

Outlining Our Test of Seth's Appetite Theory

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1 The Basic Design

We are inviting people to test Seth Roberts' theory of appetite, as described in his scholarly work and his book. Though his theory ultimately concerned weight loss as an outcome, we are suggesting a test of his proposed mechanism of hunger.

The measure of hunger we are providing for people is a simple scale taken from Blundell et al.'s (2010) review of validated appetite measures. In our recommended design, we have two experimental conditions: extra-light olive oil (ELOO) taken with flavor and ELOO taken without flavor. Self-experimenters are randomized into each condition. We also offer them the ability to choose one of the conditions or to simply track their hunger.

As mentioned in the faq, we have pre-registered with aspredicted.org and our proposed data analysis is just graphic visualization and a simple regression. We intend to run other interesting tests, models, and analysis but won't emphasize confidence intervals/p-values in those (or much at all really.) Note that our design analysis relied on results from Arechar et al. (2017) and Kirkmeyer & Mattes to get plausible priors for attrition and appetite effect size, respectively.

2 Limitations and Concerns

Main concerns: attrition, selection of participants, demand effects, lack of blinding, participants not obeying or understanding the instructions (particularly for the control condition).

Finally, here is the best halfway-plausible version of the experiment we could think of: Randomly selected non-"W.E.I.R.D." individuals eat their normal familiar breakfasts in a controlled environment. Each person takes a handful of opaque, liquid filled capsules during breakfast. Randomly each day, half of the group is administered capsules that are filled with 200 calories of extra light olive oil while the other half takes capsules filled with water. Participants and experimenters cannot tell which capsule is which.

Following breakfast, all participants observe a 2 hour flavorless window. In the middle of this 2 hour period, participants who got the water pill earlier now get the oil pill and vice versa. Hunger levels (along with other measures like grehlin and leptin hormones) are measured at regular randomly determined intervals throughout the period. The analysis is pre-registered and the data can only be accessed using an R portal that updates commands to github continuously.

3 References

Arechar, A. A., Gachter, S., & Molleman, L. (2017). Conducting interactive experiments online. *Experimental Economics*, 1-33.

Blundell, J., De Graaf, C., Hulshof, T., Jebb, S., Livingstone, B., Lluch, A., ... & Westerterp, M. (2010). Appetite control: methodological aspects of the evaluation of foods. *Obesity reviews*, 11(3), 251-270.

Gelman, A., & Roberts, S. (2007). Weight loss, self-experimentation, and web trials: A conversation. *Chance*, 20(4), 59-63.

Kirkmeyer, S. V., & Mattes, R. D. (2000). Effects of food attributes on hunger and food intake. *International Journal of Obesity*, 24(9), 1167.

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Note: Gelman & Roberts deserve special mention for illuminating the overall concept and inspiring important aspects of the methodology (including the clever use of oil in the control).