OBIWAN BEHAVIORAL ANALYSIS

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2020-12-03

Setup

May I suggest running `repro::automate()`? This will create a `Dockerfile` & `Makefile` based on every RMarkdown in this folder and the special yamls in them. add ENV DEBIAN_FRONTEND=noninteractive If you are unsure weather or not you have `git` `make` & `docker`.

```
## v Git is installed, don't worry.
```

```
## v Make is installed, don't worry.
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```
## v Docker is installed, don't worry.
```

Demographics

Summary statistics:

Table 1: AGE

group	mean	sd	min	max
Lean	-0.18	1.02	-1.50	2.36
Obese	0.07	1.00	-1.58	2.12

Table 2: BMI

group	mean	sd	min	max
Lean	22.37	1.83	18.6	24.8
Obese	35.49	3.21	30.5	44.1

Table 3: GENDER

gender	group	n
Men	Lean	12
Men	Obese	19
Women	Lean	14
Women	Obese	42

Table 4: Group

group	n
Lean	26
Obese	61

Description

Parametric Bootstrap Test method to evaluate significance of fixed effects in mixed-effects models (using MLE fit, nsim = 500) and Bayes Factor from mixed models (see Wagenmakers, 2007)

Pavlvovian Conditioning Task (Analysis: RT)

Formula = Latency ~ condition*group + age + gender + thirsty + hungry + (condition|id)
Latency = time to detect the target (ms) & condition = CS+ or CS-

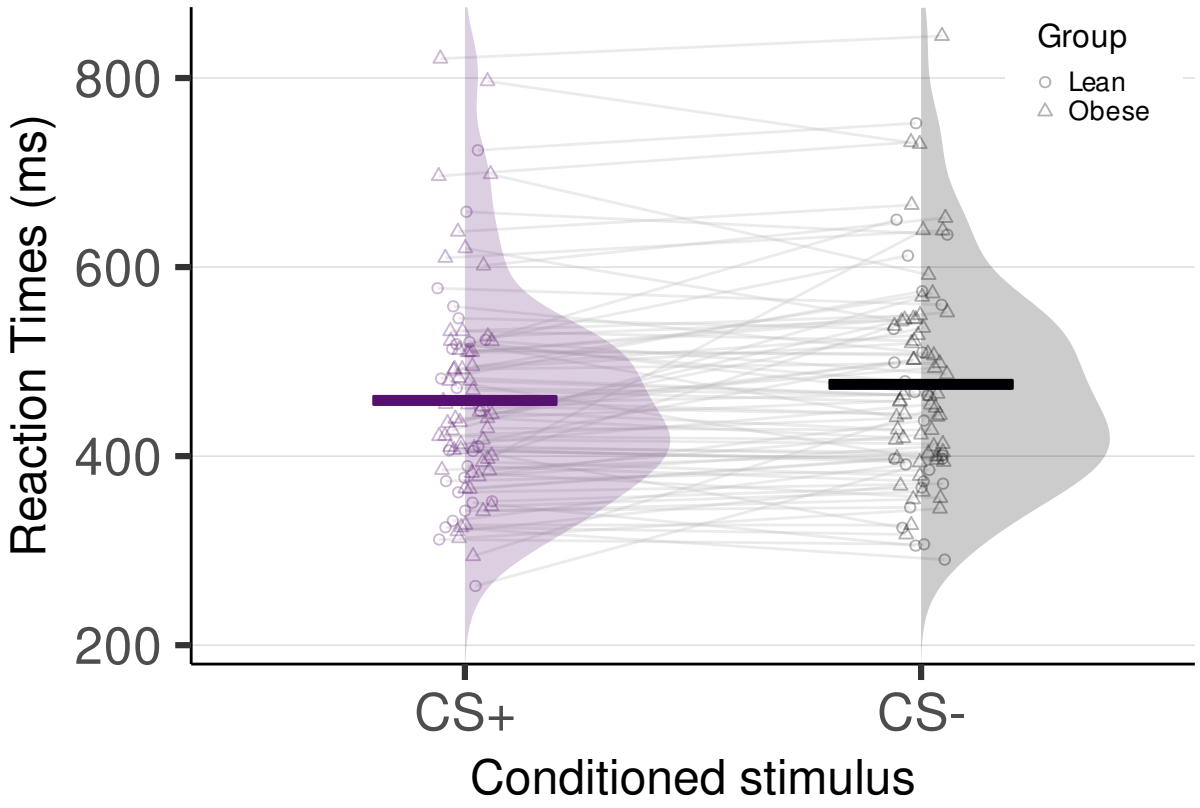
Table 5: Reaction Times

Predictors	Estimates	std. Error	CI
condition [1]	-6.463	3.212	-12.759 – -0.167
group [1]	-4.977	12.375	-29.231 – 19.277
age	26.710	12.586	2.041 – 51.378
gender [1]	-16.472	11.682	-39.369 – 6.426
thirsty	15.898	12.990	-9.561 – 41.357
hungry	0.740	13.354	-25.433 – 26.913
condition [1] * group [1]	2.304	3.226	-4.018 – 8.626
condition [1] * age	3.909	3.272	-2.503 – 10.321
condition [1] * gender[1]	2.194	3.042	-3.769 – 8.157
condition [1] * thirsty	3.150	3.419	-3.551 – 9.851
condition [1] * hungry	-2.532	3.495	-9.381 – 4.318

ICC	0.43
N id	87
Observations	3244
Marginal R2 / Conditional R2	0.046 / 0.452

Effect	df	MSE	F	p.value	PES	Lower CI	Upper CI	BF10
group	1, 81	21432.57	0.16	.687	0.00	0	0.04	1.38
age	1, 81	21432.57	4.40 *	.039	0.05	0	0.15	1.80
gender	1, 81	21432.57	1.93	.168	0.02	0	0.10	0.85
thirsty	1, 81	21432.57	1.41	.239	0.02	0	0.09	0.94
hungry	1, 81	21432.57	0.00	.961	0.00	0	NA	0.75
condition	1, 81	1673.26	3.70 +	.058	0.04	0	0.13	1.10
group:condition	1, 81	1673.26	0.58	.448	0.01	0	0.06	0.32
age:condition	1, 81	1673.26	1.11	.296	0.01	0	0.08	0.42
gender:condition	1, 81	1673.26	0.59	.444	0.01	0	0.07	0.34
thirsty:condition	1, 81	1673.26	0.77	.381	0.01	0	0.07	0.40
hungry:condition	1, 81	1673.26	0.99	.323	0.01	0	0.08	0.46

Reaction Times by condition



Analysis: Pleasantness Ratings (Pavlovian Cue)

Formula = Pleasantness ratings ~ condition*group + age + gender + thirsty + hungry + (1|id)
Ratings = how pleasant is the clue (0-100, no repetitions) & condition = CS+ or CS-

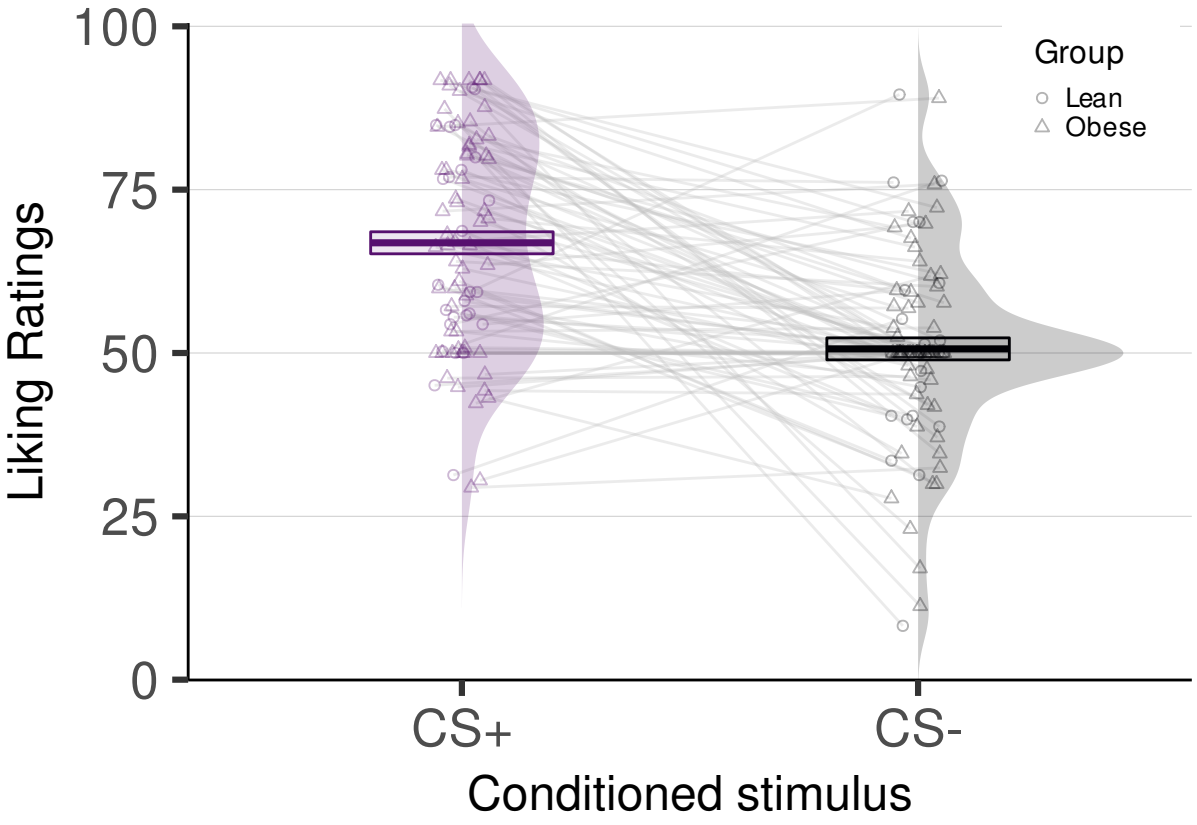
Table 6: Pleasantness Ratings (Pavlovian Cue)

Predictors	Estimates	std. Error	CI
condition [1]	7.446	1.287	4.905 – 9.987
group [1]	-0.629	1.289	-3.174 – 1.916
age	1.325	1.311	-1.265 – 3.915
gender [1]	0.828	1.217	-1.575 – 3.231
thirsty	-1.135	1.352	-3.804 – 1.534
hungry	4.316	1.390	1.571 – 7.061
condition [1] * group [1]	-0.999	1.289	-3.545 – 1.546
condition [1] * age	-0.535	1.311	-3.124 – 2.055
condition [1] * gender[1]	-0.936	1.217	-3.339 – 1.467
condition [1] * thirsty	-0.055	1.352	-2.724 – 2.614
condition [1] * hungry	3.435	1.390	0.690 – 6.180

Observations	174
R2 / R2 adjusted	0.306 / 0.259

Effect	df	MSE	F	p.value	PES	Lower CI	Upper CI	BF10
group	1, 81	225.68	0.24	.625	0.00	0.00	0.05	0.24
age	1, 81	225.68	1.03	.312	0.01	0.00	0.08	0.62
gender	1, 81	225.68	0.47	.496	0.01	0.00	0.06	0.2
thirsty	1, 81	225.68	0.71	.400	0.01	0.00	0.07	0.37
hungry	1, 81	225.68	9.77 **	.002	0.11	0.02	0.22	8.84
condition	1, 81	231.45	33.06 ***	<.001	0.29	0.16	0.41	9.94e+06
group:condition	1, 81	231.45	0.59	.443	0.01	0.00	0.07	0.36
age:condition	1, 81	231.45	0.16	.686	0.00	0.00	0.04	0.34
gender:condition	1, 81	231.45	0.58	.447	0.01	0.00	0.06	0.34
thirsty:condition	1, 81	231.45	0.00	.968	0.00	0.00	NA	0.34
hungry:condition	1, 81	231.45	6.03 *	.016	0.07	0.01	0.17	6.53

Pleasantness Ratings by condition (Pavlvovian Cue)



Instrumental Conditioning Task (Analysis)

Formula = Number of grips ~ trial*group +age + gender+ thirsty + hungry + (trial | id)
grips = number of times participant exceeded the force threshold to acquire the reward (Milkshake) Model Comparison between linear, quadratic and piecewise with spline at 5 regressions

Table 7: Model Fit Comparison

Model	BF10
trial * group + age + gender + thirsty + hungry + (trial | id)	1
trial + I(trial^2) * group + age + gender + thirsty + hungry + (trial + I(trial^2) | id)	4.06e+18
lspline(trial, 5) * group + age + gender + thirsty + hungry + (lspline(trial, 5) | id)	1.39e+19

Piecewise Regression with Splines has the best fit

Table 8: Number of grips

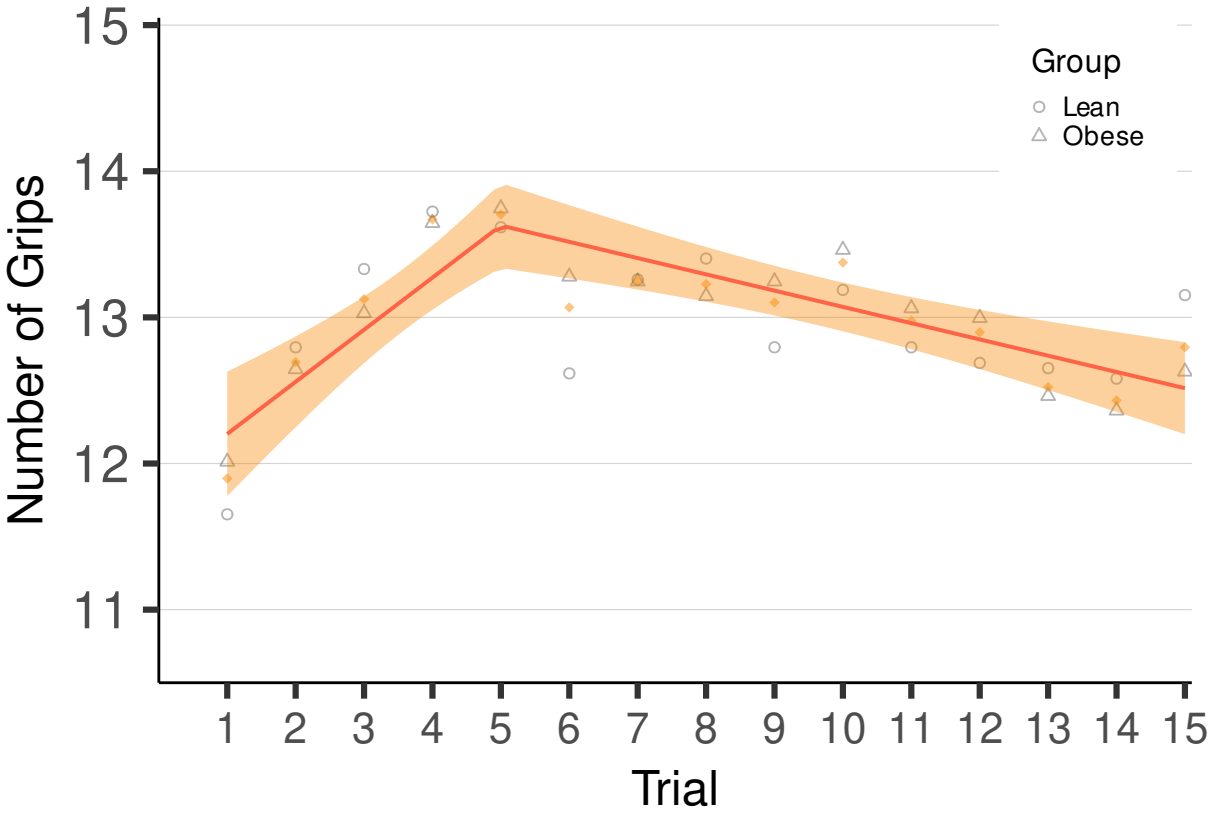
Predictors	Estimates	std. Error	CI
trial < 5	0.351	0.122	0.111 – 0.591
trial > 5	-0.114	0.030	-0.173 – -0.055
group[1]	-0.754	0.690	-2.106 – 0.598
age	-0.424	0.639	-1.677 – 0.828
gender[1]	0.863	0.603	-0.320 – 2.045
thirsty	0.587	0.667	-0.721 – 1.895
hungry	-1.227	0.678	-2.556 – 0.102
trial < 5 * group[1]	-0.025	0.122	-0.265 – 0.215
trial > 5 * group[1]	0.010	0.030	-0.049 – 0.069

ICC	0.85
N id	88
Observations	2112
Marginal R2 / Conditional R2	0.051 / 0.856

Table 9:

Effect	df	Chisq	p.value	BF10
trial < 5	1	17.24 ***	<.001	480
trial > 5	1	66.82 ***	<.001	2.04e+13
group	1	1.19	.276	0.55
age	1	1.66	.198	0.99
gender	1	2.05	.153	0.7
thirsty	1	0.37	.544	1
hungry	1	1.11	.292	0.84
trial < 5 * group	1	0.09	.769	0.11
trial > 5* group	1	0.53	.467	0.11

Number of Grips over time



Pavlvovian-Instrumental Transfer (PIT) Task (Analysis)

Formula = Mobilized effort ~ condition*group + age + gender+ thirsty + hungry + (condition|id)
Mobilized effort = Area under the curve of the force exerted exceeding the delivery threshold during Pavlvoian cue presentation

Table 10: Mobilized effort (a.u.)

Predictors	Estimates	std. Error	CI
condition [1]	2.620	2.195	-1.682 – 6.923
group [1]	-7.939	9.360	-26.284 – 10.406
age	20.535	9.132	2.637 – 38.432
gender [1]	15.014	9.101	-2.823 – 32.852
thirsty	6.145	9.498	-12.471 – 24.760
hungry	-8.180	9.887	-27.558 – 11.198
condition [1] * group [1]	-5.175	2.166	-9.420 – -0.930
condition [1] * age	-0.640	2.113	-4.782 – 3.501
condition [1] * gender[1]	2.087	2.106	-2.041 – 6.215
condition [1] * thirsty	-2.979	2.198	-7.287 – 1.328
condition [1] * hungry	4.501	2.288	0.017 – 8.985

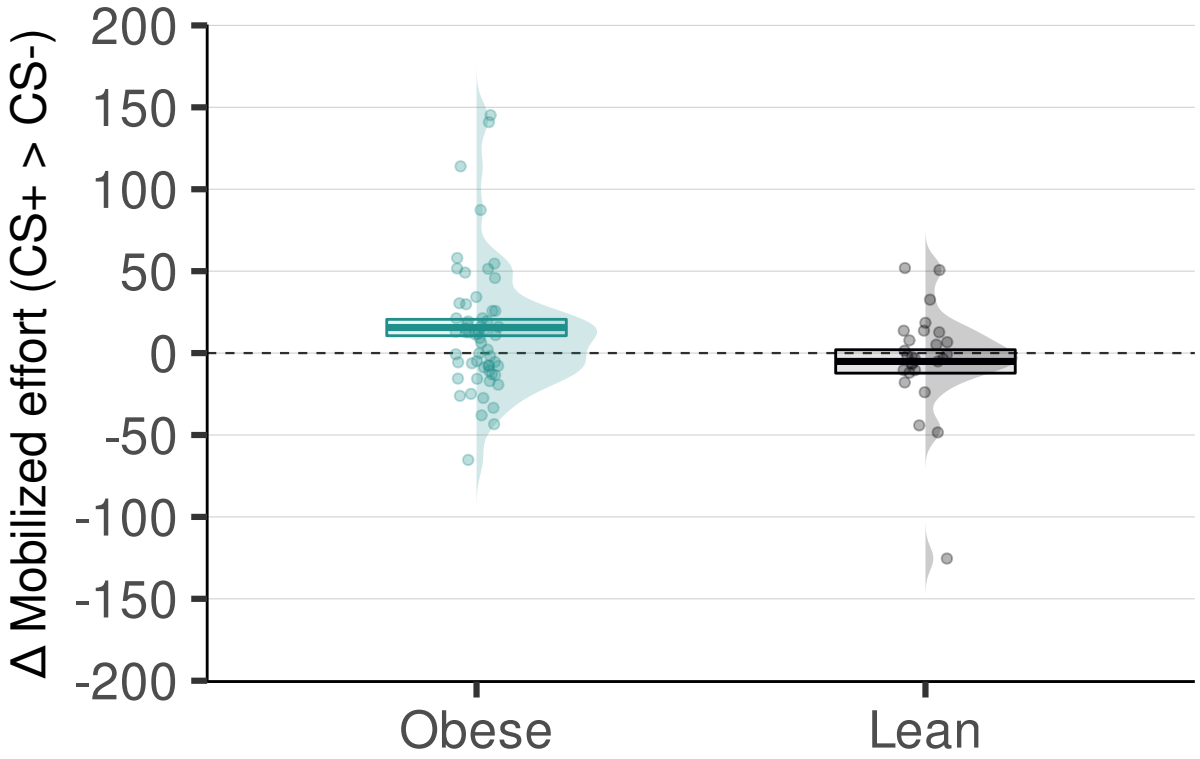
ICC	0.67
N id	86
Observations	2580
Marginal R2 / Conditional R2	0.074 / 0.691

Effect	df	MSE	F	p.value	PES	Lower CI	Upper CI	BF10
group	1, 80	12574.21	0.72	.399	0.01	0.00	0.07	0.53
age	1, 80	12574.21	5.06 *	.027	0.06	0.00	0.16	1.00
gender	1, 80	12574.21	2.72	.103	0.03	0.00	0.12	0.26
thirsty	1, 80	12574.21	0.42	.520	0.01	0.00	0.06	0.77
hungry	1, 80	12574.21	0.68	.410	0.01	0.00	0.07	0.25
condition	1, 80	673.32	1.42	.236	0.02	0.00	0.09	0.35
group:condition	1, 80	673.32	5.71 *	.019	0.07	0.01	0.17	2.78
age:condition	1, 80	673.32	0.09	.763	0.00	0.00	0.04	0.13
gender:condition	1, 80	673.32	0.98	.325	0.01	0.00	0.08	0.34
thirsty:condition	1, 80	673.32	1.84	.179	0.02	0.00	0.10	0.64
hungry:condition	1, 80	673.32	3.87 +	.053	0.05	0.00	0.14	0.50

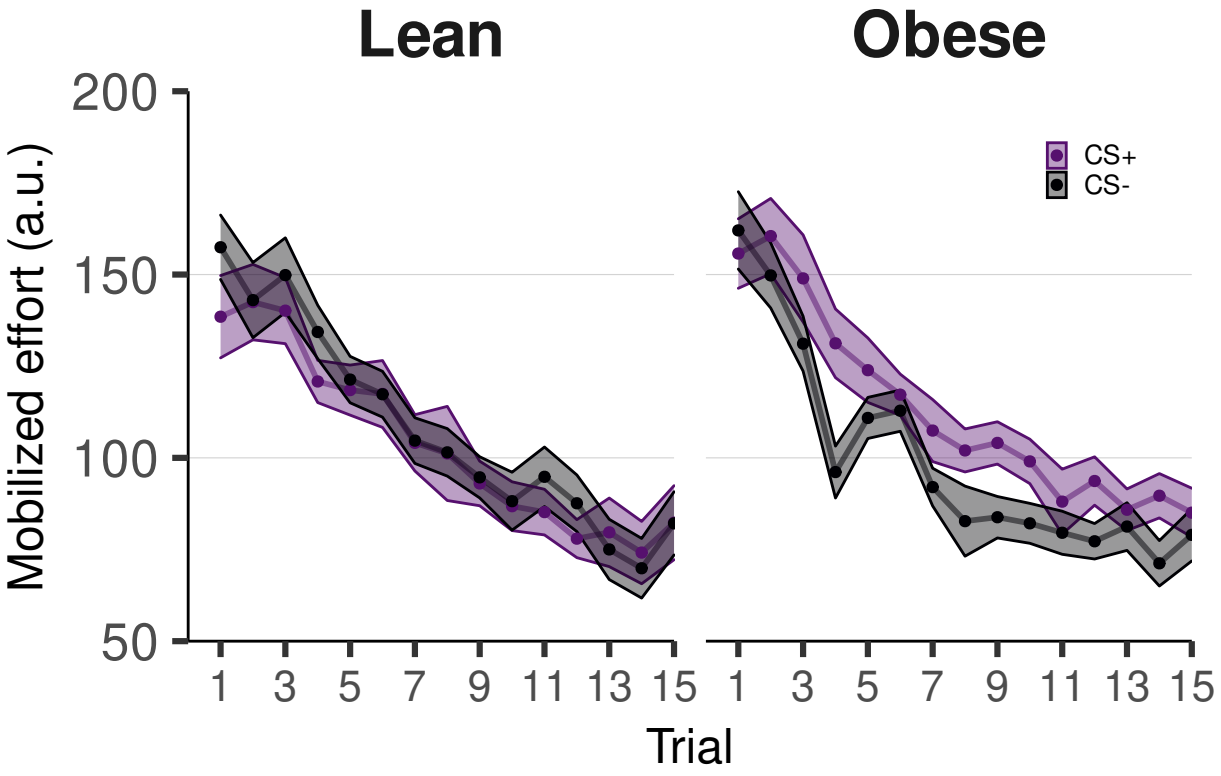
Table 11: Post-Hoc test CS+ > CS- by group (adjusted Tukey HSD)

contrast	group	estimate	SE	df	lower.CL	upper.CL	T	p.value
CS+ > CS-	Lean	-5.109	7.144	80	-19.327	9.109	-0.715	0.762
CS+ > CS-	Obese	15.591	5.005	80	5.631	25.550	3.115	0.001

Mobilized effort (AUC) difference (CS+ > CS-) by group



Mobilized effort (AUC) over time



Hedonic Reactivity Test (Analysis)

Formula = Pleasantness ratings ~ condition*group + age + gender+ thirsty + hungry + intensity + Error(id/condition)
Pleasantness ratings = how pleasant is the liquid solution rated (0-100, with repetitions) & condition = Milshake or Tasteless & intensity = difference on how intense the liquid solution were rated (mean(Milshake) - mean(Tasteless))

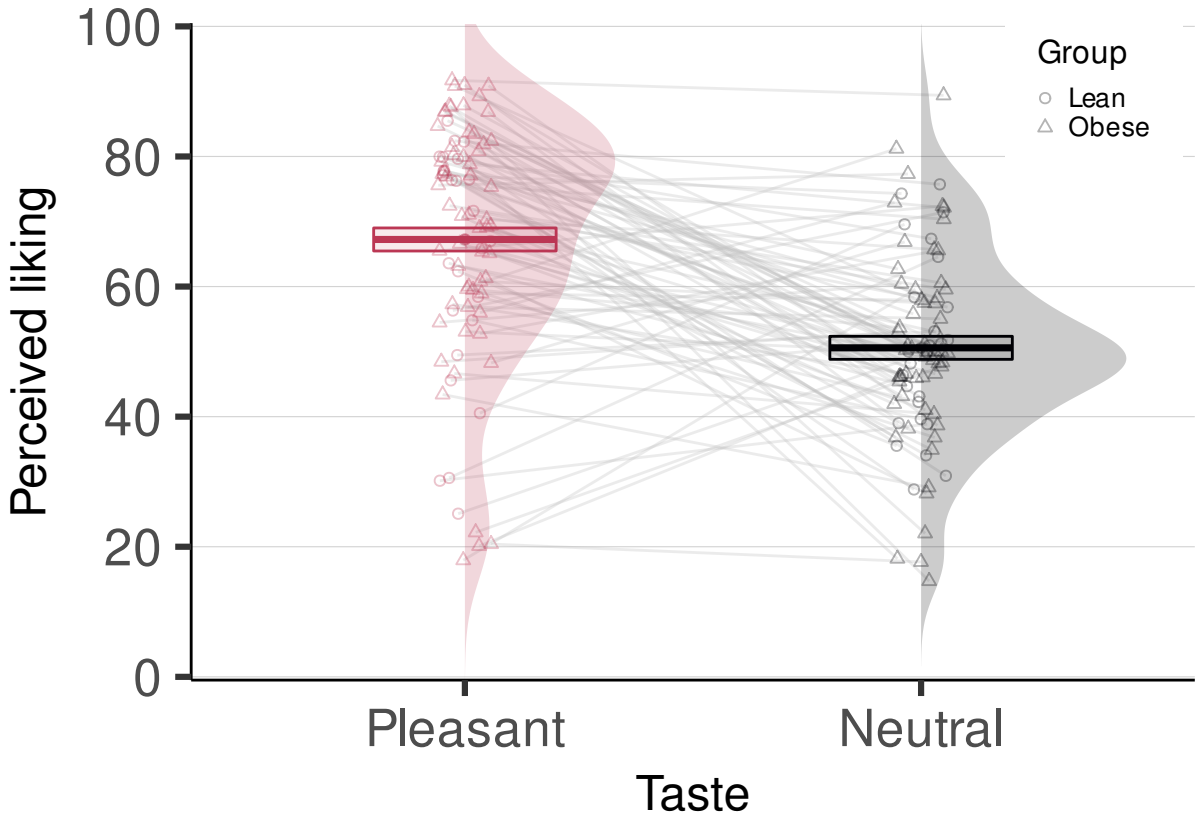
Table 12: Pleasantness ratings (taste)

Predictors	Estimates	std. Error	CI
condition [1]	7.910	1.366	5.233 – 10.587
group [1]	-1.149	1.465	-4.020 – 1.722
age	0.863	1.287	-1.659 – 3.384
gender [1]	-2.341	1.315	-4.919 – 0.237
thirsty	0.672	1.378	-2.030 – 3.373
hungry	1.549	1.421	-1.237 – 4.335
familiarity	-2.500	1.274	-4.997 – -0.003
intensity	-0.655	1.242	-3.090 – 1.780
condition [1] * group [1]	-1.059	1.366	-3.736 – 1.618
ICC	0.73		
N id	86		

Observations	3440
Marginal R2 / Conditional R2	0.186 / 0.781
NA	NA
NA	NA
NA	NA

Effect	df	MSE	F	p.value	PES	Lower CI	Upper CI	BF10
group	1, 79	270.48	0.65	.424	0.01	0.00	0.07	0.38
age	1, 79	270.48	0.53	.470	0.01	0.00	0.06	0.82
gender	1, 79	270.48	1.61	.208	0.02	0.00	0.10	0.51
thirsty	1, 79	270.48	0.00	.958	0.00	0.00	NA	0.67
hungry	1, 79	270.48	3.06 +	.084	0.04	0.00	0.13	1.5
intensity	1, 79	270.48	0.11	.744	0.00	0.00	0.04	0.71
condition	1, 79	247.69	35.67 ***	<.001	0.31	0.17	0.43	3.01e+07
group:condition	1, 79	247.69	2.60	.111	0.03	0.00	0.12	1.16
age:condition	1, 79	247.69	1.17	.282	0.01	0.00	0.08	1.08
gender:condition	1, 79	247.69	2.36	.128	0.03	0.00	0.11	1.24
thirsty:condition	1, 79	247.69	3.37 +	.070	0.04	0.00	0.13	2.03
hungry:condition	1, 79	247.69	6.44 *	.013	0.08	0.01	0.18	13.61
intensity:condition	1, 79	247.69	0.06	.802	0.00	0.00	0.03	0.41

Pleasantness Ratings (Taste) by condition



Pleasantness Ratings over time