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Pathways to Obesity

Are People “Hardwired” to Overeat?

In the past three decades, obesity has become a global epidemic. Although prevalence is highest in developed nations, developing nations have also seen alarming increases in obesity. What accounts for this trend and what can be done about it? A recent study by RAND researcher Deborah Cohen explores the causes of obesity and implications for reversing this trend. Specifically, Cohen reviews what is known about the interaction between the food environment and human neurophysiology. She provides initial evidence that the obesity epidemic is largely the consequence of excessive availability of food combined with an overabundance of cues to eat that appeal to the way the human brain is “wired” to respond to food.

Cohen notes that, although the dominant thinking about obesity prevention focuses on willpower, exercise, and better food choices for consumers, it is unlikely that human nature, metabolism, or understanding of food has changed dramatically in the past 30 years. What has changed is the food environment. Food, especially easily prepared, high-calorie items, has become more available and affordable. Numerous studies have demonstrated that people can be manipulated into eating more calories than they need by factors such as

- portion size
- food visibility
- ease of obtaining food.

Thus, it is likely that the mechanisms that affect overeating are not the result of conscious choice but operate below the level of individual awareness and beyond individual control. The research literature suggests that humans are neurologically “wired” to respond to the availability of food in ways that lead to overconsumption. Cohen proposes ten human characteristics—neurophysiological pathways—that could account for overeating. These pathways include the following:

- Seeing or smelling food can trigger *hormonal responses* that drive people to eat even when not hungry.
- Recently discovered brain cells known as *mirror neurons* are responsible for imitative behavior and could cause people to imitate the eating behavior of others.
- People have *limited cognitive capacity* to process information when making decisions; when faced with an overload of information, such as an abundance of cues to eat, they typically fall back on impulsive behavior. For eating, impulse often translates into overconsumption.
- People have an *inborn preference for fat and sugar*: People tend to choose items high in sugar and fat when they operate on impulse.

Given the lack of awareness of the environmental forces that cause people to eat too much and the limits on their ability to control responses to food, the author calls for more-careful regulation of the food environment, including limits on the number and types of food-related cues, portion sizes, food availability, and food advertising.

This fact sheet is based on Cohen DA, “Neurophysiological Pathways to Obesity: Below Awareness and Beyond Individual Control,” *Diabetes*, Vol. 57, July 2008. Available online July 2008, at <http://diabetes.diabetesjournals.org/>.

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