

Taste ratings of obese people, and taste preferences based on geographical location

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Obese people's taste ratings of sweet, sour, salt, and bitter were measured. Results indicated that obese people liked sour-tasting foods significantly less than did people of normal weight. In taste ratings for 44 food items, subjects from the Southwest region of the United States preferred pizza, hamburgers, cheeseburgers, and tacos significantly more than did subjects from the Southeast region of the United States. The subjects from the Southwest weighed significantly more than the subjects from the Southeast.

Research indicates that obese people are affected by external cues more than are nonobese people (Schachter, 1967). Schachter reported that obese people's eating was a combination of internal and external cues based on food deprivation. Some of the external cues that trigger obese people to eat are smell, taste, and the sight of other people eating (Schachter, 1967). Although research shows that nonobese people are also affected by these external cues, obese people seem to be more affected (Schachter, 1967).

It seems reasonable to suggest that the cue of taste is a prominent one. Nisbett (1968) conducted research that indicated that obese people feel a greater impact of the taste of foods than do nonobese people. Hashim and Van Itallie (1965) presented a case study in which they exposed normally prodigious eaters to an unappetizing food. The same unappetizing food was given to nonobese people. The results indicated that obese people ate considerably less of the food than did nonobese people. Non-obese people maintained their caloric intake, whereas obese people decreased theirs (Hashim & Van Itallie, 1965). This leads one to speculate that obese people are highly sensitive to the taste of food. Nisbett's (1968) study of eating behaviors indicated that obese people are guided largely by the external cue of taste and are not sensitive to internal cues of hunger.

The first hypothesis of the present study is that obese people have a greater preference for sweet foods than do nonobese people. The second hypothesis is that taste ratings that indicate preferences for certain foods will differ for different parts of the United States. Food attitudes and preferences seem to be a significant part of human culture (Rozin, 1990). However, a search of the literature revealed that there was no current research indicating food preferences based on geographical location; therefore, the present study was undertaken.

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METHOD

Subjects

One hundred twenty-four subjects participated in the study: 34 subjects were undergraduate students enrolled in an introductory psychology course at a university in the Southeast region (with a student population of 13,222), 81 subjects were enrolled in an introductory psychology class at a university in the Southwest (with a student population of 5,465), and 9 subjects were from a local weight-loss center in Lawton, Oklahoma. All subjects were randomly chosen and volunteered to participate.

Materials

A food preference survey (see Appendix) was developed for this study. In the survey, the subject was asked to rate 44 food items using a Likert scale, with 1 being *least preferred* and 5 being *most preferred*.

The second part of the survey was an actual taste test of honey, vinegar, salt, and the outside of an orange peel. Again, the subjects were asked to rate these items using a Likert scale, with 1 being *least preferred* and 5 being *most preferred*.

Procedure

The United States was divided into four regions: Southwest, Southeast, Northwest, and Northeast. Twenty universities were randomly chosen, five in each quadrant, on the basis of population sizes of 5,000 to 15,000 students. An initial request letter was written and mailed to each university's psychology department. Two universities answered with agreement to participate in the survey. The surveys were mailed to the universities in the Southeast and Northwest regions. Students of a university in the Southwest region were asked to participate in this study. Three classes of introductory psychology students were asked to fill out the survey at home and to taste honey, vinegar, salt, and the outside of an orange peel at home. Nine people from a local weight-loss center were asked to participate in the survey; one experimenter physically administered the survey and taste test to these 9 participants.

RESULTS

The percent ideal body weight (IBW; Build Study, 1979) was calculated for each subject, taking into account height and frame size. The midpoint of each range of body weight was figured for each frame size: small, average (medium), and large. Each subject's percent IBW was calculated by dividing the subject's real weight by the midpoint weight, multiplied by 100. Percent IBW greater than or equal to 115 was obese, and less than or equal to 90 was underweight. Each subject was then ranked; the top 22 subjects whose percent IBWs were greater than 115 and the

bottom 22 subjects whose percent IBWs were less than 90 were used. A *t* test between the top and the bottom body weight groups for uncorrelated measures was used for each taste test, sweet, salt, sour, and bitter [$t(42)_{\text{sour}} = 22.6, p \leq .05; M_{\text{top}}\% = 1.86, M_{\text{bot}}\% = 1.18$].

The *t* values for sweet, salt, and bitter were not significant. A *t* test was then performed, separating the Southwest and Southeast on how each food (honey, vinegar, salt, and the outside of an orange peel) was rated. No *t* value was significant. During this part of the analysis, data confirmed an informal observation that subjects from the Southwest were heavier than subjects from the Southeast. Statistical calculations revealed that, for the percentage IBW, subjects from the Southwest were significantly heavier than were subjects from the Southeast [$t(100) = 2.38, p < .05; M_{\text{SW}} = 105.95, M_{\text{SE}} = 97.23$].

The *t* tests were performed on the 44 food items, comparing Southwest to Southeast in each case: pizza [$t(104) = 3.19, p < .05; M_{\text{SE}} = 3.93, M_{\text{SW}} = 4.5$], hamburger [$t(104) = 4.37, p < .05; M_{\text{SE}} = 2.93, M_{\text{SW}} = 3.91$], cheeseburger [$t(103) = 2.21, p < .05; M_{\text{SE}} = 3.41, M_{\text{SW}} = 4.04$], and taco [$t(103) = 3.08, p < .05; M_{\text{SE}} = 3.09, M_{\text{SW}} = 3.89$]. No other comparisons were significant.

DISCUSSION

This study was based upon Schachter's (1967) theory of externality and Nisbett's (1968) study of obese people's feeling a greater impact of the taste of foods. Nisbett indicated that the responsiveness to the external cue of taste is a direct function of weight. The present study was trying to establish a direct relationship between taste preferences for sweet, sour, salt, and bitter as a function of obesity. The hypothetical question was, do obese people prefer foods that are sweeter? The data indicated that there is no significance between nonobese and obese people for the preference of sweet and salty foods. Both groups indicated a nonsignificant preference for sweet foods. The data did show significance for the taste of sour, which was represented by vinegar. The obese people rated sour food as less appealing to them than did nonobese or underweight people. This indicates that obese people tend to eat more food if the food tastes good, not sour, which is a direct function of the external cue of taste.

The present study attempted to determine if a relationship for taste preferences of certain foods was a function of geographical location of childhood and current residence. The data indicated that the two regions studied, the Southwest and the Southeast, showed no significant difference between food preferences except for four foods: pizza, hamburger, cheeseburger, and taco, which the Southwest preferred more than did the Southeast. It is speculative to state why such differences exist. Our study found that the Southwest people weighed significantly more than the Southeast people. One reason for this could be the Southwest's stronger preference for pizza, hamburger, cheeseburger, and taco, all of which are very high in calories, fat, and salt.

REFERENCES

- 1979 *Build Study* (1980). Society of Actuaries and Association of Life Insurance Medical Directors of America.
- HASHIM, S., & VAN ITALLIE, T. (1965). Studies in normal and obese subjects with monitored food dispensing device. *Annals of the New York Academy of Science*, **131**, 654-661.
- NISBETT, R. (1968). Taste, deprivation and weight determinants of eating behavior. *Journal of Personality & Social Psychology*, **10**, 107-116.
- ROZIN, P. (1990). Development in the food domain. *Developmental Psychology*, **26**, 555-562.
- SCHACHTER, S. (1967). Cognitive effects on bodily functioning: Studies of obesity and eating. In D. C. Glass (Ed.), *Biology and behavior: Neurophysiology and emotion*. New York: Rockefeller University Press and Russell Sage Foundation.

APPENDIX

Sample Survey Given to Subjects

On a scale of 1 to 5, 1 being least preferred and 5 most preferred, rate the following foods:

- _____ Pizza
- _____ Hamburger
- _____ Cheeseburger
- _____ Taco
- _____ etc.
- _____ Rice
- _____ French Fries
- _____ etc.
- _____ Green beans
- _____ Peas
- _____ etc.
- _____ Apples
- _____ Bananas
- _____ etc.
- _____ Milk
- _____ etc.
- _____ Chocolate chip cookie
- _____ Ice Cream
- _____ Popcorn
- _____ etc.
- _____ Beer
- _____ Soda pop
- _____ Water

Please conduct this part at your residence. With a measuring spoon, please taste the following items and rate their flavor according to the scale on this page: 1 being least preferred and 5 most preferred.

- _____ ½ teaspoon honey (sweet)
- _____ ½ teaspoon vinegar (sour)
- _____ ¼ teaspoon salt (salt)
- _____ the outside peel of an orange or lemon (bitter)

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