

“Why My Mother Never Threw Anything Out”: The Effect of Product Freshness on Consumption

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This research focuses on a pervasive but largely unexamined product attribute—freshness date—to shed light on how and why its influence on the consumption of perishable products changes with product ownership. Drawing on recent research on the endowment effect, we demonstrate that even when the differential costs implicit in ownership are controlled for, consumers are more likely to actually consume a product past its freshness date when they own it than when they do not. Moreover, this ownership-based increase in consumption is accompanied by lower estimates by consumers of their likelihood of getting sick from consuming the product past its freshness date. These outcomes are driven, in turn, by consumers' ownership-based susceptibility to engage in selective and confirmatory testing of the hypothesis that the product past its freshness date is consumption worthy (i.e., approach goal) rather than the alternate, default hypothesis that it is not consumption worthy (i.e., avoidance goal).

My mother was never embarrassed . . . never even knew that she should have been. It was just the way she was. Which was taste-blind and unafraid of rot. “Oh, it’s just a little mold,” I can remember her saying on the many occasions she scraped the fuzzy blue stuff off some concoction before serving what was left for dinner. . . . My parents entertained a great deal, and before I was ten I had appointed myself guardian of the guests. My mission was to keep Mom from killing anybody who came to dinner. (Reichl 1998)

Much of what we consume is perishable. From pies to produce, from poultry to pharmaceuticals, many consumables lose their freshness over time, becoming ineffi-

cient and, often, unsafe. To ensure the safety and quality of such products, marketers often label them with freshness dates, after which the goods are essentially stigmatized by their deteriorating freshness. Such stigmatization is characterized by heightened perceptions of product risk and reduced purchase likelihood (Gregory, Slovic, and Flynn 1996; Tsiros and Heilman 2005).

Notably, judgments of freshness are inputs into not only consumers' purchase decisions but also their consumption decisions. And while consumers can be acutely sensitive to freshness at the point of purchase (Tsiros and Heilman 2005), they often, as the opening lines from *Gourmet* magazine editor Ruth Reichl's memoir suggest, ignore or downplay such information during consumption. Why is this so? Why is it acceptable for many of us, who would never buy “expired” milk at the store, to pour “expired” milk into our coffee at home? Insight into this question is important for not only consumer theories of product perishability but also those interested in ensuring consumer adherence to freshness information. Yet, little is currently known about the influence of such information on the actual consumption of perishable products.

There are many reasons why people might want to consume a product they own past its freshness date. The most obvious of these is the actual monetary cost of the product. Because the good has already been paid for, people will be inclined to consume it in order to get at least some utility for their monetary outlay. While the price of the owned

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good is a sunk cost at the point of consumption, consumers tend to overweight such costs in their postpurchase decisions (Arkes and Blumer 1985). A second cost stems from consumers' inability to obtain viable substitutes at the point of consumption without expending physical and/or cognitive effort, resulting in considerable switching costs. Finally, consumers may be motivated to consume a product past its freshness date because of a trait or context-based desire to minimize waste.

Interestingly, consumers' propensity to consume a product past its freshness date may persist even when such costs and motivations do not exist or are controlled for. Much research on the endowment effect (Johnson, Haubl, and Keinan 2007; Kahneman, Knetsch, and Thaler 1990) suggests that simply owning a good (i.e., when it becomes part of one's endowment) instantaneously increases consumers' valuation of it. It is widely believed that this is due to an endowment-induced change in the reference point consumers use to value the good and their loss-averse valuations of it from these reference points. It is plausible, then, that the notions of endowment and loss aversion may account, at least in part, for people's propensity to consume a product that they own past its freshness date. Importantly, the effects of endowment on the consumption (vs. valuation) of stigmatized products (vs. basically desirable or "normal" products), such as those past their freshness date, remain unexamined. Such an account is noteworthy because the adverse consequences of actually consuming an owned product past its freshness date are potentially direr than those of merely valuing it, particularly for products such as fire extinguishers and condoms. Relatedly, this account implies that people's inclinations to consume a product past its freshness date may be rooted, at least partially, in nonconscious, loss-averse processes, making it difficult for them to change such behaviors.

This article examines the role of endowment in the consumption of products past their freshness dates. It contains three studies that, together, demonstrate an endowment-induced increase in people's consumption of a product past its freshness date and implicate selective and confirmatory hypothesis testing guided by shifting consumption goals as the driver. In doing so, the article makes two contributions. First, it advances our conceptual understanding of how and why consumers respond to freshness dating at the point of consumption. Specifically, we demonstrate that consumers' greater propensity to consume a product past its freshness date when they own it is driven at least in part by endowment-induced changes in their product risk judgments. Second, given that a product's freshness date is merely a discretized instance of a more general class of product attributes that evolve over time (e.g., the taste of wine, the reliability of many durables such as cars), this research extends extant theories of endowment by examining its effect on consumers' propensity to actually consume, rather than just value, products whose properties change over time. Our findings suggest that for a product with deteriorating properties, such as freshness, endowment can not only bias the information consumers access to justify their default goal of consuming

the product but also alter, once the product becomes stigmatized, the consumption goal itself, from that of avoidance to approach.

CONCEPTUAL BACKGROUND

Consumer Reactions to Freshness Dates

Freshness dating in the United States is regulated, rather idiosyncratically and through multiple agencies, at the state rather than the federal level (*Consumer Reports* 2004). The resulting lack of uniformity is reflected in the presence/absence as well as the type (e.g., sell by vs. use by) and format (e.g., 03-21 vs. Mar 21 vs. 0321) of freshness labels adopted, often voluntarily, by marketers. Needless to say, this diversity in freshness dating confuses consumers. A small but growing set of research attempts to understand how consumers incorporate freshness dates into their purchase decisions (Cardello and Schutz 2003; Harcar and Karakaya 2005; Tsiros and Heilman 2005). Cardello and Schutz (2003) document the importance of food freshness in purchasing decisions; it ranked just below taste and nutrition and on par with attributes such as price and convenience. Not surprisingly, then, a majority of North American consumers report checking freshness dates before they consume products, and few (7%–15%) are willing to use a product beyond its freshness date (Harcar and Karakaya 2005).

In the most comprehensive examination to date of how freshness dates affect purchasing behavior, Tsiros and Heilman (2005) survey consumers' frequency of checking expiration dates and the evolution in their willingness to pay (WTP) for perishable products as they approach their expiration dates. They find that consumers' date-checking frequency and WTP evolution varies with the product category and their experience with it. In addition, consumers' WTP depends on both demographic factors as well as their postpurchase efforts to impede the aging process. Most importantly, the authors implicate consumers' perceptions of product quality risk as a key psychological determinant of their WTP and date-checking behavior.

In sum, faced with a confusing array of freshness dates, consumers do appear to value, search for, and use such information in making purchase decisions. We theorize next about how and why such information might affect the actual consumption of an already owned product.

Endowment and Consumption Behavior

Much research points to an ownership-induced, instantaneous increase in consumers' valuations of a range of goods even when ownership results from random assignment or happenstance (Beggan 1992; Kahneman et al. 1990). A primary and extensively researched expression of such enhanced preference, the endowment effect, occurs in experimental markets where people demand a higher selling price for goods they own than they are willing to pay for the same goods as buyers, even after wealth effects and strategic behaviors are controlled for (Johnson et al. 2007;

Kahneman et al. 1990). Most research has located this endowment-enhanced preference for a product in consumers' loss-averse evaluations of it from varying, role-dependent (i.e., seller vs. buyer) reference points (Tversky and Kahneman 1991). More recently, research (Carmon and Ariely 2000; Nayakankuppam and Mishra 2005) has focused on the information-processing analogs of loss aversion in this domain, demonstrating that compared to buyers, sellers appear to attend more to and overweight the positive or value increasing aspects of the traded good, attending less to and underweighting its value-decreasing aspects.

Building on this research, Johnson, Haubl, and Keinan (2007) propose a retrieval-based account of endowment called query theory, which hinges on the premise that both sellers' and buyers' valuation of the traded good is based on a pair of value-ascertaining queries: "Why should I make the trade?" and "Why should I not make the trade?" Notably, these queries are executed in a role-dependent, sequential manner, causing the information recalled in service of the first query to interfere with and suppress the retrieval of information relevant to the subsequent query. The endowment effect stems, thus, from both buyers' and sellers' propensity to query the advantages of their role-specific current state before querying the disadvantages, yielding different valuations. In sum, recent research on the endowment effect underscores the role of the disparate goals of buyers and sellers in biasing their perceptual and memory retrieval processes in predictable and value determining ways.

Given the pivotal role of decision goals in the endowment effect, it is worth considering whether a consumption goal might differ from the valuation goals implicit in the trading-based tests of endowment. We draw on research in both goal-based decision making and regulatory systems (Metcalfe and Mischel 1999) to argue that consumption goals are more part of decision makers' "go" regulatory system, characterized by the often visceral anticipation of and desire for sensory pleasure and immediate gratification (Ditto et al. 2006; Loewenstein 1996). Valuation goals, on the other hand, are more likely to reside in the "know" regulatory system, characterized by more reasoned, long-term-oriented, cost-benefit thought and analyses. This distinction is particularly germane to the consumption versus valuation of hedonic food products, which comprise a majority of perishable goods.

Because people are inherently motivated to fulfill their consumption goals, we suggest that their decision-making queries in the service of such goals are, in general (i.e., independent of endowment), cast in favor of the "current potential action" (Johnson et al. 2007) of consumption. More specifically, we argue, based on the literature on biased pre-decision processing (Brownstein 2003; Kunda 1990; Russo, Meloy, and Medvec 1998), that the essentially "approach" nature of the consumption decision predisposes people toward the expectation or hypothesis that the product is consumption worthy, regardless of endowment. In turn, this leads them, often automatically (Sanbonmatsu et al. 1998), to search for and evaluate product information in ways that

affirm its consumption worthiness (i.e., a confirmation bias; Deighton 1984; Nickerson 1998).

The Role of Freshness Dates. The processes outlined above pertain to consumption decisions involving basically desirable and consumption-worthy (i.e., normal) products, such as those in the extant endowment studies. Even though such products contain both attractive and unattractive features, the latter do not detract from their basic appeal as goods worth owning and consuming. Once past their freshness date, however, perishable products can become stigmatized by virtue of their increased perceived riskiness (Gregory et al. 1996; Tsiros and Heilman 2005), rendering them basically undesirable in spite of the persistence in them of attractive features. We contend that because of this essential undesirability of stigmatized products, the consumption goal for such products becomes one of avoidance. Thus, consumers are predisposed toward the hypothesis that such products are not desirable or consumption worthy, processing decision-relevant information in favor of this hypothesis.

How might endowment influence the consumption decision for stigmatized products, such as those past their freshness date? Based on the endowment research discussed above, we argue that, unlike in the case of normal products, endowment of such products changes the default consumption hypothesis from avoidance (i.e., this product is not consumption worthy) to approach (i.e., this product is consumption worthy). This switch in the default hypothesis, coupled with subsequent confirmatory hypothesis testing, renders such stigmatized products more consumption worthy than if these were not part of consumers' endowment.

It is worth noting that our theorizing about the role of endowment in the consumption of products past their freshness date is more motivational in nature than extant accounts of the endowment effect (Carmon and Ariely 2000; Johnson et al. 2007; Nayakankuppam and Mishra 2005). We suggest that in making consumption (i.e., approach) decisions people not only engage in selective retrieval but also actively distort decision-relevant information in a hypothesis-confirming manner, particularly if it is ambiguous. Interestingly, while the freshness date serves as a stigmatizing event, there also appears to be much ambiguity regarding its implications for consumption-related risk (Brody 2005). Thus, we would expect the owners of a product past its freshness date to interpret this value-decreasing but ambiguous information in a self-serving manner, downplaying, relative to non-owners, the risk associated with consuming the product (see also Loewenstein et al. 2001; Trope, Gervy, and Liberman 1997).

To summarize, we suggest that the effect of endowment-conferred ownership on the actual consumption, as opposed to valuation, of a perishable product is likely to be stronger when the product is past its freshness date (i.e., a stigmatized good) than when it has yet to pass that date (i.e., a normal good). This endowment_{consumption} prediction is accompanied by a parallel endowment_{risk} prediction: when a product is past its freshness date, consumers are likely to provide lower estimates of their likelihood of getting sick from consuming

it past its freshness date if they own the product than if they do not. Next, we test these predictions by contrasting respondents' actual consumption of a perishable food product either prior to or past its freshness date as a function of endowment-conferred ownership.

STUDY 1

Design and Procedure

As per the study's objectives, we examined the effect of endowing a well-known yogurt smoothie brand, which varied in its level of freshness, on respondents' product risk perceptions and consumption behavior. About half the respondents answered questions about a smoothie that was a few days away from its freshness date (i.e., Pre-Date) whereas the other half reacted to a smoothie that was a few days past this date (i.e., Post-Date). Roughly half of the respondents in each freshness condition were endowed with the smoothie (i.e., Endowed) prior to the study, whereas the other half were not (i.e., Control). Thus, this experiment had a 2 (Endowment: 1 = Control, 2 = Endowed) \times 2 (Freshness: 1 = Pre-Date, 2 = Post-Date) between-subjects design.

The 171 undergraduate students who participated in this study for class credit were assigned to one of the four experimental conditions at random. Respondents in each condition were assigned to separate rooms where they completed a set of studies, including this one, at individual workstations. The sessions lasted approximately 1 hour and were conducted between 10 a.m. and noon to control for potential time of day confounds. Both Endowment conditions were run in each session as an additional control. All respondents first filled out a short questionnaire that elicited their frequency of yogurt consumption (at least once a week, once every couple of weeks, once a month, 3–4 times a year, once a year, less than once a year, never), their frequency of purchasing (seven-point scale; 1 = never buy, 7 = always buy) and preference for (seven-point scale; 1 = dislike very much, 7 = like very much) five of the most prevalent brands of yogurt (Breyers, Colombo, Dannon, Stonyfield Farm, and Yoplait). Finally, respondents used the same preference scale to indicate their preference for several different yogurt flavors, which included all the smoothie flavors used in the study.

Each respondent in the Endowed condition was next given a well-known brand of yogurt smoothie and told that it was his/hers to keep. Respondents were also told that they would have to answer some questions about the smoothie at some point during the hour and instructed to leave the smoothie untouched on their desk until further instructions. All respondents (Endowed and Control) then completed questionnaires corresponding to unrelated studies for approximately 20 minutes. Respondents in the Endowed condition then proceeded with the main questionnaire for this study. Respondents in the Control condition, however, were not given the main questionnaire at the beginning of the session. Once they had completed the unrelated questionnaires, the Control respondents were given the main questionnaire

along with the yogurt smoothie and told that in this study they would be answering some questions about this product. There were no differences in the treatment of the two groups beyond this point.

To ensure that respondents noticed the "best if enjoyed by" freshness date (effectively the same as "best if used by"; Brody 2005), they were told (on the cover page) that the study was about product packaging and were instructed to take a few minutes to examine the smoothie package. Respondents were then asked to report, in an open-ended format, the product's calorie content, vitamin content, place of manufacture, serving size, and freshness date. Care was taken to use smoothie batches with clearly readable freshness dates. Next, respondents were told that they were being given the opportunity to drink the smoothie. They were asked to take a moment to decide whether or not they wanted to drink the smoothie at this point in time and then to indicate their decision by checking one of three boxes corresponding to (1) "yes, I want to drink it now" (respondents were instructed to go ahead and drink the smoothie), (2) "no, I don't want to drink it now. I would like to return the smoothie to the researcher" (respondents were instructed to return the smoothie to the researcher at the end of the session), and (3) "no, I don't want to drink it now. However, I would like to take it with me when I leave and drink it later" (respondents were instructed to keep the smoothie and take it with them when they left).

Respondents were then asked to indicate their perceived likelihood of getting sick from consuming the product past its freshness date (1 = not at all likely, 7 = extremely likely). All respondents were debriefed at the end of the study. In particular, they were informed that in line with recent USDA guidelines, consuming the smoothie 4 to 5 days past its "best if enjoyed by" date did not pose a health risk.

Results

Respondents who provided incomplete responses or omitted, misread, or misinterpreted the freshness date were deleted, yielding a final set of 165 responses. Respondents' consumption behavior and health risk ratings were analyzed using an ANOVA with Freshness, Endowment, and their interaction as independent variables. While the analysis of consumption behavior using a logit model yielded comparable findings, we report results from the corresponding ANOVA for expositional ease, particularly since ordinary least squares procedures perform well with binary data when choice probabilities remain within the 0.25–0.75 range (Cleary and Angel 1984). To control for respondent-specific confounds, we included respondents' yogurt consumption frequency as well as their liking for the focal brand and the specific smoothie flavor they received as covariates in all analyses. None of these covariates were significant for either dependent variable and were, therefore, dropped.

A significant Freshness \times Endowment interaction in the ANOVAs for consumption behavior ($F(1, 164) = 5.26$, $p < .05$) and sickness ratings ($F(1, 164) = 40.2$, $p < .05$) support our endowment_{consumption} and endowment_{risk} predic-

tions: while endowment increases smoothie consumption (Control = 13%, Endowed = 38%; $F(1, 79) = 5.68, p < .05$) and decreases estimates of getting sick from doing so (Control = 4.38, Endowed = 3.60; $F(1, 79) = 4.41, p < .05$) among the Post-Date condition respondents, no such changes occur among the Pre-Date condition respondents (Consumption: Control = 53%, Endowed = 45%; $F(1, 84) = 0.48, NS$; Sickness Ratings: Control = 2.32, Endowed = 2.40; $F(1, 84) = 0.05, NS$). As an additional check, we contrasted the sickness ratings of only those Post-Date respondents who had actually consumed the product. Even with the resulting small cell sizes, we obtained a significant difference between the health risk estimates of the Endowed respondents ($M = 2.73$) and the Control ones ($M = 4.40$; $F(1, 18) = 4.81, p < .05$).

Interestingly, a test of mediation along the lines recommended by Baron and Kenny (1986) indicated that the Post-Date condition respondents' sickness ratings partially mediate the effect of endowment on their consumption behavior. Endowment is significant in regressions of both the consumption ($\beta = .13, p < .05$) and sickness ratings ($\beta = -.39, p < .05$) of this group. Moreover, when the sickness ratings are added to a regression of consumption on Endowment, it is a significant predictor ($\beta = -.05, p < .05$), whereas the effect of Endowment, albeit still significant, is reduced ($\beta = .10, p < .05$). The Sobel test is significant ($Z = 2.55, p < .05$). In sum, study 1 provides support for our two predictions: the endowment of a perishable product makes respondents more likely to consume it, but only when it is past its freshness date. Moreover, this effect of endowment is reflected in the accompanying changes in respondents' beliefs regarding the likelihood of their getting sick from consuming such a product. In the next study, we probe deeper into our proposed account of the process underlying endowment-enhanced consumption by examining the moderating effect of explicit hypothesis testing.

The Role of Explicit Hypothesis Testing

We suggest that endowment increases people's consumption of a product past its freshness date because it causes them to select and test, in a confirming manner, the hypothesis that the product is worth consuming. Research (Gibson, Sanbonmatsu, and Posavac 1997; Hoch 1984) suggests that while such hypotheses are typically generated by the decision maker, the same processes and outcomes ensue when such hypotheses are externally and explicitly posed to him/her. Thus, if our hypothesis testing account is valid, then explicit hypothesis testing (EHT)—asking people to explain or imagine why the hypothesis that the owned product is consumption worthy might be true (Hoch 1984; Koehler 1991)—should replicate the effects of endowment (i.e., increased consumption). Specifically, for products past their freshness date, EHT prior to the consumption decision should increase consumption even when the product is not owned. When the product is owned, however, having consumers engage in EHT should not, by virtue of its redundancy, increase consumption beyond that caused

by the endowment-induced selective and confirmatory hypothesis testing. These dynamics suggest that when consumers engage in EHT, the incremental contribution of endowment to consumption should be minimal. In other words, we expect EHT to be a moderator of the endowment-consumption link: endowment's consumption-enhancing effect is likely to be attenuated when consumers engage in EHT.

Importantly, this moderating effect of EHT (i.e., our EHT_{consumption} prediction) should be reflected in the extent to which consumers generate proconsumption versus anticonsumption thoughts. Prior research suggests that selective and confirmatory-hypothesis testing entails the preferential access of hypothesis consistent over hypothesis-inconsistent product-related cognitions (Gilbert 1991; Johnson et al. 2007; Koehler 1991; Sanbonmatsu et al. 1998). Thus, processing-level evidence for proconsumption product appraisals, due either to endowment or EHT, would comprise a greater proportion of support arguments for consumption than that in the case of anticonsumption or more unbiased product appraisals. Specifically, then, we would expect EHT to also moderate the cognitive underpinnings of the endowment-consumption relationship (i.e., an EHT_{thoughts} prediction). Further, these thought patterns can be expected to mediate the moderating role of EHT in the endowment-consumption link (i.e., an EHT_{mediation} prediction). We test these predictions in study 2, described next.

STUDY 2

Design and Procedure

One hundred thirty-seven undergraduate students participated in partial fulfillment of course credit. In line with its objectives, this experiment had a 2 (Endowment: 1 = Control, 2 = Endowed) \times 2 (EHT: 1 = Control [i.e., no explicit hypothesis testing], 2 = Positive) design.

We used the study 1 procedure with three exceptions. First, we focused on only products past their freshness date. Second, respondents were assigned to one of two EHT conditions. Immediately prior to making their consumption decision, respondents in the EHT Positive condition were told that they were being given the opportunity to drink the smoothie and asked to think about why they might want to do so before providing the reasons for their decision. This manipulation was guided by our desire to induce them to frame the decision selectively—in terms of the smoothie's consumption worthiness rather than unworthiness—which prior research (Koehler 1991) suggests leads to confirmatory evaluation processes. To be able to compare reasons in all four conditions, respondents in the EHT Control condition were asked to provide the reasons for their decision after their consumption decision. While it is possible that the motivations guiding consumers' postdecision justifications are somewhat different from those guiding their predecision ones, recent endowment research (Nayakankuppam and Mishra 2005, study 1) suggests that the cognitive processes underlying both are similar. Finally, respondents decided

between either drinking the smoothie immediately or returning it to the experimenter.

Results

Respondents' thought listings were coded by two independent coders, blind to the experimental treatments, into two categories: thoughts supporting consumption (i.e., proconsumption thoughts) and thoughts countering consumption (i.e., anticonsumption thoughts). All coding discrepancies were resolved through discussion until 100% agreement had been reached. We characterized the extent of proconsumption thoughts in terms of a Confirmatory Processing (CP) index, modeled after Payne's (1976) Search Pattern Index, as (number of proconsumption thoughts - number of anticonsumption thoughts)/(number of proconsumption thoughts + number of anticonsumption thoughts). This index ranges from minus 1 (only anticonsumption thoughts) to one (only proconsumption thoughts).

Respondents' consumption behavior, health risk ratings, and CP index were analyzed using ANOVA's with Endowment, EHT, and their interaction as independent variables. Analyses of consumption using a logit model yielded comparable findings. As in study 1, respondents' yogurt consumption frequency and liking for the specific smoothie flavor they received were not significant predictors of the dependent variables and therefore not included as covariates.

The Endowment \times EHT interaction was significant for both consumption behavior ($F(1, 136) = 3.97, p < .05$) and the CP index ($F(1, 136) = 4.28, p < .05$), supporting our EHT_{consumption} as well as EHT_{thoughts} predictions. While endowment increases consumption ($M = 28\%$ to $M = 62\%$; $F(1, 66) = 8.16, p < .05$) and the CP index ($M = -0.39$ to $M = 0.18$; $F(1, 66) = 7.4, p < .05$), when respondents do not engage in EHT (i.e., in the EHT Control condition), the effect of endowment on consumption ($M = 53\%$ to $M = 52\%$) and the CP index ($M = 0.18$ to $M = 0.13$; $F(1, 67) = .01, NS$) are nonsignificant in the EHT Positive condition. In addition, consistent with our theorizing, having respondents engage in EHT results in consumption and CP index levels that are comparable to that induced by endowment (Consumption: $M = 53\%$ vs. $M = 62\%$; $F(1, 65) = 0.65, NS$; CP index: $M = 0.16$ vs. $M = 0.18$; $F(1, 65) = .02, NS$).

We also obtain support for our EHT_{mediation} prediction: a test of mediation (Baron and Kenny 1986) shows that the CP index fully mediates the interactive effect of endowment and EHT on consumption behavior. The Endowment \times EHT interaction is significant in regressions of both consumption behavior ($\beta = -.08, p < .05$) and the CP index ($\beta = -.16, p < .05$). Moreover, when the CP index is added to a regression of consumption behavior on Endowment, EHT, and their interaction, it is a significant predictor ($\beta = .51, p < .05$), whereas the previously significant Endowment \times EHT interaction is reduced to nonsignificance ($\beta = -.004, NS$). The Sobel test is significant ($Z = 2.44, p < .05$).

Finally, it is worth noting that we replicate our basic study 1 findings. In the absence of EHT (i.e., EHT Control

condition), consumption is significantly greater in the Endowed condition ($M = 62\%$) than in the Control one ($M = 28\%$; $F(1, 66) = 8.16, p < .05$). At the same time, Endowed respondents rated their likelihood of getting sick as lower ($M = 3.09$) than that of the Control ones ($M = 4.05$; $F(1, 66) = 4.51, p < .05$). Not surprisingly, the effect of endowment on this sickness rating is nonsignificant ($M = 3.32$ to $M = 3.48$; $F(1, 67) = 0.13, NS$) in the EHT Positive condition, producing a significant Endowment \times EHT interaction ($F(1, 136) = 3.12, p < .08$), albeit marginally so. In sum, this study replicates the basic outcome finding of the first study and provides evidence for the underlying process. In the final study, described next, we attempt to provide convergent evidence for our theorizing about why endowment increases the consumption of products past their freshness dates by examining the moderating role of consumption goals in the endowment-consumption relationship.

The Role of Consumption Goals

Our selective and confirmatory hypothesis testing account rests on the basic premise that the endowment of products past their freshness date changes the consumption goal for such stigmatized products from avoidance to approach. If this is indeed so, then inducing an approach goal independently of endowment (e.g., by priming) should diminish the consumption-enhancing effect of endowment for such products. In other words, we would expect the effect of endowment to be greater when the a priori consumption goal for such stigmatized products is indeed one of avoidance rather than of approach. In the latter case, we would expect the incremental contribution of endowment to consumption to be minimal. Viewed differently, if our theorizing is valid, then merely changing the consumption goal for a product past its freshness date from avoidance to approach should, given the ensuing selective and confirmatory hypothesis testing, increase its consumption, even in the absence of endowment (see Johnson et al. 2007 for similar tests of query theory). Interestingly, support for this goal_{consumption} prediction would suggest that the consumption-enhancing effects of endowment found in this research can generalize beyond products past their freshness dates to all products that are associated with avoidance consumption goals (e.g., "avoidance" products or those that help prevent negative outcomes, such as medicines, bathroom cleaners, and insurance policies; Youn et al. 2001).

STUDY 3

Design and Procedure

Ninety-eight undergraduates participated in partial fulfillment of course credit. In line with its objectives, this experiment had a 2 (Endowment: 1 = Control, 2 = Endowed) \times 2 (Goal: 1 = Avoidance, 2 = Approach) design.

The procedure was the same as in study 2 with three exceptions. First, respondents were primed with either an approach or avoidance goal (i.e., assigned, at random, to

one of two Goal conditions). After respondents had completed the initial questionnaire on yogurt consumption and preferences as well as a brief filler task, they were told that while certain health, beauty, and food products are primarily designed to help consumers achieve desired outcomes (such as increased energy, attractiveness, shiny hair), others are designed to help or avoid or undo negative outcomes (such as fatigue, diseases, skin problems). In line with prior research (Kramer and Yoon 2007), half the respondents were then asked to list 10 products that avoid or undo negative outcomes (i.e., the Avoidance condition) and provide the specific outcome associated with each product listed. The other half were asked to list 10 products that help bring about positive, desired outcomes (i.e., the Approach condition) and provide the specific outcome associated with each product listed. Another filler task separated this manipulation from the main study.

Second, in line with study 3's objectives, and given the already established findings pertaining to health risk perceptions and consumption-related thoughts, the only dependent variable was actual consumption behavior. Third, to control for respondents' innate tendencies toward the approach versus avoidance regulatory systems, we measured these using the four dimensional BIS/BAS scale (see Carver and White 1994). This comprised the seven-item BIS (i.e., behavioral inhibition system) subscale and the three BAS (i.e., behavioral approach system) subscales: Reward Responsiveness (five items), Drive (four items), and Fun Seeking (four items).

Results

All respondents with incomplete responses were deleted to yield a total of 90 observations. Consumption behavior was analyzed using an ANCOVA with Endowment, Goal, and their interaction as independent variables and the four BIS/BAS subscales as covariates. Of these, only the BIS subscale was significant and therefore retained. Importantly, ANOVAs revealed that none of the subscales were significantly affected by the Goal manipulation. As well, respondents' yogurt consumption frequency and liking for the specific smoothie flavor they received were nonsignificant when included as covariates. Finally, analyses of consumption behavior using a logit model yielded comparable findings.

As in the previous studies, endowment increased consumption of the smoothie past its freshness date: consumption was significantly greater in the Endowed condition ($M = 45\%$) than in the Control one ($M = 19\%$; $F(1, 89) = 11.37, p < .05$). More importantly, we obtained the predicted interaction between Endowment and Goal ($F(1, 89) = 4.91, p < .05$); as per our goal_{consumption} prediction, the endowment-induced increase in consumption was greater when respondents were induced to have avoidance goals than when they were induced to have approach goals. Specifically, while endowment increased consumption significantly in the Avoid condition (Control: $M = 5\%$, Endow = 50% ; $F(1, 41) = 16.53, p < .05$), it did not increase consumption in the Approach condition (Control: $M = 32\%$,

Endow = 40% ; $F(1, 43) = 0.61, NS$). It is interesting, though not surprising, to note that in the Control condition, changing the goal from avoidance to approach, by itself (i.e., in the absence of endowment), significantly increased consumption (Avoid: $M = 5\%$, Approach = 32% ; $F(1, 44) = 5.76, p < .05$). In sum, our results provide further support for the process hypothesized to underlie our focal outcomes: endowment has a weaker effect on the consumption of products past their freshness dates when these are associated, a priori, with an approach rather than an avoidance goal.

DISCUSSION

This research focuses on a pervasive but largely unexamined product attribute—freshness date—to shed light on how and why its influence on the consumption of perishable products changes with ownership. Drawing on recent research on the endowment effect, we show that even when the differential costs implicit in ownership are controlled, consumers are more likely to consume a product past its freshness date when they own it than when they do not. Also, this ownership-based increase in consumption is accompanied by lower estimates by consumers of their likelihood of getting sick from consuming the product past its freshness date. These outcomes are driven, in turn, by consumers' ownership-based susceptibility to engage in selective and confirmatory testing of the hypothesis that the product past its freshness date is consumption worthy (i.e., an approach goal) over the alternate, hypothesis that it is consumption unworthy (i.e., an avoidance goal).

Extant endowment research has focused on products whose properties remain unchanged over time. In investigating the role of ownership in the consumption of products with deteriorating freshness, this research introduces a dynamic element to theories of endowment, broadening their scope to the consumption of goods whose properties evolve over time, both before and after ownership. Our findings suggest that for such products, endowment goes beyond changing the nature of information recruited to test the default consumption hypothesis (Carmon and Ariely 2000; Nayakankuppam and Mishra 2005), as well as the order of such recruitment (Johnson et al. 2007), to alter the very hypothesis itself. Specifically, the default consumption hypothesis for most normal products, such as those used in extant endowment studies, is that they are consumption worthy. We argue that in the case of products with deteriorating attributes, however, the evolution of such attributes beyond a certain stigmatizing point (e.g., going past the freshness date) can change their basic consumption worthiness to unworthiness. For such products, endowment can actually motivate consumers to change the default hypothesis back to consumption worthiness, selective confirmation of which increases consumption.

In other words, our findings contribute to the endowment literature by suggesting that in the case of products that evolve over time, both the magnitude of this effect and the underlying processes may be different from that in the case of products with unvarying properties. Interestingly, while

the smoothies in our studies are similar to other dynamic products in that deterioration on the focal attribute, freshness, is continuous, consumer reaction to such evolution does hinge, at least in our studies, on a single stigmatizing event (i.e., going past the freshness date). This raises research-worthy questions about when and how endowment might influence the consumption goal for products whose evolution is less salient or demarcated (e.g., canned goods). We focused on a deteriorating product, whereas products can also improve over time (e.g., cheese, wine). How endowment alters consumers' willingness to consume such products as well as the timing of consumption is worth investigating. Finally, it is worth noting that product evolution, either positive or negative, does not necessarily have to be absolute; an unchanging product can be viewed as deteriorating on a certain attribute if its relevant competitors are actually improving, through marketing actions, on that attribute over time.

Our motivational explanation for why some people consume "expired" products is consistent with what Loewenstein (1996) terms "motivational myopia" in decision making. The minimal health risks in our manipulations notwithstanding, ownership of perishable goods appeared to lower the perceived risk of getting sick from consuming them past their freshness dates. Perhaps these endowment-based tendencies can explain, at least partially, why, despite USDA recommendations to discard food with visible mold because it is only the tip of the fungal invasion iceberg, many consumers continue to believe that simply cutting off the moldy spots renders the remaining food consumable.

Given that it is perceived rather than objective risk that typically drives consumer behaviors (Slovic 1987), our demonstration of an endowment-induced reduction in perceived risk is a key contribution to the endowment and the risk literatures with noteworthy implications in domains beyond product freshness. For instance, the compliance rate in returning recalled consumer goods is staggeringly low (Siwolong 2002). Our research suggests that one reason for low compliance might be the motivated reduction in perceived risk due to ownership. In other words, owners of a recalled product may be more prone than nonowners to downplay the potential risks, consequently ignoring recall warnings. It would be interesting to examine how these ownership-based biases may play out for well-known, trusted brands (e.g., a market leader) versus relatively unfamiliar ones (e.g., a new entrant). It is entirely possible that brand trust and confidence may magnify the effects obtained in our research.

Turning to the substantive domain of our investigation, our findings add to our incipient understanding of consumer reactions to freshness dating by revealing a gap between consumers' fairly low self-reported intentions to consume an owned product past its freshness date (Harcar and Karakaya 2005) and their greater likelihood of actually doing so. Moreover, this gap cannot be attributed solely to the possibility that consumers fail to check for freshness information prior to actual consumption. In our studies, respondents were asked to focus explicitly on the freshness date prior to their consumption decision.

It would be interesting to examine the extent to which the endowment-enhanced consumption observed in our research generalizes to more naturalistic consumption contexts. Postownership consumption behavior in the real world is likely to depend on a range of unexamined factors, such as the extent of time past freshness and the social setting (e.g., public vs. private) in which consumption is likely to occur. For example, is there a cutoff beyond which the post-freshness date product is discarded, regardless of ownership, or do there need to be additional cues (e.g., smell) for consumption to cease? Similarly, would our findings extend to situations where the consumption decision is made for other people? Future research that explores these contextual and trait-based differences in risk taking in the domain of product perishability is warranted. Regardless, to the extent that ownership leads consumers to downplay the potentially adverse consequences of consuming the product (e.g., expired medicines), their welfare could be enhanced by not only communicating freshness information unambiguously but also making them aware of their susceptibility to such biases. For instance, public policy might mandate warning labels that highlight the risks of consuming such products postexpiration. As well, regulations aimed at greater clarity and uniformity in freshness dating is warranted, given the general confusion among consumers about the interpretability of open-coded freshness dates (i.e., dates that are readily understood by consumers, such as March 14, 2008, or 03/14/08), let alone that of close-coded ones (i.e., dates that can only be understood by those familiar with the coding system, such as 2454540, which is the Julian date for March 14, 2008).

At the same time, our findings suggest behavioral limitations to the potential success of marketers' efforts at planned obsolescence. While the tendency in today's marketplace toward the deliberate curtailment of product life span (Cooper 2004; Packard 1960) has been examined primarily in the context of durables, the same notion can characterize the tendency of some marketers of perishable products, such as food and pharmaceuticals, to use freshness dating in a manner that encourages the premature disposal or replacement of such products (*Toledo Blade* 2005). Our research suggests that consumers may resist such efforts on the part of the marketers even when they are not aware of the latter's obsolescence objectives.

Finally, a recent investigation of expired products in retail environments suggests that retailers might also suffer from an endowment-based adherence to products past their freshness dates. In the spring of 2008, the attorney general of New York sent investigators to 1,000 pharmacies across the state, where they found over 250 retailers (including national chains like Rite Aid and CVS) selling milk, eggs, infant formula, and over the counter (OTC) medication past their freshness dates (Hartocollis 2008). Most troubling is the report that the oldest OTC medications (more than 2 years past expiration) were found in the poorer, minority neighborhoods. More rigorous policing of product freshness dates at the retail level would benefit all consumers but might be particularly helpful for disadvantaged communities.

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