

Mirror, Mirror on the Wall, Who's the Thinnest One of All? Effects of Self-Awareness on Consumption of Full-Fat, Reduced-Fat, and No-Fat Products

Stacey M. Sentyrz and Brad J. Bushman
Iowa State University

Two studies tested whether self-focusing situations influence people to avoid fatty food. In Study 1, college students tasted full-, reduced-, and no-fat cream cheese spreads on bagellettes. A large mirror was present in the room for some students and was absent for the remaining students. In Study 2, shoppers at large supermarkets tasted full-, reduced-, and no-fat margarine spread on bread. A large mirror was present on the table top for some shoppers and was absent for the remaining shoppers. In both studies, individuals in the mirror group ate less of the full-fat product than did those in the no-mirror group. The presence of a mirror did not influence consumption of reduced- and no-fat products, perhaps because people thought these products were not unhealthy. These findings support self-awareness theory and suggest that individuals on weight reduction programs may benefit from making food choices in self-focusing situations.

Americans spend more than \$30 billion each year on weight-loss efforts (Miller, 1989). However, there is little evidence that the diet industry is helping people get thinner (Marks, 1991). Some weight-loss strategies have even caused medical harm such as loss of lean body mass, fatigue, hair loss, and dizziness (National Institutes of Health, 1992). More severe hazards such as increased risk for gallstones and gallbladder disease are also associated with certain diets (National Institutes of Health, 1992).

Self-monitoring of food intake is one weight-loss strategy that produces no medical harm and is a vital aspect of any successful diet (Baumeister, Heatherton, & Tice, 1994; Perri, Nezu, & Viegner, 1993; Wadden, 1993; Wadden & Foster, 1992). In one study, for example, patients who failed to self-monitor their food intake over a 3-week holiday season gained 57 times more weight than did patients who used self-monitoring techniques (Fisher,

Lowe, Jeffrey, Levenkron, & Newman, 1982). Of the 10 eating-habit changes tested in another study, only self-monitoring correlated with maintained weight loss 1½ years posttreatment in obese children (Flanery & Kirschenbaum, 1986). Self-focusing situations may be one way to influence people to lose weight because such situations may cause people to monitor their food intake more closely.

According to self-awareness theory (Duval & Wicklund, 1972; Wicklund, 1975), self-focused attention leads people to compare their behavior to internal standards. This comparison often results in negative affect when people realize that their behavior falls short of what they want it to be. Self-awareness theory suggests that there are two ways in which people can cope with the discomfort they feel when their behavior does not match internal standards: They can either "shape up" by behaving in ways that reduce the unpleasant discrepancy, or they can "ship out" by withdrawing from self-awareness. The latter response is the preferred option for most people because it is the path of least resistance. When escape from self-awareness is difficult, however, people are forced to either "shape up" or suffer the negative consequences of low self-esteem.

In a revised model of self-awareness theory, Gibbons (1990) proposed that self-awareness often works to inhibit the creation of discrepancies by causing people to avoid certain behaviors. By avoiding unhealthy fatty foods, for example, people can avoid creating unpleasant discrepancies between their behavior and internal standards.

Stacey M. Sentyrz and Brad J. Bushman, Department of Psychology, Iowa State University.

We thank Roy Baumeister, Rick Gibbons, and Todd Heatherton for their helpful comments on an earlier version of this article. We also thank Kelly Brandau, Brad Cave, Ensar Becic, Anne Koenig, Imae Nakano, Laurie Parcher, Lindsay Rholf, Cory Scimeca, Melissa Wubben, and Sumie Yano for serving as experimenters. Study 1 was conducted for Stacey M. Sentyrz's undergraduate honor's thesis.

Correspondence concerning this article should be addressed to Brad J. Bushman, Department of Psychology, Iowa State University, Ames, Iowa 50011-3180. Electronic mail may be sent to bushman@iastate.edu.

People are not usually self-focused, but certain situations can cause people to focus attention inward on themselves. Some examples of self-focusing situations include gazing into a mirror, standing in front of an audience or camera, and seeing oneself in a photograph or videotape.

Previous research has shown that increasing self-awareness leads to increased self-regulation of many different behaviors, including food consumption. A few studies have shown that self-focusing situations may serve to help regulate eating behavior (Heatherton, Polivy, Herman, & Baumeister, 1993; Pliner & Iuppa, 1978; Stephens, Prentice-Dunn, & Spruill, 1994). A review of the literature, however, suggests that more research is needed on the effects of self-awareness on the differential consumption of food products that have varying fat contents. From cookies and cakes to cream cheese and ice cream, reduced-fat and no-fat alternatives to normally fatty products are burgeoning. The focus of the present research is to examine how self-awareness may differentially affect consumption of full-fat, reduced-fat, and no-fat products. This research tests an interesting deduction from self-awareness theory. We believe that people probably have internal standards against eating high fat foods for a number of reasons. Not only do high fat foods contribute to the development of obesity, but they also increase the risk of cardiovascular disease, stroke, cancer, hypertension, diabetes, and other degenerative diseases (e.g., Gershoff, 1995; Williams & Worthington-Roberts, 1992). Thus, self-focusing situations should decrease consumption of fatty foods, especially for dieters. On the other hand, people might not have internal standards against eating reduced-fat or fat-free products because they view these products as more healthy (or as less unhealthy) than fatty products. Previous research has shown that people have more positive attitudes toward reduced-fat and no-fat products than toward full-fat products (e.g., Aaron, Mela, & Evans, 1994; Solheim, 1992; Stafleu, de Graaf, van Staveren, & de Jong, 1994). Consequently, self-focusing situations might not influence consumption of fat-free and reduced-fat products.

This article describes two studies designed to test the effects of self-awareness on consumption of full-fat, reduced-fat, and no-fat products. Study 1 was conducted in a laboratory setting, whereas Study 2 was conducted in a field setting.

Study 1

In Study 1, college student participants who had previously completed several questions about their diet status were randomly assigned to a room with or without a mirror. Participants were told that the researchers were studying the quality and taste of different types of cream cheese. Participants were given a bag of bagelettes and

three different kinds of cream cheese, clearly labeled *regular*, *light*, or *fat-free*. The number of grams of each type of cream cheese consumed by each participant was recorded. The presence of a mirror was expected to reduce consumption of the regular (fatty) cream cheese, but it was not expected to influence consumption of the light and fat-free cream cheese. Sex and diet status were treated as potential moderators of the effects of the presence of a mirror on consumption of fatty cream cheese. It is well known that women are more concerned about consuming fatty foods than are men (e.g., Dowd & Peel, 1992; Rodin, Silberstein, & Striegel-Moore, 1984; Wardle & Beales, 1986). In other words, women have stronger internal standards against consuming fatty products than men do. Because they are trying to lose weight, dieters also should have stronger internal standards against eating fatty foods than nondieters do.

Method

Participants. Participants were 320 undergraduate students enrolled in psychology courses (160 men, 160 women) who were randomly selected from a large pool of students (349 men, 506 women) who reported their eating habits as part of a battery of tests given in mass-testing sessions (see below). Students received extra course credit in exchange for their voluntary participation.

Measure of diet status. Participants rated the following statements as part of a battery of tests given in mass-testing sessions: (a) *I regularly buy fat-free products*, (b) *I eat fast food often*, (c) *I consume less than 30% of my total calories from fat*, and (d) *I count the number of calories I consume*. The statements were scored using a 10-point Likert-type scale ranging from 1 (*strongly disagree*) to 10 (*strongly agree*). Statement b was reverse scored.

The coefficient alpha for the scale was .71, a large value considering the small number of items. Principal components factor analysis revealed that 52% of the variation in the four items could be explained using one unobserved factor (eigenvalue for Factor 1 = 2.08). Because factor coefficients are highly dependent on sample characteristics, the four items were standardized and summed to form a measure called diet status (see Dawes, 1979, and Wainer, 1976). The correlation between items combined using factor weights and items combined using unit weights was .999. Women had significantly higher scores on the diet status composite variable than did men, $t(318) = 6.84$, $p < .05$, $d = 0.77$.

Procedure. Each participant was tested individually. By the flip of a coin, the participant was assigned to a mirror or no-mirror group. In the mirror group, the participant was seated at a desk in front of a large one-way mirror. No participant expressed suspicion about the presence of the mirror, perhaps because one-way mirrors are frequently found in psychological laboratories. In the no-mirror group, a curtain was drawn over the one-way mirror. The participant was told that the study was part of a National Consumer Research Project to evaluate the quality and taste of different types of cream cheese. The participant was

given a plate, a knife, a bag of Lender's plain bagellets, and three containers of Philadelphia brand cream cheese: regular (100 calories per 2 tbsp; 10 g fat), light (70 calories per 2 tbsp; 5 g fat), and fat-free (30 calories per 2 tbsp; 0 g fat). The cream cheese containers were weighed before and after the experiment. The participant rated each type of cream cheese on four dimensions: flavor, zest, texture, and aftertaste. The participant also provided an overall rating for the cream cheese. Responses were made along a 10-point Likert-type scale ranging from 1 (*well below average*) to 10 (*well above average*). The experiment was terminated when the participant told the experimenter that he or she was finished eating and rating the cream cheese. Finally, the participant was fully debriefed.

Results

Data analysis strategy. The data were analyzed with multivariate regression analysis. In regression analysis, most researchers recommend centering the predictor variables when testing for interaction effects (e.g., Aiken & West, 1991; Jaccard, Turrsi, & Wan, 1990). This transformation, which reduces the correlation between the product term and the component parts of the term, was used in the present analyses. The regression model included main effects for mirror (1 = present, 0 = absent), diet status (continuous), and sex (1 = male, 0 = female). The model also included two- and three-way interactions between the manipulated self-awareness variable (i.e., mirror) and the measured participant variables (i.e., diet status, sex). The interactions were computed as multiplicative products of the main effects.

A hierarchical analysis of sets approach was used (Cohen & Cohen, 1983). The main effects were entered in the first step, the two-way interactions were entered in the second step, and the three-way interaction was entered in the third step. Thus, the main effects were removed from the two-way interactions, and the main effects and two-way interactions were removed from the three-way interaction.

Multicollinearity, or correlation among the predictor variables, was tested by means of variance inflation factors (VIFs; e.g., Neter, Wasserman, & Kutner, 1990). A VIF of 1.0 indicates that the model terms are not linearly related. A maximum VIF value in excess of 10.0 is often taken as an indication that multicollinearity may be unduly influencing the least squares estimates. The maximum VIF in the regression analyses was 1.2, a value close to 1.0 and much smaller than 10.0. Thus, multicollinearity was not a problem in the analyses.

Cream cheese consumption. As expected, there was a significant interaction between type of cream cheese and the presence of a mirror, $F(2, 312) = 6.41, p < .05$ (see Figure 1). Participants in the mirror group ate less regular (fatty) cream cheese than did participants in the no-mirror group, $F(1, 316) = 11.12, p < .05, d = 0.42$

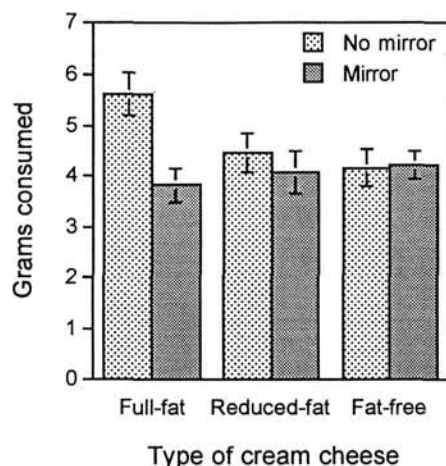


Figure 1. Consumption of full-fat, reduced-fat, and no-fat cream cheese in the presence and absence of a mirror. Capped vertical bars denote 1 SE.

(see Figure 1). The presence of a mirror did not influence consumption of light or fat-free cream cheese, $F_s(1, 316) = 0.53$ and 0.01 , respectively, $p_s > .05, d_s = 0.08$ and 0.02 , respectively (see Figure 1).

There also was a significant interaction between type of cream cheese and diet status, $F(2, 312) = 6.16, p < .05$. Diet scores were negatively correlated with consumption of fatty cream cheese, $F(1, 316) = 5.92, p < .05, r = -.18$, and were uncorrelated with consumption of light and fat-free cream cheese, $F_s(1, 316) = 1.56$ and 0.77 , respectively, $p_s > .05, r_s = .06$ and $.04$, respectively. No other significant effects were found.

Cream cheese ratings. Analysis of the cream cheese overall ratings showed a main effect for type of cream cheese, $F(2, 206) = 20.94, p < .05$. The mean ratings for the regular, light, and fat-free cream cheese were 6.34 ($SE = 0.16$), 6.46 ($SE = 0.14$), and 5.53 ($SE = 0.13$), respectively. Fat-free cream cheese received lower overall ratings than did regular or light cream cheese, $t(219) = 4.17, p < .05, d = 0.28$ and $t(216) = 6.44, p < .05, d = 0.44$, respectively. The regular and light cream cheese ratings did not differ, $t(217) = -0.83, p > .05, d = -0.06$. No other significant effects were found.

Discussion

The results of this experiment clearly support our hypothesis that the presence of a mirror would reduce consumption of fatty products, but would not influence consumption of light and fat-free products. Participants in the mirror group ate less fatty cream cheese than did participants in the no-mirror group. There was no difference in the amount of light or fat-free cream cheese participants ate in the mirror and no-mirror groups. The fact

that the mirror influenced consumption of the fatty cream cheese suggests that people probably do have an internal standard against eating fatty foods. The discrepancy from the perception that fatty food is unhealthy is reduced by consuming less of the fatty product when the individual is made more self-aware. Although dieters ate less fatty cream cheese than nondieters, neither diet status nor sex moderated the effects of the presence of a mirror on consumption of fatty cream cheese.

Study 2

Study 2 sought to replicate the findings of Study 1 in a more realistic setting with a different product. In Study 2, participants were shoppers at large supermarkets in central Iowa. The researchers set up a table to let people sample three different kinds of margarine: regular, light, and fat-free. The margarine was spread on small pieces of white sandwich bread. In the self-aware condition, a mirror was present on the table top. The researchers recorded the number of pieces of bread consumed with each type of margarine spread. The presence of a mirror was expected to reduce consumption of the regular (fatty) margarine, but it was not expected to influence consumption of the light and fat-free margarine. The researchers also recorded the shopper's sex, estimated the shopper's age, and estimated whether the shopper was underweight, normal weight, or overweight. Shopper sex, age, and weight classification were treated as potential moderators of the effects of the presence of a mirror on consumption of fatty margarine.

Method

Participants. Participants were 979 shoppers at large supermarkets in central Iowa. There were 249 men in the mirror group, 278 women in the mirror group, 228 men in the no-mirror group, and 224 women in the no-mirror group. The average age of participants was estimated to be 38.2 years ($SD = 16.9$). Only adults and teenagers were included in the sample. Participants who were estimated to be younger than 13 years old were excluded from the sample for two reasons. First, adults frequently made product choices for younger children (i.e., the responses of adults and younger children were not independent). Second, younger children might not be able to read and comprehend the fat content labels.

Procedure. The data were collected in two large supermarkets in central Iowa between 9 a.m. and 9 p.m. on Friday, Saturday, and Sunday. Near the refrigerated coolers for butter and margarine, the researchers set up tables to let people sample different kinds of margarine. Three kinds of Promise brand margarine spread were tested: regular (80 calories per tbsp; 8 g fat), buttery light (50 calories per tbsp; 5 g fat), and ultra fat free (5 calories per tbsp; 0 g fat). The margarine was spread on 1-in.² (645.16-mm²) pieces of white sandwich bread. The bread was placed on three plates that were clearly labeled *Promise*

regular margarine, Promise light margarine, and Promise fat-free margarine, respectively. At the beginning of each day, the researcher flipped a coin to determine whether a mirror (12.5 × 32.5 in. or 31.75 × 82.55 cm) was present on the table top the first or the last 6 hr of each day. The researchers recorded each shopper's sex, estimated age, and estimated weight status. The last variable was coded underweight (<20% below normal weight), normal weight, or overweight (>20% above normal weight; see Foreyt & St. Jeor, 1997).

Results

Preliminary analyses. Preliminary analyses revealed that weight and age did not significantly affect the results, either alone or interacting with other variables. Of the 979 shoppers, however, only 55 were classified as overweight, and only 8 were classified as underweight. There also was no difference in the results from the two supermarkets. Thus, age, weight, and supermarket were excluded from subsequent analyses.

Main analyses. The data were analyzed with multivariate analysis of variance with mirror (present, absent), sex (male, female), and type of margarine (full-fat, reduced-fat, no-fat) as variables. The last variable involved repeated measures.

There was a main effect for type of margarine, $F(2, 974) = 11.88, p < .05$. This main effect, however, was qualified by the predicted interaction between type of margarine spread and the presence of a mirror, $F(2, 974) = 3.25, p < .05$ (see Figure 2). Participants in the mirror group ate less regular (fatty) margarine than did participants in the no-mirror group, $F(1, 975) = 7.27, p < .05, d = 0.18$ (see Figure 2). The presence of a mirror did not influence consumption of light or fat-free margarine,

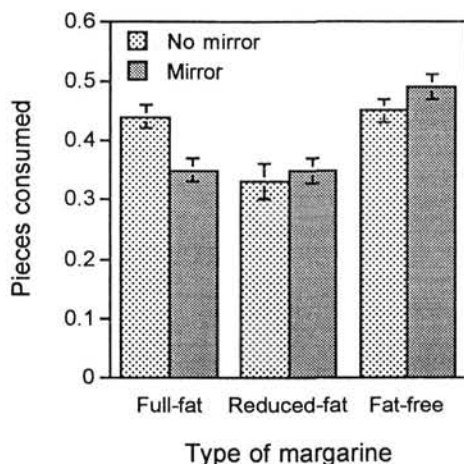


Figure 2. Consumption of full-fat, reduced-fat, and no-fat margarine in the presence and absence of a mirror. Capped vertical bars denote 1 SE.

$F_s(1, 975) = 0.53$ and 1.52 , respectively, $p_s > .05$, $d_s = 0.05$ and 0.08 , respectively.

There also was a significant interaction between type of margarine and sex, $F(2, 974) = 14.43$, $p < .05$. Women ate more of the fat-free margarine and less of the regular margarine than did men, $F(1, 975) = 9.17$, $p < .05$, $d = 0.20$ and $F(1, 975) = 35.29$, $p < .05$, $d = 0.38$, respectively. Men and women did not differ in how much light margarine they consumed, $F(1, 975) = 0.05$, $p < .05$, $d = 0.01$.

Discussion

The results of Study 2 replicated those of Study 1 in a more realistic setting. Shoppers in the mirror group ate less fatty margarine than did shoppers in the no-mirror group. There was no difference in the amount of light or fat-free margarine shoppers ate in the mirror and no-mirror groups. Consistent with previous research, women also ate less fatty margarine than did men. The presence of a mirror, however, had a similar effect on men and women.

General Discussion

The results of both studies reported in this article are entirely consistent with self-awareness theory (Duval & Wicklund, 1972; Wicklund, 1975). Attention was directed to the self by exposing participants to their reflection in a mirror. According to self-awareness theory, self-focusing situations cause people to examine themselves on one dimension after another until they inevitably discover ways in which they are inadequate. Most people fall short of their standards in the area of health and nutrition. To reduce this discrepancy, participants could either "shape up" by avoiding high-fat foods or "ship out" by escaping self-awareness. In both studies, escape from the self-focusing situation was difficult. Thus, participants remained self-focused and inhibited their eating of high fat foods. Perhaps self-awareness influences people to avoid unpleasant discrepancies by avoiding high fat foods (see Gibbons, 1990).

The studies reported in this article show that self-awareness specifically affects only those behaviors that people view as undesirable (i.e., consuming high fat foods). It seems that people exercise little or no self-regulation when it comes to consuming "safe" foods (i.e., reduced-fat and fat-free foods).

Although nonsignificant findings are inherently difficult to interpret, the failure of a mirror to influence consumption of light or fat-free products cannot be attributed to a weakness in our mirror manipulation because the presence of a mirror decreased consumption of regular (fatty) products. The nonsignificant findings cannot be attributed

to low statistical power. The large sample sizes in both studies provided ample power for statistical tests. The power to detect a mirror effect for the fatty product was .96 in Study 1 and .77 in Study 2 (see Cohen, 1988). We propose, instead, that these nonsignificant findings may be due to the fact that people do not worry much about the amount of reduced-fat and no-fat products they eat. Perhaps they conclude that reduced-fat and no-fat products are not unhealthy. This conclusion is partly supported by the finding that diet status was not correlated with consumption of light and fat-free products in Study 1. Maybe even dieters regard reduced-fat and no-fat snacks as food freebies.

These results suggest that self-focusing situations may lead to a decrease in consumption of fatty products. Because one of the main goals of dieting is to produce a desirable body shape and become more attractive, a mirror should inhibit eating because it shows people their bodies in a fair and honest manner. The present findings suggests that a mirror does not serve to reduce consumption of light and fat-free products, perhaps because people believe that such products will not make their body shapes less desirable. If people make food choices while in self-focusing situations, they may think twice about what they eat. Something as simple as a mirror on a refrigerator may influence people to avoid high fat foods.

References

- Aaron, J. I., Mela, D. J., & Evans, R. E. (1994). The influences of attitudes, beliefs and label information on perceptions of reduced-fat spread. *Appetite*, *22*, 25-37.
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Baumeister, R. F., Heatherton, T. F., & Tice, D. M. (1994). *Losing control*. San Diego, CA: Academic Press.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Dawes, R. M. (1979). The robust beauty of improper linear models in decision making. *American Psychologist*, *34*, 571-582.
- Dowd, D., & Peel, J. C. (1992). Dietary fat reduction practices by college males and females. *College Student Journal*, *26*, 231-236.
- Duval, S., & Wicklund, R. A. (1972). *A theory of objective self-awareness*. New York: Academic Press.
- Fisher, E. B., Jr., Lowe, J. R., Jeffrey, C., Levenkron, J. C., & Newman, A. (1982). Reinforcement and structural support of maintained risk reduction. In R. B. Stuart (Ed.), *Adherence, compliance and generalization in behavioral medicine* (pp. 145-168). New York: Brunner/Mazel.
- Flanery, R. C., & Kirschenbaum, D. S. (1986). Dispositional and situational correlates of long term weight reduction by obese children. *Addictive Behaviors*, *11*, 249-261.

- Foreyt, J. P., & St. Jeor, S. T. (1997). Definitions of obesity and healthy weight. In S. T. St. Jeor (Ed.), *Obesity assessment: Tools, methods, interpretations* (pp. 47–56). New York: Chapman & Hall.
- Gershoff, S. N. (1995). Nutrition evaluation of dietary fat substitutes. *Nutrition Reviews*, 53, 305–311.
- Gibbons, F. X. (1990). Self-attention and behavior: A review and theoretical update. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, 23, 249–303.
- Heatherton, T. F., Polivy, J., Herman, C. P., & Baumeister, R. F. (1993). Self-awareness, task failure, and disinhibition: How attentional focus affects eating. *Journal of Personality*, 61, 49–61.
- Jaccard, J., Turrsi, R., & Wan, C. K. (1990). *Interaction effects in multiple regression*. Newbury Park, CA: Sage.
- Marks, C. (1991, December). Are these diets worth their weight? *Mademoiselle*, 97, 86.
- Miller, A. (1989, September 11). Diets incorporated. *Newsweek*, 114, 56–60.
- National Institutes of Health, Office of Medical Applications of Research. (1992). *Methods for voluntary weight loss and control* (Technology Assessment Conference Statement). Bethesda, MD: Author.
- Neter, J., Wasserman, W., & Kutner, M. H. (1990). *Applied linear statistical models* (3rd ed.). Homewood, IL: Irwin.
- Perri, M. G., Nezu, A. M., & Viegner, B. J. (1993). *Improving the long-term management of obesity: Theory, research, and clinical guidelines*. New York: Wiley.
- Pliner, P., & Iuppa, G. (1978). Effects of increasing awareness on food consumption in obese and normal weight subjects. *Addictive Behaviors*, 8, 19–24.
- Rodin, J., Silberstein, L., & Striegel-Moore, R. (1984). Women and weight: A normative discontent. In R. A. Dienstbier & T. B. Sonderegger (Eds.), *Nebraska Symposium on Motivation: Vol. 32. Psychology and gender* (pp. 267–307). Lincoln, NE: University of Nebraska Press.
- Solheim, R. (1992). Consumer liking for sausages affected by sensory quality and information on fat content. *Appetite*, 19, 285–292.
- Stafleu, A., de Graaf, C., van Staveren, W. A., & de Jong, M. A. (1994). Attitudes towards high-fat foods and their low-fat alternatives: Reliability and relationship with fat intake. *Appetite*, 22, 183–196.
- Stephens, G. C., Prentice-Dunn, S., & Spruill, J. C. (1994). Public self-awareness and success–failure feedback as disinhibitors of restrained eating. *Basic and Applied Social Psychology*, 15, 509–521.
- Wadden, T. A. (1993). The treatment of obesity: An overview. In A. J. Stunkard & T. A. Wadden (Eds.), *Obesity: Theory and therapy* (2nd ed., pp. 197–218). New York: Raven.
- Wadden, T. A., & Foster, G. D. (1992). Behavioral assessment and treatment of markedly obese patients. In T. A. Wadden & T. B. Vanitrallie (Eds.), *Treatment of the seriously obese patient* (pp. 290–330). New York: Guilford.
- Wainer, H. (1976). Estimating coefficients in linear models: It don't make no nevermind. *Psychological Bulletin*, 83, 213–217.
- Wardle, J., & Beales, S. (1986). Restraint, body image and food attitudes in children from 12 to 18 years. *Appetite*, 7, 209–217.
- Wicklund, R. A. (1975). Objective self-awareness. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 9, pp. 233–275). New York: Academic Press.
- Williams, S. R., & Worthington-Roberts, B. S. (1992). *Nutrition throughout the lifecycle* (2nd ed.). St. Louis, MO: Mosby-Year.

Received April 28, 1997

Revision received May 15, 1998

Accepted May 27, 1998 ■