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Time Preference, Nutrition Education, and the Body Mass Index

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Introduction

- A healthy food alternative will not taste as good as an unhealthy alternative in many cases.
- Consumers confront a intertemporal choice problem: the certain immediate hedonic positive effects against the uncertain future negative health effects.
- The less weight an individual places on future health effects, the more likely they are to eat less healthy options and consequently suffer the negative consequences of poor dietary choices.
- If the rate of time preference discounting is high, then consumption will be skewed toward consuming hedonically appealing foods with less concern for health consequences.
- A large literature has found that as the delay discounting decreases an individual will make healthier food choices and thus have a lower body mass index, ceteris paribus.
- If the delay discount rate can be altered through education, then this may be a way to improve food choices and therefore health outcomes and there is some literature suggesting this may be possible

Objectives

- The purpose of this research is to explore to what extent nutrition education may be a moderating factor in the relationship between delay discounting and the body mass index. More specifically, we tested whether:
 - (i) Students majoring in nutrition will have a lower discount rate than other majors and therefore a lower BMI than other majors.
 - (ii) Thus, the effect of nutrition education on BMI is moderated through the delay discount rate

Methods

- Data were obtained from 278 college students, divided into two groups according to their major: majoring on nutrition (N=48) or not (N=230).
- We analyzed differences in the responses with respect to the discounting rate and BMI, with a focus on the interaction between response and differences in major.
- ANOVA, Probit were used for empirical estimations.

Results & Discussion

<Table 1: ANOVA results>

Major & Discounting rate

Source	SS	DF	MS	F-value	P-value
Between groups	.147	1	.147	3.49	0.063
Within groups	11.615	276	.042		
Total	11.762	277	.042		

BMI & Discounting rate

Source	SS	DF	MS	F-value	P-value
Between groups	.047	3	.016	0.36	0.779
Within groups	11.612	270	.043		
Total	11.659	273	.043		

Major & BMI

Source	SS	DF	MS	F-value	P-value
Between groups	66.456	1	66.456	4.07	0.045
Within groups	4501.292	276	16.309		
Total	4567.749	277	16.490		

<Table 2: Probit estimation result>

Obese	Coefficient	SE	Z	P-value	CI
Discount factor (δ)	-0.202	0.716	-0.28	0.778	-1.605
GPA	-0.711	0.329	-2.17	0.03	-1.355
Sex	0.295	0.315	0.94	0.349	-0.323
Year	0.231	0.143	1.63	0.102	-0.046
Major	-4.378	3.851	-1.14	0.256	-11.926
Major*GPA	0.962	1.148	0.84	0.402	-1.288
Major* δ	-0.339	1.915	-0.18	0.859	-4.093
Major*Sex	1.263	0.843	1.5	0.134	-0.3897

<Table 1: ANOVA>

- **Major & Discounting rate:** it is found that students majoring in nutrition have a lower discount rate than other major at 10% significant level.
- **BMI & Discounting rate:** the result shows there is no statistical differences in discounting rate among groups divided according to BMI.
- **Major & BMI:** it is revealed that students majoring in nutrition have a lower BMI score than other major at 5% significant level.

<Table 2: Probit>

- There is no significant relationship between time preference and obesity after controlling for demographic information and performance. Instead, we found a negative relationship between GPA and BMI, meaning that students with higher GPA have lower BMI.

Conclusions

- It is often hypothesized that people with more education have lower time discounting rates, therefore have lower BMI scores than the less educated.
- A unique data set, in class survey which divides the recipients into two groups: students majoring in nutrition and majoring in others, is used to estimate the effect of education.
- Unlike the previous findings, we found no significant relationship between time discounting and obesity after controlling for demographic information and performance.
- However, we do find that being a nutrition major or not differs both discounting rate and BMI score, implying that it tends to moderate the relationship between time preference and BMI.
- The coefficient of GPA remained statistically significant, implying that academic ability might be more important education variable than being nutrition major.