Subjective Knowledge, Search Locations, and Consumer Choice

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This article demonstrates that subjective knowledge (i.e., perceived knowledge) can affect the quality of consumers' choices by altering where consumers search. We propose that subjective knowledge increases the likelihood that consumers will locate themselves proximate to stimuli consistent with their subjective knowledge. As such, subjective knowledge influences choice by affecting search selectivity between environments rather than search within the environment. We suggest that the need for self-consistency drives this effect of subjective knowledge on search. Two lab experiments and one field study find support for the effect of subjective knowledge on nutrition search selectivity and choice as well as for the role of self-consistency.

Consumer research has a long tradition of distinguishing between actual knowledge and consumers' assessments of their knowledge (e.g., Alba and Hutchinson 2000; Bearden, Hardesty, and Rose 2001; Brucks 1985). Researchers have used objective knowledge to refer to accurate stored information (e.g., Bettman and Park 1980) and subjective knowledge as a belief about that state of knowledge (e.g., Park and Lessig 1981).

Past research has demonstrated that objective knowledge and subjective knowledge (i) are distinct constructs with unique measures (Brucks 1985; Park, Mothersbaugh, and Feick 1994), (ii) influence search and choice behavior differently (e.g., Radecki and Jaccard 1995; Raju, Lonial, and Mangold 1995), (iii) have unique antecedents (Park et al. 1994; Radecki and Jaccard 1995), and (iv) have widely varying correlations (Brucks 1985 [0.54]; Ellen 1994 [0.08]; Park et al. 1994 [0.65]; Radecki and Jaccard 1995 [0.05]). This article focuses on subjective knowledge.

Prior research has investigated the effect of subjective knowledge on attribute-level information search strategies within a single product category (Brucks 1985; Radecki and Jaccard 1995; Park et al. 1994). We propose a novel search mechanism induced by subjective knowledge. Specifically, we suggest that subjective knowledge can influence decision making by increasing the likelihood that consumers will search in locations consistent with subjective knowledge. For example, if consumers believe that they are knowledgeable about health, this should increase the likelihood that they will locate themselves proximate to stimuli associated with that knowledge—such as healthy places in the store. Consequently, if subjective knowledge has an impact on the quality of choices, we predict that it will be due to greater search selectivity between environments as opposed to greater selectivity within a certain environment. We argue that the mechanism underlying this effect is the well-documented need for self-consistency or the tendency to seek out situations and people that are in line with beliefs about the self (for a review, see Swann, Rentfrow, and Guinn 2002).

This article addresses the following research questions: First, does subjective knowledge affect the nature of consumer search and the quality of consumer choice? Second, is self-consistency the mechanism underlying the effect of subjective knowledge on the selection of search locations?

Study 1 isolates the search location effect associated with subjective knowledge. Study 2 demonstrates the role of self-consistency in the effect of subjective knowledge. Study 3

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examines the effect of subjective knowledge on choice of search location in a field study. Given the importance of health to consumer research (e.g. Block and Keller 1995; Luce and Kahn 1999; Menon, Block, and Ramanathan 2002; Moorman and Matulich 1993; Russo et al. 1986; Thompson and Troester 2002; Wansink 2002), we use nutrition knowledge and food choice as the context for all our studies.

SUBJECTIVE KNOWLEDGE AND SELF-CONSISTENT SEARCH LOCATIONS

Subjective Knowledge and Search Selectivity

Published work suggests that subjective knowledge should either decrease or not affect the amount of nutrition information consumers acquire within a category (Brucks, Mitchell, and Staelin 1984; Radecki and Jaccard 1995; Rudell 1979). Given this, are there any search advantages to building subjective nutrition knowledge? We suggest that subjective nutrition knowledge may alter where consumers spend time searching.

We propose that consumers can be selective in choosing the categories in which they search and/or in choosing the products they examine within those categories. Between-category selectivity means that consumers spend more time searching in higher-quality categories and less time in lower-quality categories. Within-category selectivity means that consumers spend more time examining higher-quality products and less time examining lower-quality products within a given category. We suggest that subjective nutrition knowledge may affect how selective consumers are between categories when searching. This extends the Brucks et al. (1984) admonition that subjective knowledge affects how consumers process information about alternatives to suggest that it may affect where consumers search.

Further, we propose that it is the need for self-consistency that drives the influence of subjective knowledge on between-category selectivity. Historical research on self-consistency has provided extensive evidence of people's tendency to behave in line with the beliefs they hold about themselves (e.g., Cialdini 1993; Festinger 1957; Heider 1958). More recently, Bosson and Swann (2001) note that people seek evaluations from significant others that confirm their self-beliefs, and Swann and Pelham (2002) find that people strategically select into social environments that provide self-confirmatory feedback. Drawing on this research, we argue that consumers should be motivated to select search locations that are consistent with their subjective knowledge.

At first glance it may seem necessary that consumers possess objective nutrition knowledge in order to distinguish between search categories that are more or less consistent with their subjective knowledge. However, we argue that it is not necessary to have objective knowledge to act consistently. Rather, it is sufficient if consumers can distinguish between general categories, for example, those that are more or less healthy (i.e., snack foods are less healthy than fresh fruits and vegetables). Such simple categorizations permit consumers to select categories consistent with their subjective knowledge without extensive objective knowledge.[1] We predict the following:

H1: Subjective nutrition knowledge will increase between-category selectivity.

Subjective Knowledge, Search Selectivity, and Nutrition Decision Quality

Given that subjective knowledge promotes between-category selectivity, how does this influence the quality of consumers' choices? We argue by changing consumers' consideration sets. When similar options are grouped together—such as in product categories—differences between categories should, by definition, be greater than differences within each category. As such, a mechanism that influences search between categories that vary in nutrition will have strong effects on consideration sets and consequently on choice outcomes (e.g., Levin, Huneke, and Jasper 2000; Nedungadi 1990; Shocker et al. 1991). We predict the following:

H2: Between-category selectivity will improve nutrition decision quality.

Following the logic of hypothesis 1 and hypothesis 2, we predict that subjective nutrition knowledge should affect choice quality and that this effect is driven by between-category selectivity. Hence,

H3: The effect of subjective nutrition knowledge on nutrition decision quality is mediated by between-category selectivity.

STUDY 1: THE EFFECT OF SUBJECTIVE KNOWLEDGE ON SEARCH AND CHOICE

Design, Procedure, and Shopping Environment

Subjective knowledge (SK) was manipulated to be either high or low. Objective knowledge (OK) was measured and used as another factor in the analyses. Twenty-six undergraduates participated as a research requirement an introduction to marketing class. Upon arriving at the lab, participants were placed in front of a computer. The opening screen noted that the study was concerned with food choices and that nutrition knowledge would be measured. Participants were then asked to complete the OK measures. Upon completion, participants were informed that their responses were being graded. Fictitious test scores randomly assigned

[1] Will a similar mechanism also affect how selective consumers are within a category once it has been selected as a search venue? Research has shown that people tend to prefer options that are easy to justify and for which they can provide acceptable reasons to both self and others (e.g., Shafir, Simonson, and Tversky 1993). Hence, consumers may find their selection between search locations as compelling evidence of consistent behavior. As such, there may be little remaining need to enact consistent behavior within that location. Given this logic, we do not expect subjective nutrition knowledge to influence within-category selectivity.

to participants were our manipulation of high and low SK. Following the manipulation, the SK manipulation check was administered. Participants then entered a computerized grocery store and were presented with a brief video that explained how to search for and select a 2-day supply of food. We decided to eliminate participants who selected fewer than 500 calories or more than 15,000 calories. One participant was excluded. Participants completed the experiment in 35 min. and were then debriefed.

Our store had a hierarchical structure composed of 21 aisles and 45 categories, including a deli, a salad bar, and a food-court containing fast-food restaurants in the local area. Within each category (cereal), product types were offered (hot cereal), and within each type, specific products were listed (oatmeal), of which there were 1,090. Products were selected for inclusion in the store by a pretest involving 100 students from the same population. Categories ranged from an average fat level per serving of 0 fat grams (e.g., fruit juice) to 15 fat grams per serving (e.g., deli meat). Brand names were not provided, except when it was impossible to otherwise describe the product (e.g., Cheerios). Participants were told to make their choices without concern about price. Package design or graphics were not provided—only the generic name of the product. Shoppers could access four types of information: serving size, nutrition, ease of preparation (easy, moderate), and speed of preparation (fast, medium, slow). Nutrition information included the level and percentage recommended daily value for calories, protein, carbohydrates, sugar, total fat, saturated fat, cholesterol, fiber, calcium, iron, vitamin C, and sodium.

Shoppers moved around the store by clicking their mouse to enter categories and to view products. Individual product information could be read. Shoppers could move easily between products, and they could hop from one category or aisle to another. At any point during the shopping trip, shoppers could click on their basket to recall product names, the number of servings they purchased, and any information for products in their basket.

Measures

Objective Fat Knowledge Measure. Although nutrition knowledge could be assessed in many ways, we focused on knowledge about fat. In a pretest, 44 respondents answered 25 questions regarding dietary guidelines related to fat, health consequences of dietary practices related to fat, and food composition related to fat. We partitioned our sample into quartiles based on the number of items answered correctly. We then conducted a one-way ANOVA using each question as a dependent variable and eliminated items that were too difficult or too easy and that did not have a significant linear term in the ANOVA. The final formative measure is presented in appendix A.

Subjective Fat Knowledge Manipulation and Check. Participants were randomly assigned to a high- or low-SK condition and received false feedback on their knowledge score. Specifically, participants were told that their score was compared with those of 1,000 students at the university and that their fat knowledge score was either in the ninetieth (high-SK) or tenth (low-SK) percentile.

We evaluated the SK manipulation using six manipulation check items, which are listed in appendix A. An index of these items formed a reliable scale ($\alpha = 0.88$). Results indicate that consumers appraised their fat knowledge as significantly higher when given the high-SK manipulation rather than the low one ($M_{HSK} = 4.6$ vs. $M_{LSK} = 3.2$, $F(1, 21) = 6.36$, $p = .05$). It was found that OK had a weak main effect on the manipulation check ($F(1, 21) = 3.60$, $p = .10$), which is not unexpected given that some past research reports a moderate correlation between SK and OK (Brucks 1985). There was no SK × OK interaction. Using the SK manipulation check, SK and OK are uncorrelated ($r = -0.15$, NS).

Dependent Variables. To measure between-category selectivity, we regressed each participant's search time in each of the 45 categories on the average fat per serving associated with that category. The between-category selectivity measure is the beta coefficient associated with the relationship of category search time and fat levels. Negative betas indicate participants spent more time in lower-fat categories, demonstrating higher levels of between-category selectivity.

Fat decision quality was measured by the average fat per serving purchased by the participant. The lower the level of fat per serving, the higher the fat decision quality.

Results

Predictions were tested using ANOVA, except for hypothesis 2, which used OLS regression. The between-subjects factors were the manipulated SK and measured OK, from which two categories were devised using a median split. Results replicate if we use a continuous OK measure and regression analysis. All tests are two-tailed unless noted otherwise.

Subjective Nutrition Knowledge → Between-Category Selectivity. Results indicate that SK has a significant effect on between-category selectivity ($F(1, 21) = 7.539$, $p = .01$). Recalling that selectivity improves as it becomes more negative, analysis of the means indicates that high SK induces greater between-category selectivity ($M_{HSK} = -1.34$) than low SK ($M_{LSK} = -0.206$), supporting hypothesis 1. While OK has no effect on between-category selectivity ($F(1, 21) = .966$, NS), the OK × SK interaction is significant ($F(1, 21) = 5.564$, $p = .03$). High-SK compared to low-SK leads to greater between-category selectivity when OK is low ($M_{HSK,LOK} = -2.030$ vs. $M_{LSK,LOK} = 0.078$) compared to when OK is high ($M_{HSK,HOK} = -0.650$ vs. $M_{LSK,HOK} = -0.490$). This suggests that the effect of SK on between-category selectivity is stronger when OK is low

and weakened when OK is high; however, none of the simple effects are significant.[2]

Between-Category Selectivity → Fat Decision Quality. Results indicate that between-category selectivity has a positive effect on decision quality ($t = 2.833$, $b = 0.43$, $p = .01$). To interpret, recall that both fat decision quality and between-category selectivity improve as they become more negative. These results support hypothesis 2.

Subjective Nutrition Knowledge → Between-Category Selectivity → Fat Decision Quality. Given that we find support for hypotheses 1 and 2, we now examine whether between-category selectivity mediates the effect of SK on fat decision quality. Following standard procedure, we first establish that SK affects fat decision quality ($F(1, 21) = 3.455$, $p = .07$). High SK ($M_{HSK} = 2.23$) results in lower levels of fat per serving relative to low SK ($M_{LSK} = 3.66$); OK ($F(1, 21) = .000$, NS) and the interaction of OK × SK ($F(1, 21) = 0.11$, NS) have no effect on fat decision quality.

We now examine the effects of OK, SK, and the predicted mediator, between-category selectivity, on fat decision quality. In this model the effect of SK is insignificant ($F(1, 20) = 0.341$, NS), but between-category selectivity remains a significant predictor ($F(1, 20) = 5.080$, $p = .04$), suggesting complete mediation. Follow-up tests examining the decrease in SK indicate that it is significant ($z = 2.08$, $p = .05$; Kenny, Kashy, and Bolger 1998). These findings support hypothesis 3.

Discussion

Results indicate that SK increases between-category selectivity and that between-category selectivity mediates the relationship between SK and decision quality. One unexpected finding is that greater OK weakens the effect of SK on between-category selectivity. We speculate that this weakening occurs because OK reduces consumers' reliance on simple categorizations that distinguish more or less healthy categories (i.e., snacks are less healthy than fresh fruits). As a result, consumers may be more likely to spend closer to equal amounts of time in healthy and less healthy categories.

In conclusion, although our results provide some indication that SK may have important effects on where consumers search, we have provided no evidence that the choice of search location is caused by self-consistency. Study 2 deals with this concern.

[2] As alluded to in n. 1 above, within-category selectivity was also assessed for each category by regressing search time for each product within a category on the fat per serving associated with that product. Each participant's beta coefficients were averaged across categories. Negative betas indicate that participants spent more time on lower-fat products within each category. Using this measure, SK($F(1, 21) = 2.205$, NS), OK ($F(1, 21) = 2.001$, NS) and SK × OK ($F(1, 21) = 1.955$, NS) had no effect on within-category selectivity. We speculate that consumers no longer felt the need to act consistently once they entered a consistent category. However, these findings could also be driven by methodological constraints that may limit the sensitivity of this measure.

STUDY 2: EVIDENCE FOR THE SELF-CONSISTENCY MECHANISM

This study provides evidence for the self-consistency mechanism underlying the effect of SK on choice of search location. It uses procedures identical to those of study 1 to measure OK and provide false feedback to create high- and low-SK levels. Participants were randomly assigned to conditions that did or did not allow them to behave in a manner consistent with their SK. We predicted that, if consistency is the mechanism drawing high-SK consumers into certain search locations, enacting SK-consistent behaviors should reduce their need for consistency. Using the same logic, if SK-consistent behaviors are prevented, the need for consistency should remain high.

In the block condition, participants were not permitted to enter the low-fat categories in the store. These categories were determined by a median split on the mean fat level of products in the category. Participants were informed, "these categories are not available for shopping today." In the no-block condition, participants were permitted to shop in all of the categories. In the block and no-block conditions, participants completed a questionnaire that evaluated their need for consistency after completing their food shopping. In the control condition, participants completed the same scale immediately after the SK manipulation check.

Both low-SK and high-SK participants in the control condition should have a high need for consistency as neither has yet had the opportunity to enact consistent behaviors. Conversely, high-SK participants who have access to the entire store should be able to fulfill their need for consistency and, when asked at the end, should have lowered this need compared to the control group. However, high-SK participants not allowed to enter healthy categories are blocked from behaving consistently and should retain a high need for consistency. For the high-SK group, the control condition is thus expected to equal the blocked condition, while the no-block group should exhibit lower consistency needs. Low-SK participants do not necessarily rely on healthy categories to behave consistently. Consequently, low-SK participants who were blocked from healthy aisles should experience a lower need for consistency than what high-SK participants experience when they are blocked from healthy aisles.

Two hundred and twelve undergraduates participated in the study for class credit. The SK manipulation check was successful ($F(1, 208) = 5.076$, $p = .025$); the OK ($F(1, 208) = 0.054$, NS) and the OK × SK interaction ($F(1, 208) = 1.12$, NS) did not affect the check. Using the SK manipulation check, SK and OK are uncorrelated ($r = 0.05$, NS).

Given that the focus of the study is on self-consistency, we adopted the internal consistency dimension of Cialdini, Trost, and Newsom's (1995) preference for consistency (PFC) scale as the dependent measure. The scale items, which formed a reliable index ($\alpha = 0.73$), include the following: It is important to me that my actions are consistent

with my beliefs, I get uncomfortable when I find my behavior contradicts my beliefs, I typically prefer to do things the same way, I'm uncomfortable holding two beliefs that are inconsistent, and It doesn't bother me much if my actions are inconsistent (reverse-coded).

Results support the expected pattern (see fig. 1). Given our directional predictions, the tests we report are one-tailed. Specifically, high-SK participants in the control condition have a higher need for consistency ($M_{\text{HSK, Control}} = 6.69$) than high-SK participants in the no-block condition ($M_{\text{HSK, No-Block}} = 5.89$; $F(1, 48) = 6.527$, $p < .01$) but need for consistency levels equal to high-SK participants in the block condition ($M_{\text{HSK, Block}} = 6.55$; $F(1, 49) = 0.004$, NS). High-SK participants in the block condition ($M_{\text{HSK,Block}} = 6.55$) have a higher need for consistency relative to high-SK participants in the no-block condition ($M_{\text{HSK, No-Block}} = 5.89$; $F(1, 49) = 5.643$, $p < .05$).

Turning to low-SK participants, considering our predictions, the most important finding is that, when comparing high-SK and low-SK participants in the block condition, high-SK participants ($M_{\text{HSK, Block}} = 6.55$) have a higher need for consistency relative to low-SK participants ($M_{\text{LSK, Block}} = 6.10$; $F(1, 50) = 3.013$, $p < .05$). Although not part of our predictions, low-SK participants in the control condition ($M_{\text{LSK, Control}} = 6.68$) have a significantly higher need for consistency compared with the low-SK participants in the no-block condition ($M_{\text{LSK, No-Block}} = 6.23$; $F(1, 47) = 2.816$, $p < .05$) but not in the block condition, although directional results are achieved ($M_{\text{LSK, Block}} = 6.10$, $F(1, 49) = 2.384$, NS). Also, low-SK participants in the block condition ($M_{\text{LSK, Block}} = 6.10$) have need for consistency levels equal to low-SK participants in the no-block condition ($M_{\text{LSK, No-Block}} = 6.23$, $F(1, 48) = .250$, NS).

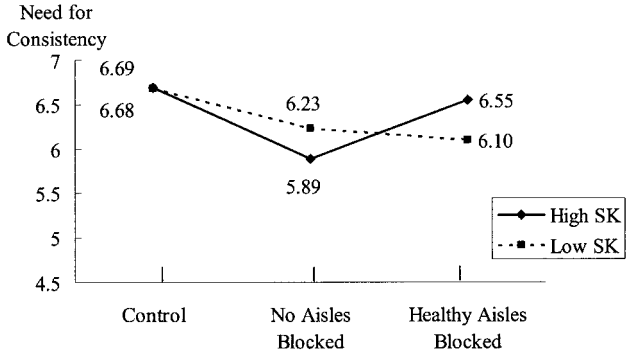
This pattern of effects provides stronger evidence of the role of self-consistency as an underlying mechanism driving the effect of SK on the choice of search location. High-SK participants expressed a strong need for consistency when blocked from shopping in low-fat aisles but not when able to shop anywhere in the store, indicating that acting consistently in their choice of search location allowed high-SK participants to reduce their need for self-consistency.

STUDY 3: A FIELD STUDY

Our previous studies manipulated SK, focused on fat, and were performed in a lab. This study examines the effect of measured SK at the level of overall nutrition in a field study. Measuring SK overcomes the concern that participants behave consistently for the experimenter and not to be consistent with their SK. Focusing on overall nutrition (not just fat) and operating in the field also increases the generalizability of our findings. Because we are utilizing data from Moorman (1996), we are only able to investigate hypothesis 1, which examines the effect of nutrition SK on consumers' between-category selectivity. In Moorman (1996), consumers were observed making a choice in a single category as opposed to being observed across multiple categories, as was the case in the lab studies. As such, we will be limited to answering the question: Are high-SK consumers more likely to be found shopping in healthier categories?

FIGURE 1

NEED FOR CONSISTENCY AS A FUNCTION OF SUBJECTIVE KNOWLEDGE AND SEARCH LOCATION ACCESS



Design, Procedure, and Sample

A sample of consumers ($n = 947$) was randomly selected while shopping in one of 20 product categories. Researchers posing as consumers unobtrusively observed consumers making a choice. Consumers were then intercepted and asked to complete a one-page survey (see Cole and Balasubramanian 1993) and in return were offered a $1.00 coupon toward any purchase.

Measures

Nutrition Knowledge. Nutrition OK was measured using 15 questions focused on nutrition knowledge of dietary guidelines and health consequences (see app. B). Correct answers were summed to create this formative measure ($M = 8.78$, SD $= 3.29$). Nutrition SK was measured using a scale composed of three items ($\alpha = 0.80$) adapted from Brucks (1985). Nutrition OK and SK are not correlated ($r = -0.16$, NS). Two levels of SK and OK were created using a median split. The results replicate those using continuous measures.

Healthiness of Category Selection. We utilized ratings published in Moorman and Slotegraaf (1999). These researchers randomly selected six brands from each category and presented their nutrition information to two certified nutritionists, who independently rated each brand in terms of its overall nutrition level on a scale, where 1 is very healthy and 7 is not at all healthy. Interjudge reliability assessments were 74.9%.

Results

Given the lack of experimental controls, the analysis also included covariates for gender, age, education, and income levels as well as a dummy variable denoting the year in

which the data were collected (pre-NLEA or post-NLEA). Recall that lower scores of category healthiness reflect higher nutrition levels. Results indicate that SK affected the healthiness of the category selected ($F(1, 938) = 3.282$, $p = .07$) with high-SK consumers selecting healthier categories than low-SK consumers. These findings are consistent with hypothesis 1 in study 1.

The only other significant predictor in the model is the interaction of SK and OK on category healthiness ($F(1, 938) = 3.686$, $p = .05$). High SK compared to low SK leads to healthier category selection (lowest score) when OK is low ($M_{HSK,LOK} = 3.24$ vs. $M_{LSK,LOK} = 3.52$, $F(1, 497) = 5.376$, $p = .02$) but not when OK is high ($M_{HSK,HOK} = 3.53$ vs. $M_{LSK,HOK} = 3.47$, NS). This finding is consistent with what was observed in study 1.

GENERAL DISCUSSION

The studies we present point to the following conclusions. First, SK influences consumers' search location and the quality of their choices. Second, SK affects search and choice because consumers are motivated to behave consistently with their SK. Indeed, we show that consumers who can engage in SK-consistent behavior lower their need for consistency compared to those who are restricted from SK-consistent behavior.

This research contributes to the literature on SK in three ways. First, we observed a unique search outcome associated with SK. Our focus on search location across categories augments existing research, which has focused on attribute information search within a single category. Our findings also support prior policy recommendations that product category choice may be more important to quality outcomes than brand choice (Bettman 1975). Second, we provide evidence that SK affects search via a self-consistency motive. Third, the ultimate effect of SK on the nutritional quality of consumers' choices clarifies one concrete manifestation of the adaptive value of knowledge illusions (Alba and Hutchinson 2000; Taylor and Brown 1988).

The generality of the effect of SK on choice of search location is an important direction for future research. In our nutrition context, consumer learning about category healthiness was reflected in the supermarket layout. Consumers can also learn about how categories within a store vary in price, quality, or other important attributes. For example, consumers might learn how clothing quality varies across different sections of a department store or how movie suitability varies across different sections of a video store. Further, we think it likely that SK influences between-store selectivity as consumers select stores that are self-consistent.

Future research could also examine what boundary conditions are associated with the effect of SK on choice of search location. In studies available from the authors, we found three conditions important to observe the effect: (1) consumers can categorize products and search locations (e.g., distinguish food categories that are more or less healthy), (2) the search environment is organized in a way that is consistent with consumers' categorizations so these categories can direct search (e.g., products are clustered in types, such as fruit, as opposed to arranged alphabetically), and (3) choice is stimulus-based, not memory-based, so that SK can influence consumers' selection of search location and their subsequent choices.

Future research could also provide additional insights by testing rival explanations for SK's effects. In studies available from the authors, we ruled out that SK was affecting search location choice by putting people in a bad mood or that it was only effective for people with enduring confidence in their ability as consumers. Other conditions should be explored.

Our explanation focuses on consumers' need to behave self-consistently. In addition, future research should investigate how this self-consistency goal relates to other goals that consumers may hold, including health-related goals, such as losing weight or rewarding oneself. Further, the need for self-consistency may become stronger if activated by environmental cues such as certain types of communication or shopping situations. Identification of such primes could have significant policy implications. Finally, we focused on the effect of SK on search between categories. Future investigations could examine a broader range of positive and negative effects of SK on a more complete set of search and choice outcomes.

APPENDIX A

STUDY 1 AND STUDY 2 MEASURES

SUBJECTIVE FAT KNOWLEDGE MANIPULATION CHECK

• How knowledgeable do you feel about dietary guidelines for fat and food groups?
• How knowledgeable do you feel about the link between fat and health consequences?
• How knowledgeable do you feel about fat contained in foods?
• How knowledgeable do you feel about fat in general?
• How confident do you feel about your ability to make low-fat choices?
• How confident do you feel about your ability to use your knowledge of fat in making food choices?

(Seven-point scale, 1 is not at all and 7 is extremely.)

OBJECTIVE FAT KNOWLEDGE

Dietary Guidelines Related to Fat

• Most health professionals recommend that you consume no more than _____ % of your total calories from fat per day? (20, [25], 30, 35)
• Most Americans consume about _____ % of their calories from fat per day. (23, 27, [30], 33, 36)

(Correct answers are in brackets.)

Health Consequences Related to Fat

• A diet higher in total fat will increase levels of blood sugar and increase the risk of diabetes. ([T], F)
• Food high in total fat can: (A) Increase the risk of colon cancer; (B) Increase the risk of liver disease; (C) Increase the risk of heart disease; (D) All of the above; [(E) Both A and C]
• Total fat is different from dietary fiber on a number of characteristics. Which of the following is true? (A) Fat intake increases the risk of liver disease. Fiber consumption has no effect on liver disease. [(B) Fat is absorbed into the body. Fiber is not.] (C) Fat is not considered to be a nutrient. Fiber is considered to be a nutrient. (D) All of the above. (E) Both A and B.
• You should not drink too much water with high fat foods because the combination will cause bloating. (T, [F])
• Too much fat can easily become a health risk because it blocks the absorption of some minerals, such as iron, copper, and zinc. (T, [F])
(Correct answers are in brackets.)

Food Composition Related to Fat

• Butter, cream cheese, and margarine contain similar amounts of fat per serving size. ([T], F)
• One package of M&Ms contains more fat than 1 slice of cheese pizza. (T, [F])
• One hamburger contains more fat than 1 slice of pizza. ([T], F)
• One cup of baked beans contains more fat than 1 cup of refried beans. ([T], F)
• One avocado contains more fat than a 6 oz. steak. ([T], F)
(Correct answers are in brackets.)

APPENDIX B

STUDY 3 NUTRITION KNOWLEDGE MEASURES

SUBJECTIVE NUTRITION KNOWLEDGE (ADAPTED FROM BRUCKS 1985)

• Rate your knowledge of nutrition information compared to the average consumer. (Seven-point scale, 1 is much less, 4 is average, and 7 is much more.)
• Rate your confidence in using nutrition information compared to the average consumer. (Same scale.)
• I feel confident about my ability to comprehend nutrition information on product labels. (Seven-point scale, 1 is disagree and 7 is agree.)

OBJECTIVE NUTRITION KNOWLEDGE

Food Serving and Dietary Guidelines (USDA)

• Nutrition guidelines recommend at least _____ servings of vegetables daily (1, [3], 6)
• Nutrition guidelines suggest that no more than _____ percent of the calories consumed in a day should come from fat. (10%, 20%, [30%], or 50%)
• Nutrition guidelines consider what to be moderate alcoholic drinking for an average man? (1, [2], or 3 drinks per day)
• Which food group contains the most cholesterol? (Breads & Cereals; Sugars; Vegetables & Fruits, [Meat, Fish & Poultry])
• Which food group contains Vitamins A and C, folic acid, minerals, and fiber? (Breads & Cereals; Sugars; [Vegetables & Fruits]; Meat, Poultry & Fish)
(Correct answers are in brackets.)

Health Consequences

Match the nutrient to the correct health outcome.

1.	Calcium	[5]	Causes high blood pressure
2.	Saturated Fat	[1]	Builds strong bones
3.	Vitamin A	[3]	Maintains eyes, skin, and hair
4.	Iron	[9]	Forms amino acids to build your body
5.	Sodium	[6]	Fights colds and has anticancer power
6.	Vitamin C	[4]	Carries oxygen in the blood
7.	Vitamin D	[7]	Helps absorb calcium
8.	Carbohydrates	[8]	Converts to sugar/fuels the body
9.	Protein	[2]	Causes cardiovascular disease
10.	Potassium	[10]	Balances sodium in the body

(Correct answers are in brackets.)

[*Dawn Iacobucci served as editor and Eugene Anderson served as associate editor for this article.*]

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