The Roles of Beliefs, Information, and Convenience

in the American Diet

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Introduction

Over the past two decades there has been a proliferation in the amount of scientific information substantiating a link between eating a good diet and maintaining good health. From this has sprung an increasing number of national campaigns intended to educate Americans on the importance of a more healthful diet. The success of these campaigns have likely contributed to the findings of a 2001 Food Marketing Institute (FMI) study, where nearly 60 percent of sampled shoppers reported their grocery purchases were strongly affected by some health concern and 76 percent felt eating well was a better way to manage their health than medication (FMI 2001a, p.7). Not surprisingly, then, the last decade has seen an increase in sales of organic, light, low-fat, and low-salt foods. In the natural food industry[1] alone, there has been an average growth rate of 20-25 percent per year. In comparison, the conventional food market has reported average growth rates of three to five percent per year (Richman, 1999).

Yet while Americans are more aware of the links between diet and health, the rising numbers of dual income and single parent families have made the average family more pressed for time and more willing to pay for greater convenience. Since 1960, the percentage of women working full time has increased over 60 percent. Meanwhile, there has also been an escalation in the amount of dining out, fast food meals, and home meal replacement (FMI 2001b; Senauer et al. 1991, p. 5). As of 1995, Americans were eating nearly 30 percent of their meals away from home, an over 80 percent increase from 1977 (Lin, Guthrie, and Frazao, 1999). A potential problem with this escalation is that overall Americans demonstrate they know very little about the nutrient content of food prepared away from home and regularly underestimate the fat and caloric content of such meals (Kennedy et al, 1999).

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[1] Natural foods are defined as being produced with minimal processing, free of artificial ingredients, preservatives, and chemicals,

Another potential health risk from the increased demand for convenient foods and foods prepared away from home is that they tend to be denser in calories. This is not to say that food made from scratch cannot be high in fat, but it is often difficult to find healthful foods that are convenient and flavorful. The lack of healthful alternatives at fast food and take out restaurants was cited as the strongest impediment to having a more healthful diet (FMI 2001a, p. 19). Not surprisingly, while Americans have reduced their overall fat consumption, they have made less progress reducing the amount of fat in food consumed away from home. In 1995, Americans derived an average of 31.5 percent of their calories from fat when eating food prepared at home. However, they received nearly 41 percent of their calories from fat when eating food prepared away from home (Lin, Guthrie, and Frazao).

The increased consumption of more convenient foods may be a significant contributor to the dramatic increases in both the incidence and level of obesity among Americans. As of 2000, it was estimated that 56.4% of all Americans were overweight and one in five US adults were obese (Associated Press, 2001). Consequently, there has been a parallel rise in the incidence of diseases highly correlated with poor nutrition and over consumption: cancer, strokes, heart disease and diabetes. With total economic costs of these four diseases conservatively estimated at $70.9 billion per year, this may prove to be a costly trend (Frazao 1999, p. 23). The surgeon general has even predicted that obesity may soon overtake tobacco as the primary cause of preventable deaths (News Service, 2001)

Such conflicting trends highlight a striking paradox: While Americans claim to be eating better and improving their understanding of diet and health, they are getting heavier and increasing their risk of suffering from diet related illnesses. The cause of this paradox is unclear. It may be because Americans just eat too much of everything; there may be a clear division between the people who eat poorly and the people who eat healthfully; or alternatively, it may be that individuals usually try to incorporate their beliefs about healthy eating into their food choices, but due to time constraints, stress, and the need for convenience, must sometimes forego good intentions for more immediate gratification.

An inconsistency between what an individual chooses to do and what she believes she should do is an example of a time-inconsistent choice. More formally, a time-inconsistent choice is one where an individual makes a choice that would not have been made under a more detached, objective perspective. For example, one may claim that for tomorrow's dinner, she would prefer a healthy salad at 6:30 to a hamburger at 5:35. However, when evaluating this same decision for tonight's dinner while feeling hungry and pressed for time, the same individual may decide that a hamburger in five minutes is preferred to a salad in one hour. Although the delay between alternatives does not change, reducing the time to either reward equally by 24 hours may switch the ranking of alternatives. Such inconsistencies are well documented in behavioral studies, where both human and animal subjects will switch how they choose between alternatives when the time delay is decreased equally for each alternative. Thus as advocated by Hoch and Lowenstein (1991) "a more complete understanding of consumer behavior must recognize that people are influenced both by long-term rational concerns and by more short-term emotional factors (p.492)."

The aim of this study is to develop a model that explicitly incorporates both long-term health objectives and short-term satisfaction objectives in individual food choices. This will help to identify factors that lead to more time-inconsistent choices. To that end, this study models how one's demand for convenience changes with time pressures and hunger, measured as the interval an individual has gone without food. It is hypothesized that as people become hungrier and busier, their short-term satisfaction objective may take priority over their long-term health objectives. Thus, they may be apt to prefer more convenient foods. Since most convenient foods are higher in calories, fat, cholesterol and sodium, there is an ancillary increase in the consumption of these nutrients. Therefore, not accounting for one's level of hunger and demand for convenience may mispecify the roles of prices, income, and information on nutrient demand.

Theoretical Model

The majority of studies of nutrient demand are based on the traditional, neoclassical economic model where the consumer solves:

$$\max_{F, NF} \; U(F, NF) \tag{1}$$

subject to the budget constraint $p_F \cdot F + p_{NF} \cdot NF \leq Y$ where F is a vector of food goods and NF is a vector of non-food goods consumed by the consumer with prices p_F and p_{NF}. Imposing separability of food and non-food goods results in a system of demand functions $X_n = f(p_F, Y)$ for each of the n different nutrients. Many studies have expanded on this approach to include health status, health information, and other demand shifters but rarely provide a theoretical framework that argues for their inclusion. Moreover, most of the studies aggregate individual meals and food consumed throughout the day, week or year. This aggregation over observations ignores the individuals' level of hunger when they make their food choice and where they procured the food. This may then result in misspecifying the relationship between information and nutrient consumption.

The theoretical model in this study begins with the Becker household production model, where individuals are assumed to maximize utility, subject to their production functions, budget constraint and time constraint. To develop a model that more accurately depicts how individuals make their food choices, this model also assumes that individuals;

i. use household time to create food, health and relaxation,

ii. make their food and nutrient consumption choices on a per-meal[2] basis,

iii. are affected by the prospect of immediate gratification, convenience and time delay, and

iv. are more affected by these factors as their hunger increases.

Specifically, it is assumes that an individual maximizes his or her utility:

(2) $$\underset{F_m, NF_m, H_m, \Gamma_m, T\ell_m^h}{Max} \quad U = \sum_{m=1}^{M} U(F_m, NF_m, H_m, T\ell_m^h; \Gamma_m, \ \varepsilon^o{}_m, \ \varepsilon^u{}_m)$$

F_m is a K dimensional vector of food consumed at meal m. In this model, individuals not only receive satisfaction directly from food, but also consumption of non-food items (NF_m), healthy leisure time ($T\ell^h{}_m$), and the individual's health status (H_m). It is assumed that individuals make their consumption decisions on a per-meal basis (m) over some finite planning period that ends at M. For example, if the planning period were one day, then M would be the last meal of the day. It is also assumed that individuals get utility from the quality of their leisure time. In this way, leisure time when one is sick yields less satisfaction then when she is healthy. Healthy leisure time is the product of time spent in leisure activities ($T\ell_m$) and the quality of leisure activities $\Omega(H_m)$, which indicates the flow of health services per unit of leisure time (Grossman 1970). In this framework, a person with perfect health would get one full hour of quality leisure time for every leisure hour. If this person's health were to decline, then she would receive less than one hour of quality leisure time.

(3) $$T\ell^h{}_m = T\ell_m \Omega(H_m)$$

The level of satisfaction received from these variables is indirectly affected by the following factors: an individual's observable exogenous factors, such as socio-demographic characteristics ($\varepsilon^o{}_m$); her

[2] In this study, the word meal is used for simplicity, but also includes snacks and all other eating occasions.

exogenous unobservable characteristics, such as taste (ε^{u}_{m}); and her endogenous level of hunger at meal m (Γ_m), which decreases with the amount of food she consumed at the previous meal (F_{m-1}), and increases with the amount of time between meals (I_m) such that :

$$(4) \qquad \Gamma_m = \Gamma(I_m, F_{m-1}) .$$

It is assumed that the indirect affects of hunger on the marginal utilities from each argument are as follows: Increasing hunger increases the utility received from food and leisure time, but also leads to temporary discomfort. The rationale behind this is that, as one becomes hungrier, she may receive more enjoyment from food, but may also experience health problems, such as low blood sugar, fatigue, and irritability. These increasing ill health effects will increase one's sensitivity to time delay, and eventually, demand for convenience. In this framework, greater convenience is modeled as a reduction in time spent producing food. Since the total amount of time is finite, leisure time is negatively related to time spent preparing food. Thus, increasing hunger leads to a decreased demand for preparation time in favor of more leisure time.

The first constraint, the individuals health production function (H_m), defines the links between health inputs: nutrients (n_m); time spent in health pursuits, such as exercising and becoming more informed about good nutrition (Th_m), and hunger (Γ_m). The health production function is also affected by exogenous observable characteristics, such as gender, age, and education(ε^{oh}_{m}) and exogenous unobservable factors (ε^{uh}_{m}) such as genetic endowment. This function is assumed to be continuous, strictly concave, twice continuously differentiable and exhibit positive and diminishing marginal utilities with respect to each argument except hunger, and the nutrients that should be consumed in moderation[3]. In hunger, the production of health is increasing (or neutral) up to some hunger level Γ^*.

[3] According to USDA recommendations, individuals should limit intake of fats, sugar, cholesterol and sodium.

Once an individual surpasses this critical level, the ill health effects of denying the body nutrients begin to have a negative effect on the production of health until some maximum level of hunger $\underline{\Gamma}$, after which the individual will die of hunger. As such, the health production function is defined as follows:

$$(5) \qquad H_m = h(n_m, Th_m, \Gamma_m; \ \varepsilon_m^{oh}, \ \varepsilon_m^{uh})$$

The purpose of including the hunger variable is to model not only the importance of the amount and number of nutrients consumed, but also the timing of which they are consumed. Typical health production functions only analyze the amount and number of nutrients consumed in a given observation period, yet excluding the timing of consumption is tantamount to assuming that it is irrelevant. If timing is irrelevant, then an individual who eats nothing for six days, and gorges himself on 7 breakfasts, 7 lunches and 7 dinners on the seventh day would have the same estimated health production as an individual who spaces these meals out over 7 days. This does not correspond with current beliefs about diet and nutrition. For that reason, this study explicitly assumes that the timing of nutrient consumption is relevant in the health production function.

The nutrient intake of individuals is decided by a perceived mapping function ($\hat{\tau}$), which translates the foods consumed, F_m, into nutrients, such as grams of fat, protein, carbohydrates, and cholesterol. The accuracy of this mapping function depends on the individual's knowledge (η_m), her stock of human capital (E_m) and where the individual procured the food (FS_m). This mapping function uses a Lancaster framework, where (η_m) dictates the individual's perception of how much a specific characteristic flows from each food item. For example, an individual who is well aware of the health risks linked with consuming too much fat will be better able to determine the amount of fat in a food item than someone who is unaware of these links. Also, it is assumed that an individual will be better able to assess the nutrient content of food prepared at home than food purchased away from home. Thus, where she purchased her food affects her perception of nutrient content.

$$n_m = F_m \hat{\tau}_m \tag{6}$$

$$\hat{\tau}_m = \tau(\eta_m ; E_m, FS_m) \tag{7}$$

The second constraint the individual faces is the food production function, which is assumed to be continuous, strictly concave, twice continuously differentiable and exhibit positive and diminishing marginal utilities with respect to each argument. This model assumes that kth food item produced by the individual at the mth meal is a function of j purchased inputs ($\{x_{mkj}\}_{j=1}^{J}$) and time spent preparing food (TF_{km}), given the individuals stock of human capital (E_m). This yields the individuals per meal food production function:

$$F_{mk} = F(\{x_{mkj}\}_{j=1}^{J}, Tf_{mk}; E) \tag{8}$$

With the additional constraints of the individual's time and budget, the First Order conditions are solved to yield the following per-meal reduced form demand functions for the jth food inputs at the mth meal:

$$X_{mj}^{\ *} = D^{X_{mj}}(P_X,\ P_{NF},\ w,\ A,\ E,\ \eta,\ \varepsilon^o,\ \varepsilon^u,\ I_m,\ F_{m-1}, FS_m) \tag{9}$$

Where w is the individual's labor wage, A is assets, while ε^o and ε^u are observable and unobservable exogenous characteristics. Substituting the optimal amounts of food inputs and prep-time into (6) and (7) yields a derived nutrient demand function:

$$n_m^{\ *} = D^n(P_X,\ P_{NF},\ w,\ A,\ E,\ \eta,\ \varepsilon^o,\ \varepsilon^u,\ I_m,\ F_{m-1}, FS_m) \tag{10}$$

Data and Assumptions

The data to be used comes from the USDA's 1994-1996 Continuing Survey of Food Intake by Individuals (CSFII 1994-1996) and the companion Diet and Health Knowledge Survey (DHKS). The purpose of the CSFII is to monitor food use and consumption patterns in the U.S. and provide data on food and nutrient intake. This data set contains detailed information on an individual's food intake, and her personal and household characteristics, such as age, level of education, sex, weight, height, race, income, education level of family members, and family size. The DHKS is the first national survey of individuals' dietary attitudes and nutrition knowledge that can be linked to the nutrient intakes. It provides information on peoples' attitudes and knowledge about dietary guidelines and their ability to put this knowledge into practice. It also provides information on the perceived adequacy of one's own food and nutrient intake.

The CSFII data were collected via in-person interviews, where survey respondents were asked to recall their food intake over the last 24-hours This was done on 2 non-consecutive days spaced 3-10 days apart. In each CSFII household, the DHKS was administered to 1 adult over 20 years old who reported at least one day of food intake. This survey was administered over the telephone 2 to 3 weeks after the collection of CSFII data. For the purposes of this study, only individuals who also answered the DHKS will be included in the econometric analysis to maintain a clear linkage between one's information and beliefs and her nutrient intake. The survey was a stratified, multistage area probability sample that over-sampled low-income families. The use of sampling weights is important because it compensates for variable probabilities of selection, different response rates and potential deficiencies in the sampling frame and are designed to yield estimates of the actual population which allows inferences drawn from sample estimates to be applied to the population.

Econometric Issues

From the reduced demand equation (8), nutrient demand is a function of market prices, wages and full income, given household and individual socio-demographic characteristics, individual health related characteristics, an individual's level of health information, her sensitivity to time delay at a specific meal, and whether the meal was prepared at home or away from home.

However, given the data set and nature of the problem, this study will need to address some of the anticipated econometric issues. The first is that nutrient intake is analyzed on a per-meal basis and will therefore include several observations on one individual. The resulting estimated error terms will likely be correlated across observations for a given individual. Because of this, OLS estimates would be inefficient and the significance of parameter estimates would be inaccurate. Using a random effects model will help to circumvent this issue.

Another issue that can lead to problems with the econometric estimation is that, as is common with cross-sectional data, there is no information on expenditures or prices. However, since the individuals' intake choices were made at a single point in time, it is not unusual to assume there is little variation in prices across households and that these differences can be captured by the geographic location and urbanization of the household (Variyam et al, 1995, 1996).

A third econometric problem is that the hunger variable is a function of both the interval between meals and the amount of food energy consumed at the previous meal. Thus, one of the independent variables is a lagged variable from the previous eating occasion, resulting in estimated error terms that are likely correlated across meals for a given individual. Again, OLS estimates would be inefficient. Assuming a first order autoregressive process will help to skirt this issue.

A fourth econometric issue is that several of the right hand side variables, namely health information, hunger, and food source, are arguably endogenous and are most likely measured with error. The standard econometric method of correcting problems of endogeneity and measurement error is to use some type of instrumental variables (IV) estimators. For the IV approach to yield consistent estimates, the instruments used must meet the conditions of exogeneity and relevance. Yet, as summarized by Park and Davis (2001), there are three properties of cross sectional data and nutrient demand analysis that lead to relevancy condition not being satisfied:

(i) While in the short run, the conditional demand for nutrients is a function of prices, full income, time constraints, health information and individual endowments, the long run, or unconditional, demand for nutrients is a function of prices, income, time constraints, and individual endowments;

(ii) Most cross sectional data sets do not have information on market prices, time constraints, and full income;

(iii) The correlation between many variables in cross-sectional data is very low.

Thus condition (i) suggests that theoretically, variables in the unconditional demand equations can provide instruments for the conditional demand equation. Due to property (ii) the only available instruments are the individual’s personal and household characteristics. However, there is no theoretical reason for partitioning these characteristics into either the conditional or the unconditional demand equations. Finally, the low correlation among variables means that IV estimators may still be biased and inefficient. Based on these problems and the results of a comparison between OLS and IV estimates using cross-sectional data, Park and Davis concluded that OLS estimates were preferred and suggest employing multiple model estimators and specifications. For this study, instrumental variables were not used for the econometric analysis of nutrient intake.

Econometric Analysis

The demand model used for estimation is a linear equation relating individual i's nutrient consumption to household and individual socio-demographic (ε_{i1}) characteristics, individual health related characteristics (ε_{i2}), an individual's level of health intentions (η_i), her sensitivity to time delay at a specific meal (Γ_{im}), and the source of the meal (FS_{im}):

(11) $$N_{im} = \beta_o + \beta'_1 \varepsilon_{i1} + \beta'_2 \varepsilon_{i2} + \beta'_3 \eta_i + \beta_4 \Gamma_{im} + \beta_5 FS_{im} + e_{im} + u_i$$

In equation (11) β_0 is an intercept term, β_1 through β_5 are structural coefficients, e_{im} is the random disturbance for the ith individual at the mth meal, u_i is the random disturbance for the ith individual and is constant for all meals. A list of variables, excluding health intentions, is found in Table 1.

This paper groups health information into five general categories: Knowledge, Beliefs, Perceptions, Importance, and Intentions. Justification for this is based on the Theory of Reasoned Action, a general theory of human behavior that links beliefs, attitudes, and intentions to observed behavior. It initially used primarily in marketing but has been extended to economic analysis of resource management (Fishbein and Manfredo, 1992). Doing this will help illuminate how different aspects of information are used when making food choices. For example, although one may be fully aware of the links between being overweight and health problems, if she does not think it is important, she will be less likely to act on this information. Answers to questions that form the knowledge index have definitive right and wrong answers, where as answers to belief questions are more subjective. Perception variables were made by comparing how respondent ranked their own diet quality compared to how their diet actually scored using components of the Healthy Eating Index (Variyam, Shim and Blaylock, 2001). Past studies have created information proxies based on the number of correct answers to the DHKS survey. However, as the market axiom suggests, perception is reality. Thus, it may be that what someone perceives to be true is a better predictor of behavior than simply whether or not someone believes what is deemed to be true. The list of variables that have been used to proxy one's health intentions are found in Table 2.

Results

The coefficient estimates of the per-meal fat consumption from equation (11) are reported in Table 3. Not surprisingly, we find that several of the more traditional explanatory variables have a significant effect on per-meal fat consumption. Older individuals, individuals that come from larger households, live in the southern United States or live in rural areas consume significantly more fat at each meal. However, we also find that situational factors, such as the interval between meals, the amount and kind of food consumed at the previous meal, and the where the meal was procured also have significant explanatory power. These results show that when an individual has a longer interval between meals, consumes more simple carbohydrates, and eats at a bar or restaurants she will consume food that is significantly denser in fat. Conversely, an individual who has consumed a larger amount of calories at the previous meal or obtained the food from a grocery store is more likely to consume lower fat food at the current eating occasion. Finally, these results show that individuals who have more accurate perceptions of their own diet quality or put more importance is placed on diet quality also consumer foods that are significantly lower in fat.

Conclusion

The purpose of this paper is to present a new approach to examining the demand for nutrients that incorporates many of the advances in behavioral economics and the analysis of nutrition intake. By including variables such as hunger and time pressures, this study illuminates how sensitivity to time delay contributes to more time-inconsistent behavior. Namely, as individuals become hungrier and busier, their use of information and long-run health objectives play a lesser role to more immediate gratification. A somewhat obvious recommendation from these findings would be to increase the convenience of relatively more healthful foods or improve the nutrient content of convenient foods. These findings also suggest that it could be beneficial to provide nutritional information at the point where an individual purchases more convenient food and food prepared away from home. Although labeling laws has improved our understanding of the nutrient content of food purchased at a grocery store, there is still room to improve our understanding of foods prepared away from home.

Another noteworthy finding is that not all aspects of information have the same affect in influencing observed behavior. These results show that perceptions and importance have more of an effect than straight-up information and beliefs. Two simple recommendation from these findings would be to make Americans better aware of their own diet quality and to find ways to make them believe that maintaining a healthy diet is indeed important.

The main limitation of this model is empirical applicability due to limited availability of surveys that collect all the data of interest. For example, the empirical analysis cannot precisely identify how and why eating foods prepared away from home leads to a higher consumption of fat. It may be that time-constraints lead to an increased demand for convenience and convenient foods tend to be denser in fat. It may be that individuals are less informed about the nutrient content of food prepared away from home. It may be a combination of these two factors. However, as alternative models appear more often in the economics literature, data collection activities may eventually better meet the needs of these economic models.

Table 1:Independent Variables and Definitions

Category	Variable	Definition	Mean	Std. Dev
Dependent Variable	Dfat	Percent of calories at meal from fat	.281	.064
Household Characteristics	Income	Total household income in $1,000	34.884	9.053
	Program	1 if participate in food assistance program	0.079	0.093
	Size	Number of members in household	2.586	0.503
	Midwest	1 if Midwest	0.252	0.149
	South	1 if South	0.355	0.164
	West	1 if West	0.203	0.138
	Northeast	1 if Northeast	0.191	0.135
	Urban	1 if central city	0.296	0.157
	Suburban	1 if suburb	0.437	0.170
	Rural	1 if rural	0.267	0.152
Socioeconomic and Demographic Characteristics of Main Meal Planner	Age	Age of meal-planner in years	50.882	5.904
	Female	1 if meal planner is female; 0 otherwise	0.496	0.172
	College	1 if attended school beyond 12^{th} grade	0.437	0.170
	White	1 if White	0.776	0.143
	Black	1 if Black	0.115	0.109
	Hispanic	1 if Hispanic	0.081	0.094
Health Related Factors of Main Meal Planner	Vegetarian	1 if vegetarian	0.030	0.059
	Allergy	1 if individual has any food allergies	0.103	0.104
	BMI	Body weight (kgs)/ $height^2$ (meters)	28.092	4.059
	Smoker	1 if smoker	0.257	0.150
	TV	Average hour of t.v. watching per day	2.667	0.842
	BFPL	1 if pregnant, breast feeding or lactating	0.009	0.033
	Involved	1 if plans, prepares or shops for meals	0.760	0.147
Sensitivity to time delay	Interval	Time elapsed between meals	3.972	0.785
	Calories	Calories consumed at previous meal, as a percent of their RDA	0.205	0.064
	Glycemic	Ratio of carbohydrates to fiber consumed at previous meal	15.181	5.760
	Hours worked	Number of hours worked previous week	22.506	8.047
Food Source:	Free	1 if meal came from someone else	0.076	0.091
	Captive	1 if meal came from cafeteria, dining center	0.022	0.050
	Cheap	1 if food came from fast food restaurant, pizza place, vending machine	0.083	0.095
	Social	1 if meal came from a sit down restaurant or tavern	0.064	0.084
	Planned	1 if meal was prepared with food purchased at a grocery store	0.713	0.155

Table 2: Intention Variables*

Knowledge 8.380 (0.816)	Beliefs 11.774 (1.177)	Perceptions 11.716 (0.751)	Importance 17.441 (1.297)	Intentions 15.754 (1.759)
Number of correct answers on health questions	Agreement with 'some people are born to be fat..not much you can do..'	Perception of protein, cholesterol, and fat intake	Source of high fiber or low fat diet, if any	High Fiber diet
Number of correct servings of grains, fruits, vegetables, etc. the individual is able to identify	Agreement with '.. so many recommendations.. it's hard to know what to believe'	Perception of own body weight	Any existing medical condition	Diabetic diet
	Agreement with 'What you eat can make a difference in chance of getting a disease'	Perception of own diet quality	Importance of maintaining a healthy weight	Exercise frequency
	Number of diseases associated with eating too much cholesterol		Importance of limiting saturated fat	Whether or not respondent uses labels
	Number of diseases associated with being overweight		Importance of limiting fat and cholesterol intake	Whether or not respondent is involved with some aspect of meal planning
	Number of diseases associated with eating too much fat		Importance of eating lots of fiber	

* The number below the variable's name is the mean. The numbers in parentheses are the standard deviation.

Table 3: Effect of explanatory variables on per-meal fat consumption

Explanatory Variable	Estimate	t
INTERCEPT	0.3632	25.77
INCOME**	-0.0002	-3.65
PROGRAM	0.0074	1.69
INVOLVED	-0.0063	-2.5
HHSIZE**	0.0022	2.67
MIDWEST	0.0075	2.49
SOUTH**	0.0103	3.57
WEST	0.0063	1.97
SUBURB**	-0.0142	-5.47
URBAN**	-0.0172	-5.96
BLACK	0.0029	0.77
HISP	-0.0093	-2.21
COLLEGE	-0.0031	-1.37
AGE**	0.0003	3.53
BMI_SP	-0.0003	-0.88
VEGGIE**	-0.0205	-3.49
ALLERG	-0.0010	-0.32
SMOKE	0.0043	1.78
TV	0.0006	1.43
BFPL	0.0197	1.87
HOURS WORKED**	-0.0001	-2.59
INTENTIONS	0.0004	1.75
INFORMATION	-0.0005	-1.01
BELIEFS	-0.0007	-2.2
PERCEPTIONS**	-0.0015	-3
IMPORTANCE**	-0.0022	-7.21
INTERVAL**	0.0130	28.92
GLYCEMIC**	0.0002	3.92
CALORIES**	-0.0613	-10.01
FREE**	-0.0175	-3.7
CAPTIVE	-0.0062	-0.87
SOCIAL**	0.0178	3.56
PLANNED**	-0.0602	-17.05

** Variable is significant at α=.001

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