

## Neural Activity Reveals Preferences Without Choices

By ALEC SMITH, B. DOUGLAS BERNHEIM, COLIN CAMERER, AND ANTONIO RANGEL

### Online Appendix

#### Instructions

This experiment has three parts. We will give you the instructions for each part just before you perform that part.

PART I. During this part, which will be performed inside the fMRI scanner, we will show you pictures of different food items, one at a time. Each item will appear for 2.75 seconds. In total we will show 130 different items, some of which will be repeated several times. It is important that you pay attention to the stimulus while it is on the screen. All of the food items used in the experiment are available for purchase at local grocery stores.

Why should you care about the pictures? Because at the end of the experiment we will ask you to eat one of the snacks shown.

There is a 50% probability that we will randomly select one of the trials from Part 1 and that you will have to eat 3 spoonfuls of the food item shown that trial. If the snack is not chosen from Part 1, it will be chosen from either Part 2 or 3, which we will tell you about later. Either way, you will eat one of the foods shown in the scanner.

Occasionally you will be asked whether a snack is “salty” or “sweet.” Please indicate your response using the buttons as directed by the experimenter.

PART II. During this part you will see 50 screens with pairs of food items that you saw in Part I. In every trial we want you to select the food item that you would prefer to eat. You will do this by a mouse click on the picture that you want to choose.

There is a 50% probability that a trial will be selected from this part of the experiment. If a trial is selected from part II, you will have to eat three spoonfuls of whatever item you select from the pair of items shown in that trial.

PART III. During this part of the experiment we ask you to indicate how much you would like to eat each of the snacks shown, on a scale ranging from -3 (Strong Dislike) to 3 (Strong Like). You will indicate your ratings by clicking on the scale below the image.

Although the snack you will eat has already been chosen, we ask that you take this part of the experiment seriously and indicate your true rating for each snack.

**Table A1: List of foods used in the experiment, with ratings**

Food	Mean	Std. Dev.	Food	Mean	Std. Dev.
Pig's feet (pickled)	-1.87	0.56	Tomato soup	0.23	0.60
Lamb baby food	-1.61	0.77	Vanilla pudding	0.23	0.63
Clam juice	-1.56	0.95	Grapefruit	0.26	0.78
Baby beans	-1.40	0.78	Streusel	0.27	0.78
Carrot baby food	-1.35	0.65	Wheat crisps	0.27	0.59
Mac & cheese baby food	-1.33	0.73	Cereal bar (blueberry)	0.29	0.70
Squash baby food	-1.26	0.63	Blueberry shortbread	0.30	0.67
Baby clams	-1.25	0.76	Tomatoes	0.30	0.86
Clams	-1.25	0.72	Caramel crisps	0.31	0.80
Meat spread	-1.14	0.88	Chocolate pudding	0.32	0.81
Ham spread	-1.12	0.80	Peanut butter cookies	0.34	0.48
Sardines	-0.97	0.97	Sour cream & onion chips	0.35	1.01
Corned beef	-0.91	0.95	Mixed yogurt	0.37	0.58
Spinach	-0.82	0.73	Potato chips	0.38	0.66
Plum	-0.82	0.70	Wheat cereal	0.39	0.66
Sweet peas	-0.73	0.71	Oatmeal cookies	0.40	0.50
Garbanzo beans	-0.72	0.81	Popcorn, buttered	0.40	0.71
Palm heart	-0.71	0.93	Fruit chews	0.41	0.63
Sauerkraut	-0.69	0.94	Cashews	0.42	0.90
Artichoke	-0.66	1.20	Kiwi	0.43	0.93
Beet	-0.58	0.90	Cheese cracker	0.44	0.93
Water chestnuts	-0.58	0.87	Corn chips (ranch)	0.45	0.59
Albacore tuna, canned	-0.51	0.99	Fruit candy	0.45	0.74
Brussels sprouts	-0.48	1.00	Potato chips	0.46	0.73
Alfalfa sprouts	-0.46	0.94	Pomegranate smoothie	0.47	0.69
Salmon	-0.46	0.71	Cherry ice cream	0.48	0.89
Beef stick	-0.38	0.78	Graham crackers	0.48	0.54
Diet vanilla shake	-0.37	0.87	Plums	0.49	0.81
Celery	-0.34	0.88	Wheat thins	0.52	0.50
Baby corn	-0.29	0.80	Potato chips	0.52	0.66
Clam chowder	-0.24	0.82	Chocolate candy	0.55	0.57
Red licorice	-0.14	0.71	Blueberry smoothie	0.55	0.62
Beef jerky	-0.13	0.96	Granny Smith apple	0.57	0.68
Chow mien	-0.10	0.91	Chocolate chip cookie	0.61	0.50
Tuna, chunks in water	-0.10	0.89	Cola soft drink	0.64	0.85
Broccoli	-0.07	0.85	Chocolate bar w/ rice	0.64	0.52
Lemons	-0.05	0.63	Orange	0.66	0.76
Cherry pie	0.03	0.72	Banana	0.67	0.75
Mac & cheese	0.05	0.72	Chocolate bar w/nougat	0.71	0.74
Cheese flavored cracker	0.08	0.62	Ice cream sandwich	0.72	0.76
Crackers	0.09	0.55	Choc. Bar w/caramel	0.72	0.57
Spicy cheese puffs	0.09	0.84	Sandwich cookie	0.75	0.66
Chicken noodle soup	0.11	0.82	Milk chocolate bar	0.75	0.71
Cheese and cracker	0.11	0.68	Chocolate bar w/rice	0.78	0.55
Turkey lunch meal	0.13	0.81	Grapes, Red	0.80	0.55
Fruity sweet corn cereal	0.13	0.66	Muffins, chip	0.80	0.60
Kettle corn	0.14	0.83	Grapes, white	0.83	0.60
Sweet corn cereal	0.15	0.60	Milk chocolate bar	0.86	0.52
French onion chips	0.19	0.60	Chocolate bar w/wafer	0.93	0.57
Cheese puffs	0.20	0.65	Milk chocolate bar	0.96	0.44

**Figure A1.** Samples of the food pictures used in the experiment.

A



B



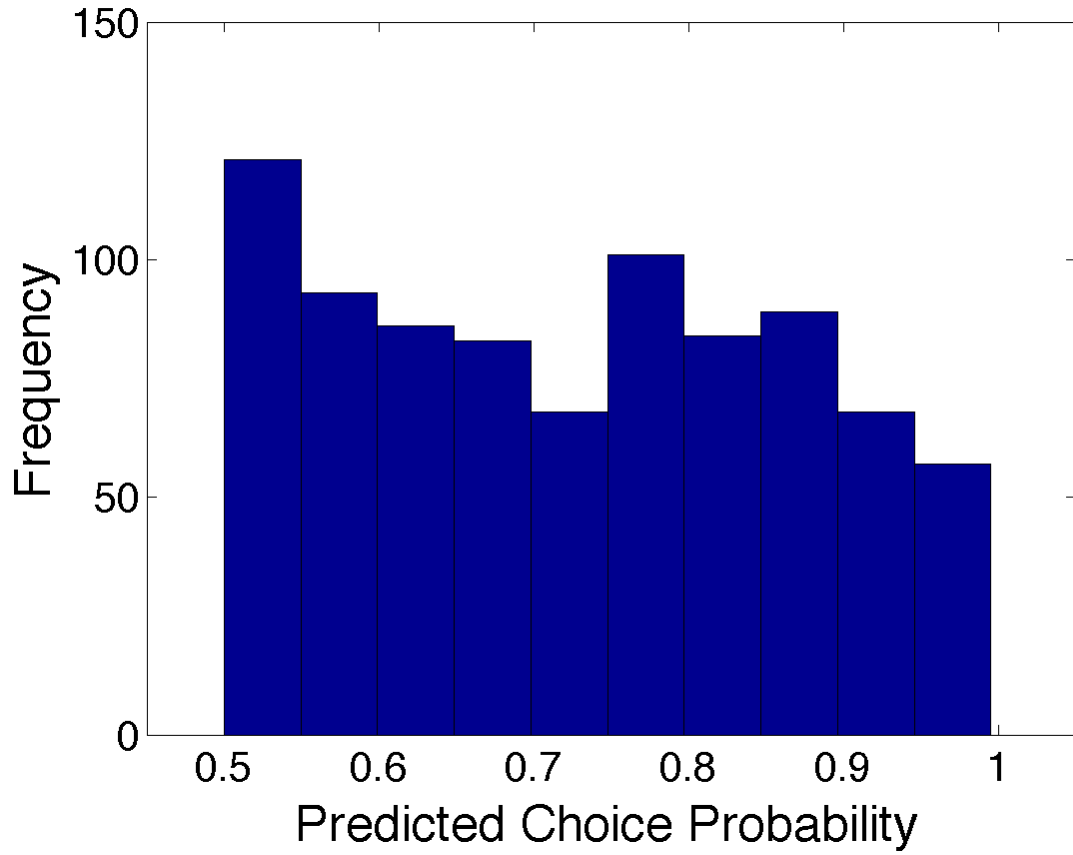
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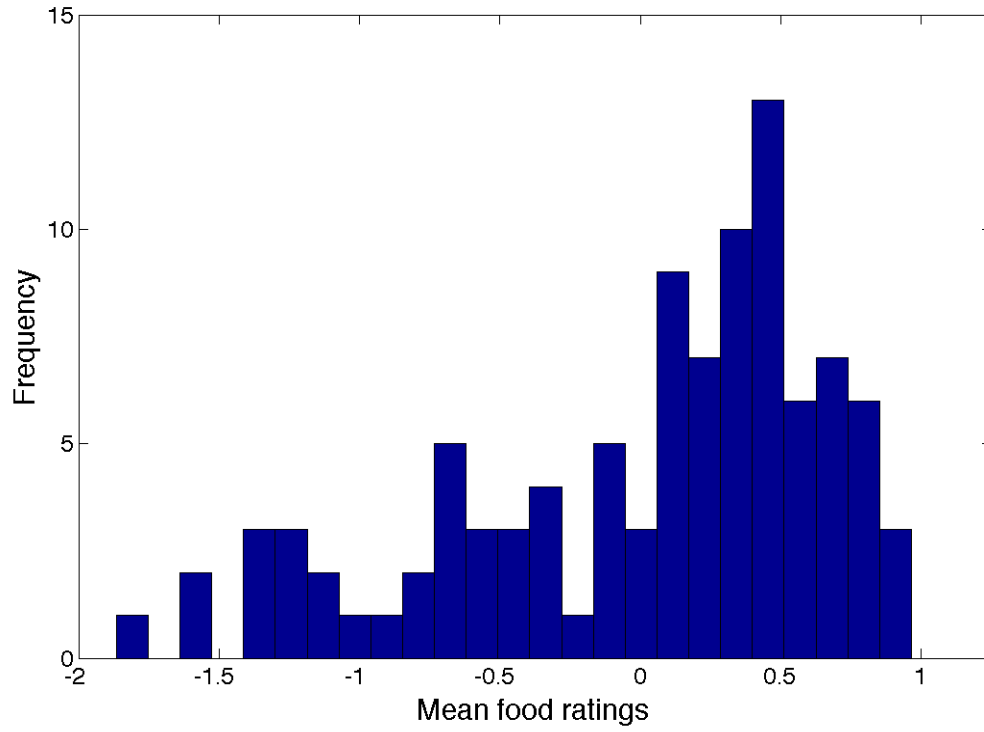
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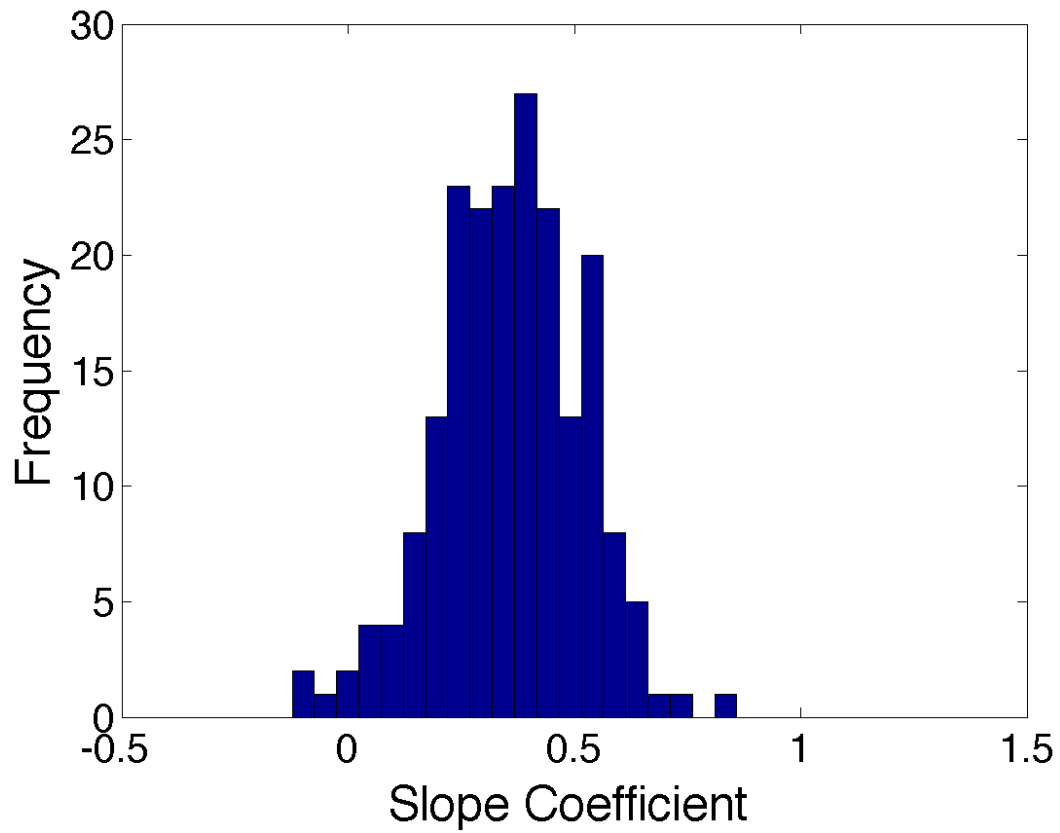
**Figure A2.** Distribution of prediction resolution (predicted probability of the more likely alternative), within-subject predictions for new items



**Figure A3.** Distribution of mean normalized ratings across food items.



**Figure A4.** Distribution over 200 population draws of slope coefficients from linear probability models relating an above-median indicator to the predicted probability of an above-median average rating, based on predictions for new items and new groups.



**Figure A5.** Scatter plot showing mean normalized food ratings of the hold-out group versus predicted food ratings, averaged over 200 population draws. Regression line (estimated by pooling all predictions and including population fixed effects) included.

