Judgment and Decision Making, Vol. 5, No. 3, June 2010, pp. 144–150

The "organic" path to obesity? Organic claims influence calorie judgments and exercise recommendations

Jonathon P. Schuldt* and Norbert Schwarz
Department of Psychology, University of Michigan

Abstract

Labeling a food as "organic" entails a claim about its production but is silent on its calorie content. Nevertheless, people infer that organic cookies are lower in calories and can be eaten more often than conventional cookies (Study 1). These inferences are observed even when the nutrition label conveys identical calorie content and are more pronounced among perceivers high on pro-environmentalism. Moreover, when evaluating a person with a weight-loss goal, forgoing exercise is deemed more acceptable when the person has just chosen organic rather than conventional dessert (Study 2). These results reflect an "organic/natural"-"healthy" association that is capable of biasing everyday judgments about diet and exercise.

Keywords: organic, food labeling, health claims, halo effects, calorie estimation, obesity.

Mom, look! Organic gummy bears!
Yes, I see. No more sweets.
Mom, but they're organic.
- Overheard by one of the authors in the checkout lane of a natural foods store.

1 Introduction

As Americans' waistlines have grown, so has their appetite for organic foods. U.S. sales of organics rose from approximately $1 billion in 1990 to $25 billion in 2009 (OTA, 2010); meanwhile, roughly one-third of U.S. adults now qualify as obese (Flegal et al., 2010). Yet, scant research has explored the implications of "organic" production claims for judgments and decisions related to weight gain. Although organic claims license inferences about lower levels of conventional pesticides and synthetic additives in foods (USDA, 2010), they are silent on calorie content. Might consumers nevertheless assume that organics contain fewer calories as well?

The tendency to overgeneralize health claims suggests this possibility. Previous research has demonstrated that margarine advertised as "no cholesterol" and "healthy" is judged as lower in fat (Andrews, Netemeyer, & Burton, 1998) and that nutrient-based claims can promote calorie underestimation, thought to be an important factor in the obesity crisis (Lichtman et al., 1992; Young & Nestle, 2002; Wansink & Chandon, 2006a, 2006b; Chandon & Wansink, 2007). It is not clear, however, whether such effects would extend to organic claims, which speak to production process and not nutrient content per se (Barham, 2002; Winter & Davis, 2006). Consistent with activation theory (Collins & Loftus, 1975), specific nutrient claims (e.g., "no cholesterol") have been shown to affect judgments of closely associated nutrients (e.g., fat) but not of more general, distal concepts (e.g., cancer risk) (Andrews et al., 1998). From this perspective, "organic" and other production-related claims may not be expected to activate "calories" and other nutrient-related concepts.

On the other hand, a number of different theories suggest that organic claims might indeed bias — and specifically, reduce — calorie judgments. First, strong associations exist between the concepts "organic" and "healthy" in contemporary America, associations that are promoted by marketers and reflected in survey data in which most Americans endorse organics as healthier (Harris Interactive, 2007). Moreover, natural foods (as opposed to those altered by humans in some significant way) tend to be seen as inherently good and healthy (Rozin et al., 2004), further supporting associations between organic production and healthy attributes. Given that calorie restriction is nearly synonymous with "healthy" in the U.S. (Crawford & Krebs, 2008), these associations might lead consumers to assume that foods produced organically con-

*The authors gratefully acknowledge the research assistance of Kelly Doyle, Mary Hannahan, Elaine Nabel, and Elizabeth Walrath. These data were presented at the 5th annual pre-conference on Judgment and Decision Making at the Society for Personality and Social Psychology's 11th annual conference, held at Las Vegas, Nevada, on January 28, 2010. Correspondence concerning this article should be addressed to Jonathon P. Schuldt, Department of Psychology, University of Michigan, 530 Church St., 3232 East Hall, Ann Arbor, Michigan, 48109. Email: jschuldt@umich.edu.

tain fewer calories than their conventional counterparts, despite the fact that the "organic" designation entails no such claim (FMI, 2006). Second, because calorie estimation is a cognitively demanding task (Wansink & Chandon, 2006b), consumers might even substitute the associatively related attribute "healthy" for "organic" as a means for simplifying complex calorie judgments (Kahneman & Frederick, 2002). Third, consumers might go beyond the literal meaning of the producer's utterance (Grice, 1975; Schwarz, 1996) and infer that a producer who adheres to organic production standards might also care about other health-related aspects of the product, again supporting more general inferences about the product's healthy attributes (Wansink & Chandon, 2006a). Fourth, the logic of halo effects (Thorndike, 1920) more generally suggests that consumers might judge products with one positive attribute more favorably on other attributes, even when they are not substantively related; if so, organics might be judged as lower-calorie to the extent that perceivers hold favorable attitudes toward organic production. Because natural foods tend to be seen as inherently good and healthy (Rozin et al., 2004), "organic" halos seem plausible given the back-to-nature connotations of organic production.

Although the above considerations all point to generalized positive effects of organic claims, the strength of these effects might be moderated by perceivers' general attitudes toward organic foods. These attitudes are likely to show more variation than attitudes toward health-related nutrient claims (e.g., "no cholesterol", "low-fat") and might vary partly as a function of individual differences in pro-environmentalism (Chen, 2009). If so, people high on pro-environmentalism might be more affected by organic claims, reflecting that positive halo effects should increase with the positivity of the attitude toward the initial attribute (here, organic production).

Despite different underlying assumptions, all of these considerations converge on the same core prediction: organic claims might reduce calorie judgments, making the consumption of organic foods seem more compatible with a weight-loss goal. The present studies test this prediction by assessing the effect of organic claims on perceived calorie content and consumption recommendations as well as the impact of organic consumption on the perceived need to exercise. We also explore whether individuals high on pro-environmentalism are especially likely to show this effect, consistent with the halo logic outlined above. Note, however, that an alternative prediction is also plausible: those high on pro-environmentalism may know more about organics, rendering them *less* susceptible to unwarranted inferences from organic claims.

1.1 Overview of present work

Two laboratory experiments assess the effect of organic claims on calorie judgments and on judgments regarding food consumption and physical exercise, important factors in obesity. In Study 1, we test whether an "organic" version of a real-world food product (Oreo cookies) elicits lower calorie judgments than does the conventional version; in addition, we solicit consumption recommendations, allowing us to test whether organic claims influence a judgment that directly pertains to food consumption. In Study 2, we test whether the effect of organic claims extends beyond judgments of the food itself to influence exercise recommendations — another important factor in obesity.

2 Study 1

2.1 Method

One hundred and fourteen students (80 females, 34 males) from the University of Michigan Introductory Psychology subject pool completed this laboratory experiment in exchange for partial course credit. As part of an approximately 30-minute session on "thinking about food", participants first completed a questionnaire soliciting personal background information (e.g., age, sex) including variables plausibly related to the hypothesized effects (e.g., political ideology, importance of eating healthfully). Participants also reported their height and weight, which we used to calculate body mass index (BMI), found to moderate calorie judgments in previous research (e.g., Wansink & Chandon, 2006a).

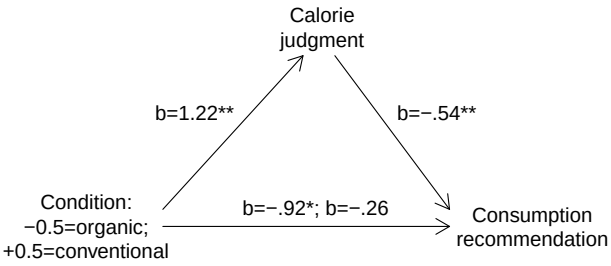
Participants were then randomly assigned by computer algorithm to a web page displaying the actual Nutrition Facts label for either conventional Oreos (N = 42) or for Oreos "*made with organic flour and sugar*" (N = 72). These Nutrition Facts indicate the same number of calories (i.e., 160 per 34g serving), and we drew participants' attention to this information using the following instructions (underlines original):

Below is a nutritional label from a package of Oreo cookies [Oreo cookies made with organic flour and sugar]. Notice that the serving size (34g) is equal to 2 cookies, which together contain 160 calories. Feel free to consult any of the nutritional information provided below before answering the questions.

Beneath these instructions appeared the respective Nutrition Facts, followed by questions capturing participants' calorie judgment (*Compared to other cookie brands, do you think that 1 serving of these [organic] Oreo cookies contains fewer calories or more calories?*; 1 = *Fewer calories*, 7 = *More calories*) and consumption recommendation (*Compared to other cookie brands, how*

https://doi.org/10.1017/S1930297500001017 Published online by Cambridge University Press

Figure 1: Model depicting the mediating role of calorie judgments on the relationship between production claim (organic vs. conventional) and consumption recommendations (* p < .01; ** p < .001).



often should these [organic] Oreo cookies be eaten?; 1 = *Less often*, 7 = *More often*).

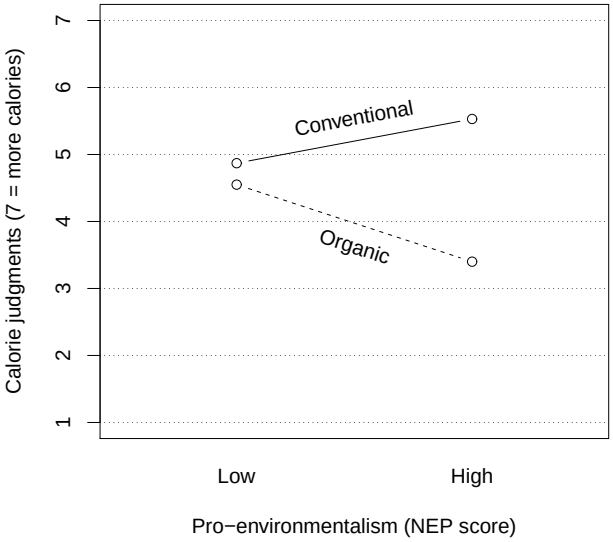
Near the end of the session, all participants completed the 15-item New Ecological Paradigm scale (NEP; Dunlap et al., 2000), a common measure of pro-environmentalism, allowing us to test whether this variable moderated the hypothesized effects. Sample items are "We are approaching the limit of the number of people the earth can support" and "Humans are severely abusing the environment".

2.2 Results

As predicted, participants' judgments of calorie content relative to other brands were influenced by the organic claim: even though all participants had just read that one serving of the product contained 160 calories, the organic cookies received lower calorie judgments (M = 3.94) than did the conventional ones (M = 5.17); F (1, 112) = 26.17, p < .001, d = .97, for the main effect. In addition, the organic claim influenced participants' consumption recommendations: the organic cookies were deemed more appropriate to eat more often (M = 3.68) than were the conventional ones (M = 2.76); F (1, 112) = 22.39, p < .01, d = .89, for the main effect.

Because attributes besides calories might account for the effect of organic claim on consumption recommendations (e.g., the moral licensing effect of green consumption; Mazar & Zhong, 2010), we examined whether calorie judgments mediated this effect by testing the significance of pathway coefficients in our hypothesized mediation model (MacKinnon et al., 2002) (Figure 1). After confirming that both consumption recommendations and calorie judgments were significantly associated with our manipulation (see above), we regressed consumption recommendations onto condition (organic vs. conventional) and calorie judgments. Results revealed that calorie judgments significantly predicted consumption recommendations (b = –.54, $|t|$ (111) = 5.35, p < .001) whereas condition no longer did so (b = –.26, $|t|$ (111) = .91, p = .36); thus, calorie judgments fully mediated the effect of condition on consumption recommendations. We interpret these mediation results with some caution, however, given that both calorie judgments and consumption recommendations might merely reflect the same underlying variable (e.g., the healthiness associated with organics).

Figure 2: Graph depicting the interaction between organic claim and pro-environmentalism (i.e., NEP score) for calorie judgments (Low = M–2SD; High = M+2SD).



Next, we examined whether these organic halos are more pronounced for people high on pro-environmentalism, as the logic of halo effects would suggest. To test this, we regressed calorie judgments onto condition (organic = –0.5, conventional = +0.5), pro-environmentalism (NEP score, mean-centered), and their interaction term. Results revealed a significant interaction (b = .06, t (110) = 1.95, p = .05) such that — consistent with the logic of halo effects — the effect of organic claim on calorie judgments was more pronounced at higher levels of pro-environmentalism (Figure 2).[1] Whereas the main effect of condition on calorie judgments again emerged (b = –1.22, $|t|$ (110) = 5.09, p < .001), there was no main effect of pro-environmentalism (b = –.01, $|t|$ < 1, *ns*). We also conducted a similar analysis for consumption recommendations. The interaction between pro-environmentalism and condition, however,

[1]Further diagnosis of this interaction with spotlight and simple slopes analysis confirmed that the pattern is consistent with halo logic. Participants at high levels of pro-environmentalism (M+2SD) showed the predicted effect of organic claim (M_{organic} = 3.40 vs. $M_{\text{conventional}}$ = 5.53; b = 1.68, t (110) = 4.90, p < .001), whereas participants at low levels of pro-environmentalism did not (M–2SD) (M_{organic} = 4.55 vs. $M_{\text{conventional}}$ = 4.87; t < 1, *ns*). Moreover, the relationship between calorie judgments and pro-environmentalism was nearly significant in the organic condition only (b_{organic} = –.04, $|t|$ (110) = 1.79, p = .08 vs. $b_{\text{conventional}}$ = .02, $|t|$ < 1, *ns*).

https://doi.org/10.1017/S1930297500001017 Published online by Cambridge University Press

did not emerge for consumption recommendations (b = –.04, $|t| < 1$, *ns*). The main effect of condition on consumption recommendations again emerged (b = –.89, $|t|$ (110) = 3.09, $p < .01$), and there was no main effect of pro-environmentalism (b = .02, $t < 1$, *ns*). Finally, BMI, sex, importance of eating healthfully, and political ideology did not significantly moderate any of the effects (ps > .20).

2.3 Discussion

Study 1 extends the literature on overgeneralizations from nutrient-based claims (e.g., "low-fat"; Wansink & Chandon, 2006a) by demonstrating that "organic" — a production-related claim that does not speak to nutrient content per se — can elicit unwarranted nutritional inferences, here in form of reduced calorie estimates. When judging the calorie content of Oreo cookies relative to other brands, participants evaluating Oreo cookies "made with organic flour and sugar" provided lower calorie judgments than did participants evaluating conventional Oreos. This effect was obtained even though participants' attention had been drawn to Nutrition Facts labels that correctly conveyed that one serving of (organic or conventional) Oreos contained 160 calories. Presumably, participants inferred that, if organic cookies contain 160 calories, then the calorie content of conventional cookies — whatever the precise amount — is likely to be higher. In addition, participants considered it appropriate to consume Oreo cookies more frequently when they were "organic" than when they were not, and this effect was mediated by perceived calorie content. Finally, consistent with the logic of halo effects, the observed bias in calorie judgments was more pronounced among people scoring higher on pro-environmentalism, that is, among those holding more positive attitudes toward organic production.

That the organic claim reduced calorie judgments in the face of objective calorie information suggests the use of the attribute "organic" as a heuristic cue (Batte et al., 2007) that guides consumers' calorie judgments. As mentioned above, calorie estimation is a cognitively demanding task and prone to numerous biases and situational influences (e.g., Wansink & Chandon, 2006b). If people are poor judges of calorie content, they might use organic claims as a basis for classifying foods as "good" or "natural", a heuristic that simplifies nutrition information and could reduce calorie judgments (for a discussion, see Rozin et al., 1996).

3 Study 2

Study 1 demonstrated that organic claims can bias consumers' calorie judgments as well as their perceptions of how often a food should be eaten, both of which are possible factors in obesity. In Study 2, we sought to examine whether the influence of organic claims can extend beyond judgments about the food itself to judgments about the need for physical exercise — another major factor in the obesity crisis. Specifically, we reasoned that if organics are assumed to contain fewer calories (as shown in Study 1), then eating organics might be seen as a suitable substitute for other weight-loss promoting behaviors, such as physical exercise. Research on goal cognition suggests that such an effect is plausible; for instance, perceived progress toward a weight-loss goal can reduce the likelihood of subsequent goal-consistent food choices (e.g., choosing an apple over a chocolate bar; Fishbach & Dhar, 2005). To the extent that the act of eating organics is construed as progress toward a weight-loss goal, it might relax judgments about the importance of physical exercise, indicating that organic claims can undermine healthy choices.

3.1 Method

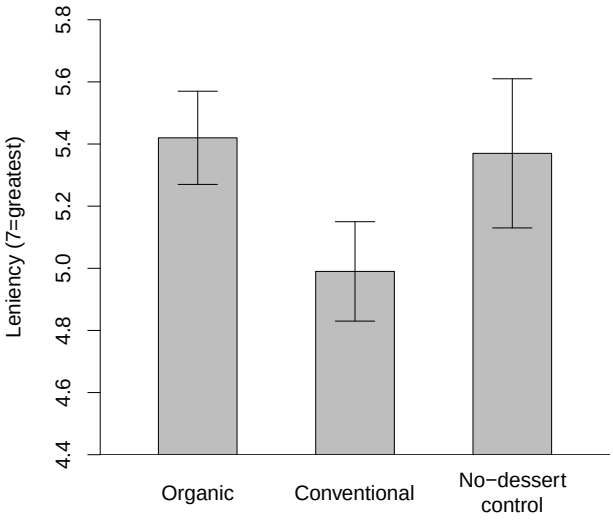
As part of a different 30-minute session on "thinking about food", two hundred and fifteen students (117 females, 98 males) from the University of Michigan Introductory Psychology subject pool participated in this laboratory experiment in exchange for partial course credit. Data from one participant were excluded because of a computer glitch, leaving N = 214 for analysis. Participants first completed the personal background questionnaire from Study 1; afterward, they were instructed to read about a person facing a choice and to indicate the decision they thought was best.

Participants read about a target person, Susie, described as a 20-year-old sorority member with a weight-loss goal. Participants read that Susie typically runs three miles after dinner; however, on this day, she was considering forgoing exercise to spend more time on schoolwork. Susie ate "*roasted vegetables over brown rice*" for dinner; the experimental manipulation was applied to her dessert choice, which was between "*a small bowl of ice cream*" and "*a chocolate chip cookie*", only one of which was described as "organic". Participants were randomly assigned by computer algorithm to one of five conditions: organic ice cream (N = 41), organic cookie (N = 50), conventional ice cream (N = 41), conventional cookie (N = 47), or a no-dessert control condition (N = 35).[2] Susie ei-

[2]Assigning more participants to the organic and conventional conditions than to the control condition afforded greater N for testing the primary hypothesis and helped ensure that any observed effect was not

https://doi.org/10.1017/S1930297500001017 Published online by Cambridge University Press

Figure 3: Graph displaying the mean leniency ratings by condition in Study 2. Error bars represent standard errors of the means.



ther chose the organic dessert, the non-organic dessert, or "no dessert at all" (neither dessert was described as "organic" in the control condition) (see Appendix A for the complete text).

Participants then answered the following question to capture leniency toward forgoing exercise: *Under the circumstances, do you think it would be okay for Susie to skip her usual 3-mile run tonight?* (1 = *Not at all okay*, 7 = *Very okay*). We predicted that participants in the organic conditions would be more lenient toward Susie forgoing exercise than would participants in the conventional conditions. Finally, participants completed the 15-item NEP scale, allowing us to test whether the predicted effect varied by pro-environmentalism.

3.2 Results

Because we held no hypotheses regarding specific dessert food (i.e., cookie vs. ice cream), we collapsed across this variable after confirming that it did not interact with food claim (i.e., organic vs. conventional) ($F < 1$, *ns*).

Given our primary hypothesis that the target (Susie) would receive higher leniency ratings when she chose organic over conventional dessert, relative to the reverse, we tested the corresponding planned contrast in ANOVA (Rosenthal & Rosnow, 1985).[3] As predicted, participants were significantly more lenient toward Susie forgoing exercise when she had chosen an organic dessert ($M = 5.42$, $SD = 1.44$) rather than a conventional dessert ($M = 4.99$; $SD = 1.52$) ($F\,(1, 211) = 3.80$, $p = .05$, $d = .27$) (Figure 3). Participants' leniency in the no-dessert control condition fell in-between ($M = 5.37$, $SD = 1.44$); although it was higher than when Susie chose a conventional dessert, this difference was not significant ($F\,(1, 211) = 1.69$, $p = .20$).

Given that pro-environmentalism moderated the effect of organic claim on calorie judgments in Study 1, we tested whether highly pro-environmental participants were especially lenient toward Susie forgoing exercise in the organic condition. Pro-environmentalism (i.e., NEP score) did not moderate the present effect ($p > .30$); neither did BMI, sex, importance of eating healthfully, or political ideology ($ps > .40$).

3.3 Discussion

These results demonstrate that the influence of organic claims extends beyond calorie judgments and consumption recommendations (Study 1) to impact judgments about the need for physical exercise — another key factor in obesity. Despite Susie's goal of losing weight through regular exercise, participants were more lenient toward her forgoing planned exercise when she had just chosen organic over conventional dessert. As millions of Americans attempt to lose weight, eating organic foods — even desserts — might be viewed as a substitute for actual weight-loss promoting behaviors.

Although leniency was higher in the no-dessert condition than in the conventional dessert condition, it is somewhat surprising that the observed difference was not significant. This may be partly due to the smaller N in the control condition, a result of our assigning more participants to the dessert conditions on which our primary hypothesis was focused. Even more surprising may be the similar leniency ratings in the organic and no-dessert conditions — in fact, leniency toward forgoing exercise was slightly *greater* when Susie chose organic dessert than when she chose to eat no dessert at all, suggesting that the association between "organic" and "healthy/low-calorie" is strong enough to offset the high-calorie/indulgent associations characteristic of dessert in general.

4 General discussion

The reported findings extend the literature on unwarranted inferences from food claims. Building on earlier work that documented profound overgeneralization from nutrient-based claims, we tested whether a production-based claim — namely, that a food is "organic" — can similarly bias consumers' perceptions of attributes that are only associatively related. Our findings show that this is the case. When a food is described as organic, per-

attributable to a particular food (i.e., cookie or ice cream).

[3]Contrast weights: +1 (organic mean), –1 (conventional mean), 0 (no-dessert control mean).

https://doi.org/10.1017/S1930297500001017 Published online by Cambridge University Press

ceivers erroneously infer that it is lower-calorie and that it can be eaten more frequently (Study 1). These benevolent impressions of organic foods are likely to influence consumption decisions and to have downstream implications for other health-related choices. We observed these implications when participants read about a person with a weight-loss goal who was considering skipping her planned physical exercise: participants considered forgoing exercise to be more acceptable when the person had just chosen an organic rather than a conventional dessert (Study 2). In combination, these findings suggest that "organic" claims not only foster lower calorie estimates and higher consumption intentions, but that they might also convey that one has already made progress toward one's weight-loss goal, thus undermining subsequent goal-consistent action (Fishbach & Dhar, 2005).

As noted above, several processes may contribute to unwarranted inferences from production-based food claims, and the present studies were not designed to evaluate their relative contributions. One possibility we addressed is a straightforward halo effect (Thorndike, 1920) in which one highly valenced attribute gives rise to similarly valenced inferences about other attributes. Compatible with this logic, the influence of organic claim on calorie judgments in Study 1 was most pronounced among participants high on pro-environmentalism, that is, participants for whom organic production is a particularly valued attribute. In Study 2, however, pro-environmentalism did not moderate the effect of organic claim on leniency toward forgoing exercise. One possible reason for this divergence is that leniency toward forgoing exercise might be driven by processes unrelated to inferences about calorie content. For instance, Mazar and Zhong (2010) observed that green consumption can have a moral licensing effect, allowing people to behave more unethically after consuming environmentally friendly products. If eating organic dessert is construed as an ethical act, observers might be more tolerant when the person subsequently "cheats" on a weight-loss goal by forgoing exercise, given the credentials already earned. Future research may fruitfully investigate the processes underlying these effects.

Independent of the underlying processes, our findings highlight that the popularity of organic foods may not be without its downsides. People struggling to cut calories might turn to organics and possibly consume more calories than they otherwise would. Although we found no relationship between body mass index and the effects reported here, future research may explore the effect of organic claims on actual consumption behavior, both in general and among populations that may be especially vulnerable to these effects, such as the obese and the highly pro-environmental.

References

Andrews, J. C., Netemeyer, R. G., & Burton, S. (1998). Consumer generalization of nutrient content claims in advertising. *Journal of Marketing, 62,* 62–75.

Barham, E. (2002). Towards a theory of values-based labeling. *Agriculture and Human Values, 19,* 349–360.

Batte, M. T., Hooker, N. H., Haab, T. C., & Beaverson, J. (2007). Putting their money where their mouths are: Consumer willingness to pay for multi-ingredient, processed organic foods. *Food Policy, 32,* 145–159.

Chandon, P., & Wansink, B. (2007). The biasing health halos of fast-food restaurant health claims: Lower calorie estimates and higher side-dish consumption intentions. *Journal of Consumer Research, 34,* 301–314.

Chen, M. F. (2009). Attitude toward organic food among Taiwanese as related to health consciousness, environmental attitudes, and the mediating effects of a healthy lifestyle. *British Food Journal, 111,* 165–178.

Collins, A. M. & Loftus, E. F. (1975). A spreading-activation theory of semantic processing. *Psychological Review, 82,* 407–428.

Crawford, C., & Krebs, D. (2008). *Foundations of evolutionary psychology*. New York: Erlbaum.

Dunlap, R. E., Van Liere, K. D., Mertig A. G., & Jones, R. E. (2000). Measuring endorsement of the new ecological paradigm: A revised NEP scale. *Journal of Social Issues, 56,* 425–442.

Fishbach, A., & Dhar, R. (2005). Goals as excuses or guides: The liberating effect of perceived goal progress on choice. *Journal of Consumer Research, 32,* 370–377.

Flegal, K. M., Carroll, M. D., Ogden, C. L., & Curtin, L. R. (2010). Prevalence and trends in obesity among US Adults, 1999–2008. *Journal of the American Medical Association, 303,* 235–241.

Food Marketing Institute (FMI) (2006). FMI backgrounder: Natural and organic foods.

Grice, H. P. (1975). Logic and conversation. In P. Cole & J. L. Morgan (Eds.), *Syntax and semantics (vol. 3): Speech acts* (pp. 41–58). New York: Academic Press.

Harris Interactive (2007). Large majorities see organic food as safer, better for the environment and healthier — but also more expensive. *The Harris Poll #97*. Retrieved 12 May 2009. http://www.harrisinteractive.com/harris_poll/index.asp?PID=813.

Kahneman, D., & Frederick, S. (2002). Representativeness revisited: Attribute substitution in intuitive judgment. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment* (pp. 49–81). Cambridge: Cambridge University Press.

Lichtman, S. W., Pisarska, K., Berman, E. R., Pestone, M., Dowling, H., Offenbacher, E., Weisel, H., Heshka, S., Matthews, D. E., & Heymsfield, S. B. (1992). Discrepancy between self-reported and actual caloric intake and exercise in obese subjects. *The New England Journal of Medicine, 327,* 1893–1898.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7,* 83–104.

Mazar, N. & Zhong, C. B. (2010). Do green products make us better people? *Psychological Science*, *21,* 494–498.

Organic Trade Association (OTA) (2010). 2010 Organic Industry Survey. Retrieved 28 April 2010. http://www.organicnewsroom.com/2010/04/.

Rosenthal, R., & Rosnow, R. L. (1985). *Contrast analysis: Focused comparisons in the analysis of variance*. Cambridge University Press.

Rozin, P., Ashmore, M. B., & Markwith, M. (1996). Lay American conceptions of nutrition: Dose insensitivity, categorical thinking, contagion, and the monotonic mind. *Health Psychology, 15,* 438–447.

Rozin, P., Spranca, M., Krieger, Z., Neuhaus, R., Surillo, D., Swerdlin, A., & Wood, K. (2004). Natural preference: Instrumental and ideational/moral motivations, and the contrast between foods and medicines. *Appetite, 43,* 147–154.

Schwarz, N. (1996). *Cognition and communication: Judgmental biases, research methods and the logic of conversation*. Hillsdale, NJ: Erlbaum.

Thorndike, E. L. (1920). A constant error in psychological ratings. *Journal of Applied Psychology*, *4*, 469–477.

United States Department of Agriculture (USDA) (2010). National organic program: National list of allowed and prohibited substances. Retrieved 2 Jun 2010. http://www.ams.usda.gov/.

Wansink, B., & Chandon, P. (2006a). Can "low-fat" nutrition labels lead to obesity? *Journal of Marketing Research, 43,* 605–617.

Wansink, B., & Chandon, P. (2006b). Meal size, not body size, explains errors in estimating the calorie content of meals. *Annals of Internal Medicine, 145,* 326–332.

Winter, C. K, & Davis, S. F. (2006). Organic foods. *Journal of Food Science, 71,* R117-R124.

Young, L. R., & Nestle, M. (2002). The contribution of expanding portion sizes to the U.S. obesity epidemic. *American Journal of Public Health, 92,* 246–249.

Appendix A — Decision task from Study 2

Name: Susie Thompson (college student, age 20)
Susie is member of Kappa Alpha Omega sorority at West Virginia University. She is currently trying to lose weight by eating healthy meals and getting regular exercise. For example, last night Susie had a spinach salad topped with chicken and walnuts for dinner, a small piece of cake for dessert. She then went on her usual 3-mile run.

Tonight, Susie has lots of homework to do and so she is a bit busier than normal. She has just finished dinner and dessert, and is trying to decide whether or not to skip her usual run in order to save time. For dinner, she had roasted vegetables over brown rice. For dessert, she was deciding between...

[conventional conditions]

> *... a small bowl of organic ice cream and a chocolate chip cookie, and she chose to eat the chocolate chip cookie.*
>
> *...an organic chocolate chip cookie and a small bowl of ice cream, and she chose to eat the ice cream.*

[organic conditions]

> *... a small bowl of ice cream and an organic chocolate chip cookie, and she chose to eat the organic chocolate chip cookie.*
>
> *... a chocolate chip cookie and a small bowl of organic ice cream, and she chose to eat the organic ice cream.*

[no-dessert control condition]

> *... a chocolate chip cookie and a small bowl of ice cream, and she chose to have no dessert at all.*

https://doi.org/10.1017/S1930297500001017 Published online by Cambridge University Press