Table S1. The Groups Compared and Statistical Test Used in each experiment

Experiments	Statistical Test Used	Groups Compared	Parameters and velues
Exploration Duration in Sociality Test	One-way ANOVA	(a) exploration duration of small-bodied A. ocellaris in 1v0 Sociality Test	F(2,12)=854.2, *P*<0.0001
	One-way ANOVA	(b) exploration duration of large-bodied A. ocellaris in 1v0 Sociality Test	F(2,12)=136.1, *P*<0.0001
	One-way ANOVA	(c) exploration duration of small-bodied A. ocellaris in 1v4 Sociality Test,	F(2,12)=456.7, *P*<0.0001
	One-way ANOVA	(d) exploration duration of large-bodied A. ocellaris in 1v4 Sociality Test.	F(2,12)=239.6, *P*<0.0001
Frequency of Area Entries in Sociality Test	One-way ANOVA	(a) Frequency of area entries of small-bodied A. ocellaris in 1v0 Sociality Test	F(2,12)=0.137, *P*=0.981
	One-way ANOVA	(b) frequency of area entries of large-bodied A. ocellaris in 1v0 Sociality Test	F(2,12)=1.285, *P*=0.036
	One-way ANOVA	(c)frequency of area entries of small-bodied A. ocellaris in 1v4 Sociality Test	F(2,12)=0.077, *P*=0.995
	One-way ANOVA	(d) frequency of area entries of large-bodied A. ocellaris in 1v4 Sociality Test	F(2,12)=2.794, *P*=0.027
Social Preference Index in Sociality Test	One-way ANOVA	SG-1V0, SG-1V4 , LG-1V0, LG-1V4	F(3,16)=10.65, *P*=0.013
Exploration Duration in Cognition Ability Test	One-way ANOVA and Duncan's multiple comparison	Exploration duration of small-bodied A. ocellaris in Cognition Ability Test under the presence of stimulus fish across different regions	F(5,24)=127.5, *P*<0.0001 F(2,12)=745.0, *P*<0.0001
	One-way ANOVA and Duncan's multiple comparison	Exploration duration of small-bodied A. ocellaris in Cognition Ability Test without stimulus fish across different regions	F(5,24)=35.11, *P*<0.0001 F(2,12)=97.36, *P*<0.0001
	One-way ANOVA and Duncan's multiple comparison	Exploration duration of large-bodied A. ocellaris in Cognition Ability Test under the presence of stimulus fish across different regions	F(5,24)=19.33, *P*<0.0001 F(2,12)=114.8, *P*<0.0001
	One-way ANOVA and	Exploration duration of large-bodied A. ocellaris in Cognition Ability Test without stimulus fish across different regions	F(5,24)=136.0, *P*<0.0001

	Duncan’s multiple comparison	F(2,12)=630.2, *P*<0.0001