03**	**33.85**	**<0.0001**
Unfamiliar ZEFI - White Noise	**1.01 ± 0.03**	**34.25**	**<0.0001**
Xfostered			
Father ZEFI - Unfamiliar BEFI	**-0.13 ± 0.03**	**-4.23**	**0.0001**
Father ZEFI - Unfamiliar ZEFI	**0.13 ± 0.03**	**4.01**	**<0.001**
Father ZEFI - White Noise	**0.68 ± 0.03**	**19.67**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	**0.26 ± 0.02**	**13.74**	**<0.0001**
Unfamiliar BEFI - White Noise	**0.81 ± 0.02**	**32.89**	**<0.0001**
Unfamiliar ZEFI - White Noise	**0.55 ± 0.02**	**22.85**	**<0.0001**
Isolate			
Father ZEFI - Unfamiliar BEFI	**0.10 ± 0.03**	**2.90**	**0.02**
Father ZEFI - Unfamiliar ZEFI	-0.06 ± 0.04	-1.73	0.31
Father ZEFI - White Noise	**0.32 ± 0.04**	**8.26**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	**-0.15 ± 0.04**	**-4.91**	**<0.0001**
Unfamiliar BEFI - White Noise	**0.23 ± 0.03**	**6.62**	**<0.0001**
Unfamiliar ZEFI - White Noise	**0.38 ± 0.04**	**9.89**	**<0.0001**

Table S4. Latency results from gamma models and post hoc tests for Field L and NCM. Estimates are reported on the log link scale.

Field L			
	Coefficient estimate ± SE	Z	P
Conditional model			
UnitType.NS	**-0.26 ± 0.07**	**-3.66**	**<0.001**
Post hoc tests	Coefficient estimate ± SE	Z ratio	P
Normal - isolate	**-0.57 ± 0.17**	**-4.91**	**<0.0001**
Normal - xfostered	*-0.45 ± 0.22*	*-2.10*	*0.09*
Isolate - xfostered	0.12 ± 0.23	0.53	0.86
Normal			
Father ZEFI - Unfamiliar BEFI	-0.16 ± 0.13	-1.27	0.58
Father ZEFI - Unfamiliar ZEFI	0.06 ± 0.15	0.36	0.98
Father ZEFI - White Noise	0.10 ± 0.16	0.59	0.94
Unfamiliar BEFI - Unfamiliar ZEFI	0.22 ± 0.13	1.67	0.34
Unfamiliar BEFI - White Noise	0.26 ± 0.14	1.88	0.24
Unfamiliar ZEFI - White Noise	0.04 ± 0.16	0.25	0.99
Xfostered			
Father ZEFI - Unfamiliar BEFI	**0.54 ± 0.20**	**2.79**	**0.03**
Father ZEFI - Unfamiliar ZEFI	0.23 ± 0.18	1.29	0.57
Father ZEFI - White Noise	*0.52 ± 0.21*	*2.50*	*0.06*
Unfamiliar BEFI - Unfamiliar ZEFI	**-0.10 ± 0.12**	**-2.55**	**0.05**
Unfamiliar BEFI - White Noise	-0.02 ± 0.18	-0.22	1
Unfamiliar ZEFI - White Noise	0.28 ± 0.17	1.67	0.33
Isolate			
Father ZEFI - Unfamiliar BEFI	-0.01 ± 0.13	-0.11	1
Father ZEFI - Unfamiliar ZEFI	-0.20 ± 0.16	-1.22	0.61
Father ZEFI - White Noise	-0.12 ± 0.15	-0.78	0.86
Unfamiliar BEFI - Unfamiliar ZEFI	-0.19 ± 0.15	-1.26	0.59
Unfamiliar BEFI - White Noise	-0.11 ± 0.14	-0.78	0.86
Unfamiliar ZEFI - White Noise	0.08 ± 0.17	0.48	0.96

NCM			
Post hoc tests	Coefficient estimate ± SE	Z ratio	P
Normal - isolate	0.03 ± 0.10	0.252	0.97
Normal - xfostered	**-0.35 ± 0.09**	**-4.01**	**<0.001**
Isolate - xfostered	**-0.37 ± 0.10**	**-3.73**	**<0.001**
BS - NS1	*0.23 ± 0.11*	*2.17*	*0.08*
BS - NS2	0.03 ± 0.10	0.32	0.94
NS1 - NS2	-0.20 ± 0.14	-1.47	0.30

Normal			
Father ZEFI - Unfamiliar BEFI	0.23 ± 0.12	1.92	0.22
Father ZEFI - Unfamiliar ZEFI	0.26 ± 0.14	1.84	0.26
Father ZEFI - White Noise	0.23 ± 0.17	1.34	0.54
Unfamiliar BEFI - Unfamiliar ZEFI	0.03 ± 0.14	0.18	1
Unfamiliar BEFI - White Noise	0.00 ± 0.17	-0.03	1
Unfamiliar ZEFI - White Noise	-0.03 ± 0.18	-0.17	1
Xfostered			
Father ZEFI - Unfamiliar BEFI	**0.46 ± 0.18**	**2.53**	**0.05**
Father ZEFI - Unfamiliar ZEFI	0.14 ± 0.17	0.81	0.85
Father ZEFI - White Noise	**0.66 ± 0.21**	**3.21**	**0.01**
Unfamiliar BEFI - Unfamiliar ZEFI	**-0.32 ± 0.12**	**-2.75**	**0.03**
Unfamiliar BEFI - White Noise	0.20 ± 0.16	1.28	0.57
Unfamiliar ZEFI - White Noise	**0.52 ± 0.15**	**3.51**	**<0.01**
Isolate			
Father ZEFI - Unfamiliar BEFI	-0.10 ± 0.16	-0.61	0.93
Father ZEFI - Unfamiliar ZEFI	-0.16 ± 0.18	-0.86	0.83
Father ZEFI - White Noise	0.24 ± 0.20	1.16	0.65
Unfamiliar BEFI - Unfamiliar ZEFI	-0.06 ± 0.17	-0.35	0.99
Unfamiliar BEFI - White Noise	0.33 ± 0.19	1.75	0.30
Unfamiliar ZEFI - White Noise	0.39 ± 0.21	1.88	0.24

Table S5. Z-score results from gaussian models and post hoc tests for Field L and NCM. Estimates are reported on the response scale.

Field L			
	Coefficient estimate ± SE	Z	P
Conditional model			
Hemisphere.Right	**0.54 ± 0.10**	**5.71**	**<0.0001**
UnitType.NS	**0.55 ± 0.09**	**5.93**	**<0.0001**
Post hoc tests		t_{779}	
Normal - isolate	**0.40 ± 0.16**	**2.56**	**0.03**
Normal - xfostered	0.22 ± 0.33	0.67	0.78
Isolate - xfostered	-0.18 ± 0.34	-0.53	0.85
Normal			
Father ZEFI - Unfamiliar BEFI	**0.38 ± 0.10**	**4.09**	**<0.001**
Father ZEFI - Unfamiliar ZEFI	**0.34 ± 0.11**	**3.10**	**0.01**
Father ZEFI - White Noise	**0.99 ± 0.11**	**9.04**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	-0.05 ± 0.10	-0.49	0.97
Unfamiliar BEFI - White Noise	**0.60 ± 0.10**	**6.38**	**<0.0001**
Unfamiliar ZEFI - White Noise	**0.65 ± 0.11**	**5.94**	**<0.0001**
Xfostered			
Father ZEFI - Unfamiliar BEFI	-0.12 ± 0.14	-0.15	0.83
Father ZEFI - Unfamiliar ZEFI	0.04 ± 0.14	0.27	0.99
Father ZEFI - White Noise	**1.08 ± 0.14**	**7.82**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	0.15 ± 0.09	1.77	0.29
Unfamiliar BEFI - White Noise	**1.20 ± 0.10**	**12.53**	**<0.0001**
Unfamiliar ZEFI - White Noise	**1.04 ± 0.09**	**11.91**	**<0.0001**
Isolate			
Father ZEFI - Unfamiliar BEFI	0.18 ± 0.12	1.53	0.42
Father ZEFI - Unfamiliar ZEFI	-0.31 ± 0.14	-2.22	0.12
Father ZEFI - White Noise	**0.81 ± 0.14**	**5.81**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	**-0.49 ± 0.12**	**-4.15**	**<0.001**
Unfamiliar BEFI - White Noise	**0.62 ± 0.12**	**5.23**	**<0.0001**
Unfamiliar ZEFI - White Noise	**1.11 ± 0.14**	**8.16**	**<0.0001**

NCM			
	Coefficient estimate ± SE	Z	P
Conditional Model			
Hemisphere.Right	**0.33 ± 0.08**	**3.89**	**<0.001**
Post hoc tests	Coefficient estimate ± SE	t_{655}	P
Normal - isolate	0.19 ± 0.20	0.96	0.60
Normal - xfostered	**0.42 ± 0.16**	**2.70**	**0.02**

Isolate - xfostered	0.23 ± 0.20	1.16	0.48
BS - NS1	**-0.29 ± 0.11**	**-2.63**	**0.02**
BS - NS2	0.04 ± 0.11	0.35	0.94
NS1 - NS2	*0.33 ± 0.14*	*2.29*	*0.06*
Normal			
Father ZEFI - Unfamiliar BEFI	**0.25 ± 0.09**	**2.90**	**0.02**
Father ZEFI - Unfamiliar ZEFI	0.19 ± 0.10	1.89	0.23
Father ZEFI - White Noise	**1.49 ± 0.10**	**14.92**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	-0.06 ± 0.09	-0.73	0.88
Unfamiliar BEFI - White Noise	**1.24 ± 0.09**	**14.22**	**<0.0001**
Unfamiliar ZEFI - White Noise	**1.30 ± 0.10**	**13.04**	**<0.0001**
Xfostered			
Father ZEFI - Unfamiliar BEFI	*-0.39 ± 0.17*	*-2.32*	*0.09*
Father ZEFI - Unfamiliar ZEFI	0.05 ± 0.16	0.32	0.99
Father ZEFI - White Noise	**0.78 ± 0.17**	**4.65**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	**0.44 ± 0.09**	**4.96**	**<0.0001**
Unfamiliar BEFI - White Noise	**1.16 ± 0.10**	**11.81**	**<0.0001**
Unfamiliar ZEFI - White Noise	**0.72 ± 0.09**	**8.18**	**<0.0001**
Isolate			
Father ZEFI - Unfamiliar BEFI	0.20 ± 0.15	1.41	0.49
Father ZEFI - Unfamiliar ZEFI	-0.18 ± 0.17	-1.09	0.69
Father ZEFI - White Noise	**0.56 ± 0.17**	**3.32**	**0.01**
Unfamiliar BEFI - Unfamiliar ZEFI	**-0.39 ± 0.15**	**-2.67**	**0.04**
Unfamiliar BEFI - White Noise	*0.35 ± 0.15*	*2.43*	*0.07*
Unfamiliar ZEFI - White Noise	**0.74 ± 0.16**	**4.42**	**0.0001**

Table S6. Proportion responsive results from binomial models and post hoc tests for Field L and NCM. Estimates are reported on the log odds ratio scale.

Field L

	Coefficient estimate ± SE	Z	P
Conditional model			
Hemisphere.Right	**0.91 ± 0.29**	**3.10**	**<0.01**
UnitType.NS	**0.90 ± 0.29**	**3.12**	**<0.01**
Post hoc tests		Z ratio	
Normal - isolate	1.10 ± 0.61	1.38	0.17
Normal - xfostered	0.37 ± 0.90	0.42	0.91
Isolate - xfostered	-0.73 ± 1.03	-0.71	0.76
Normal			
Father ZEFI - Unfamiliar BEFI	0.51 ± 0.52	0.98	0.76
Father ZEFI - Unfamiliar ZEFI	0.18 ± 0.61	0.30	0.99
Father ZEFI - White Noise	**2.64 ± 0.57**	**4.62**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	-0.32 ± 0.50	-0.65	0.92
Unfamiliar BEFI - White Noise	**2.13 ± 0.45**	**4.75**	**<0.0001**
Unfamiliar ZEFI - White Noise	**2.46 ± 0.55**	**4.44**	**0.0001**
Xfostered			
Father ZEFI - Unfamiliar BEFI	0.44 ± 0.89	0.49	0.96
Father ZEFI - Unfamiliar ZEFI	1.00 ± 0.87	1.15	0.67
Father ZEFI - White Noise	**3.31 ± 0.88**	**3.75**	**0.001**
Unfamiliar BEFI - Unfamiliar ZEFI	0.57 ± 0.42	1.33	0.54
Unfamiliar BEFI - White Noise	**2.88 ± 0.50**	**5.71**	**<0.0001**
Unfamiliar ZEFI - White Noise	**2.31 ± 0.44**	**5.28**	**<0.0001**
Isolate			
Father ZEFI - Unfamiliar BEFI	1.01 ± 0.66	1.53	0.42
Father ZEFI - Unfamiliar ZEFI	-0.85 ± 0.95	-0.89	0.81
Father ZEFI - White Noise	**2.99 ± 0.73**	**4.10**	**<0.001**
Unfamiliar BEFI - Unfamiliar ZEFI	-1.86 ± 0.83	-2.24	0.11
Unfamiliar BEFI - White Noise	**1.98 ± 0.53**	**3.73**	**0.001**
Unfamiliar ZEFI - White Noise	**3.84 ± 0.89**	**4.30**	**0.0001**

NCM

	Coefficient estimate ± SE	Z	P
Conditional Model			
Days Post Fledge	**0.62 ± 0.19**	**3.18**	**<0.01**
Post hoc tests	Coefficient estimate ± SE	Z ratio	P
Normal - isolate	-0.26 ± 0.38	-0.68	0.77
Normal - xfostered	**0.96 ± 0.32**	**3.12**	**<0.01**

Isolate - xfostered	**1.22 ± 0.41**	**2.96**	**<0.01**
BS - NS1	-0.53 ± 0.35	-1.51	0.29
BS - NS2	0.12 ± 0.32	0.38	0.92
NS1 - NS2	0.65 ± 0.45	1.46	0.31
Normal			
Father ZEFI - Unfamiliar BEFI	0.68 ± 0.48	1.43	0.48
Father ZEFI - Unfamiliar ZEFI	0.56 ± 0.54	1.05	0.72
Father ZEFI - White Noise	**3.72 ± 0.56**	**6.69**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	-0.12 ± 0.42	-0.28	0.99
Unfamiliar BEFI - White Noise	**3.04 ± 0.43**	**7.05**	**<0.0001**
Unfamiliar ZEFI - White Noise	**3.15 ± 0.50**	**6.30**	**<0.0001**
Xfostered			
Father ZEFI - Unfamiliar BEFI	-0.62 ± 0.71	-0.88	0.81
Father ZEFI - Unfamiliar ZEFI	0.99 ± 0.66	1.50	0.44
Father ZEFI - White Noise	**3.08 ± 0.72**	**4.28**	**0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	**1.61 ± 0.41**	**3.89**	**<0.001**
Unfamiliar BEFI - White Noise	**3.70 ± 0.53**	**6.96**	**<0.0001**
Unfamiliar ZEFI - White Noise	**2.09 ± 0.43**	**4.89**	**<0.0001**
Isolate			
Father ZEFI - Unfamiliar BEFI	0.66 ± 0.74	0.89	0.81
Father ZEFI - Unfamiliar ZEFI	0.36 ± 0.85	0.42	0.97
Father ZEFI - White Noise	**2.83 ± 0.81**	**3.50**	**<0.01**
Unfamiliar BEFI - Unfamiliar ZEFI	-0.30 ± 0.68	-0.44	0.97
Unfamiliar BEFI - White Noise	**2.17 ± 0.62**	**3.51**	**<0.01**
Unfamiliar ZEFI - White Noise	**2.47 ± 0.75**	**3.27**	**<0.01**

Table S7. Selectivity (d'$_{WhiteNoise}$) results from gaussian models and post hoc tests for Field L and NCM. Estimates are reported on the response scale.

Field L			
	Coefficient estimate ± SE	Z	P
Conditional model			
Hemisphere.Right	**0.89 ± 0.17**	**5.20**	**<0.0001**
UnitType.NS	**0.46 ± 0.17**	**2.74**	**<0.01**
Post hoc tests		t$_{597}$	
Normal - isolate	-0.66 ± 0.97	-0.67	0.78
Normal - xfostered	*-1.44 ± 0.70*	*-2.04*	*0.10*
Isolate - xfostered	-0.78 ± 0.94	-0.83	0.68
Normal			
Father ZEFI - Unfamiliar BEFI	**0.69 ± 0.12**	**5.88**	**<0.0001**
Father ZEFI - Unfamiliar ZEFI	*0.28 ± 0.14*	*2.04*	*0.10*
Unfamiliar BEFI - Unfamiliar ZEFI	**-0.42 ± 0.12**	**-3.55**	**<0.01**
Xfostered			
Father ZEFI - Unfamiliar BEFI	-0.19 ± 0.17	-1.16	0.48
Father ZEFI - Unfamiliar ZEFI	-0.00 ± 0.17	-0.01	1
Unfamiliar BEFI - Unfamiliar ZEFI	0.19 ± 0.10	1.86	0.15
Isolate			
Father ZEFI - Unfamiliar BEFI	0.17 ± 0.14	1.20	0.45
Father ZEFI - Unfamiliar ZEFI	**-0.42 ± 0.16**	**-2.56**	**0.03**
Unfamiliar BEFI - Unfamiliar ZEFI	**-0.59 ± 0.14**	**-4.16**	**0.0001**

NCM			
	Coefficient estimate ± SE	Z	P
Conditional Model			
Hemisphere.Right	**0.59 ± 0.22**	**2.74**	**<0.01**
Post hoc tests	Coefficient estimate ± SE	t$_{514}$	P
Normal - isolate	**1.26 ± 0.46**	**2.73**	**0.02**
Normal - xfostered	*0.74 ± 0.36*	*2.08*	*0.09*
Isolate - xfostered	-0.52 ± 0.45	-1.14	0.49
BS - NS1	-0.55 ± 0.28	-2.00	0.12
BS - NS2	0.12 ± 0.27	0.45	0.90
NS1 - NS2	0.67 ± 0.36	1.87	0.15
Normal			
Father ZEFI - Unfamiliar BEFI	*0.30 ± 0.13*	*2.30*	*0.06*
Father ZEFI - Unfamiliar ZEFI	0.05 ± 0.15	0.30	0.95

Unfamiliar BEFI - Unfamiliar ZEFI	-0.25 ± 0.13	-1.95	0.13
Xfostered			
Father ZEFI - Unfamiliar BEFI	-0.37 ± 0.25	-1.49	0.30
Father ZEFI - Unfamiliar ZEFI	0.28 ± 0.25	1.12	0.50
Unfamiliar BEFI - Unfamiliar ZEFI	**0.65 ± 0.13**	**4.89**	**<0.0001**
Isolate			
Father ZEFI - Unfamiliar BEFI	0.38 ± 0.22	1.72	0.20
Father ZEFI - Unfamiliar ZEFI	-0.12 ± 0.25	-0.46	0.89
Unfamiliar BEFI - Unfamiliar ZEFI	*-0.49 ± 0.22*	*-2.25*	*0.06*

Table S8. Normalized classification accuracy (based on R_{corr}) results from gaussian models and post hoc tests for Field L and NCM. Estimates are reported on the response scale.

Field L			
	Coefficient estimate ± SE	Z	P
Conditional model			
Hemisphere.Right	**0.07 ± 0.01**	**5.72**	**<0.0001**
UnitType.NS	**0.03 ± 0.01**	**2.67**	**<0.01**
Post hoc tests		t_{706}	
Normal - isolate	0.00 ± 0.02	0.08	1
Normal - xfostered	-0.05 ± 0.03	-1.53	0.28
Isolate - xfostered	-0.05 ± 0.03	-1.43	0.33
Normal			
Father ZEFI - Unfamiliar BEFI	0.02 ± 0.01	1.56	0.40
Father ZEFI - Unfamiliar ZEFI	0.00 ± 0.02	0.27	0.99
Father ZEFI - White Noise	**0.17 ± 0.02**	**10.77**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	-0.02 ± 0.01	-1.26	0.59
Unfamiliar BEFI - White Noise	**0.14 ± 0.02**	**9.56**	**<0.0001**
Unfamiliar ZEFI - White Noise	**0.16 ± 0.02**	**10.37**	**<0.0001**
Xfostered			
Father ZEFI - Unfamiliar BEFI	-0.03 ± 0.04	-0.89	0.81
Father ZEFI - Unfamiliar ZEFI	0.03 ± 0.03	0.89	0.99
Father ZEFI - White Noise	**0.24 ± 0.03**	**6.98**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	**0.06 ± 0.01**	**3.34**	**<0.01**
Unfamiliar BEFI - White Noise	**0.27 ± 0.02**	**14.65**	**<0.0001**
Unfamiliar ZEFI - White Noise	**0.21 ± 0.02**	**13.45**	**<0.0001**
Isolate			
Father ZEFI - Unfamiliar BEFI	**-0.05 ± 0.02**	**-2.98**	**0.02**
Father ZEFI - Unfamiliar ZEFI	*-0.05 ± 0.02*	*-2.36*	*0.09*
Father ZEFI - White Noise	**0.09 ± 0.02**	**5.08**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	0.00 ± 0.02	0.04	1
Unfamiliar BEFI - White Noise	**0.15 ± 0.02**	**9.62**	**<0.0001**
Unfamiliar ZEFI - White Noise	**0.14 ± 0.02**	**7.30**	**<0.0001**

NCM			
	Coefficient estimate ± SE	Z	P
Conditional Model			
Hemisphere.Right	**0.03 ± 0.01**	**2.07**	**0.04**
Post hoc tests	Coefficient estimate ± SE	t_{574}	P
Normal - isolate	**0.07 ± 0.02**	**3.19**	**<0.01**

Normal - xfostered	**0.06 ± 0.02**	**2.91**	**0.01**
Isolate - xfostered	-0.01 ± 0.03	-0.41	0.91
BS - NS1	-0.03 ± 0.02	-1.68	0.22
BS - NS2	**-0.04 ± 0.02**	**-2.44**	**0.04**
NS1 - NS2	-0.01 ± 0.02	-0.55	0.85
Normal			
Father ZEFI - Unfamiliar BEFI	-0.01 ± 0.02	-0.32	0.99
Father ZEFI - Unfamiliar ZEFI	-0.02 ± 0.02	-0.98	0.76
Father ZEFI - White Noise	**0.19 ± 0.02**	**9.98**	**<0.0001**
Unfamiliar BEFI - Unfamiliar ZEFI	-0.01 ± 0.02	-0.81	0.85
Unfamiliar BEFI - White Noise	**0.20 ± 0.02**	**11.82**	**<0.0001**
Unfamiliar ZEFI - White Noise	**0.21 ± 0.02**	**11.01**	**<0.0001**
Xfostered			
Father ZEFI - Unfamiliar BEFI	**-0.11 ± 0.03**	**-3.34**	**<0.01**
Father ZEFI - Unfamiliar ZEFI	-0.05 ± 0.03	-1.75	0.30
Father ZEFI - White Noise	**0.10 ± 0.03**	**3.06**	**0.01**
Unfamiliar BEFI - Unfamiliar ZEFI	**0.05 ± 0.02**	**2.94**	**0.02**
Unfamiliar BEFI - White Noise	**0.20 ± 0.02**	**10.51**	**<0.0001**
Unfamiliar ZEFI - White Noise	**0.15 ± 0.02**	**8.77**	**<0.0001**
Isolate			
Father ZEFI - Unfamiliar BEFI	-0.06 ± 0.03	-1.95	0.21
Father ZEFI - Unfamiliar ZEFI	-0.04 ± 0.04	-1.17	0.65
Father ZEFI - White Noise	0.07 ± 0.03	1.92	0.22
Unfamiliar BEFI - Unfamiliar ZEFI	0.02 ± 0.03	0.56	0.94
Unfamiliar BEFI - White Noise	**0.12 ± 0.03**	**4.16**	**<0.001**
Unfamiliar ZEFI - White Noise	**0.11 ± 0.03**	**3.06**	**0.01**