

# Mindless Eating and Healthy Heuristics for the Irrational

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Food choice decisions are not the same as intake volume decisions. The former determine *what* we eat (soup or salad); the latter determine *how much* we eat (half of the bowl or all of it). Large amounts of money, time, and intelligence have been invested in understanding the physiological mechanisms that influence food choice (James O. Hill, forthcoming). Much less has been invested in understanding how and why our environment influences food consumption volume. Yet environmental factors (such as package size, plate shape, lighting, variety, or the presence of others) affect our food consumption volume far more than we realize (Wansink 2006).

Whereas people can acknowledge that environmental factors influence others, they wrongly believe they are unaffected. Perhaps they are influenced at a basic level of which they are not aware. A better understanding of these drivers of consumption volume will have immediate implications for research, policy, and personal interventions. There are three objectives of this paper: (1) explain why environmental factors may unknowingly influence food consumption; (2) identify resulting myths that may lead to mis-specified models or misguided policy recommendations; and (3) offer clear direction for future research, policy, and personal dietary efforts.

## I. Why Do We Overeat?

Many seemingly unrelated environmental factors consistently influence eating behavior. In this review we highlight how these factors work. Our colleagues in this session have outlined how eating as a secondary activity (Marianne

Bertrand and Diane Whitmore Schanzenbach 2009) and the use of information (George Loewenstein, Julie Downs, and Jessica Wisdom 2009) may play significant roles. Primarily, environmental factors influence eating by altering perceived consumption norms, or interfere with our ability to monitor how much we have consumed (Wansink 2004).

### A. Consumption Norms Offer Suggestible Benchmarks

For many individuals, determining how many pieces of pizza to eat for lunch is a low-involvement behavior that can be based on how much one normally consumes (Wansink, Robert J. Kent, and Stephen J. Hoch 1998). Yet consumption can also be unknowingly influenced by environmental cues—benchmarks or reference points—that may subtly suggest a consumption norm that is appropriate, typical, reasonable, and normal.

For instance, the number of items in an assortment or the eating behavior of a dinner companion may serve as a benchmark that a person uses to gauge how much to eat or drink. Similarly, large packages, plates, serving bowls, and even pantries have all been shown to increase how much a person serves and consumes by 15 to 45 percent (cf. Wansink 2006). The consumption norms suggested by these large sizes have been shown to influence experts—leading professional bartenders to overpour alcohol and nutritional science professors to overserve themselves ice cream. Moreover, the tendency to be biased by these cues may be even as powerful—within limits—as the taste of the food itself. When movie-goers in a Philadelphia suburb were given large-size containers of stale, 14-day-old popcorn, they still ate 38 percent more than those given the medium-sized containers despite the popcorn's poor taste (Wansink and Jun-Yong Kim 2005).

All of these cues perceptually suggest that a larger amount of food is normal, appropriate, and reasonable to consume. Most

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individuals dutifully follow these implicit suggestions. The influence of consumption norms, as with normative benchmarks generally, often occurs outside of conscious awareness.

### *B. Consumption Monitoring and Calorie Estimation Is Highly Inaccurate*

Eating is multidimensional and difficult to monitor. This can lead people to focus more on food choice than on their consumption volume of the chosen food, and it can lead to unmonitored, unintended overeating. Calorie estimates are biased not only by the size of packages and plates, but also by the size of a meal. In general, all people underestimate their calorie consumption by a predictable compressive power function (Wansink and Pierre Chandon 2006a).

In addition to this basic tendency to underestimate one's calories as a function of the size of a meal, people are biased by the "health halos" that accompany labels. A series of studies where foods were falsely labeled as being "low fat" led consumers to overconsume these foods relative to control foods. Even when taking into account the average (11 percent) reduction in the calorie content of low-fat offerings, these people ate 34 percent more calories than the control group (Wansink and Chandon 2006b). A similar result was found with regard to how much a person ordered and ate from restaurants they perceived as healthier versus less healthy (e.g., Subway versus McDonald's). That is, although consumers ate 11 percent fewer calories than when at McDonalds, they estimated they had eaten 37 percent fewer.

## **II. Two Myths of Mindless Eating**

The unique context of eating may challenge the assumptions that researchers and public policy officials have about consumers and rational decision making. When faced with food, people respond differently than when faced with other purchases. This can lead researchers and public policy officials to make assumptions about mindful eating that take on an untested yet near mythical surety.

### *A. Mindless Eating Myth 1: People Know How Much They Want to Eat*

In one study, 62 MBA students were presented with a 90-minute class session that used lectures,

videos, demonstrations, and group activities to underscore that if they were presented with a gallon serving bowl of Chex Mix, they would serve and eat more than if they were presented with two half-gallon serving bowls. At the end of this session, these were informed, intelligent consumers. Six weeks later, these same students were invited to an apparently unrelated Super Bowl party where they were presented either gallon-size serving bowls of Chex Mix or twice as many half-gallon bowls. Those presented with the gallon bowls served 53 percent more and ate 59 percent more.

When asked if they believed the size of the serving bowls influenced their behavior, they denied it influenced them (Wansink and Matthew M. Cheney 2005). Similarly, consider the studies showing that Philadelphia bartenders poured 28–32 percent more into short wide tumblers than tall, narrow high-ball glasses. After pointing out their bias, the bartenders were asked to pour again. Although they were a bit more accurate, they still poured 21 percent more into the wider glasses than the taller ones (Wansink and Koert van Ittersum 2005). Whereas people readily acknowledge these environmental factors influence other people, they deny the influence on themselves.

### *B. Mindless Eating Myth 2: People Know when They are Full*

One objection to studies that show that people overserve themselves in response to environmental cues is to argue that people may get tricked into overserving themselves, but they would not overeat. This presupposes that a person is more responsive to their internal cues of satiation (such as hunger or taste) than to external cues.

The extent of this predisposition varies across people. One study asked a matched set of 150 Parisians and Chicagoans when they knew they were through eating dinner. The Parisians said they knew they were through eating dinner when they "were no longer hungry" or when the "food no longer tasted good"—both internal cues of satiation. In contrast, the Chicagoans said they knew they were through eating dinner when their "plate was empty" or when the TV show they were watching "was over"—external cues of satiation. Yet regardless of culture, overweight people used more external than internal cues (Wansink, Collin R. Payne, and Chandon 2007).

This physiological view toward satiety was further challenged in a study that suggested that people stop eating when their dish is empty. When a soup bowl was designed to automatically refill itself, those who had been given these bowls ate an average of 73 percent more than those eating from a regular bowl. When asked if they were full, a common response was, “How can I be full, I still have half a bowl left?” (Wansink, James E. Painter, and Jill North 2005). A similar study involving the bussing of chicken wing bones at an all you can eat restaurant showed a similar result. Those whose chicken wings had been bussed ate 34 percent more, but did not believe it.

People may believe they know when they are full, but studies in the field suggest they eat more with their eyes than with their stomach. Indeed, we may *think* we know when we are full, but that is our fallibility.

### III. Healthful Heuristics for the Irrational

Portion control and calorie counting are difficult for even the most diligent. It becomes even more problematic when environmental cues bias one’s feeling of satiation. Given that only 1 in 20 dieters successfully maintains weight loss (Hill 2009), it appears that strict, mindful regulation may not be the winning strategy for many individuals. For some, it may be easier to change their environment than to change their mind (Wansink 2006).

Most people know that an apple is better than a candy bar, and that a candy bar is better for them than two candy bars. It is less clear that consumers need more nutrition information than they need better heuristics to help them develop a bias toward eating less and eating more healthfully. Such rules could offset irrational tendencies.

To examine this in a pilot study, 1,000 visitors were recruited from a weight-loss Web site ([www.MindlessEating.org](http://www.MindlessEating.org)) and asked to be involved in a three-month study where they would be randomly assigned three small behavior changes they were encouraged to make. These changes were ones that had led people to eat less in controlled lab studies (such as “use ten-inch dinner plates,” or “eat fruit before snacking”). Their self-reported weight and their compliance were tracked for three months.

Despite the limitations of this exploratory pilot, some useful findings are worth highlighting. As the abbreviated descriptions in Table 1 indicate, the effectiveness of the heuristics var-

ied. Although they ranged from a 1.93-pound monthly weight loss (e.g., use ten-inch plates for dinner) to a 0.83-pound monthly weight gain (eat oatmeal for breakfast), the average heuristic resulted in an average weight loss—1.16 pounds/month per person—that was statistically different from zero ( $t(19) = -13.3, p < 0.001$ ). In this pilot study, there are additional findings that provide promise for more focused investigation:

- (i) There is a low degree of correspondence between monthly compliance and weight loss. While some heuristics were easier to comply with, they did not lead to the greatest weight loss.
- (ii) The most effective heuristics entailed little decision making (such as use a smaller plate or eat in the kitchen) and little ambiguity.
- (iii) Flexible heuristics (eat a hot breakfast) were easier to comply with and more effective than more restrictive heuristics (eat oatmeal for breakfast).
- (iv) Some heuristics that reduced food intake in lab studies backfired in the field (such as brushing teeth instead of snacking or eating oatmeal for breakfast).

In general, the results show the importance of weighting the effectiveness of an intervention by its compliance and by the estimated weight loss given full compliance (e.g., 30 out of 30 days). Interestingly, these heuristics may help individuals make better food choices by taking their mind out of the game—effectively creating healthful heuristics and behavioral rules-of-thumb.

### IV. The Future of Mindless Eating

It has now becoming increasingly important to better understand what drives food consumption volume (Wansink 2004). Consumers’ well-being will advance if these discoveries can help them effectively alter their personal environment so they can reduce the cognitive and convenience costs of eating more healthful amounts.

#### A. Research Advances through Theory

Since the mid-1960s, researchers have been identifying many important factors correlated

TABLE 1—SELF-REPORTED COMPLIANCE AND WEIGHT LOSS FOR HEALTHY HEURISTICS

Heuristic	Number of days of compliance per month	Lbs. of monthly weight loss
Use ten-inch plates for dinner	8.14	-1.93
Don't eat with the TV on	6.71	-1.58
Eat fruit before snacking	6.10	-1.11
Eat a hot breakfast	12.11	-1.07
Eat vegetables and salad first	4.23	-1.05
Use the half-plate rule	7.87	-0.60
Store produce on middle refrigerator shelf	7.31	-0.47
Limit snacks to three bites	6.02	-0.29
Brush teeth instead of snacking	4.61	0.18
Eat oatmeal for breakfast	8.68	0.83

with food consumption. The next evolutionary step needs to be in the direction of understanding the “whys” behind food intake volume. The focus needs to explain why we eat how much we eat, rather than simply showing how much is eaten and when. This will require new theory and supporting research. In redirecting our research efforts, two promising areas for study involve (1) consumption norms, and (2) consumption monitoring and calorie estimation. Both at least partially explain the impact of seemingly disparate drivers of consumption (such as package size, variety, and social influences). Keeping a focus on the mechanisms or processes behind consumption—the whys behind it—will help the interdisciplinary area of food consumption progress in ways that can raise its profile and its impact on policymakers, and ultimately on consumer welfare.

#### *B. Increasing Consumer Well-Being Requires Changing One's Personal Environment*

Consumption is a context where understanding fundamental behavior has immediate implications for consumer welfare. People are often surprised by how much they consume. This indicates they may be influenced at a basic level of which they are not aware. This is why simply knowing these environmental traps does not typically help one avoid them. Relying only on cognitive control and on willpower is often disappointing. Furthermore, consistently reminding people to vigilantly monitor their

actions around food is not realistic. Continued cognitive oversight is difficult for those who are focused and disciplined. It is nearly impossible for those who are not.

What can be done? The environment can work for people or against people. On one hand, it can unknowingly entice and contribute to our overconsumption of food. On the other hand, a personally controlled environment can help people more effortlessly manipulate their consumption and lose weight in a way that does not necessitate the discipline of dieting or relinquishing self-governance to another. For some, this might involve repackaging food into single-serving containers, storing tempting foods in less convenient locations, and pre-plating one's food prior to beginning a meal. Perhaps individuals do not need more nutrition information, but information about their own behavioral tendencies and how they may be more easily managed through heuristics.

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