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Outpacing Others: When Consumers Value Products Based on Relative Usage Frequency

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When considering the purchase of a new product, will consumers be more likely to make the purchase if they think about using it every day or if they think about using it every week? From an economic perspective, using a durable product more frequently should increase its perceived value. However, we show that perceived usage frequency relative to other consumers can influence product interest more than absolute usage frequency. In five studies, we use scale labels, advertisements, and customer reviews to invoke either a high-frequency or low-frequency norm. We show that high-frequency cues create less product interest and lower willingness to pay than low-frequency cues because consumers infer that their relative usage frequency will be lower, reducing the product's perceived fit. This effect is moderated by the consumer's perceived similarity to the standard of comparison and the consumer's own characteristics.

How do consumers decide whether to buy a durable good, and how much they are willing to pay for it? One factor they might consider during the decision process is how often they will use the product. In this article, we examine how cues suggesting that a product is expected to be used more or less frequently affect consumer interest in the product.

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Intuitively, using a product more frequently should increase its perceived value, assuming that the consumer will not fully deplete the product's stock before discarding it, as is true for many consumer goods. Consistent with this notion, empirical research shows that the more frequently consumers believe they will use a durable product, the greater their willingness to pay for it (Tanner and Carlson 2009). Moreover, marketing practitioners often try to reassure consumers that after spending the money to purchase a product, they will use it frequently. For example, Black & Decker's Web page for the Mini Pro Plus Food Processor suggests frequent use by telling consumers that they can "use the built-in chute to slice or shred cheese, cucumbers, mushrooms, and more! Remove the chute cover & use the chopping blade to chop onions, peppers, nuts, or bread crumbs." Thus, both empirical research and marketing practice suggest that using frequent use will increase consumer interest in a product.

In contrast to this common wisdom, we propose that under some conditions, considering less frequent use will be more motivating to consumers than considering more frequent use. In this article, we build on previous work by suggesting that when estimating the value of a durable good, consumers not only consider the absolute frequency with which they

will use the product but also the frequency with which they will use the product relative to other consumers. Expecting that they will use a product more in absolute terms, all else equal, should increase interest in the product (Tanner and Carlson 2009); however, the same cues that increase perceptions of absolute frequency can also increase perceptions of the product's average usage frequency (Schwarz et al. 1985). If consumers believe they will use the product less than other consumers, then their own usage frequency may fall below the perceived norm for the product, and they will not feel as good about acquiring it. That is, if Black & Decker's description of the food processor were preceded by the headline "Do you feel like you're always in the kitchen slicing and chopping?" those who don't spend a lot of their time in the kitchen might rule out the product as being for a target customer different from themselves.

In the next section, we provide the conceptual background for our predictions. We then report the results of five studies. In study 1, we show that although consumers predict a higher absolute usage frequency when they use a high-frequency response scale than when they use a low-frequency response scale, their level of interest in the product is lower because they infer a lower relative usage frequency. In study 2, we demonstrate the same effect using a product advertisement to cue either a high- or low-frequency norm. In studies 3, 4, and 5, we examine the underlying process by showing that the perceived fit of the product mediates the effect of the frequency cue on perceived relative use and interest in the product and that the consumer's inferences about the relevance of the frequency cue moderate the effect.

CONCEPTUAL BACKGROUND

The perceived value of a good or service has been defined in the marketing literature as the ratio of the perceived benefits of the good or service to the perceived sacrifice incurred to acquire it (Monroe 1990). Perceived value increases with the benefits expected to be derived and decreases with the price (Dodds, Monroe, and Grewal 1991). Consumers may perceive the benefits of a good or a service along several dimensions, such as functional, social, and emotional (Sheth, Newman, and Gross 1991). Of these, functional value—the instrumental usefulness of the good for delivering functional, utilitarian, or physical performance—has traditionally been considered a key driver of consumer choice (McFadden 1986).

An important component of functional value is the frequency with which consumers believe they will use a product (Tanner and Carlson 2009). If the perceived value of the product is a ratio of the perceived benefits of the product and the cost to acquire it, perceived value should increase with each use of the product that derives positive benefits (holding the price constant). Indeed, literature in both marketing and economics implicitly assumes that the higher the perceived benefits of a product, the higher the consumer's willingness to pay, constrained by budgetary and competitive forces (e.g., McFadden 1986; Monroe 1990; Sheth et al. 1991).

Using Contextual Cues to Influence Frequency Judgments

Previous research has shown that consumers' predictions about their frequency of engaging in specific behaviors are quite malleable (e.g., Menon, Raghurir, and Schwarz 1995; Schwarz et al. 1985; Tanner and Carlson 2009). For example, when Schwarz and colleagues (1985) asked a sample of adults to report how much TV they watched, some were given a low-frequency response scale ranging from "up to $\frac{1}{2}$ hour daily" to "more than $2\frac{1}{2}$ hours daily" and others were given a high-frequency response scale ranging from "up to $2\frac{1}{2}$ hours daily" to "more than $4\frac{1}{2}$ hours daily." Despite being asked exactly the same question, "How many hours of TV do you watch on an average weekday?" respondents who used the low-frequency scale systematically estimated watching fewer daily hours of TV than those who used the high-frequency scale. Notably, the effects of varying the frequency scale are not limited to the answers respondents provide to questions about their own absolute behavioral frequencies. Respondents also infer that the frequency with which the average person performs behaviors is higher when they see a high-frequency scale than when they see a low-frequency scale (Schwarz et al. 1985). That is, a high-frequency scale invokes a higher frequency norm than a low-frequency scale. This suggests that the scale is perceived to be a relevant source of information about average consumption rates.

These inferences about average consumption behavior can have important implications for consumers' subsequent judgments about themselves. For example, respondents in the TV-watching study reported that they were more satisfied with the variety of their leisure activities when they had used high-frequency scales than when they had used low-frequency scales, even though they reported watching more TV in the high-frequency scale condition (Schwarz et al. 1985). This suggests that when making their satisfaction judgments, respondents paid more attention to their perceived relative TV watching than to the actual number of hours they reported watching TV. That is, because they checked off a response that they believed was lower relative to the average on the high-frequency scale than on the low-frequency scale, they felt better about how they spent their leisure time. Similar results emerged when patients used high- or low-frequency scales to report the occurrence of their physical symptoms. Although patients reported more frequent symptoms when they used a high-frequency scale than when they used a low-frequency scale, those who used a high-frequency scale reported greater satisfaction with their health, presumably because they focused on how well they were doing relative to others (Schwarz and Scheuring 1992).

These examples suggest that inferences about relative standing may be more important than information about absolute standing in predicting consumers' judgments. Indeed, empirical studies in several domains demonstrate that favorable social comparisons can dominate absolute measures of utility in preference judgments. For example, most

study participants judging outcomes in a legal case cared more about relative payments than about absolute payments, preferring an outcome of \$500 for themselves and \$500 for the other person over an outcome of \$600 for themselves and \$800 for the other person (Loewenstein, Thompson, and Bazerman 1989). Similarly, when MBA students were asked whether they would accept or reject a job offer, those offered \$75,000 with the assurance that all MBA students were offered the same starting salary were more likely to accept it than those offered the same job paying \$85,000 with the knowledge that others from the same MBA program would be earning \$95,000 for the same job at the same company (Bazerman, White, and Loewenstein 1995).

Analogously, we argue that just as perceived value of outcomes is influenced by comparisons to reference points (Kahneman and Tversky 1979; Kirmani and Baumgartner 2000), perceptions about relative usage frequency will have significant effects on consumers' interest in products. Consumers believe that goods are made available and priced based on market forces such as demand from other consumers (Burson 2007; Prelec, Wernerfelt, and Zettelmeyer 1997). If consumers use contextual cues to draw inferences about how much they will use a product relative to others, they may be less interested in purchasing products they believe they will use less frequently than other people. Specifically, replicating previous research on behavioral frequency judgments (e.g., Menon et al. 1995; Schwarz et al. 1985), consumers should predict that they will use a product more when asked about their absolute usage frequency using a high-frequency scale rather than a low-frequency scale. However, we expect that consumers will be less interested in purchasing the product when they use a high-frequency scale than when they use a low-frequency scale because they will infer that their usage is lower relative to other consumers. In technical terms, we expect perceived relative use to mediate the effect of frequency cues on consumers' interest in purchasing products.

Further, this effect should not be limited to frequency scale manipulations. We expect that any cue that leads consumers to infer a higher or lower average frequency of use will have an analogous effect on interest in the product and willingness to pay. Suggesting to consumers that a product is "appropriate for daily (vs. weekly) use" should affect consumers' inferences just like a frequency scale manipulation. That is, we should observe more interest in the product when consumers read an advertisement portraying weekly use of a product than when they read an advertisement portraying daily use of a product. In summary, we hypothesize that:

H1: Relative to high-frequency cues, low-frequency cues will increase consumers' interest in a product.

H2: Perceived relative usage frequency will mediate the effect of frequency cues on consumers' interest in a product.

Using Frequency Cues to Infer Fit

One reason frequency cues are so influential when judging product value may be that frequency cues help consumers assess whether a product is a good fit for themselves. Previous research suggests that consumers evaluate offers on the basis of the perceived fit between the offer and their own resources and needs (Kivetz and Simonson 2003; Prelec et al. 1997). For example, although consumers are typically attracted to products with more features (Brown and Carpenter 2000; Thompson, Hamilton, and Rust 2005), adding features that are believed to be targeted at other consumers (e.g., calculator functions only useful to biochemistry students) can actually make products less attractive (Simonson, Carmon, and O'Curry 1994). Consumers seem to actively look for cues to determine whether products are targeted to them.

We propose that frequency cues that lead consumers to infer a higher or lower average frequency of use will influence perceived relative use and interest in the product by influencing perceived fit. That is, we predict three-path mediation such that frequency cues first affect perceived fit, which then affects perceived relative use and, finally, interest in the product.

H3: The effect of frequency cues on perceived relative use is mediated by the perceived fit between the product and the consumer.

This underlying mechanism should also be elucidated via moderation. Reactions to frequency cues should be moderated by the consumer's inferences about the average consumer who is represented by the frequency cue. The similarity between one consumer and another increases the likelihood that the consumer will engage in social comparison (Festinger 1954). An extensive stream of research shows that as the consumer's similarity in features or circumstances to another decreases, the other is considered less relevant for the purpose of social comparison and is less likely to affect the consumer's own self-view (see Wood 1989 for a review). Thus, we predict that social comparison is more likely to be invoked when consumers believe they are similar to the consumer represented by the frequency cue than when they believe they are dissimilar.

Specifically, we hypothesize that similarity to the consumer who is the source of the frequency cue will moderate the effect of the frequency cue on interest in a product.

H4: Low- (vs. high-) frequency cues will increase perceived product fit, perceived relative usage frequency, and interest in a product when the frequency cue reflects the usage of a similar other, but not when it reflects the usage of a dissimilar other.

Finally, a consumer's own characteristics should moderate the effects of frequency cues on perceived fit, relative

use, and product interest. Differences in perceived fit should make offers simultaneously seem more attractive to some consumers and less attractive to other consumers. For example, Kivetz and Simonson (2003) show that consumers are more interested in loyalty programs that they feel are an especially good fit for themselves, even if the rewards are more difficult to obtain. When participants were told about a loyalty program in which they would receive a reward after making 12 sandwich purchases or a loyalty program in which they were offered the same reward for making both 12 sushi purchases and 12 sandwich purchases, sushi lovers were more likely to join the higher-effort sushi and sandwich program than the lower-effort sandwich only program. The higher level of effort required made the program seem like a better fit for sushi lovers relative to others; although the actual effort required was higher, they perceived it to be lower relative to others and the rewards more attainable. Not surprisingly, those who disliked sushi were more likely to join the sandwich only loyalty program because it required less effort (i.e., the reward was more attainable).

Research on the impact of role models also highlights the importance of standard attainability to predict whether social comparison will increase or decrease motivation. For example, whereas exposing participants to role models who achieved a level of success believed to be attainable significantly enhanced participants' self-views, exposing participants to role models who achieved a level of success seen as unattainable led to more negative self-views (Lockwood and Kunda 1997). Thus, whether high-frequency cues will motivate or demotivate product interest may depend on the attainability of these cues, which is determined by consumer characteristics such as whether they are heavy or light users within a product category.

We predict that heavy and light users will react differently to contextual frequency cues. Specifically, light users who are concerned about not getting as much value from a product as they would like should be more motivated by low- than by high-frequency cues. Low-frequency cues suggest that average use is lower, thereby increasing perceived fit and perceived use relative to others. In contrast, heavy users should be more motivated by high- than by low-frequency cues. To heavy users, high-frequency cues suggest that the product is a better fit with their own usage rate, making them feel better positioned relative to others to attain the high- than low-usage frequency (Kivetz and Simonson 2003) and increasing their interest in the product. In sum, we predict that user type will moderate the effect of frequency cues on consumers' interest in a product. Specifically,

- H5a:** For light users, low- (vs. high-) frequency cues will increase perceived product fit, perceived relative usage frequency, and interest in a product.
- H5b:** For heavy users, high- (vs. low-) frequency cues will increase perceived product fit, perceived relative usage frequency, and interest in a product.

In study 1, we use a frequency scale manipulation to show that a consumer's interest in a product is influenced by perceptions of relative (vs. absolute) usage frequency and that favorable perceptions of relative usage frequency increase interest in acquiring the product. In study 2, we show that the same effect can be produced by using an advertisement to cue usage frequency, even when the ad does not explicitly provide a comparison with other consumers. In study 3, we show that the frequency scale effect on perceived relative usage frequency and interest in the product is mediated by the perceived fit between the product and the consumer. In study 4, we show that low-frequency cues are more motivating only when they are believed to come from a similar other. Finally, in study 5, we show that the effect is moderated by whether consumers are light or heavy users in the product category.

STUDY 1: EFFECT OF FREQUENCY CUES ON PRODUCT INTEREST

In this study we examine whether low- (vs. high-) frequency scales increase perceptions of relative usage frequency and interest in the product (hypotheses 1 and 2).

Design, Stimuli, and Procedures

One hundred twenty-three undergraduate students (55% females, average age = 20) were asked to fill out a survey about video games in exchange for extra credit and were randomly assigned to either a low-frequency scale or a high-frequency scale condition. The frequency scale manipulation was embedded in the first question of the survey, which prompted respondents to indicate how frequently they play video games. The response alternatives presented either a high-frequency scale (6 points, ranging from at least once a day to less than once a week) or a low-frequency scale (6 points, ranging from at least once a week to less than once a year), as shown in appendix A. Both sets of response alternatives allowed participants to record any absolute frequency of use, although most absolute frequencies appeared to be higher when indicated using the low-frequency response alternatives than when indicated using the high-frequency response alternatives. For example, someone who played video games four times a week would check off the highest frequency response in the low-frequency condition versus the third from lowest frequency response in the high-frequency condition.

After reporting their absolute frequency of use, participants reported their interest in the product category using two items: "over the next two months, how interested would you be in buying new video games?" and "how interested would you be in visiting a website that provides links to several types of online video games?" (not interested/very interested). We averaged these two items ($\alpha = .72$) to form a composite measure of interest in the product category. Next, participants were presented with a short description of a video game (the Pirates of the Caribbean Sink or Spin Game) that is available online. They were asked to rate their

interest in this target product (not interested/very interested) as well as to indicate whether they wanted to receive a free trial copy of the game (yes/no). In addition, we asked participants to rate their relative usage frequency by indicating how frequently they play video games relative to other undergraduate students (less often/more often) and provide demographic information (gender and age). All dependent measures used 7-point scales, unless otherwise noted.

Results and Discussion

Gender was significantly correlated with participants' general interest in video games ($r = .56, p < .001$). Overall, males were more interested in video games than females, but adding gender as a covariate in our analyses does not change any of the results.

Absolute and Relative Frequency of Use. An ANOVA on participants' ratings of absolute usage frequency indicated a significant effect of the frequency scale ($F(1, 121) = 46.75, p < .001$). As expected, participants in the high-frequency scale condition reported playing video games more often ($M = 5.33$, "at least once a week") than participants in the low-frequency scale condition ($M = 3.25$, "at least once a month"). Also as expected, we found the opposite pattern of results for perceived relative frequency of use. An ANOVA on participants' ratings of how frequently they play video games relative to other undergraduate students showed a significant effect in the opposite direction ($F(1, 121) = 9.06, p < .01$). Despite indicating a lower absolute frequency of use, those in the low-frequency scale condition reported playing video games significantly more often than other undergraduate students ($M = 2.57$), compared to participants in the high-frequency condition ($M = 1.73$). Thus, the range of the frequency labels seems to provide participants with a frame of reference to judge their own frequency of use. Table 1 presents means and standard deviations across conditions.

Interest in the Product Category. A one-way ANOVA on participants' general interest in video games indicated a significant main effect of the frequency scale ($F(1, 121) = 7.85, p < .01$). Consistent with hypothesis 1, the low-frequency scale labels significantly increased participants' interest in new video games ($M = 2.45$) relative to high-frequency scale labels ($M = 1.75$). Further, supporting hypothesis 2, mediation analysis shows that participants' perceptions of relative frequency of use significantly mediated the observed scale label effects (Sobel $z = 2.79, p < .01$). Specifically, when participants' ratings of how much

they would use the product relative to others (less often/more often) was entered as a covariate in the ANOVA on interest toward the product, we found a significant effect of the covariate ($F(1, 120) = 55.91, p < .001$), and the effect of frequency scale became nonsignificant ($F(1, 120) = 1.65, p > .20$).

Interest in a Specific Product. As expected, low-frequency scale labels increased not only general interest in video games but also participants' behavioral intentions toward a specific target product, the Pirates of the Caribbean game. Those in the low-frequency condition reported greater interest in playing this game ($M = 2.27$) relative to those in the high-frequency condition ($M = 1.57; F(1, 121) = 9.60, p < .01$). Notably, the frequency scale labels significantly influenced participants' willingness to accept a free trial copy of the game ($\chi^2(1) = 4.5, p < .05$). Specifically, the low-frequency scale labels nearly doubled the percentage of respondents who requested a free trial copy (41.7%), compared to high-frequency scale labels (23.8%). Adding to previous work that highlights the importance of anticipated absolute frequency in desire to purchase a product (e.g., Tanner and Carlson 2009), our results indicate that in some cases, perceived relative usage can be a more important driver of product preference than anticipated absolute usage. Thus, as a marketing tactic, asking consumers how often they would use a product on a scale with low-frequency response alternatives can be an effective way to increase the perceived value of a target product.

STUDY 2: ADVERTISING DAILY VERSUS WEEKLY USAGE

The next study tests whether the results of study 1 generalize to situations in which an advertising communication—rather than scale labels—suggests that high (e.g., daily) versus low (e.g., weekly) usage frequency is the norm. Although sellers may intuitively wish to assure potential customers that they will use a new product frequently—thus getting their money's worth—we hypothesize that consumers who read about experiencing benefits daily might be less motivated to purchase the product than consumers who read about experiencing benefits weekly.

Design, Stimuli, and Procedures

This study employed a 2 (frequency: day vs. week) \times 2 (product: grill vs. fitness shoes) between-subjects design. Ninety-four individuals (48% females, ages ranging from

TABLE 1
MEANS AND STANDARD DEVIATIONS ACROSS CONDITIONS IN STUDY 1

Scale labels	Absolute frequency	Relative frequency of use	Interest in product category	Interest in new product
Low frequency	3.25 (1.95)	2.57 (1.78)	2.45 (1.55)	2.27 (1.46)
High frequency	5.33 (1.39)	1.73 (1.27)	1.75 (1.22)	1.57 (1.00)

18 to 63, with a mean age of 24) volunteered at a campus student union to complete this study in exchange for a small payment. Six participants did not complete the entire survey, resulting in a final sample of 88 participants.

All respondents were presented with a one-page print advertisement (see app. B). They were randomly assigned to see either an ad for a grill or an ad for fitness shoes. Respondents in the fitness shoes condition saw an ad for a real brand of fitness shoes (the New Balance 780 Fitness Collection), and those in the grill condition saw an ad for a real brand of grill (the Cuisinart Griddler™ Panini & Sandwich Press). In addition to a photograph of the product, the ad contained some copy to promote the product in which we embedded the manipulation of usage frequency. For example, respondents in the fitness shoes condition read the headline “Stairs. Squats. Lateral Drills,” were told that these shoes were ready for their toughest workouts, and were prompted with the question “How will you stay active?” We embedded our manipulation of usage frequency into the copy, such that those in the day (week) condition read, “How will you stay active *today* [*this week*]?” and that “The new 780 fitness collection is ready for your toughest workouts *every day* [*every week*].” We followed the same procedure to create our ad copy for the grill condition.

Next, participants answered a number of questions about their interest in the product featured in the ad. Participants reported their interest in the product using three items: “how much value would [this product] provide to you?” (1 = no benefit, 7 = a lot of benefit), “how interested are you in owning [this product]?” (1 = not at all, 7 = very), and “how interested would you be in visiting a website that provides links to additional information about [this product]?” (1 = not at all, 7 = very). We averaged these three items ($\alpha = .85$) to form a composite measure of interest in the product.

Participants also reported whether they already owned this product or something very similar (yes or no). In addition, they responded to a series of three items about relative usage frequency, including how frequently they think they would use the product relative to others who buy the product (1 = less often, 7 = more often), how often they think they would use it (1 = rarely, 7 = frequently), and how much they think they would use it (1 = a little, 7 = a lot). We averaged these three items ($\alpha = .96$) to form a composite measure of perceived relative usage frequency.

Results

Whereas the majority of participants in the fitness shoe condition owned the product being advertised (73%), less than a quarter of the participants in the grill condition owned the product (23%). Because ownership differed substantially across the two product categories, we entered ownership into our analyses as a covariate.

Perceived Relative Frequency of Use. As expected, those in the day condition believed that their use of the product relative to others would be lower than those in the

week condition. A two-way ANCOVA on participants' ratings of how frequently they would use the product relative to others showed a significant effect of frequency ($F(1, 83) = 5.57, p < .05$). Those in the week condition predicted higher relative use ($M = 4.55$) compared to those in the day condition ($M = 3.78$). Like the frequency labels in study 1, the usage frequency mentioned in the advertisement seemed to provide participants with a frame of reference to judge whether or not their own usage frequency was high or low. The main effect of product was also significant ($F(1, 83) = 14.16, p < .01$), with participants indicating that they would use the fitness shoes ($M = 4.86$) more than the grill ($M = 3.47$). No other effects were significant ($p > .53$). Table 2 presents means and standard deviations across conditions.

Interest in the Product. A two-way ANCOVA on participants' interest in the product indicated a significant main effect of frequency ($F(1, 83) = 4.29, p < .05$). Supporting hypothesis 1, using the words “this week” in the advertisement significantly increased participants' interest in the product ($M = 3.99$) relative to using the word “today” ($M = 3.38$). Further, consistent with hypothesis 2, a mediation analysis showed that participants' perceptions of how much they would use the product relative to others significantly mediated the frequency effect (Sobel $z = 1.99, p < .05$). When participants' perceptions of relative use were entered as a covariate in the 2×2 ANCOVA on interest toward the product, we found a significant effect of the covariate ($F(1, 82) = 44.91, p < .001$), and the effect of frequency became nonsignificant ($F(1, 82) = .11, p > .74$).

Discussion

This study generalizes the results of study 1 beyond response scale manipulations, indicating that cues about normative usage frequency within advertisements can significantly affect participants' interest in real consumer products even when the ads do not explicitly communicate how the customer's behaviors might compare to these norms. Those contemplating using the product “weekly” rather than “daily” thought they would use the product more (e.g., relative to the norm), and this perception of relative usage frequency increased their interest in the product.

It seems that the effects in study 2 were driven by the

TABLE 2
MEANS AND STANDARD DEVIATIONS ACROSS CONDITIONS
IN STUDY 2

Ad condition product	Relative frequency of use	Interest in product
Low frequency (week):		
Fitness shoes	5.43 (1.49)	4.42 (1.38)
Grill	3.56 (1.56)	3.40 (1.28)
High frequency (day):		
Fitness shoe	4.54 (1.66)	4.08 (1.57)
Grill	3.12 (1.21)	2.83 (1.22)

interplay of at least two types of inputs: (1) the frequency of the perceived norm and (2) individuals' beliefs about their own likely usage frequency. The high-frequency ad appears to be demotivating relative to the low-frequency ad because individuals believe that they are unlikely to use the product every day (i.e., their own usage frequency would be less than the high-frequency norm) but likely to use the product at least once a week (i.e., more than the low-frequency norm). Upon viewing the ads, consumers appeared to spontaneously generate beliefs about how their own usage frequency compares to the advertised frequency.

STUDY 3: MEDIATING ROLE OF PERCEIVED FIT

In this study, we examine the underlying mechanism for the effect of frequency cues on product interest in more detail. Specifically, we test whether the perceived fit between the product and the consumer's needs and resources plays a mediating role in the relationship between frequency cues and perceived relative usage frequency (hypothesis 3).

Design, Stimuli, and Procedures

Two hundred and two students (42% females, average age = 20) participated in this study in exchange for extra credit. Participants responded to a survey about scientific calculators, a product commonly used by undergraduate students and, as in study 1, were randomly assigned to either a low-frequency scale condition or a high-frequency scale condition.

The frequency scale manipulation was embedded in the first question of the survey, which prompted respondents to indicate how frequently they would use a scientific calculator if they had one using either a high-frequency scale or a low-frequency scale (app. A). After reporting their absolute frequency of use, participants were asked to rate how much benefit (no benefit at all/a lot of benefit) and value (not valuable at all/very valuable) the target product would provide to them and how much they would like to own a new scientific calculator (not at all/very much). We averaged these three items to create a composite measure of participants' interest ($\alpha = .93$) in the product category. Next, participants rated their relative frequency of use using the same three items to which participants had responded in study 2 ($\alpha = .85$).

Finally, we measured consumers' inferences about perceived fit and cost per use, two inferences that might underlie the relationship between low-frequency cues and greater product interest. Perceived fit was measured by asking participants to rate the extent to which they think scientific calculators are made to be used by people like them (not at all/very much). Cost per use was measured by asking participants to rate their agreement with two statements: "If I were to buy a scientific calculator, I would get my money's worth," and "If I were to buy a scientific calculator, my cost per usage would be low" (disagree/agree). All dependent measures used 7-point scales. At the end, participants in-

dicated whether they currently owned a scientific calculator and provided demographic information.

Results

The majority of our participants (90%) indicated that they owned a scientific calculator at the time of the study.

Absolute and Relative Frequency of Use. An ANOVA on participants' absolute frequency of use revealed a significant effect of frequency scale ($F(1, 200) = 86.35, p < .001$). Consistent with previous research, participants in the high-frequency condition reported using the product significantly more frequently ($M = 3.91$, "at least every 5 days") than those in the low-frequency condition ($M = 1.78$, "at least once every 2 weeks").

An ANOVA on participants' perceptions of use relative to others also revealed a significant main effect of frequency scale ($F(1, 200) = 13.13, p < .001$). Consistent with our prediction that participants would use the scale labels as cues about their use relative to that of others, we found that despite their lower absolute frequency ratings, those in the low-frequency condition perceived themselves as significantly heavier users of the product relative to others ($M = 4.62$) than those in the high-frequency condition ($M = 3.74$).

Interest in the Product Category. We predicted that because the low-frequency scale labels would increase perceived relative usage frequency, consumers would be more interested in the product in the low-frequency than in the high-frequency scale condition (hypothesis 1). An ANOVA revealed a significant effect of frequency scale ($F(1, 200) = 16.57, p < .001$), indicating that low-frequency scale labels significantly increased interest in the product category ($M = 5.0$) relative to high-frequency labels ($M = 4.12$).

Consistent with hypothesis 2, a mediation analysis shows that participants' perceptions of how much they would use the product relative to others mediate the observed frequency scale effect on product interest (Sobel $z = 3.51, p < .001$). When participants' ratings of relative use were entered as a covariate in the ANOVA on interest toward the product, we found a significant effect of the covariate ($F(1, 199) = 213.49, p < .001$), and the effect of frequency scale was reduced ($F(1, 199) = 4.15, p > .05$).

Perceived Fit and Cost per Usage Inferences. We hypothesized that participants use the frequency scale to draw inferences about the perceived fit of the product with their own needs and resources. Greater perceived fit should increase perceived relative usage frequency and interest in the product (hypothesis 3). A competing possibility, however, is that participants use the frequency scale to draw inferences about their cost per use. If a lower frequency scale increases perceived relative use, this might lead participants to believe that their cost per use would be lower, increasing their interest in the product. Thus, we measured both perceived fit and cost per use.

An ANOVA on participants' ratings of perceived fit re-

vealed a significant effect of frequency scale ($F(1, 200) = 6.12, p < .05$). Low-frequency scale labels increased participants' perceptions that the product was "made for them" ($M = 5.0$) relative to high-frequency labels ($M = 4.45$). Moreover, within each frequency condition, participants' ratings of perceived fit were significantly correlated with their responses: the more frequent they indicated their usage would be, the higher they rated the perceived fit of the product ($r = .29, p < .01$ in the low-frequency condition and $r = .50, p < .001$ in the high-frequency condition). As shown in table 3, supporting hypothesis 3, a three-path mediation test (Taylor, MacKinnon, and Tein 2008) shows that perceived fit significantly mediates the effect of the frequency cue on perceived relative usage frequency, which then mediates the effect of perceived fit on product interest (to demonstrate three-path mediation, the joint significance test requires that β_1, β_2 , and β_3 are all significant).

In contrast, the frequency scale manipulation did not affect cost per usage inferences significantly ($p > .25$), suggesting that this is not the mechanism being invoked by the manipulation of the frequency scale.

Discussion

Study 3 replicated the effects of studies 1 and 2 in a fourth product category and suggests that perceived fit is driving the effect of frequency cues on perceived relative usage frequency and product interest. To further examine the underlying mechanism, in our next study we examine a key factor that we expect will moderate our effects: the perceived similarity between the respondent and the consumer believed to be represented by the frequency cue. We use a new frequency manipulation that allows us to vary consumers' inferences about the source of the frequency cue.

STUDY 4: MODERATION BY PERCEIVED SIMILARITY

In this study, participants read a customer review for a new product, the Sony Digital Reader. Within the text of the customer review, a gender-neutral reviewer reports either using the product every week or using it every day and

provides a brief self-description that is either similar to the study participants (a college student from the same city) or dissimilar to the study participants (a parent from a city halfway across the country). We predicted that when participants identified with the reviewer, they would be more likely to make social comparisons and a low-frequency cue would be more motivating. In contrast, when participants did not identify with the reviewer, they would be less likely to make social comparisons and low-frequency cues would be no longer be more motivating than high-frequency cues (hypothesis 4).

Design, Stimuli, and Procedures

One hundred twenty-two individuals (51% female, with a mean age of 20) participated in the study in exchange for course credit. This study employed a 2 (frequency: day vs. week) \times 2 (reviewer: similar vs. dissimilar) between-subjects design.

Participants were asked to look at a picture and read a review of a new product, the Sony Digital Reader, and then indicate how much they were willing to pay for the product. Both the frequency manipulation and the reviewer manipulation were embedded in the text of a favorable review for this product. In the high-frequency condition, the reviewer reported using the product once a day ("I use it every day!"), while in the low-frequency condition, the reviewer reported using it once a week ("I use it every week!"). In the similar reviewer condition, the review was attributed to a college student from the same city as the participants ("I am a busy college student and bought the Sony reader about four months ago so that I would have all of my reading material with me when I need it"). In the dissimilar reviewer condition, the review was attributed to a parent living in a distant city ("I am a busy parent and bought the Sony reader . . ."). All other parts of the review were identical (see app. C).

Our manipulation check for perceived similarity consisted of two items: "When you read the customer review of the Sony Digital Reader at the beginning of this study, how similar to you did you feel the customer who reviewed the product was?" and "How similar did you feel that your own usage of the product would be to this customer's?" These

TABLE 3

THREE-PATH MEDIATION ANALYSIS FOR STUDY 3

Independent variables	Perceived fit (mediator 1)		Relative use (mediator 2)		Interest in product (DV)	
	β	t	β	t	β	t
Constant	5.00	30.73***	1.53	4.26***	1.81	6.63***
Frequency	-.55	-2.47**	-.55	-2.66***	-.32	-2.12**
Perceived fit			.62	9.46***	.10	1.69*
Relative use					.58	11.41***

NOTE.—Beta values are unstandardized. Values in bold must be significant to demonstrate three-path mediation via a joint significance test (Taylor et al. 2008).

* $p < .10$.

** $p < .05$.

*** $p < .01$.

two items were reliable ($r = .63$), and we averaged them to form a composite measure of perceived similarity. As in study 3, perceived fit was measured by asking participants to rate the extent to which they thought the Sony Digital Reader was made to be used by people like them. As in studies 2 and 3, participants responded to three items measuring perceived relative usage, and we averaged these three items ($\alpha = .97$) to form a composite measure of relative usage. To measure product value in a more managerially relevant way than in our previous studies, we asked participants to indicate how much (in dollars) they would be willing to pay for the Sony Digital Reader. All measures except willingness to pay used 7-point scales.

Results

Manipulation Check. A 2×2 ANOVA on perceived similarity showed that this measure was significantly higher in the similar reviewer ($M = 3.57$) than in the dissimilar reviewer condition ($M = 2.31$; $F(1, 120) = 22.48, p < .001$). No other effects were significant (p 's $> .19$).

Perceived Fit. We predicted that when participants believed they were similar to the reviewer, they would be more likely to make social comparisons, and a low-frequency cue would make the product seem like a better fit than a high-frequency cue. In contrast, when participants believed they were dissimilar to the reviewer, they would be less likely to make social comparisons, and a low-frequency cue would no longer improve perceived fit.

A 2×2 ANOVA on perceived fit showed a main effect of similarity, such that perceived fit was higher in the similar reviewer condition ($M = 4.69$) than in the dissimilar reviewer condition ($M = 3.48$; $F(1, 120) = 18.97, p < .001$). In addition, the predicted interaction between similarity and frequency was significant ($F(1, 120) = 3.77, p = .05$). When the reviewer was similar to the participant, a low-frequency cue led to higher perceived fit ($M = 5.04$) than a high-frequency cue ($M = 4.33$; $F(1, 62) = 3.92, p = .05$). In contrast, when the reviewer was dissimilar, there was no difference in perceived fit across frequency conditions ($M = 3.30$ vs. 3.67 ; $p > .38$). Table 4 provides the means in each condition.

Relative Usage Frequency. A 2×2 ANOVA on relative usage frequency showed a similar pattern of effects. There

was a main effect of similarity on relative frequency, such that relative use was significantly higher in the similar reviewer condition ($M = 3.92$) than in the dissimilar reviewer condition ($M = 2.71$; $F(1, 120) = 16.32, p < .001$). In addition, we observed the predicted interaction between reviewer similarity and frequency ($F(1, 120) = 10.30, p < .001$). When the reviewer was similar to the participant, a low-frequency cue led to higher relative frequency ($M = 4.41$) than a high-frequency cue ($M = 3.43$; $F(1, 62) = 4.94, p = .03$). In contrast, when the reviewer was perceived to be dissimilar, a high-frequency cue led to greater relative frequency ($M = 3.18$) than a low-frequency cue ($M = 2.24$; $F(1, 58) = 5.50, p = .02$). Although the reversal of the effect in the dissimilar condition was unexpected, it may suggest that when the other consumer is dissimilar and does not invoke social comparison, high-frequency cues increase perceived absolute usage frequency, which then increases perceived relative usage frequency.

Willingness to Pay. Suggesting the managerial relevance of frequency cues, our results show a similar pattern of effects for willingness to pay. A 2×2 ANOVA on willingness to pay shows a marginal main effect of similarity, such that participants were willing to pay more for the Sony Digital Reader in the similar ($M = \$129.66$) than in the dissimilar reviewer condition ($M = \$107.10$; $F(1, 118) = 2.79, p < .10$). More importantly, we observe a significant interaction between frequency and reviewer similarity ($F(1, 118) = 4.46, p = .04$). In the similar reviewer condition, participants were willing to pay more when they saw a low ($M = \$149.46$) than when they saw a high-frequency cue ($M = \$109.86$; $F(1, 61) = 3.97, p = .05$). However, in the dissimilar reviewer condition, there was not a significant difference in willingness to pay between the high- ($M = \$115.82$) and the low-frequency cue ($M = \$98.39$; $p > .34$) conditions.

Replicating our mediation analysis in study 3, a three-path mediation test (Taylor et al. 2008) supports hypothesis 3, showing that perceived fit significantly mediates the effect of the frequency cue on relative usage frequency, which then mediates the effect of perceived fit on willingness to pay. Table 5 shows the three regressions required for the joint significance test.

TABLE 4

MEANS AND STANDARD DEVIATIONS ACROSS CONDITIONS IN STUDY 4

Reviewer and frequency cue	Perceived fit	Relative frequency of use	Willingness to pay
Similar reviewer:			
Low frequency	5.04 (1.26)	4.41 (1.92)	\$149.46 (91.24)
High frequency	4.33 (1.51)	3.43 (1.60)	\$109.86 (66.38)
Dissimilar reviewer:			
Low frequency	3.30 (1.61)	2.24 (1.41)	\$98.39 (76.25)
High frequency	3.67 (1.67)	3.18 (1.65)	\$115.82 (62.86)

TABLE 5
THREE-PATH MEDIATION ANALYSIS FOR STUDY 4

Independent variables	Perceived fit (mediator 1)		Relative use (mediator 2)		Willingness to pay (DV)	
	β	t	β	t	β	t
Constant	4.08	29.56***	.63	1.84*	77.77	4.26***
Frequency	-.08	-.60	.05	.37	-5.53	-.88
Reviewer	-.60	-4.36***	-.21	-1.63	-3.29	-.48
Frequency \times Reviewer	.27	1.94*	.30	2.51**	6.28	.965
Perceived fit			.66	8.32***	-7.23	-1.34
Relative use					21.08	4.35***

NOTE.—Beta values are unstandardized. Values in bold must be significant to demonstrate three-path mediation via a joint significance test (Taylor et al. 2008).

* $p < .10$.

** $p < .05$.

*** $p < .01$.

Discussion

This study both replicates and qualifies the results of our earlier studies. First, when the reviewer is perceived as similar to the participant, we observe the same effect we demonstrated in our earlier studies: low-frequency cues lead to higher perceived fit and greater willingness to pay for the product than high-frequency cues. Moreover, in this study we replicate study 3's three-path mediation process in which the frequency cue influences the perceived fit between the product and the consumer, which then influences relative usage frequency and, finally, interest in the product (in this case, operationalized as willingness to pay for the product).

Second, we show that our basic effect is moderated by the perceived similarity between the consumer and the consumer believed to be portrayed by the frequency cue. Earlier research on social comparison has shown that consumers are more likely to make comparisons and contrast their own behavior with similar others than dissimilar others (Mussweiler 2003). Our findings are consistent with this research in that low-frequency cues (which create favorable inferences about relative usage frequency) are more motivating than high-frequency cues when they come from similar others but not when they come from dissimilar others. Although frequency cues are often perceived to be part of the context, as in questionnaires, clearly consumers' inferences about the applicability of the frequency cue matter.

Finally, this study extends the managerial relevance of our earlier results by showing that consumers' willingness to pay for products can be significantly influenced by frequency cues.

The next study investigates another potential moderator of these effects. If high suggested usage frequency generally leads to less interest in the product than low suggested usage frequency, are there any consumers for whom it would be more effective to suggest a high frequency of use? That is, would any potential purchasers of the Black & Decker Mini-Pro Plus Food Processor we mentioned earlier be drawn in rather than turned off by a headline asking "Do you feel like you're always in the kitchen slicing and chopping?" We expect that individual differences in user type (e.g., casual

cook vs. avid cook) will moderate the effects, such that those who believe they will fall short of the high-frequency norm will be more demotivated than those who believe they will be able to reach the high-frequency norm. Indeed, those who believe they can attain the high-frequency norm might be more motivated by a high- than a low-frequency norm, as this high-frequency norm is a better match to their own behaviors, making them perceive that they are better positioned than others to meet a high usage frequency.

STUDY 5: MODERATION BY USER TYPE

In our final study, we examine how heavy versus light exercisers respond to usage frequency cues for fitness shoes. We predict that whereas a high-frequency (vs. low-frequency) positioning will be demotivating for light users (i.e., replicating the pattern of results obtained in study 2 for fitness shoes), a high-frequency (vs. low-frequency) positioning will be motivating for heavy users (hypothesis 5).

Design, Stimuli, and Procedures

One hundred seventy-seven individuals (51% females, ages ranging from 18 to 23, with a mean age of 20) participated in the study in exchange for course credit. We used one of the product categories from study 2, fitness shoes, as our focal product, and we manipulated frequency (day vs. week) between subjects with the same one-page advertisements for fitness shoes we used in study 2. We measured user type (light vs. heavy exerciser) by asking participants to indicate how frequently they exercise.

As in study 2, we measured interest in the product category using three items. However, because the correlation between interest in visiting a Web site and the other two items was not very high ($r = .39$ and $r = .52$; $\alpha = .75$), we averaged only the value and interest items to form a composite measure of interest in the product (consistent with study 1). As in studies 2, 3, and 4, participants responded to three items measuring perceived relative usage. We averaged these three items ($\alpha = .96$) to form a composite measure of relative usage. At the end, participants indicated

the number of times per week they exercise using an open-ended item and provided demographic information. Their reported exercise frequency was unrelated to the advertisement frequency cue ($p > .40$).

Results

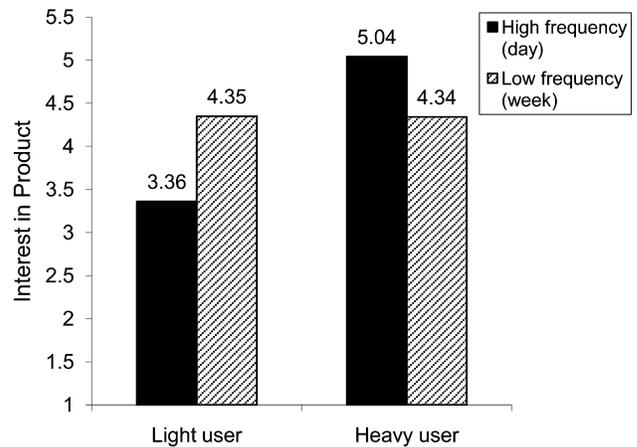
Perceived Relative Frequency of Use. A linear regression of predicted use of the product relative to others on advertised frequency of use (daily or weekly), exercise frequency, and the two-way interaction showed three significant effects ($F(3, 170) = 36.01, p < .001$). Using the word “today” in the advertisement significantly decreased perceived relative use of the product compared to using the words “this week” ($\beta = -.64, t(172) = 4.26, p < .001$). Heavy exercisers also believed that they would use the product more often relative to others than light exercisers ($\beta = .61, t(172) = 4.93, p < .001$). More importantly, the data showed the predicted interaction between advertised frequency of use and exercise frequency ($\beta = .65, t(172) = 4.32, p < .001$). A spotlight analysis at one standard deviation above and below the mean of exercise frequency (Aiken and West 1991; Fitzsimons 2008) showed that light exercisers thought they would use the product more relative to others in the week than in the day condition ($\beta = -.31, t(172) = 3.59, p < .01$), whereas heavy exercisers thought they would use the product more relative to others in the day than in the week condition ($\beta = .22, t(172) = 2.56, p = .01$).

Interest in the Product. A linear regression of interest in the fitness shoes on advertised frequency of use (daily or weekly), exercise frequency, and the two-way interaction showed three significant effects ($F(3, 170) = 9.69, p < .001$). First, using the word “today” in the advertisement significantly decreased participants’ interest in fitness shoes compared to using the words “this week” ($\beta = -.68, t(172) = 3.81, p < .001$). Second, heavy exercisers were more interested in the product than light exercisers ($\beta = .29, t(172) = 4.09, p < .001$). Finally, the data revealed the predicted interaction between advertised frequency of use and exercise frequency ($\beta = .73, t(172) = 4.12, p < .001$). Supporting hypothesis 5, a spotlight analysis at one standard deviation above and below the mean of exercise frequency (Aiken and West 1991; Fitzsimons 2008; see fig. 1) showed that light exercisers were more interested in the product in the week than in the day condition ($\beta = -.30, t(172) = 2.99, p < .01$), whereas heavy exercisers were more interested in the product in the day than in the week condition ($\beta = .29, t(172) = 2.87, p < .01$). Thus, suggesting more frequent (daily) use in the advertisement seems to be more motivating than suggesting less frequent (weekly) use for heavy exercisers. However, the same tactic seems to be demotivating for light exercisers.

Next, we tested whether perceived relative use mediated the effect of the ad frequency cue on interest in the product. When perceived relative use was entered into the regression, perceived relative use was significant ($\beta = .41, t(172) =$

FIGURE 1

EFFECTS OF OWN USAGE STATUS AND ADVERTISED FREQUENCY ON INTEREST IN PRODUCT (STUDY 5)



4.86, $p < .001$). Relative to our initial regression, the main effect of the advertisement became less significant ($\beta = -.41, t(172) = 2.35, p < .05$; Sobel $z = 2.91, p < .01$) and the interaction between advertisement and exercise frequency became less significant ($\beta = .47, t(172) = 2.63, p < .01$; Sobel $z = 2.95, p < .01$). Thus, supporting hypothesis 2, relative frequency judgments partially mediate the effect of the frequency cue and the interaction between the frequency cue and exercise frequency on product interest.

Discussion

Replicating the results of study 2, a low-frequency positioning (i.e., using the words “this week” in the ad) was more effective overall in garnering interest in the product than a high-frequency positioning (using the word “today”). However, the results showed that while a high-frequency cue is demotivating to light users, it is motivating to heavy users. Indeed, while the light users concluded that their usage frequency relative to others would be reduced in the high-frequency condition, the heavy users concluded that their usage frequency relative to others would be higher in the high-frequency condition. It is noteworthy that for both light and heavy users in this study, perceived relative usage frequency mediated the effect of the advertisement on their attitudes toward the product.

GENERAL DISCUSSION

The present research makes three key contributions. First, we show that counterintuitively, suggesting to consumers that they will use a product more often in absolute terms can result in less interest in the product and lower purchase intentions. Moving beyond earlier work on relative judgments, we show that frequency cues encourage consumers

to draw inferences about the fit between a product and their needs. A high-frequency cue can cause consumers to conclude that the product is not a good fit for their needs and that their own relative usage frequency (in comparison to other consumers) will be low, reducing their interest in the target product. Second, we show moderation of the effect, both based on the source of the frequency cue (e.g., customer perceived to be similar or dissimilar to the consumer) and based on the consumer's own characteristics (light or heavy user of the product category). Whereas earlier work on response scale effects has relied on these scales "blending into the background," we demonstrate that whether consumers believe that the frequency cues are relevant to them moderates their effect. In addition, although we find that low-frequency cues are more motivating overall than high-frequency cues, the final study demonstrates that the pattern reverses for consumers who are heavy users of the product. Finally, we show that frequency cues of different forms (response scales, cues embedded in ads or customer reviews) have a consistent effect on consumers' inferences about relative usage frequency and their interest in products.

Notably, these results are counter to an economic perspective in which consumers value a product more the more often they think they would use it. We agree that all else equal, believing one will use a product more rather than less should increase its perceived value, as shown in previous work (Tanner and Carlson 2009). Yet in some cases, the same cues that encourage consumers to predict higher absolute use of a product also lead them to predict lower subjective use of the product. Indeed, in studies 1 and 3, participants in the high-frequency scale conditions reported they would use the product more in absolute terms, yet they thought they would use the product less relative to others (see also Schwarz 1999; Schwarz et al. 1985). Perceptions of relative (i.e., subjective) use rather than absolute use played the critical role in driving consumers' attitudes toward the target product. It appears that individuals contemplating whether a product will be a good fit consider whether it will be a good fit for them in comparison to others.

It is important to note that the impact of low-frequency cues on attitudes and behavior is contingent on consumers' engaging in a spontaneous social comparison process. Whereas in studies 1 and 3, the scales participants used to report their absolute usage frequencies may have prompted them to consider where they fell on the scale relative to others, the advertisements used in studies 2 and 5 and the customer reviews in study 4 provided no such explicit comparison. That we observed similar effects across all five studies suggests that these social comparisons do emerge spontaneously. Notably, study 4 qualifies our earlier results by showing that conditions that encourage or discourage social comparison moderate the effectiveness of frequency cues. Specifically, when the context encourages social comparison, low-frequency cues tend to be more motivating than high-frequency cues, but when the context discourages social comparison, high-frequency cues can be just as motivating as low-frequency cues. Further, our findings suggest that without a clear in-

dications that the source of the frequency cue is dissimilar to them, consumers appear to engage spontaneously in comparison with the standard presented by the cue.

One extension of this research that we have not yet examined is how different sources of product value moderate the effect of frequency cues on product interest and willingness to pay. We have examined both services (online video games) and durable products (grill, exercise shoes, calculator, digital reader) and both products that most participants own (e.g., calculator, exercise shoes) and do not own (e.g., grill, digital reader), but all of the categories we examined provide primarily functional value to their users. Comparative judgments of usage frequency may be less predictive of attitudes when products are not evaluated primarily based on their functional utility but on other sources of utility such as their emotional or social value. For instance, when consumers are motivated to purchase a product for status reasons, inferences of relative frequency of use may be less predictive of purchase behavior.

Another boundary condition that future work could examine is whether frequency cues implying extremely high or low usage patterns will produce the same effects. The low (i.e., weekly use) and high-frequency (i.e., daily use) claims we used in our advertising studies and customer review study were not unreasonable given the target products we selected. Frequency cues implying extremely high or low usage patterns that do not match consumers' usage patterns are likely to appear irrelevant to most consumers, undermining the credibility of the frequency cues. This may produce null effects similar to those we observed in study 4 when the frequency cue came from a dissimilar other.

Related Literatures

A key finding of the current research is that consumers are more interested in purchasing and using a product when they perceive that their own predicted usage frequency is high relative to that of other consumers. At first glance, this finding seems contrary to a large body of work showing that people look to what others do as a guide for their own behaviors. For example, the literature on descriptive social norms indicates that the more people believe others litter, the more they themselves litter; the more they believe others like them recycle, the more they themselves recycle (Cialdini, Reno, and Kallgren 1990; Goldstein, Cialdini, and Griskevicius 2008). One difference between this literature and our context is that our participants are considering the purchase of a durable product, which is valued more when it is used more (Tanner and Carlson 2009). In this context, when individuals perceive that they will not be able to reach the (high) usage frequency level of others, they feel demotivated by the perceived norm. People are less interested in buying fitness shoes if they think that others around them are exercising daily but that they will fall short of this frequency. However, when individuals feel they can attain the level of the high-frequency norm (e.g., the heavy exercisers in study 5), they are more motivated when presented with the high-frequency than low-frequency norm.

Indeed, both the heavy and light users of the product category in our research were influenced by perceived relative usage, which is interesting in light of numerous studies showing that experts are less vulnerable to context effects and judgmental biases than are novices (Coupey, Irwin, and Payne 1998; Fox, Ratner, and Lieb 2005; Tanner and Carlson 2009). This previous research is consistent with the idea that contextual influences shape judgments when preferences are constructed rather than stored and that the judgments of novices are more likely to be constructed than those of experts. Our finding that even those who have considerable experience in a product category are biased by invoked reference points is consistent with previous research that found judgments of value to be context-dependent even among those highly familiar with the product (Kirmani and Baumgartner 2000).

Implications for Consumer Welfare

The present findings suggest implications for those interested in increasing the frequency of desirable behaviors, such as eating healthy foods, exercising, saving money, and taking steps to reduce energy consumption. For example, our results suggest that an ad campaign asking people "How will you save money this month?" can be more effective than "How will you save money today?" particularly among those segments of consumers who find it difficult to eke out savings on a daily basis (see also Ülkümen, Thomas, and Morwitz 2008). Notably, some existing marketing campaigns seem to get it wrong, such as a Gold's Gym sign promoting daily usage by exhorting exercisers to "Know that you'll be back for more tomorrow." Our findings suggest that for light exercisers, promoting weekly use would be a more effective approach for increasing product value perceptions.

An interesting question is what pattern would emerge when the focal behavior is socially undesirable. In this case, perceiving that one consumes a product more than others do could motivate a decrease in consumption. For example, consumers who consider whether they have had fast food in the "past month" (vs. in the "past day") might perceive themselves as relatively heavy users of fast food and become motivated to reduce consumption. Indeed, research indicates that learning that others engage in a socially undesirable behavior less often than one thought, such as binge drinking on campus, decreases one's own frequency of engaging in the behavior (Prentice and Miller 1993). Our findings suggest that perceptions of the relative frequency of engaging in undesirable behaviors can be affected by the time frame suggested in marketing communications, with likely consequences for future behaviors.

Whereas previous research has posited anticipated absolute usage frequency as a predictor of product attitudes, the present work highlights the importance of relative usage frequency as a determinant of consumer attitudes and purchase intentions. As a result, survey response categories conveying that typical frequency for a product is high may actually reduce consumers' interest in acquiring the product. Ads or customer reviews highlighting how a product can be incorporated into a consumer's daily life can backfire if

consumers believe their own usage frequency will be lower than that of others. Consumer perceptions of a product's value are, therefore, a function not only of how often they will use the product themselves but also whether they believe this is relatively high or low compared to other people. Our findings suggest that if individuals believe they will not be able to keep up with the pace of others, they might choose not even to try.

CONCLUSION

Whereas previous research has posited anticipated absolute usage frequency as a predictor of product attitudes, the present work highlights the importance of relative usage frequency as a determinant of consumer attitudes and purchase intentions. As a result, survey response categories conveying that typical frequency for a product is high may actually reduce consumers' interest in acquiring the product. Ads or customer reviews highlighting how a product can be incorporated into a consumer's daily life can backfire if consumers believe their own usage frequency will be lower than that of others. Consumer perceptions of a product's value are, therefore, a function not only of how often they will use the product themselves but also of whether they believe this is relatively high or low compared to other people. Our findings suggest that if individuals believe they won't be able to keep up with the pace of others, they might choose not even to try.

APPENDIX A

FREQUENCY SCALE MANIPULATION USED IN STUDIES 1 AND 3

How frequently [do you play video games/would you use a scientific calculator if you had one]? (please check one box)

Low-frequency labels:

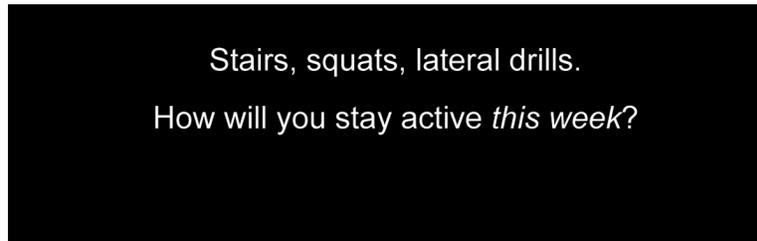
- At least once a week
- Less than once a week but at least once every two weeks
- Less than once every two weeks but at least once a month
- Less than once a month but at least every six months
- Less than once every six months but at least once a year
- Less than once a year

High-frequency labels:

- At least once a day
- Less than once a day but at least once every two days
- Less than once every two days but at least once every three days
- Less than once every three days but at least every five days
- Less than once every five days but at least once a week
- Less than once a week

APPENDIX B**FREQUENCY MANIPULATION USED IN STUDIES 2 AND 5**

The ad used in the low-frequency condition is shown. In the high-frequency condition, the words “this week” and “every week” were replaced with “today.”

FIGURE B1

New Balance 780 Fitness Collection

**The new 780 fitness collection is ready
for your toughest workouts *every week*.**

NOTE.—Color version available as an online enhancement.

APPENDIX C

FREQUENCY MANIPULATION USED IN STUDY 4

The ad used in the similar reviewer low-frequency condition is shown. In the high-frequency condition, the words “every week” were replaced with “every day.” In the dissimilar reviewer condition, the review began with the phrase “I am a busy parent . . .” and the reviewer’s city was Minneapolis, MN.

FIGURE C1

Sony Digital Reader – Pocket Edition



Customer Reviews:

5.0 out of 5 stars **I use it every week!**, February 25th, 2010

By **M. Oakes** (Washington D.C) - [See all my reviews](#)

I am a busy college student, and I bought the Sony reader about four months ago so that I would have all of my reading material with me when I need it. I really don't even notice that I am reading on an electronic device. The type is very clear, and the page turns are fast enough to keep up with my reading.

The menus on the device are simple to use, and I like the fact that I can be reading multiple things at once. I can have multiple bookmarks, as well, so that's a nice feature.

I use it every week, and all-in-all, the Sony reader is perfect for me!

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