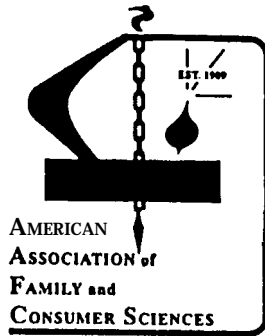


DECEMBER 1994
Volume 23, Number 2



Family and Consumer Sciences Research Journal

Formerly Home Economics Research Journal



SAGE Periodicals Press

Antecedents and Mediators of Eating Bouts

Brian Wansink
Dartmouth College

Understanding eating bouts is of both theoretical and practical importance. Two questions are examined here: (a) What stimulates eating bouts? and (b) What influences how much food will be consumed during such a bout? The results from a survey of 178 adults suggest that satiating episodes in which a person consumes three times the amount of a particular food than he or she would typically consume are viewed as constituting an eating bout. These eating bouts can be stimulated by internal cues, such as moods or cravings, or by external cues, such as the visual or aromatic salience of the food. In general, eating bouts that are stimulated by internal cues are perceived as being less reasonable, less healthy, and less enjoyable, leaving a person feeling more guilty, lonely, and depressed. Furthermore, it was found that when an eating bout was stimulated by external cues, the food's nutritional value, versatility, and perishability influenced how much was eaten. In contrast, when an eating bout was stimulated by internal cues, these factors were not influential in how much was eaten. The educational implications of these findings are then discussed.

Dramatic increases in the volume consumed of a certain food are referred to as eating bouts. Such bouts involve everything from soup and oranges to cookies and ice cream, and they influence the consumption patterns of nearly all households. Because of this, understanding eating bouts is of both theoretical and practical importance. To this extent, this article addresses two questions: (a) What stimulates eating bouts? and (b) What influences how much food will be consumed during such a bout?

Irregularities in a person's rate of consumption of a particular food are common (Laguerre, 1991). Some irregularities can be attributed to particular situations or occasions, such as weddings, holidays, vacations, or dinner parties. Others can be attributed to the seasonality

Author's Note: Dr. Wansink is currently Visiting Professor at the Wharton School, University of Pennsylvania. He is grateful to the Iowa State Extension Service for their support of this research. Special thanks also to Bruria Miron, Ellen Ziv, and Bonnie Shaw for their help in data collection and analysis, and for the reviewers who provided valuable input to this article. For further information, please contact Professor Brian Wansink, Amos Tuck School, Dartmouth College, Hanover, NH 03755.

Family and Consumer Sciences Research Journal, Vol. 23, No. 2, December 1994:166-182
© 1994 American Home Economics Association

Antecedents and Mediators of Eating Bouts

Brian Wansink
"Dartmouth College

Understanding eating bouts is of both theoretical and practical importance. Two questions are examined here: (a) What stimulates eating bouts? and (b) What influences how much food will be consumed during such a bout? The results from a survey of 178 adults suggest that eating episodes in which a person consumes three times the amount of a particular food than he or she would typically consume are viewed as constituting an eating bout. These eating bouts can be stimulated by internal cues, such as moods or cravings, or by external cues, such as the visual or aromatic salience of the food. In general, eating bouts that are stimulated by internal cues are perceived as being less reasonable, less healthy, and less enjoyable, leaving a person feeling more guilty, lonely, and depressed. Furthermore, it was found that when an eating bout was stimulated by external cues, the food's nutritional value, versatility, and perishability influenced how much was eaten. In contrast, when an eating bout was stimulated by internal cues, these factors were not influential in how much was eaten. The durational implications of these findings are discussed.

Dramatic increases in the volume consumed of a certain food are referred to as eating bouts. Such bouts involve everything from soup and oranges to cookies and ice cream, and they influence the consumption patterns of nearly all households. Because of this, understanding eating bouts is of both theoretical and practical importance. To this extent, this article addresses two questions: (a) What stimulates eating bouts? and (b) What influences how much food will be consumed during such a bout?

Irregularities in a person's rate of consumption of a particular food are common (Logue, 1991). Some irregularities can be attributed to particular situations or occasions, such as weddings, holidays, vacations, or dinner parties. Others can be attributed to the seasonality

Author's Note: Dr. Wansink is currently Visiting Professor at the Wharton School, University of Pennsylvania. He is grateful to the Iowa State Extension Service for their support of this research. Special thanks are due to Bruria Miron, Ellen Ziv, and Bonrie Shaw for their help in data collection and analysis, and for the reviewers who provided valuable input to this article. For further information, please contact Professor Brian Wansink, Amos Tuck School, Dartmouth College, Hanover, NH 03755.

Family and Consumer Sciences Research Journal, Vol. 23, No. 1, December 1994 166-182
© 1994 American Home Economics Association

and availability of the food. This article focuses on eating bouts that occur in typical, everyday situations. In doing so, it makes three key contributions. First, it suggests that there are theoretical and empirical distinctions between those eating bouts that are stimulated by internal cues versus those that are stimulated by external cues. Second, it identifies food-related factors that mediate the volume of food consumed during an eating bout. These factors include the nutritiousness, substitutability, price, and perishability of the food. Third, the article presents a useful theoretical framework and empirical findings that can aid in nutrition education.

After describing prior research in this area, a theoretical framework for understanding eating bouts is presented and hypotheses are generated. These hypotheses are then tested with a cross-sectional questionnaire that examines the circumstances surrounding the eating bouts of 178 adults, including the antecedents and consequences of these eating bouts. The results and the implications for consumer education are then discussed.

EATING BOUTS

Eating bouts are distinguished from "binging," in that they are not pathological in nature (Herman & Polivy, 1984). That is, they do not represent a dysfunctional or habitual behavior. An "eating bout" refers to a time period in which a particular food is consumed in a much greater volume than is the norm for that individual (Herman & Mack, 1975). One way to objectively characterize the intensity of an eating bout is by comparing the volume of food consumed with the volume of food that an individual typically consumes in a similar time period (Berry, Beatty, & Klesges, 1985).

Dividing the volume of food consumed during the eating bout by the amount generally consumed during that time period provides a ratio of consumption intensity. For instance, if an eating bout involved three times the volume of food that a person would generally consume in that same time period, this ratio of consumption intensity would be 3.0. This ratio enables us to make comparisons across very different foods. That is, ice cream, potato chips, cake, or pizza are measured in very different ways. A ratio (which is a unit-free measure of comparison) enables us to make generalizations across them. The second advantage of using a ratio is that it is sensitive to each individual's specific consumption norms. That is, eating a pint of ice

cream in one afternoon might represent a threefold increase for a light user, but it maybe considered typical for a more frequent user.

Although a basic hunger drive can obviously initiate an eating bout (Bloch, 1978; Logue, 1991), the boundary model of consumption (Herrnan & Polivy, 1984) argues that the point at which a person is hungry and the point at which he or she is full are both subjective and wide-ranging (Sunday, Sanders, & Collier, 1983). Unless one is physically stuffed with food, he or she can still "make room for some more," particularly in the case of foods containing sugar (Berry et al., 1985; Denton, 1982; Ferber & Cabanac, 1987). As a result, although hunger plays a significant physiological role in food consumption, there are other important nonphysiological aspects that also influence eating bouts (cf. McAlister & Pessenier, 1982). Nevertheless, eating bouts often extend far beyond the point where one's physical hunger would be satisfied.

THE CUES THAT STIMULATE EATING BOUTS

A distinction between internal and external cues is used to explain differences in what motivates people to eat (Schachter & Gross, 1968). A series of studies that was conducted in the late 1960s showed that external cues such as food visibility, the number of highly palatable food cues present, and the time of day can all cause a person to consume more food than he or she otherwise would consume (Nisbett, 1968; Schachter & Gross, 1968). These studies implied a dichotomy between internal and external control of feeding (cf. Schachter, Goldman, & Gordon, 1968).

In reality there is likely to be a joint relationship between internal and external cues (Rodin, 1981). That is, a person would not respond to external cues if he or she did not already have an internal predisposition (such as some degree of hunger). Nevertheless, it is important to realize that these two cues probably have very unequal effects. In a particular situation, one may dominate the other.

Reported Reasons Why Eating Bouts Occur

It is interesting to speculate as to whether consumers tend to attribute their eating bouts to internal or external cues. To examine this, a small exploratory study was conducted with 33 female staff

TABLE 1: Reported Reasons for Why an Eating Bout Occurs

Reported Reason	Number (and % of Sample Mentioning Reason (of 33) ^a	
	Speculation About Others	Self-Report of Oneself
Internal cues		
Affect (i.e., love the food, had a craving for it, tastes great, etc.)	22 (67%)	19 (58%)
Mood (i.e., depressed, lonely, anxious, angry, etc.)	19 (58%)	8 (24%)
Hungry (i.e., starving, had not eaten)	3 (9%)	1 (3%)
External cues		
Visual salience/convenience (i.e., it was around/sitting out, wanted to finish it up, it was convenient, etc.)	16 (48%)	11 (33%)
Aromatic salience	1 (3%)	3 (9%)
Miscellaneous/situational cues		
(i.e., birthday, guests, holiday)	7 (21%)	0 (0%)

a. Note that respondents were able to mention more than one reason. Most individuals did mention multiple reasons when speculating about others, but they frequently mentioned only one reason when reporting about their own behavior.

members at a northeastern college. The women were between 25 and 55 years of age with a diverse educational background (the typical subject had attended college but had not necessarily graduated). Although no questions were asked about weight, height, or bone structure, these women appeared to represent a typical cross section of heights, weights, and bone structures for the geographical area. They were told they would be asked a number of questions involving "home economics-related questions." They were then asked to complete questionnaires that asked them what factors they believed stimulated one of their recent eating bouts, and what stimulated an eating bout of a friend or family member. The order in which they were either asked about themselves or about others was randomized. The attributions made about these eating bouts are noted in Table 1.

In general, eating bouts that were stimulated by the visual or aromatic salience of the food can be considered to be externally stimulated, whereas eating bouts stimulated by one's own mood, craving for the food, hunger, and so on can be considered to be internally stimulated. It is interesting to note that these people perceived internal cues to be the cause of the eating bouts of others, but they perceived their own eating bouts to be more externally cued, $\chi^2 =$

5.2, $p < .05$. For example, two family members can split what remains of a cake, but each may attribute different reasons as to why they ate it and as to why the other person did the same.

Internal cues. A food is internally cued when one evokes the **food to salience without the aid** of any external cues, such as the presence of the food itself (Schachter, 1971). Research by Kirkley, Burge, and Ammerman (1988) and by Herrnan and Polivy (1984) suggest that when eating bouts are stimulated by internal cues, these bouts may frequently be associated with strong negative emotions, such as depression, boredom, or loneliness. This is consistent with the findings in Table 1. Other internal cues that are noted in Table 1 are ones that are not attributed to emotions per se; instead, they are attributed to a **“craving” or hunger that one** had for the food. Past research has suggested that once a satiation point has been reached and a person is no longer hungry it is clear that “hunger” can no longer motivate consumption (Berry et al., 1985). The data in Table 1 are consistent with this, for very few individuals mentioned hunger to be the factor behind either their own eating bout (9%) or behind the eating bout of others (3%).

External cues. External cues such as the visual or aromatic prominence of the food cars also produce salience (Schachter, 1971). These externally cued eating bouts are the type that are stimulated when one walks past cookies on the table or when one sees half of a cake on a counter. In effect, people claim to eat this food “because it’s there.” In such cases, it seems unlikely that there is a powerful premeditated drive to consume this food; the food simply is convenient and prominent. In effect, the food is salient because of recent exposure to it, not necessarily because a person evoked it from long-term memory (Rook & Hoch, 1985; Schachter, 1971), which can be the case with internally cued eating bouts.

How Do Internally Cued and Externally Cued Eating Bouts Differ?

Recall that **internally cued eating bouts** are more frequently associated with strong negative emotions than are externally cued eating bouts. Although **such bouts are by no means rational or reasonable** in terms of being **premeditated, they are likely to be perceived as more reasonable** than internally cued eating bouts simply because they

have less emotion associated with them. The strong negative emotions associated with internally cued eating bouts are likely to make these bouts appear less reasonable. Therefore, one can hypothesize the following:

Hypothesis 1: When an eating bout is stimulated by an internal cue, a person will perceive it as less reasonable than if it were externally cued.

This hypothesis is important because it has implications for one’s perceptions about oneself. If internally cued eating bouts are seen to be less reasonable than externally cued ones, they should also generate a greater degree of guilt.

Hypothesis 2: When an eating bout is stimulated by an internal cue, a person will feel more guilty about having been involved with it than if it were externally cued.

What Influences How Much a Person Eats?

It has been suggested that the strength of a person’s motivation to consume a food determines the volume of food he or she ultimately consumes (Nisbett, 1968). Internally cued eating bouts are likely to characterize a more intense level of motivation because they necessitate that the food be evoked from longer term memory and that the person locate and open the food (it may not be as convenient as being “on the table”). As a result, when involved in an internally cued eating bout, people may be less rational about the food because they are more motivated and have expended more effort to consume it. If a person is highly motivated about consuming a food and is not rational in the way she or he is viewing the food at that moment, it will be eaten. Food-related characteristics, such as nutrition, perishability, substitutability, or price will have little affect on how much food is eaten.

Hypothesis 3: When an eating bout has been stimulated by an internal cue, the volume of food consumed will be (a) uncorrelated with the food’s perceived nutritional value, (b) uncorrelated with the food’s perceived perishability, (c) uncorrelated with the food’s perceived substitutability, and (d) uncorrelated with the food’s perceived price.

In contrast, recall that Hypothesis 1 stated that eating bouts that are externally cued will be relatively more reasonable. If this is true,

a food that is perceived to be of high nutritional value, relatively inexpensive, perishable, or a convenient substitute for another food is likely to be eaten in greater quantities than foods with opposite characteristics. As a result, we should expect the following.

Hypothesis 4: When an eating bout has been stimulated by an *external cue*, the volume of food consumed will be (a) positively correlated with the food's perceived nutritional value, (b) positively correlated with the food's perceived perishability (c) positively correlated with the food's perceived substitutability and (d) negatively correlated with the food's perceived price.

METHODOLOGY

The objectives of this study are (a) to determine how internally cued eating bouts may be distinct from externally cued eating bouts, and (b) to determine the extent to which the volume of food consumed during these eating bouts is altered by food-related factors such as nutritional value, perishability substitutability, and price.

Respondents and Procedure

Respondents were recruited through seven Parent-Teacher Associations (PTAs) in New Hampshire. Involvement in this study served as a fund-raiser for these PTAs as \$6 were donated to the respective organization for each member who participated in the study. Each PTA managed their own recruitment: Notes were sent home with children, and follow-up phone calls were made by selected members. In all correspondence, the respondents were simply told that we were interested in their experiences with different home economics issues. A total of 212 respondents participated. Seventy-two percent of the respondents were between the ages of 30 and 45, 63% were female, and 62% were employed outside the home. All but three had completed high school, and 32% had completed college. Through visual inspection, it was determined that all but three of the respondents were within a range of what could be considered a normal weight range for their height and their frames. Although it would have been optimal to have weight, height, and body-type measures, questions regarding these measures (along with income) were not allowed by the sponsoring organization because of privacy reasons.

Respondents met in groups of 11 to 19 at the respective schools where their PTA met. They were asked to take alternate seats, and each was given a closed packet of materials containing a cover sheet of instructions and a number of consecutively labeled booklets. The respondents were told they were going to answer a variety of questions that dealt with issues ranging from home economics to how they spend their leisure time.

Each respondent was then instructed to turn to the booklet containing the questionnaire about their consumption habits. On opening the 19-page booklet, they read the following

Many of us go through short periods of time when we eat a particular food more frequently than we usually do. We are interested in getting a better understanding of a recent experience which you had after going on such an eating bout for a particular food. Think carefully about your experience for a few moments and then answer the questions on the next page. If you cannot recall the last time you went on such an eating bout, please continue to the next booklet.

What initially prompted you to start eating this food more frequently than you normally do?

Respondents were given a full page in which to answer these questions. Following this, they were asked the type of food they ate, how much they ate, and what volume of this food they normally ate.

Measures

Respondents were then asked to respond on a 9-point semantic differential scale, ranging from *bad* (1) to *good* (9), as to whether they thought eating this food during this particular occasion was *bad*—good, foolish—wise, unreasonable—reasonable, *appropriate*—inappropriate (Wansink & Deshpande, 1994). The correlation matrix of these four variables provided a Cronbach's alpha (.941) that enabled these four scale items to be averaged as a summary measure of attitude (Nunnally, 1967). Measuring food on these dimensions is consistent with past survey research (Gormally, Black, Daston, & Rardin, 1982; Kidder, 1980; Stemple & Wesley 1988). This construct will simply be referred to as "reasonableness" in subsequent discussions.

Following these attitude measures, respondents were asked specific questions regarding their beliefs about different characteristics of the food (such as its nutritional value, its substitutability with other

products, its perishability, and its price), circumstances surrounding the eating bout (such as the accessibility of the food and its inventory level), and about feelings they associated with the eating bout. All of these questions involved a specific question that the respondent answered by circling the appropriate response on a 9-point Likert-type scale ranging from *strongly disagree* (1) to *strongly agree* (9). Last, basic demographic measures were taken regarding their family size, ages, and education. It took most respondents approximately 35 minutes to complete this 19-page booklet.

Although questions related to height, weight, and bone structure were included in the pilot study, they were not permitted in the main study. It was believed, however, that heights and weights would be normally distributed across the respondents and would not represent a systematic sampling concern. These respondents did not appear to be physically atypical for what would be expected from this population.

RESULTS

Overview

Out of the 212 respondents, 41% reported that their eating bout involved a sweet food, 29% reported their eating bout involved a salty food, and 16% reported eating a dairy-related food (typically ice cream). The remaining 14% of respondents mentioned a variety of foods from casseroles to fruit.

The average consumption volume involved in these eating bouts was 3.1 times the respondents' daily consumption volume for that food. This figure is important because it represents a self-defined benchmark as to what an average individual believes constitutes an eating bout. This ratio ranged from 2.3 to 4.0 and did not vary systematically across the different food types.

These questionnaires were coded by two judges ($\alpha = .87$) to determine whether an eating bout had been internally or externally cued. Consistent with the descriptions of internal and external cues given earlier in the article (see also Table 1), 27% of the eating bouts were coded as being externally cued and 65% as internally cued. The remaining 8% of the questionnaires were ones that were not fully or correctly completed. (Three, for instance, had noted that they had not been involved in an eating bout.) The remainder of the analyses was conducted on the 178 fully completed questionnaires. Eating bouts

that were coded as internally cued involved similar foods as those coded as externally cued.

How Do Internally Cued and Externally Cued Eating Bouts Differ?

It was stated in Hypotheses 1 and 2 that internally cued eating bouts would be perceived as less reasonable than externally cued eating bouts and would generate a greater degree of guilt. These were both confied in Table 2. Respondents having internally cued eating bouts perceived their eating of the foods as being less reasonable than those whose eating bouts were externally cued. The significance of these differences was confirmed when an analysis of variance (ANOVA)¹ was conducted on ratings of whether the respondents considered that eating the food was "unreasonable: $F(1, 177) = 4.5, p < .05$. These respondents were also likely to feel more guilty after this eating bout, $F(1, 177) = 4.4, p < .05$. These differences were consistent across the four different categories of food (salty foods, sweet foods, dairy-related foods, and miscellaneous foods).

Table 2 indicates there are other important differences between internally and externally cued eating bouts. Eating bouts that are categorized as internally cued were not only perceived as less reasonable but, when compared to externally cued bouts, they were also perceived to be less healthy $F(1, 177) = 4.6, p < .05$; less enjoyable, $F(1, 177) = 3.6, p < .05$; and they often involved larger volumes of food, $F(1, 177) = 5.1, p < .05$. These differences existed even though the foods eaten during these two types of bouts were similar.

It is also worth noting that after being involved in an internally cued eating bout, not only did people feel relatively more guilty but they also felt relatively more lonely $F(1, 177) = 3.7, p < .05$, and more depressed, $F(1, 177) = 3.5, p < .05$. In addition, they also rated these foods as memorable from their childhood, $F(1, 177) = 3.4, p < .05$, and as being similar to the foods they liked as children, $F(1, 177) = 3.6, p < .05$.

What Influences How Much a Person Eats?

In Hypothesis 3 (a-d) it was hypothesized that when an eating bout is stimulated by an internal cue, perceptions of the food's nutritional value, perishability, substitutability, and price will not influence how much of a food a person eats. The results in Table 3 partially support these hypotheses. Three of these four variables were uncorrelated

TABLE 2: How Internally Cued and Externally Cued Eating Bouts Differ

Variable	Eating Bouts*	
	Internally Cued (n = 131)	Externally Cued (n = 47)
Consumption intensity (Volume consumed) + (typical volume consumed)	3.4	2.1
Perceptions of the eating bout		
"Eating the food was reasonable-a"	4.5	5.6
"Eating the food was healthy"	4.4	5.4
Perceptions of the food		
"The food is nutritious"	3.3	4.9
"I enjoyed the food"	3.9	5.7
Self-perceptions following the eating bout		
"I felt guilty after eating the food"	5.7	4.2
"I felt lonely after eating the food"	4.9	2.8
"I felt depressed after eating the food"	4.4	2.9
Food-related associations		
"The food reminded me of my childhood"	5.2	3.3
"The food reminded me of foods I liked as a child"	5.0	3.4

a. Information about the characteristics of the product or the situation in which it was consumed were measured on a 9-point Likert-type scale (1 = *strongly disagree*, 9 = *strongly agree*).

* $p < .05$.

with how much food was eaten. The exception was a measure of the food's nutritional value ("The food is less fattening"), which was statistically significant at the .05 level ($r = -.26$). A second measure of nutritional value ("The food is nutritious") was statistically insignificant.

In contrast to this, Hypothesis 3 (a-d) stated that the volume of food eaten during externally cued eating bouts would be positively related with that food's perceived nutritional value, its perishability, and its substitutability, whereas it would be negatively related to its price. This hypothesis was generally supported. People ate more of the foods they viewed as either nutritional, perishable, or substitutable ($p < .01$). As shown in Table 3, the correlation between nutritional value and consumption volume averaged .42 (.41 and .44), the correlation between perishability and consumption volume averaged .32 (.26 and .39), and the correlation between substitutability and consumption volume averaged .61 (.70 and .51). It is likely that this correlation with perishability would have been even higher if not for

TABLE 3: Product-Moment Correlations Between Food Perceptions and Consumption Volume

Food Perceptions	Aggregate (n = 178)	Correlations	
		Internally Cued Eating Bouts Only (n = 131)	Externally Cued Eating Bouts Only (n = 47)
Perceived perishability			
U becomes state quickly	-.06	-.17	.26*
It loses flavor once opened	.10	-.19	.39**
Perceived substitutability			
I can eat it instead of other foods	.12	.11	.70**
I can eat it in a variety of situations	.18	.22	.51**
Perceived price			
I never considered the price	-.05	-.21	-.37
Didn't matter how much I paid	-.04	-.16	-.34
Perceived nutritional value			
The food is nutritious	-.05	-.24	.41**
The food is less fattening	-.04	-.26**	.44**

* $p < .05$; ** $p < .01$.

the fact that these foods generally tended to not be very perishable, thus restricting the variance.

The perceived price of the food was not significantly correlated ($r = -.34$ and $-.37$, $p < .10$) with one's consumption volume. This may be because the price of the food was relatively inexpensive or because people consider price when they buy a product but not necessarily when they use it (Blattberg & Neslin, 1990). That is, price may have an impact on one's choice of a nonperishable item at the grocery store, but it may be forgotten or ignored once the food is purchased and in the cupboard.

DISCUSSION AND IMPLICATIONS

What Stimulates Eating Bouts and Influences the Amount Consumed?

Broadly speaking, eating bouts are stimulated by *external cues* (such as visual or aromatic salience) and by *internal cues* (such as moods, boredom, or hunger). In essence, the food becomes salient because it

is either seen or smelled, or because it is evoked from memory. Although it is not argued that these two cues are mutually exclusive, or that they always operate distinctly they are associated with important differences. Eating bouts that are categorized as internally cued are perceived as less reasonable, less healthy, less enjoyable, and they often involve large volumes of food. Following these eating bouts, people reported that they felt guilty, lonely, and depressed. Do internally cued eating bouts generate these feelings? The answer is unclear because they probably existed prior to the eating bout. It is simply important to realize that these feelings were not eliminated by the eating bout.

Not only do internally cued eating bouts influence attitudes differently than externally cued eating bouts but they also influence how much one eats. If an eating bout is internally cued, the volume of food a person eats tends to be unrelated to the nutritional value, price, substitutability, or perishability of the food. In contrast, if an eating bout is externally cued, a person is more likely to take these factors into account . . . with the exception of price. It is not surprising that a food's price had no impact on consumption volume of externally cued bouts. Prices can influence one's choice in the grocery store but have less of an impact once the food has been purchased and is in the kitchen.

It is interesting to note that people tended to characterize the consumption of a food as an "eating bout" when it involved three times (3.1) as much of that food as they usually consume. This may prove to be a useful benchmark for future research in this area.

Limitations and Future Research Opportunities

These studies provide insights that help us better understand some of the factors that influence eating bouts. An appropriate starting point for this research was to build a model of eating bouts that accounts for the circumstances under which they are stimulated. Although the model presented here incorporates both internal and external cues, the goal of this research was not to examine the relationship between these two cues. These two sets of cues may operate independently, interactively, or in serial. Regardless of the exact relationship, these findings indicate that these two different cues each have dramatically different associations.

Eating-bout intensity has been defined here as a ratio of the volume of food consumed in a particular time period divided by the typical

volume of that food that the person consumes in that time period. How large must this ratio be before it qualifies as an eating bout? Defining a value for this ratio would not only be food specific but it would also depend on how much one typically consumed of that particular food. In this study, the average ratio across all types of foods was 3.1. At this evolutionary stage in eating-bout research, it is best to provide broad parameters for eating bouts and let these bouts be self-defined by the respondents who are examined. We must, however, be aware of the limitations associated with self-reported behavior. A field study in which variables such as external-cue salience were manipulated (instead of measured) would be valuable. Nevertheless, identifying "internal cues" will still be difficult and may still necessitate self-reports.

It is interesting to speculate whether certain individuals have a tendency to be drawn to either internally cued or externally cued bouts. In the future, measures of weight, height, and body type might be useful in helping to determine if these factors can explain the intensity of these bouts. In addition, various psychological characteristics have recently been associated with compulsiveness (O'Guinn & Faber, 1989; Wansink, 1994). These characteristics might help identify the types of people who are predisposed to being influenced by either internal or external cues. Furthermore, the responsiveness to external cues could be generated through a conversation, a recipe, or an advertisement. These different forms of external stimuli can be the focus of laboratory studies, which can examine the degree to which they influence consumption across different psychological profiles of consumers.

IMPLICATIONS FOR EDUCATION

No presumption is made in this article as to whether eating bouts are good or bad because too much depends on the food and on the person. It is clear, however, that when one feels depressed after an eating bout and claims not to have enjoyed the food (see Table 2), an educational program may help them either manage their expectations or modify their behavior. This becomes even more important when we realize that such bouts tend to involve over three times one's typical consumption of that food.

The first step to helping consumers manage their eating bouts is to promote an awareness of those specific factors that can stimulate

eating bouts. People need to be made aware that eating bouts can simply be stimulated by the visual salience of a food. To minimize externally stimulated eating bouts, consumers should be encouraged to make food less available and less visually salient. In other words, keeping a food on the table or counter, or in the front of the refrigerator or freezer, all but guarantees that it will not remain there for long.

To minimize internally stimulated eating bouts, such as those stimulated by moods and cravings, it is important to inform consumers about the consequences of such eating bouts. Not only will they enjoy the food less but they will feel guilty for eating it, and they will eat a relatively large volume of it. **Realizing** that such bouts do nothing to eliminate one's feelings of loneliness or depression may help a person avoid them. Furthermore, it is also important that consumers realize that once these eating bouts begin, they are not guided by reason, and they often continue until that product is depleted from inventory. It is obvious that "if it's not around, you won't eat it." Nevertheless, nothing deters an ice cream eating bout better than having no available ice cream.

SUMMARY

Although eating bouts are **self-defined** and vary across individuals, it is interesting to note that people tended to **characterize** the consumption of a food as an "eating bout" when it involved **approximately** three times as much of that food as they usually consume. Furthermore, it was found that eating bouts that are characterized as being internally cued exhibit important differences from those that are externally cued. Even though they involve identical foods, **internally** cued eating bouts are perceived as being less reasonable, less healthy, less nutritious, and less enjoyable. They also leave a person feeling more guilty, more **lonely**, and more depressed. This also has an impact on the volume of food that one eats. If a person is internally motivated to consume a food, the food's price, nutritional value, substitutability, and perishability have no effect on how much will be eaten. Perceptions of these factors **only influence** how much one eats when the food is externally cued.

NOTE

1. A series of analyses of variance (ANOVAs) were conducted across a number of key dependent variables, and demographic data and product-type dummy variables were included as covariates. Because these variables proved to be insignificant as covariates, they were not included in the analyses reported here (Winer, 1971).

REFERENCES

- Berry, S. L., Beatty, W. W., & Klesges, R. C. (1985). Sensory and social influences on ice cream consumption by males and females in a laboratory setting. *Appetite*, 6, 41-45.
- Blattberg, R. C., & Neslin, S. A. (1990). *Sales promotion: Concepts, methods, and strategies*. Englewood Cliffs, NJ: Prentice-Hall.
- Bloch, M. R. (1978). The social influence of salt. In *Human nutrition* (pp. 187-192). San Francisco: Freeman.
- Denton, D. (1982). *The hunger for salt*. New York: Springer-Verlag.
- Edelman, B., Engell, D., & Hirsch, E. (1986). Environmental effects on the intake of overweight and normal-weight men. *Appetite*, 7, 71-83.
- Ferber, C., & Cabanac, M. (1987). Influence of noise on gustatory affective ratings and preference for sweet or salt. *Appetite*, 8, 229-235.
- Cam, S. M., & Leonard, W. R. (1989). What did our ancestors eat? *Nutrition Reviews*, 47, 337-345.
- Connally, J., Black, S., Daston, S., & Rardin, D. (1982). The assessment of binge eating severity among obese persons. *Addictive Behaviors*, 7, 47-55.
- Herman, C. P., & Mack, D. (1975). Restrained and unrestrained eating. *Journal of Personality*, 43, 647-660.
- Herman, C. P., & Polivy, J. (1984). A boundary model for the regulation of eating. In A. B. Stunkard & E. Stellar (Eds.), *Eating and its disorders* (pp. 141-156). New York: Raven.
- Kidder, L. H. (1980). *Research methods in social relations*. New York: Holt, Rinehart & Winston.
- Kirkley, B., Burge, J. C., & Ammerman, A. (1988). Dietary restraint, binge eating, and dietary behavior patterns. *International Journal of Eating Disorders*, 7(6), 771-778.
- Lea, S. E. G. (1978). The psychology and economics of demand. *Psychological Bulletin*, 85(3), 441-466.
- Logue, A. W. (1991). *The psychology of eating and drinking*. Oxford: Freeman.
- McAlister, I., & Pessemier, E. (1982). Variety seeking behavior. An interdisciplinary review. *Journal of Consumer Research*, 9, 311-322.
- Nisbett, R. E. (1968). Taste, deprivation and weight determinants of eating behavior. *Journal of Personality and Social Psychology*, 10, 107-116.
- Nunnally, J. C. (1967). *Psychometric theory*. New York: McGraw-Hill.
- O'Guinn, T., & Faber, R. (1989). Compulsive buying: A phenomenological exploration. *Journal of Consumer Research*, 16, 147-157.

- Rodin, J. (1981). Current status of the internal-external hypotheses for obesity. *American Psychologist*, 36(4), 361-372.
- Rook, D. W. (1987). The buying impulse. *Journal of Consumer Research*, 14, 189-199.
- Rook, D. W., & Hoch, S. J. (1985). Consuming impulses. In M. B. Holbrook & E. C. Hirschman (Eds.), *Advances in consumer research* (Vol. 12, pp. 23-27). Provo, UT: Association for Consumer Research.
- Schachter, S. (1971). Some extraordinary facts about obese humans and rats. *American Psychologist*, 26, 129-144.
- Schachter, S., Goldman, K., & Gordon, A. (1963). Effects of fear, food deprivation, and obesity on eating. *Journal of Personality and Social Psychology*, 10, 91-97.
- Schachter, S., & Gross, L. (1968). Manipulated time and eating behavior. *Journal of Personality and Social Psychology*, 10, 93-106.
- Stemple, G. H., & Westley, B. H. (1983). *Research methods in mass communication*. Englewood Cliffs, NJ: Prentice-Hall.
- Sunday S., Sanders, S. A., & Collier, G. (1983). Palatability and meal patterns. *Physiology & Behavior*, 30, 91S-918.
- Wansink, B. (1994). The dark side of consumer behavior: Empirical examinations of impulsive and compulsive consumption. In C. Allen & D. Roedder-John (Eds.), *Advances in consumer research* (Vol. 20, p. 411). Provo, UT: Association for Consumer Research.
- Wansink, B., & Deshpande, R. (1994). Out of sight, out of mind: Pantry stockpiling and brand-usage frequency. *Marketing Letters*, 5, 91-100.
- What Americans eat*. (1993). New York: Parade Publications.
- Winer, B. J. (1971). *Statistical principles in experimental design*. New York: McGraw-Hill.