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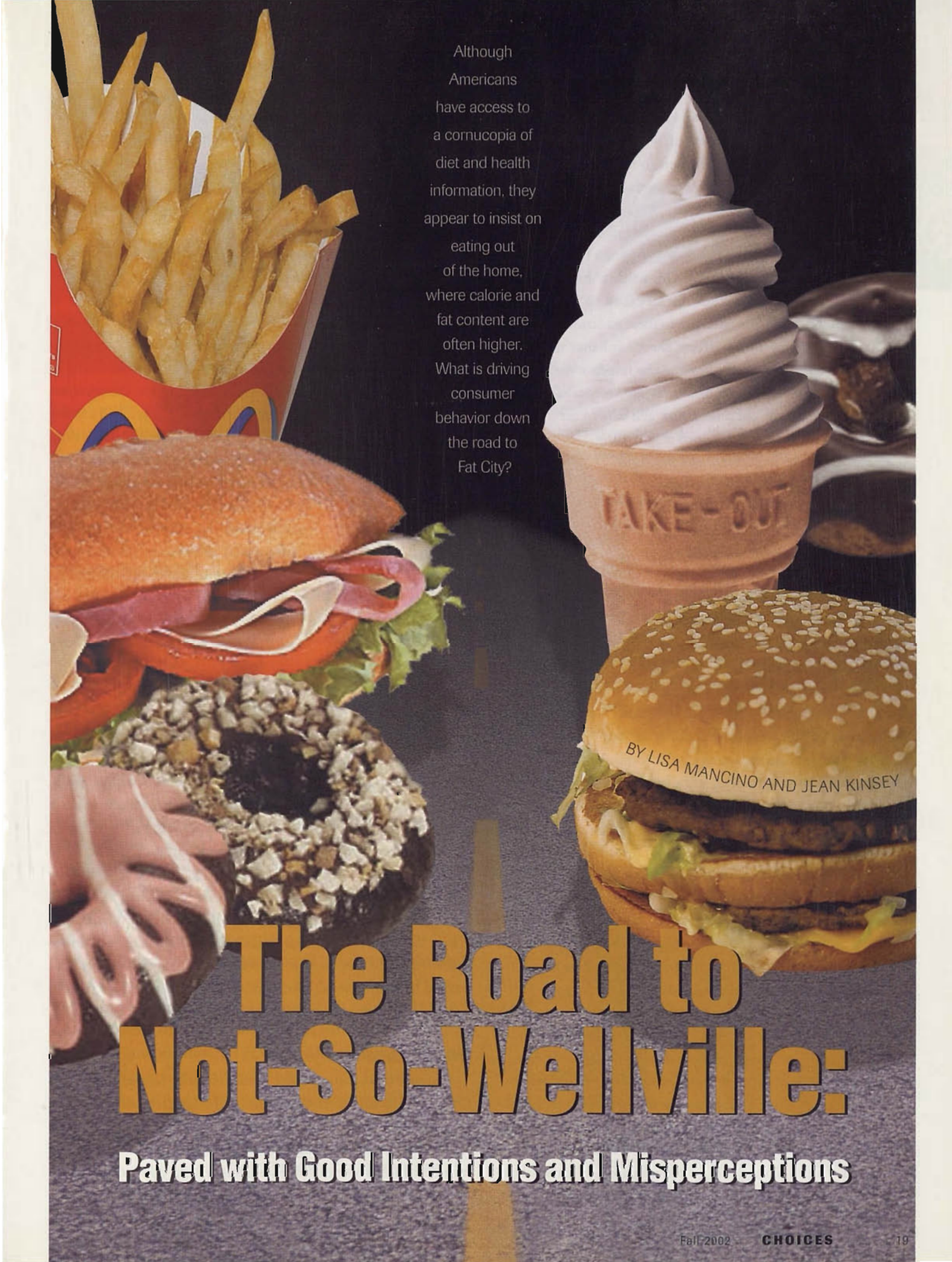
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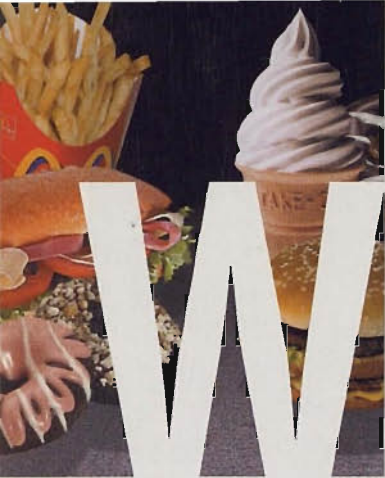


Although Americans have access to a cornucopia of diet and health information, they appear to insist on eating out of the home, where calorie and fat content are often higher. What is driving consumer behavior down the road to Fat City?

BY LISA MANCINO AND JEAN KINSEY

The Road to Not-So-Wellville:

Paved with Good Intentions and Misperceptions



hat we know about the importance of eating well should increase our intentions to follow a healthy diet. Unfortunately, intentions can be thwarted by circumstances, such as hunger, a hectic schedule, and where we choose to obtain our food (Figure 1). This article illustrates the way these factors tend to thwart good

intentions. Making specific reference to these situations, and suggesting ways to mitigate their effects, should enhance the usefulness of educational campaigns designed to improve diet quality.

The public policy approach to improving Americans' diet and health centers on telling consumers how and why to eat well. National campaigns have aimed at educating Americans about the importance of a healthful diet: Consume "Five a Day" for fruits and vegetables. Follow the food guide pyramid. Limit calories from fat. These campaigns contribute to the growing number of shoppers who say that their grocery purchases are affected by health concerns, and who believe that eating well is more effective than medication in health care management.

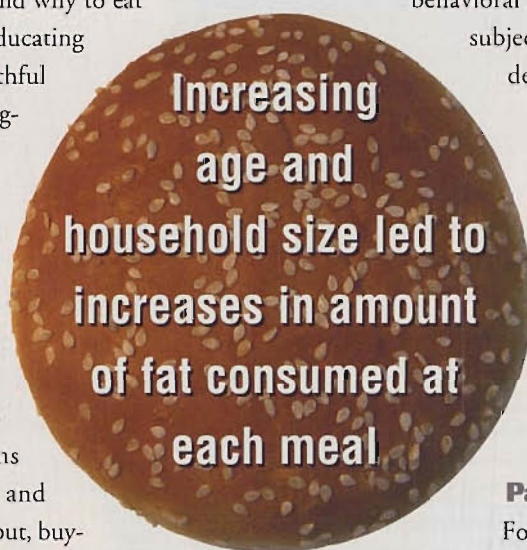
Meanwhile, the rising number of dual-income and single-parent families means that more shoppers are pressed for time and willing to pay for the convenience of eating out, buying ready-to-eat meals, or dining on fast foods. Unfortunately, Americans demonstrate little knowledge about the nutrient content — especially fat and calories — of food prepared away from home (Kennedy et al.). While information about their nutritional value is almost always unavailable, these foods tend to be both higher in fat and calories than home-prepared meals (Figure 2). An individual who eats a Big Mac, a medium order of French fries, and a medium Coke for lunch consumes 1,250 calories and 54 grams of fat. This meal accounts for almost 63 percent of the daily calories and 83 percent of the recommended fat intake for someone on a 2,000 calorie-per-day diet.

Americans claim to better understand the relationship between diet and health, but they are increasing their risk of suffering from diet-related illnesses. The cause is unclear; it may be that Americans just eat too much of everything, or there may be a clear division between the people who eat poorly and those who eat healthfully. Alternatively, it may be that individuals try to incorporate their beliefs about healthy eating into their food choices, but because of time constraints and the desire for convenience — situational factors — they sacrifice good intentions for immediate gratification.

The difference between what an individual chooses to do, and what she believes she should do, is an example of a time-inconsistent choice. An individual makes a choice, perhaps under pressure or in haste. The individual might not have made the same choice in a more objective situation. For example, an individual may claim that for tomorrow's dinner, she would prefer a broiled chicken breast at 6:30PM over a hamburger at 5:35PM. However, when making this same decision for tonight's dinner (while hungry and pressed for time), this same person may decide that a hamburger now is preferred to broiled chicken in one hour. Although the one-hour delay between alternatives has not changed, eliminating the 24-hour planning horizon causes the ranking of alternatives to switch.

Such inconsistencies are well documented in the literature on

behavioral economics, where both human and animal subjects have switched their choices when the time delay is shortened. Despite these findings, traditional economic studies of consumer behavior have relied primarily on prices, income, and information to explain food choices. Advances in behavioral economics suggest that understanding consumers' motivations can be improved by incorporating the effects of situational factors such as time delays on the link between intentions and actual behavior.



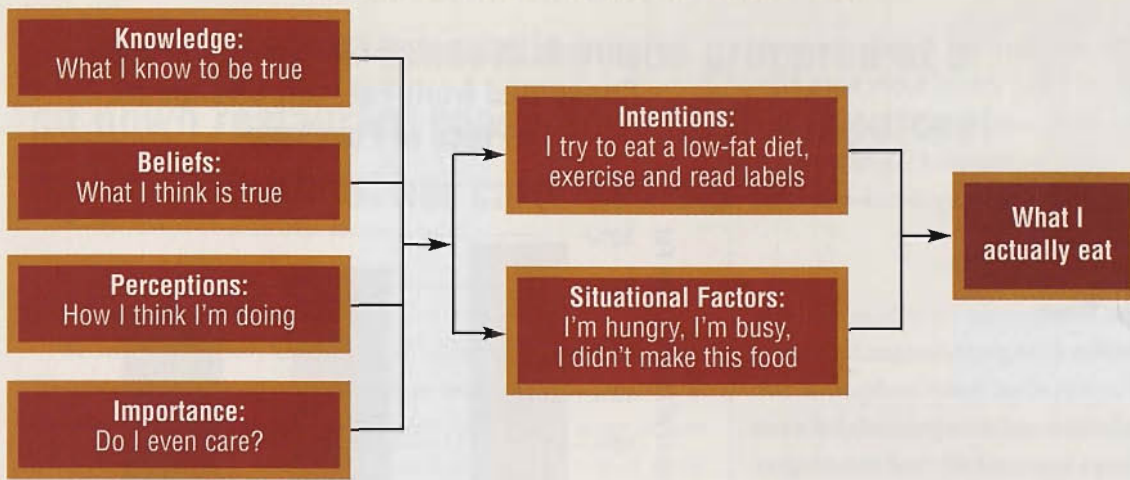
Paved with Choices

For example, suppose 100 individuals were surveyed about what they ate for lunch and about their corresponding knowledge of health and nutrition, revealing a positive relationship between diet quality and information about nutrition. Knowing how hungry the individuals were when they decided what to have for lunch could reveal a relationship between degree of hunger and nutritional knowledge in food selection. In this case, increasing hunger leads to greater sensitivity to delayed outcomes (eat *now*, regardless of the nutritional implications). Thus, there are two distinct relationships between nutritional knowledge and diet quality: one where diet quality is highly correlated with nutritional information, and one where food choices tend to be less nutritionally based, regardless of knowledge.

What's The Point?

If some food choices show inconsistencies related to specific situational factors, then our educational efforts regarding the relationship between health knowledge and diet quality can be improved by acknowledging situations in which individuals are prone to make inconsistent choices and suggesting ways to minimize the effects. To do this, we first need to establish that short-term

Figure 1: What I Know vs What I Eat



situational factors, such as hunger and time constraints, do indeed affect our eating decisions. We also need to determine how these factors interact with health objectives when making eating decisions (Figure 1). This will identify the situations in which intentions about a healthy diet give way to one's demand for convenience and immediate gratification.

What's Our Data?

The United States Department of Agriculture's (USDA) 1994-1996 Continuing Survey of Food Intake by Individuals (CSFII) and the companion Diet and Health Knowledge Survey (DHKS) were used to test for time-inconsistent food claims. The CSFII contains information on individuals' food intake as well as personal and household characteristics such as age, gender, education, race, income, and family size. The DHKS provides information on individuals' attitudes and knowledge about dietary guidelines and their ability to use them correctly.

Using the Data to Make Some Variables: Health Objectives

We assumed that an individual's intentions to eat well are dictated by her knowledge and beliefs about health and nutrition, her perceptions about her own diet quality, and her views on the importance of a good diet for good health. Although someone may be fully aware of the linkage between obesity and health problems, she will not act on this information if she does not think it is important. The study shows how individuals use different aspects of information when making food choices. For this test, health information is grouped into five categories: knowledge, beliefs, perceptions, importance, and intentions.

Individuals' responses from specific questions on the DHKS were used to create proxies for these categories. Questions that form the knowledge index have well-defined right and wrong answers. Objective responses to questions like, "Please identify the recommended number of daily servings of vegetables" were used to form this index.

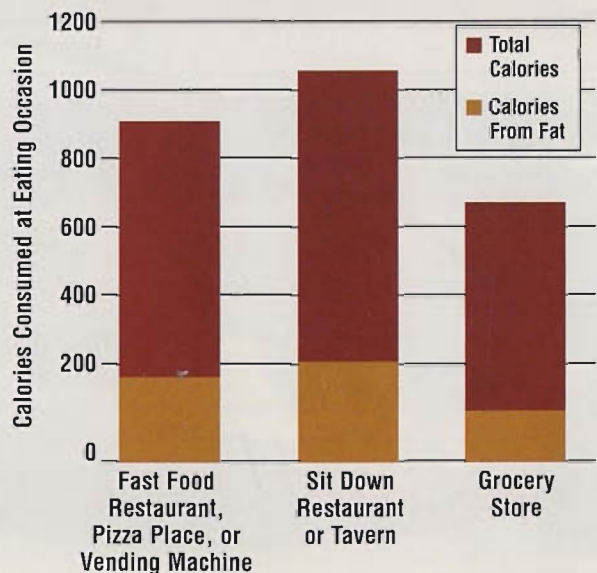
In contrast, subjective questions were used to form the beliefs index: "How many diseases do you attribute to consuming too much fat?" The perceptions index was constructed by comparing how respondents ranked their own diet quality to how their

actual diet was ranked using the USDA's Healthy Eating Index (Bowman et al.; Variyam, Shim, and Blaylock). The importance index came from respondents estimating the importance they placed on maintaining a healthy weight, limiting saturated fat, eating fiber, and limiting cholesterol. The intentions index relates to an individual's special diet, use of nutritional labels, or level of physical activity.

Creating Variables from Circumstances

We analyzed eating decisions at each eating occasion to isolate the effects of hunger, time delay, and food source. Although the CSFII does not ask individuals how hungry they were at each eating occasion, it provides the elapsed time between eating occasions, calories consumed at the previous eating occasion, and the amount of simple carbohydrates in the last snack or meal. Foods high in starch, high in sugar, and low in fiber have a high "glycemic count," which

Figure 2: Calories and Portion of Calories from Fat Consumed at a Single Eating Occasion, by Place of Purchase



can cause insulin levels to spike and leave one feeling extremely hungry when insulin levels drop. Thus, eating foods with high glycemic counts may lead to increased sensations of hunger at the next eating occasion. For that reason, we included the ratio of carbohydrates to fiber consumed at the previous eating occasion in order to construct a “glycemic index.”

So Much to Eat, So Little Time

We tested to determine whether changes in hunger, time pressures, and food source significantly affect nutrient demand. We also tested to see if increases in hunger and time pressures led to an increased demand for convenience foods, which tend to be higher than home-cooked foods in calories, fats, sodium, and cholesterol. Finally, we evaluated how the use of nutritional information changes as one becomes hungrier, busier, and eats more foods away from home.

Do Situational Factors affect Nutrient Demand?

Several familiar demographic factors had a significant effect on average fat consumption per meal. Increasing age and household size led to increases in amount of fat consumed at each meal. Also, individuals who lived in the southern United States or in rural areas consumed above-average quantities of fat at each meal. We also found that situational factors, such as the interval between meals, the amount and kind of food consumed at the previous meal, and where the meal was purchased also help explain food choices.

Increasing the interval between meals, increasing the glycemic count of the previous meal, and decreasing the size of the previ-

Figure 3: Estimated Change in Calories Consumed from Fat with the Amount of Time Between Eating Occasions

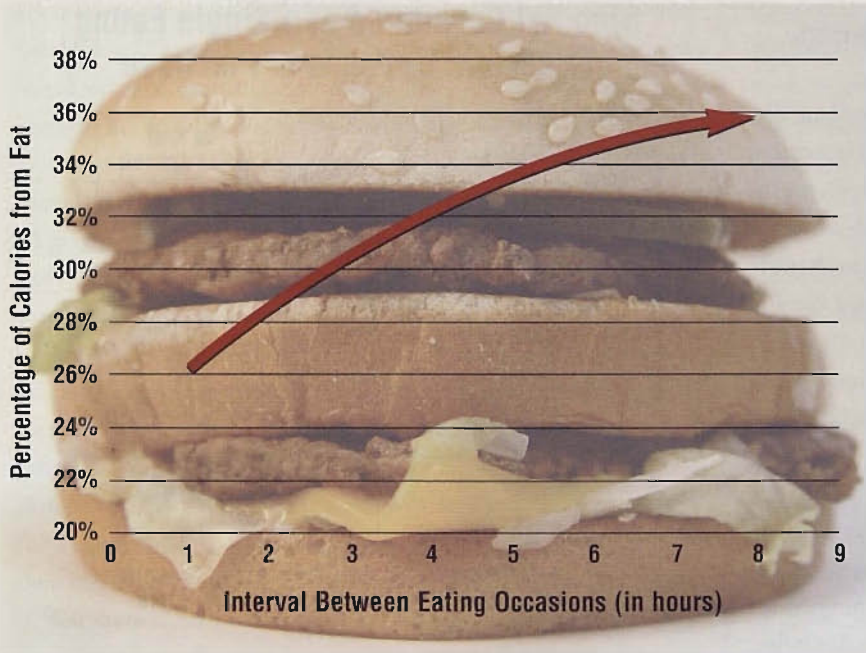
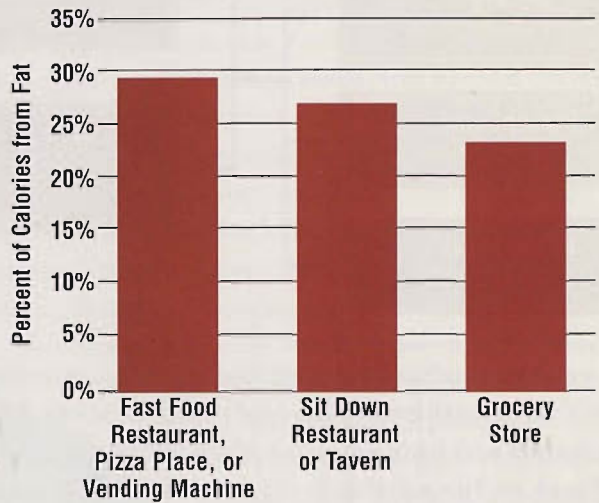


Figure 4: Estimated Change in Calories Consumed from Fat with Change in Place of Purchase



ous meal were all associated with significantly higher fat consumption at the current eating occasion. Eating occasions that occurred at a bar, fast food place, or restaurant contained significantly more fat than snacks or meals consisting of food purchased at a grocery store. Figure 3 shows how the percentage of calories from fat changed with the interval between meals.

On average, increasing the interval between meals by 30 minutes was associated with a two percentage-point increase in the consumption of calories from fat. However, this relationship began to level off after about six and a half hours between meals.

Does the Situation Affect the Decision?

We also found that increasing the interval between meals, the consumption of high glycemic foods at the previous meal, and the number of hours worked in a given week significantly increased the likelihood that an individual consumed foods away from home. Moreover, the percentage of calories from fat changed with the food source (Figure 4). On average, an individual consuming food prepared at a sit down restaurant consumed about 3.5 percent more of her calories from fat compared to what she would have had if she prepared the meal at home. She would have consumed about six percent more calories from fat if she ate food from a fast food place or pizza parlor.

...an individual consuming food prepared at a sit down restaurant consumed about 3.5 percent more of her calories from fat

Intentions in Action

We found that not all aspects of information had the same effect in influencing observed behavior. Increasing the accuracy of perceptions about one's own diet quality and putting more importance on health and nutrition reduced the fat content of foods consumed at the current eating occasion. On average, a one-point improvement in accuracy of perception was associated with a five-tenths percent reduction in the consumption of calories from fat. A one-point increase in the importance of diet quality was associated with a seven-tenths percent reduction in calories from fat.

As people became hungrier, busier, and consumed more foods away from home, the impact of their good intentions changed. As suggested in Figure 3, when individuals went more than four hours between eating occasions, their nutrition information became significantly less effective as a predictor of fat consumption. When people ate food from a restaurant, fast food place, or pizza parlor, their nutrition information also became significantly less of a predictor of observed fat consumption. There was no significant difference in the use of information based on levels of education or obesity.

Using Situational Factors

Using advances in behavioral economics to analyze nutrient intake improves our understanding of how situational factors and long-term health objectives affect food choices. Certain situational factors contribute to time-inconsistent behavior. As individuals become hungrier and busier, their use of information plays a smaller and smaller role in food choice. They seek immediate gratification.

The inconsistencies might be eliminated by increasing the convenience of "healthy" foods or by improving the nutrient content of "convenient" foods. Consumers can help themselves by limiting the interval between meals and limiting the consumption of simple carbohydrates. Controlling for these factors should strengthen the link between good intentions and observed behavior, ultimately reducing the frequency of time-inconsistent food choices.

Future nutrition-education campaigns should focus on the messages that can exert the most influence over observed behavior. Our results suggest the individual's perceptions about her own diet quality and the level of importance placed on maintaining a good diet are key "message items."

A more efficient way to induce change might be to help individuals become aware of the quality of their diet, and convince them

that diet quality is important for healthy living. Our findings suggest that benefits accrue to providing nutritional information on foods prepared away from home. Although labeling laws have continued to improve our understanding of the nutrient content of food purchased at a grocery store, there is room to improve our understanding of foods prepared away from home.

How well an individual is able to match intentions to actually eating healthfully changes with time pressures, hunger, food source, and the type of foods consumed. As people change their dietary goals based on prevailing nutritional lore, such situational factors will continue to interfere with one's long-term health objectives.

For More Information:

Empirical findings are from Lisa Mancino's Ph.D. Thesis titled "Americans' Food Choices: The Interaction of Intentions, Impulses, and Convenience." In press.

Bowman, S.A., M. Lino, S.A. Gerrior, and P. Bastiosis. *The Healthy Eating Index: 1994-1996*. U.S. Department of Agriculture, Center for Nutrition Policy and Promotion. CNPP-5, Washington DC, 1998. <http://www.usda.gov/cnpp/hei94-96.PDF>

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Variyam, J.N., Y. Shim, and J. Blaylock. "Consumer Misperceptions of Diet Quality." *Journal of Nutrition Education*. 33 (November/December 2001): 314-321.

Lisa Mancino is a graduate student in the Department of Applied Economics at the University of Minnesota. Jean D. Kinsey is Professor in the Department of Applied Economics and co-director of the Retail Food Industry Center at the University of Minnesota.

