The Impact of Chocolate on Graduate Student Happiness

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Added some new text here.

Abstract

- Why did we start? Because chocolate.
- What did we do? Ate chocolate.
- What did we find? It's delicious.
- What does it all matter? It's obvious!

Background

Let's face it. Chocolate is delicious, and it seems impossible that it might not be good for you. However, the science is unclear, at least for some outcomes.(Chan 2007)

Methods

We recruited students who thought they were coming for training in reproducible research methods as a pre-text for eating chocolate in the morning. We measured their happiness using our established, validated index.

We calculated some descriptive statistics and ran a simple linear regression model:

$$y_{it} = \beta_0 + \beta_1 * Treated + \beta_2 * Period + \epsilon_{it}$$

We also explored a model with a product term, but not because p>0.05 in the previous model. Honest.

Results

Descriptive statistics are shown in Table 1.

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
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Estimates from the regression analysis are shown in Table 2. Regression results clearly show that chocolate increases happiness. We can see that the overall happiness index for the chocolate group was 4.67 units higher in the post period relative to the change over the same period in the control group [95% CI: 3.66, 5.68].

Regression results clearly show that chocolate increases happiness, but if you aren't convinced please see Figure 1.

Table 1: Mean happiness by treatment and time

	Pre Mean (SD)	Intervention Mean (SD)	Post Mean (SD)
No	10.08	14.81	20.25
	(3.257)	(4.354)	(4.236)
Yes	14.75	19.69	29.59
	(3.303)	(4.385)	(4.686)
Total	12.42	17.26	24.94
	(4.025)	(5.003)	(6.462)
N	500	500	500

mean coefficients; sd in parentheses

Table 2:

	Dependent variable:
	happy
as.factor(treated)Yes	6.297***
	(0.218)
as.factor(period)1. Intervention	4.840***
	(0.266)
as.factor(period)2. Post	12.517***
	(0.266)
Constant	9.260***
	(0.218)
Observations	1,500
R^2	0.673
Adjusted R^2	0.673
Residual Std. Error	4.212 (df = 1496)
F Statistic	1,027.862*** (df = 3; 1496)
Note:	*p<0.1; **p<0.05; ***p<0.01

	Model 1
(Intercept)	9.26***
	(0.22)
as.factor(treated)Yes	6.30***
	(0.22)
as.factor(period)1. Intervention	4.84***
	(0.27)
as.factor(period)2. Post	12.52***
	(0.27)
R^2	0.67
Adj. R^2	0.67
Num. obs.	1500
RMSE	4.21

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$. texreg

Table 3: Statistical models

Table 4: Effect of chocolate on happiness

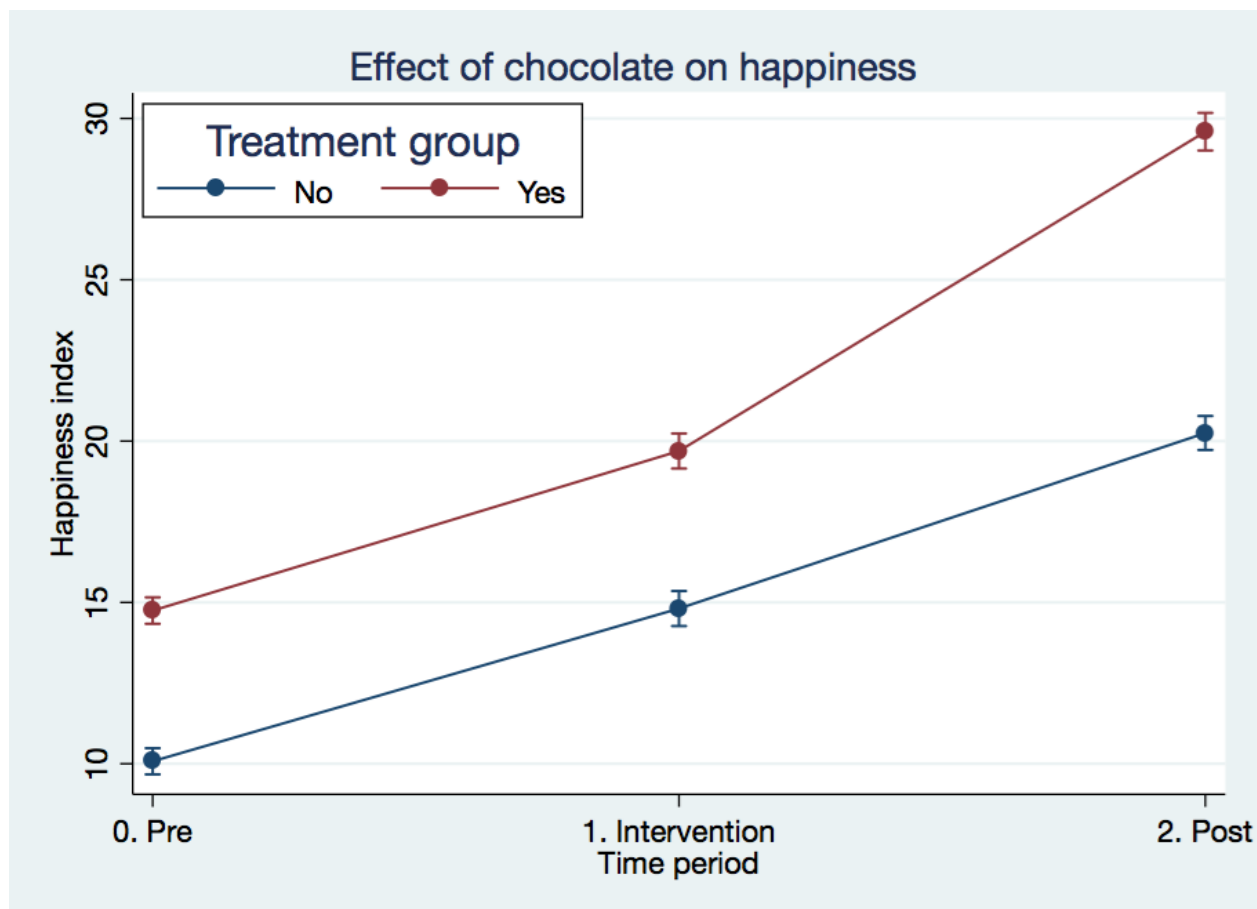|	(1) Adjusted model	(2) Interaction model
Treatment		
Yes vs. No	6.30	4.67
	[5.87,6.72]	[4.09,5.25]
Time period		
Time 1 vs. Time 0	4.84	4.73
	[4.32,5.36]	[4.36,5.11]
Time 2 vs. Time 0	12.52	10.17
	[11.99,13.04]	[9.82,10.52]
Product terms		
Treated X Time 1		0.21
		[-0.31,0.73]
Treated X Time 2		4.67
		[4.15,5.19]
Intercept	9.26	10.08
	[8.83,9.69]	[9.67,10.48]
N	1500	1500

95% confidence intervals in brackets

Figure 1: Predicted happiness index from interaction model

Discussion

We think this is convincing. But it may not matter for policy since another randomized trial showed that many participants switched groups mid-study because of their personal chocolate preferences.(Scaramuzza and Zuccotti 2015)

References

Chan, Kevin. 2007. "A Clinical Trial Gone Awry: The Chocolate Happiness Undergoing More Pleasantness (CHUMP) Study." *CMAJ* 177 (12): 1539–41. https://doi.org/10.1503/cmaj.071161.

Scaramuzza, Andrea E, and Gian Vincenzo Zuccotti. 2015. "Dark Chocolate Consumption and Lower HbA1c in Children with Diabetes: Direct Cause or Pure Happiness?" *Clin Nutr* 34 (2): 333–4. https://doi.org/10.1016/j.clnu.2015.01.007.