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BINGE EATING IN NORMAL WEIGHT AND OVERWEIGHT INDIVIDUALS[1]

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Summary.—The incidence of emotional distress-related eating was investigated through a structured interview given to a sample of 49 men and 51 women, 21 to 55 yr. of age. The interview was designed to uncover the incidence of emotional distress-related eating, types of situations under which it occurs, and its relationship to body weight. Results indicated emotional distress-related eating occurs frequently particularly among women (51% reported binge eating at least 3 times per month). There was a great deal of individual variability in motives given for binge eating but typically only one or two motives applied to a given subject. There was no relationship between amount of overweight and binge eating. 27% of subjects reported regularly eating in response to environmental stimuli. The implications for psychosomatic and externality theories of obesity are discussed.

According to assumptions of the psychosomatic theory, obesity is a symptom of underlying emotional conflict. Early maladaptive experiences with food lead obese individuals to use overeating as a strategy to cope with emotional distress. Proponents of the psychosomatic theory have alternatively viewed overeating as a learned response used to reduce anxiety (Kaplan & Kaplan, 1957) or as the result of confusion among internal states. In the latter view, since the obese person has never learned to discriminate hunger from anxiety, anxiety is typically mislabelled as hunger (Bruch, 1973). The prediction is: when anxious or emotionally distressed, an obese person increases intake.

Most of the evidence for the psychosomatic theory rests on a relatively small number of in-depth clinical case studies (Stunkard, 1959; Mendelson, 1966; Bruch, 1973). These studies often describe eating patterns which correspond to what Stunkard (1959) called binge eating. This term was used to describe the eating behavior of a few massively obese individuals who had sought clinical help for their obesity. Stunkard reported that these individuals alternated between periods of "normal" eating with periods of rapid and compulsive consumption of large quantities of food. These eating bouts or binges were almost always precipitated by an emotionally stressful experience. Although Stunkard estimated the incidence of binge eating to be less than 5%, Bruch (1973), after treating hundreds of individuals with eating problems, reported that almost all of her obese patients displayed binge eating at one time or another. More recent studies have also reported a relatively high fre-

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quency of binge eating among overweight and dieting normal weight individuals (Hawkins & Clement, 1980; Loro & Orleans, 1981).

Experimental attempts in the laboratory to demonstrate binge eating or indeed any emotional distress-associated eating in overweight subjects have yielded, at best, weak support. Laboratory studies have generally relied on increasing anxiety by such methods as threat of painful electric shocks or painful medical procedures (Schacter, *et al.*, 1968; McKenna, 1972). The electric shock significantly decreased the intake of normal-weight individuals but had little effect on the intake of the obese ones (Schacter, *et al.*, 1968). In some of these studies, the obese subjects did show a slight but non-significant increase in intake (McKenna, 1972). Consistent failure to find a significant increase in the intake of obese subjects combined with the increased popularity of alternative explanations, particularly externality theory, has contributed to the abandonment of the psychosomatic theory as a useful explanation of obesity.

The discrepancy between experimental and clinical results may be the result of several factors. For one thing, the experimental setting with its necessarily narrow definition of anxiety may not mimic the actual situations under which people binge eat. Specifically, fear of electric shock may produce a totally different experience than anxiety or distress about failing an examination, having a poor social life or fighting with one's children. An individual who eats in response to family discord may not with other emotional distress.

Differences in subjects' characteristics may also contribute to the lack of consistency between clinical laboratory studies. Subjects in clinical case studies are typically female, middle-aged, and moderately to severely obese. Subjects in laboratory studies are usually young (college students), mildly obese and, particularly in earlier studies, are male (Schacter & Roden, 1974). Perhaps, eating for emotional reasons is less common among mildly obese male college students than other segments of the population. Another factor possibly contributing to the lack of experimental support may be the focus on binge eating as a behavioral characteristic only of obese individuals. There is increasing evidence that the obese/normal weight dichotomy is too simplistic since many individuals of normal weight stay that way through dietary restraint (Herman & Polivy, 1976). Finally, most of the studies investigating emotional distress-related eating have measured differences in intake. The interpretation of intake studies is often problematical. There is evidence that the obese are socially stigmatized for their obesity (Monello & Mayer, 1966; Cahnmann, 1968; Allon, 1977). Therefore, it is possible as Krantz (1978) has suggested, many of the results from previous comparisons of the intake of obese and normal weight individuals result from attempts on the part of the obese ones to behave in a "situationally appropriate manner." A non-laboratory study of eating patterns (particularly non-hunger related) of different subgroups would be more useful than a laboratory study.

The purpose of the study was three-fold. The first was to learn more about emotional distress-related eating, its incidence in the general population, characteristics of bingers (age, sex, degree of overweight) and the situations under which this type of eating is likely to occur. More generally, this information could help clarify the contribution of binge eating to obesity. Finally, the study provides a test of the assumption of the psychosomatic theory that overeating is used as a strategy to cope with emotional distress.

A structured interview format was used. It was thought that in an interview one might better tap the whole range of situations under which binging may occur. From the results of earlier clinical studies, it was expected that binging would be more common among women, and there would be individual differences in the types of situations under which binging was likely to occur. Finally, it was expected that, while many people would say they did not eat when upset, some non-bingers would report externally stimulated overeating, e.g., eating in response to the sight or smell of food or the time of day.

METHOD

Forty-nine female and 51 male employees of the U.S. Army Natick Research & Development Labs participated. Subjects ranged in age from 21 to 55 yr. and in weight from thin (10% or more under average weight for their height and sex according to norms established by the Metropolitan Life Insurance Company) to obese (30% or more above average weight). Subjects were randomly selected from a large pool of individuals who had volunteered to participate in food acceptance studies.

Subjects who participated in an interview on food habits were told:

> Many people report that they sometimes eat when they are not really hungry. Often this type of eating is associated with a particular mood or event. For example, some report that they eat when they are tired or upset or anxious about something. These are only a few of the reasons that people give for eating when they are not really hungry. Other people say they eat when they are not really hungry because they are at a restaurant or at someone's house or because it is a certain time of day or because they see some food that they really like. We are interested in finding out more about all types of non-hunger related eating and would appreciate your help in this. All information will be kept strictly confidential.

Subjects were then asked the questions in Table 1. These interviews generally took between 10 to 15 min. The order of items in Table 1 was followed whenever possible. However, if a subject spontaneously started answering a question designed to come later, he was encouraged to continue talking about that issue. The interview was also modified under two other circumstances. If subjects answered "No" to Questions 1 and 1A, they were asked: "Would you say that all of your eating occurs because you are hungry?" If they answered "yes" they were asked Questions 15 through 18 and were told "thank you very much," and the interview was terminated. Similarly, if subjects answered "No" to Question 3, they were asked: "Does that mean that

TABLE 1
INTERVIEW ON EATING HABITS

1. Do you ever eat when you are not hungry?
   1A (asked if answer to 1 was No) Do you ever overeat?
2. (Asked if answer to 1 or 1A was Yes) Under what circumstances is this likely to happen?
3. Do you ever eat because of a particular mood?
4. (Asked if answer to 3 was Yes) Is this type of eating any different in any way than your other eating?
   4A If so, How is it different?
5. You say that you sometimes eat because you are (particular mood the subject named), Under what circumstances is this likely to happen? Could you tell me about the last time it happened?
6. How frequently does eating because you are (particular mood) happen?
7. At these times, what do you eat and how much do you eat?
8. Do you ever eat because of any other mood?
   8A (If answer to 8 was Yes) same sequence of questions as following 3 was asked.
9. Are there any other times you eat when you are not hungry?
10. (If answer to 9 was Yes) Under what circumstances is this likely to happen?
11. How frequently does eating like this happen?
12. At these times, what do you eat and how much do you eat?
13. Are there any other times you eat when you are not hungry?
14. Are there any times that you overeat that you have not touched on yet? If so, can you tell me about them?
15. Is there anything else that you can tell be about your eating habits?
16. How old are you?
17. How tall are you?
18. How much do you weigh?

your eating habits do not change at all when you are tired or upset or anxious or depressed or are feeling any other mood?" If the subjects answered "No" they were then asked Questions 15 through 18.

Individuals were defined as binge eaters if they reported eating because of a particular mood and said that it happened at least three times each month. Similarly, individuals were defined as external eaters if they reported eating associated with particular events and said that it happened at least three times each month. These events included: time of day, sight or smell of food, being at a restaurant or someone's home, or typically doing some activity which was associated with food, e.g., watching television. The interviews were designed to provide information about characteristics of individuals who eat in response to emotional distress. Since the interview provided primarily qualitative descriptive data, test-retest reliability could not be established. However, to gain some idea of the consistency of answers, 12 individuals (6 subjects who were categorized as binge eaters, 4 subjects who were categorized as external eaters, and 2 subjects who reported never eating when not hungry) were re-interviewed 4 to 6 mo. after the initial interview. In each case, very similar patterns of responses were obtained on the two occasions.

RESULTS

It was expected that binge eating would be a common occurrence par-

ticularly among women and as defined by this criterion and responses to these questions, it was. Forty percent ($n = 40$) of subjects reported binge eating at least three times per month. A test of the standard error of proportions was 5% (Fleiss, 1973). It can be concluded that the real proportion of the population who binge eat falls between 30 to 50%.

The results also indicate that there was a great deal of individual variability in motives given for binge eating. These included anxiety, tiredness, loneliness, family discord, being on a diet for a long time, feeling sorry for oneself, and frustration with work. Usually one or two motives were relevant.

As was expected, the rate of binge eating was greater for women than for men. Fifty-one percent ($n = 25$) of women reported binge eating (eating in response to emotional distress at least three times per month) compared to 29% ($n = 15$) of the men. A test of proportions showed this difference was significant ($Z = 2.18$, $p < .05$) (Fleiss, 1973). There was an opposite difference for the rate of external eating. Forty-one percent ($n = 21$) of men reported external eating (eating in response to environmental food stimuli when not hungry) compared to 11% ($n = 5$) of the women ($Z = 3.19$, $p < .01$). There was no significant sex difference when both types of non-hunger-related eating were combined (difference = 8.8%, and standard error = 9.6%) (Fleiss, 1973). Thus, men and women differ in the types but not the incidence of non-hunger-associated eating. Almost all of the subjects who reported external eating gave one of the following as the reason: the sight of food, the smell of food, they typically ate at that time (e.g., after work or while watching television), they had nothing else to do, the food was there.

Notably, in this sample, there was no relationship between degree of overweight and binge eating. Among those characterized as binge eaters, 48% ($n = 19$) were of normal weight, while 52% ($n = 21$) were overweight (at least 30% overweight according to Metropolitan Life Insurance Standards). In contrast to overweights, however, non-overweight individuals typically reported compensating for a binge by reducing subsequent intake. In addition, overweight individuals reported binge eating more frequently than non-overweight individuals. Eighteen percent ($n = 16$) of subjects could be categorized both as binge eaters and external eaters. There were subjects who reported that at least three times each month they ate in response to a particular mood and also ate in response to certain environmental stimuli such as the habitual consumption of snacks while watching television. Eighty-nine percent ($n = 16$) of these subjects were at least 30% overweight according to the Metropolitan Life Insurance norms. A test of the standard error of proportions showed the proportion of overweight subjects in this group was significantly greater than the proportion of overweight subjects ($n = 25$) in the group as a whole ($Z = 6.59$, $p < .001$).

Subjects were also asked about their moods and physical states after emotional distress associated eating. Although a variety of responses were given to the question, "How would you describe your physical state after this type (emotional distress related) of eating?," the most frequent response suggested a reduction in affect. Seventy percent ($n = 30$) of the subjects used one of the following adjectives to describe their physical state following emotional distress related eating: tired, relaxed, loggy, groggy, bloated, too full to move, sleepy, sluggish, or calm. There was also a variety of responses to the question of what mood was experienced. The two most common responses had to do with self-disgust and satisfaction. Thirty-three percent ($n = 13$) of the subjects used one of the following adjectives to describe their mood: guilty, disgusted with myself, angry at myself, unhappy. Twenty-five percent ($n = 10$) of subjects reported a very different type of mood: satisfied, good, mellow, relaxed and better than I felt before. Subjects' moods after external eating were less easily categorized than moods after emotional distress-associated eating. The most common response which was given by 52% of the subjects was that they felt no different.

Discussion

The present results suggest that binge eating or eating in response to emotional distress happens frequently particularly among women and may occur for a variety of reasons. However, these reasons often vary markedly from person to person. For a given individual, one or perhaps two emotional states are likely to result in binge eating while other emotional states are relatively unlikely to produce such a reaction. In addition, external eating or eating in response to environmental stimuli also occurs frequently, particularly for men.

No difference exists on the basis of body weight among individuals who report binge eating or external eating. However, individuals who report that they regularly eat both in response to emotional distress and environmental stimuli are extremely likely to be obese. Thus, the present results provide qualified support for the assumptions of the psychosomatic theory as well as externality theory. Neither is sufficient. While both types of overeating may contribute to obesity, many non-obese also eat in response to emotional and external stimuli.

The present results while providing support for the assumptions of the psychosomatic theory also suggest that emotional distress is too broad a term to be useful for the purposes of describing the conditions under which people are likely to overeat. Some people eat in response to loneliness, others in response to frustration, anxiety, depression, etc. This finding suggests that laboratory experiments which manipulate only one kind of emotional experience will affect the eating of only a very few people.

Apparently, men are more likely than women to attribute overeating to

an external stimulus, than a mood. The origins of this difference are unclear. Future research should focus on the aspect of sex-role socialization which is associated with different eating styles. Normal weight individuals are as likely as overweight individuals to eat in response to emotional distress. One major difference between the two groups might be that in contrast to overweight individuals, normal weight individuals compensate for a binge by decreasing subsequent intake. There is some evidence from comments of normal weight respondents that this goes on. For example, one 20-yr.-old normal weight woman who reported binging in response to exams and her performance in college added "the day after I binge eat, I eat almost nothing. Partly this is so I don't gain weight but partly its also because I'm so disgusted with myself for eating so much in the first place." An increasing number of studies suggest that the obese/normal weight dichotomy is inadequate as a significant number of normal-weight individuals maintain their weight through conscious dietary restraint (Herman & Polivy, 1976). Results from the present study provide additional evidence for the existence of a group of normal-weight individuals who remain that way through dietary restraint. Other explanations might be that normal-weight individuals consume less when they binge or consume foods that are lower in calories.

Binge eating appears to reduce stress for many people, which provides support for assumptions of the psychosomatic theory. While respondents vary in the types of emotional states which are likely to result in binge eating, most report that afterward they are relaxed. This result supports earlier findings from Slochower (1976) that eating can serve to reduce emotional arousal. The reasons for this are unclear. Subjects apparently "know" that in the short term at least food will make them feel better. Thus, in spite of concerns about body weight and the knowledge that subsequently they probably will regret eating, when emotionally aroused, they eat. As one 24-yr.-old woman who reported binging when she did not have a date on a weekend and was feeling sorry for herself said: "Eating is like a friend when I get like that. The food makes me feel good and takes my mind off what is bothering me even though I know I will feel terrible about eating so much later." While this type of response, that food has a tranquilizing effect, is typical of most binge eaters, a small proportion report that eating has an opposite effect; it serves to make them feel more energetic. For example, a 39-yr.-old overweight (20% above Metropolitan Life Insurance norms) male who reported eating when he became frustrated with his job added, "At these times, I like to go out to a restaurant which has a big buffet. I eat about three times as much as I normally do. I probably shouldn't, but the food really makes me feel better. It puts me in a good mood and gives me the energy to go back to work again."

One other note about the, apparently, tranquilizing effect of food concerns

its possible physiological and pharmacological effects. In studies on subhuman species, the ingestion of specific food substances affected neurotransmitters and subsequently affected brain function and food selection (Wurtman & Wurtman, 1979). Future research involving behavioral, physiological, and pharmacological measures will undoubtedly yield more about the effect of foods on mood and behavior.

The present results provide evidence for two types of overeating which may occur for a variety of reasons, eating in response to emotional distress and eating in response to environmental stimuli. This result suggests that instead of being conceptualized as competitors, the psychosomatic and externality theories are, rather, describing different subgroups. The present results say nothing about the origin of either type of overeating or why some individuals are more likely than others to eat when emotionally distressed or in response to environmental stimuli. Future research should explore both issues to provide more information about the origins of obesity.

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