

Can Uncertainty Improve Promotions?

Kelly Goldsmith and On Amir*

* Kelly Goldsmith is an assistant professor at the Kellogg School of Management, Northwestern University; address: 2001 Sheridan Rd, Evanston, Ill. 60208; phone: (847) 467-4366; fax: (847) 491-2498; email: Kelly-Goldsmith@Kellogg.Northwestern.edu. On Amir is assistant professor of marketing at the Rady School at University of California in San Diego; address: 9500 Gilman Dr., MC 0553, La Jolla, Calif., 92093-0553; phone: (858) 534-2023; fax: (858) 534-0745; email: OAmir@UCSD.edu.

ABSTRACT

Many consumer promotions involve uncertainty (e.g., purchase incentives offering the chance to receive one of several rewards). Despite retailers' heavy reliance on such promotions, much academic research on uncertainty has demonstrated examples of consumers avoiding and/or disliking uncertainty, suggesting that promotions involving uncertainty might not be as effective for retailers as promotions offering certain rewards. In an effort to reconcile the prevalence of uncertain promotions with the existing research, this paper explores the conditions under which uncertain promotions may be effective for retailers. The paper concludes with a discussion of the theoretical and practical implications for these findings.

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Imagine two promotions that a retailer might offer. In the first, consumers are told that they will receive a generous gift with purchase (e.g., “Buy today and receive a Jones Soda T-shirt!”). In the second, consumers are told that they will receive a gift with purchase that could be either the same generous gift or an inferior gift (e.g., “Buy today and receive *either* a Jones Soda T-shirt *or* a Jones Soda bumper sticker!”). The latter incentive would be comparably more uncertain than the former with a lower expected value to the customer; however, does this mean it would be less effective? This comparison becomes interesting because although promotions involving uncertainty are regularly employed by retailers (Altstiel and Grow, 2006; Carmody 2001), a substantial body of academic research suggests that consumers’ response to an uncertain incentive will never be as positive as their response to the uncertain incentive’s best possible outcome. The current research tests this possibility by exploring the conditions under which promotions involving uncertainty (e.g., the chance to win either a valued reward or an inferior reward) may be no less effective than promotions offering only valued rewards at certainty.

The managerial relevance of this inquiry is clear as running a promotion that offers the chance ($p < 1.0$) of winning a valued reward would obviously cost less to retailers than distributing the valued reward at certainty. For the same reason, any rational model of choice that assumes risk neutrality or risk aversion would predict that an uncertain incentive’s effectiveness would be less than that of the valued reward. This paper argues that retailers’ prevalent usage of uncertainty in promotions may be justified because consumers may respond to uncertain incentives as if they expect to receive the best possible outcome. In such instances, uncertain incentives will generate appeal beyond their calculated risk neutral expected value and as such will present a cost-effective promotional strategy to retailers. In the remainder of the paper, we will elaborate on the theoretical and empirical foundations for this premise and test for

the proposed effect in a series of laboratory experiments and a field experiment involving real shoppers making consequential purchase decisions. As suggested by our opening example, we will test this proposition by comparing consumers' responses to both certain (e.g., valued; inferior) and uncertain (e.g., either valued or inferior) incentives. We will then explore the relevant boundary conditions for the effectiveness of uncertainty in promotions and conclude with a discussion of several mechanisms potentially underlying this effect as well as the theoretical and practical implications for these findings.

THE UNCERTAINTY ABOUT UNCERTAINTY

Every day consumers are exposed to retail promotions involving uncertainty. Examples include promotions involving sweepstakes, games of chance, contests and instant win games. Typically, such promotions offer consumers the possibility of a reward in exchange for their patronage or in exchange for their personal information. Among promotions involving uncertainty, instant win games are some of the most prevalent (Carmody 2001). These games are conducted globally and are especially common among retailers of consumer packaged goods (CPGs) (Smith 2009). In recent years, promotions involving instant win games have been used increasingly as such games can easily be administered both online and in stores and can be effective at driving traffic to the retailer's Web site (Smith 2009). Typically in an instant win game consumers are given some sort of token with purchase (e.g., a scratch ticket or game piece attached to the package) and can find out instantly which (if any) of a variety of prizes they have won, with the range of possible prizes varying in value. Some well publicized examples of instant win games include the MyCoke Under the Cap Instant Win Sweepstakes conducted by

Coca-Cola as part of their MyCoke Rewards Program (Grauschopf 2009) and the McDonald's Monopoly game, which is conducted annually across several countries, and offers consumers the chance to instantly win prizes ranging from low-value menu items (e.g., small fries) to monetary rewards (McDonald's Monopoly 2009).

Based on widespread use of promotions involving uncertainty, one might deduce that they must be a cost-effective means to curry consumer interest. However, how effective are such promotions compared to promotions providing all consumers a valued reward with certainty? Academic research suggests that the effectiveness of promotions involving uncertainty may be limited; specifically, an uncertain incentive is likely to be less effective than if its best possible outcome were offered. Well-known work in economics and psychology documents consumers' preference for certain benefits over uncertain benefits. By definition, risk aversion stipulates that a "riskless" benefit will always be valued over the same benefit with any uncertainty (Kimball 1993). Captured by the concavity of the Prospect Theory value function (as well as any other utility function satisfying concavity in the domain of gains) is the notion that, unless the probabilities are very small, consumers will tend to be risk averse over gains (Kahneman and Tversky 1979) and prefer a sure reward to a lottery of equivalent expected gain (Bernoulli 1954; Dhar, Gonzalez-Vallejo, and Soman 1995). Kahneman and Tversky (1979) further describe the "certainty effect," which specifically addresses how in the domain of gains consumers avoid risk or uncertainty, at times with little normative justification¹. More recently, Gneezy and colleagues (2006) have identified situations in which people value uncertain rewards even less than their worst possible realization, demonstrating hyper risk aversion. Specifically in their

¹ However, it has been suggested that such "ambiguity aversion" arises at least in part from comparative judgments (Tversky and Fox 1995), while consumer promotions tend to present offers in non-comparable contexts (as our leading example depicts).

experiments, participants' willingness to pay to participate in a lottery was lower in monetary value than the lottery's worst possible outcome (Gneezy, List and Wu 2006).

This research suggests that promotions involving uncertainty may have a limited ability to arouse consumer interest; on the other hand, additional research suggests that consumers may not evaluate such promotions with careful mathematical scrutiny and at times may interpret uncertainty through "rose-colored glasses." The notion that consumers can put a positive "spin" on uncertainty is consistent with prior work on optimism showing that in setting goals (Armor and Taylor 2002; Newby-Clark et al. 2000), making predictions about future life events (Weinstein 1980), and evaluating ourselves in comparison to others (Kruger 1999; Kruger and Evans 2006; Martz et al. 1988; Taylor and Brown 1998) most people tend to make optimistic assessments.

For the purpose of understanding when consumers' response to uncertainty may be positive, we will differentiate between two forms of optimism. First, optimism can be conscious, such as when people are aware of the population base rate (e.g., 90% of new restaurants fail); however, they believe that base rate applies to others and will not apply to them (e.g., an individual believes his restaurant has only a 20% chance of failure). A second form of optimism, which is relevant to the current research, is a more innate or automatic optimism whereby one's first response to uncertain outcomes or events is to interpret them positively (Bar-Hillel and Budescu 1995; Taylor and Brown 1988).

Unlike conscious optimism, which may persist even after careful deliberation, this innate optimism is a reflexive response that can be overridden or dampened by considerations of "real" aspects of the forthcoming event, e.g. actual likelihood rates. For example, drawing attention to the population base rate would disengage the innate optimistic response. In support of this, prior

research has demonstrated that unlike conscious optimism, innate optimism can lead people to positively interpret uncertainty, without influencing perceived likelihood judgments (Bar-Hillel and Budescu 1995; Krizan and Windschitl 2007). Thus, while conscious optimism involves knowing the base rate but not applying it to oneself, innate optimism operates prior to base rate considerations.

In this paper we propose that this innate optimistic response is what allows uncertain incentives to be effective. Related research supporting this prediction has shown that there can be benefits to uncertainty in low-stakes scenarios. Specifically, Dhar, Gonzales-Vallejo and Soman (1999) find that uncertain discount levels (e.g., a range of possible discounts) can generate greater consumer interest than precise discounts in low-stakes scenarios (e.g., a small number of products are discounted). Likewise, Amir and Ariely (2008) find that some degree of uncertainty about progress on a simple task can enhance motivation, performance, and task enjoyment. Norton and colleagues find a similar effect in interpersonal attraction, demonstrating that in the domain of on-line dating, the less people know about prospective mates (the more uncertain the outcome), the more they like them (Norton, Frost, and Ariely 2006). Wilson et al. (2005) describe these unforeseen benefits to uncertainty in terms of a “pleasure paradox,” as consumers at times may sacrifice the pleasures uncertainty can offer (e.g., uncertainty around the origin of a small gift) out of a desire for greater information (increased predictability). Although this literature only makes indirect predictions for the analysis of consumer promotions offering uncertain rewards, it supports the notion that interest and motivational benefits may accrue from some degree of uncertainty.

Thus while the standard risk aversion or risk neutrality assumptions may suggest that uncertain incentives will never arouse interest on par with their best possible outcome, we draw

from recent research on optimism and uncertainty to predict that consumers will respond to uncertain incentives almost as if they expect to receive the best possible outcome. We will test this hypothesis in a series of experiments. Experiment 1 demonstrates the proposed effect. Experiments 2a and 2b outline boundary conditions for when uncertain incentives may not lead to positive outcomes (i.e., when innate optimism is impaired and consumers cannot react intuitively). Finally, a field experiment (Exp. 3) confirms that this effect extends to actual retail settings where consumers make consequential choices. The paper concludes with a discussion of the theoretical and practical implications for this work, and considers several potential accounts for the process underlying the phenomenon.

EXPERIMENT 1: CONSUMER INTEREST IN UNCERTAIN INCENTIVES

Method

Participants were 117 individuals from an online pool who were compensated with entry into a lottery for a \$40 gift certificate for an online retailer. All participants were randomly assigned to one of three conditions: valued reward, inferior reward and uncertain incentive. Participants in the valued and inferior reward conditions read instructions asking them to imagine that their favorite soft drink company was running a promotion: anyone purchasing a six-pack of soft drinks would receive a free gift with purchase. Participants in valued [inferior] reward condition were offered a package of Godiva Truffles [two Hershey's Kisses²] as their gift with purchase. Participants in the uncertain incentive condition were told that their gift would be “*either a package of Godiva Truffles or two Hershey's Kisses.*”

² A small American chocolate.

After reading the description of the incentive, participants indicated their percentage likelihood of purchasing a six-pack of soft drinks (scale: 0% - not at all likely to 100% - extremely likely), and how attractive they found the offer (scale: 1 – not at all attractive to 7 – very attractive). On the next page participants were asked to estimate the value of the promotion to which they were assigned (in U.S. dollars). Finally, participants assigned to the uncertain incentive condition were asked to estimate the probability that they would receive the package of Godiva Truffles (valued reward).

Results and Discussion

Our central hypothesis predicts that consumers will respond to uncertain incentives almost as if they expect to receive the best possible outcome. The results of Experiment 1 support this prediction. Participants assigned to the valued reward condition reported they would be significantly more likely to purchase the six-pack of soft drinks and found the incentive more attractive than those assigned to the inferior reward condition (Purchase likelihood: $M_{\text{valued}} = 73.5\%$; $M_{\text{inferior}} = 44.6\%$, $t(75) = 3.62$; Attractiveness: $M_{\text{valued}} = 5.5$; $M_{\text{inferior}} = 2.6$, $t(75) = 7.33$; p 's $< .001$). More important for our current account, participants' reactions to the uncertain incentive approximated reactions to the valued reward: there was no significant difference in purchase likelihood between the valued reward condition and the uncertain incentive condition ($M_{\text{valued}} = 73.5\%$; $M_{\text{uncertain}} = 67.8\%$, $t(77) = .76$, $p > 0.4$). However, the uncertain incentive was judged less attractive than the valued reward ($M_{\text{valued}} = 5.5$; $M_{\text{uncertain}} = 4.6$, $t(77) = 2.08$, $p = .04$). Participants assigned to the uncertain incentive condition reported they would be significantly more likely to purchase the six-pack of soft drinks and found the incentive more

attractive than those assigned to the inferior reward condition ($t(76) = 2.99, p < .01$, and $t(76) = 4.66, p < .001$, respectively).

- Insert Table 1 here -

In order to compare the estimated value of the promotion expressed by participants in the uncertain incentive condition to the estimated values expressed by participants in the valued and inferior reward conditions we performed two different analyses. First, we compared the value (in U.S. dollars) that participants assigned to the promotion across the three conditions. Participants in the valued and inferior reward conditions estimated the promotion to be worth \$5.33 and \$1.34³, respectively ($t(68) = 4.37, p < .001$). Those in the uncertain incentive condition estimated the promotion value at \$2.96. This was significantly lower than the estimate of the valued reward ($t(62) = 2.38, p = .02$) and only marginally higher than the estimate of the inferior reward ($t(62) = 1.68, p = .10$).

Second, we used the incentive values elicited from participants in the valued and inferior reward conditions (\$5.33 and \$1.34, respectively) and the reported probability of receiving the valued reward given by participants in the uncertain incentive condition (mean = .49) to calculate the expected value of the uncertain incentive (\$3.35). This value was not significantly different from the promotion value that participants in the uncertain incentive condition reported when asked directly (\$2.96; $t(29) = .519, p > .6$).

To test how the estimated value expressed by participants in the uncertain incentive condition compares to the expected value implied by their judgment and intention responses, we

³ While the retail value of two standard Hershey's kisses would almost certainly fall below \$1.34, participants may have reported the amount that they imagined the incentive / promotion would cost the company.

determined the implied risk-neutral expected value indicated by their reported purchase likelihood and attractiveness ratings. This was done using a linear transformation based on the ratio between the estimated dollar value of the promotion and the judgment and intention responses in the valued and inferior reward conditions. Using this method, the expected values implied by participants in the uncertain incentive condition were \$4.91 (using reported purchase likelihood) and \$4.47 (using the attractiveness measure). Both of these valuations significantly exceed the expected value these participants expressed directly (Purchase likelihood: $t(29) = 2.61, p = .014$; Attractiveness: $t(28) = 2.02, p = .052$).

The current experiment demonstrates that consumers' response to uncertain incentives approximates their response to the best possible outcome; despite the fact that participants estimated the value of the uncertain incentive to be significantly lower than that of the valued reward, and they did not believe they would be receiving the valued reward with certainty. The results suggest that the participants' intentions toward and judgments of the uncertain incentive implied valuations for the incentive that exceeded the incentive's estimated valued (the value that the consumers themselves placed on the incentive).

Though Experiment 1 demonstrates the proposed effect, the rationale for this effect does not imply it is without bounds. Prior work has shown that feelings of risk can cause an uncertain outcome to be valued even less than its worst possible outcome (Gneezy, List, and Wu 2006) and that affective reactions to risk can dominate cognitive assessments of risk (Loewenstein et al. 2001). However, unlike consumers evaluating everyday promotions, participants in this prior research may have thoughtfully considered their decisions. We will use this distinction in order to reconcile our findings with earlier work demonstrating hyper risk aversion among consumers.

To provide initial test of the impact of consideration on the effectiveness of uncertain incentives, Experiment 2 employs a simple manipulation: participants were asked to estimate their probability of receiving the valued reward either prior to responding to the behavioral measures or after responding to them. In addition to testing for the effect of probability consideration on the observed pattern of results, this manipulation also allows us to test an alternate account for the pattern of results in Experiment 1. At present, one could argue that conscious optimism might predict the pattern of results observed thus far, with consumers responding positively to the uncertain incentive because they believe their likelihood of receiving the best possible outcome is better than most. Conversely, we suggest that the positive response to uncertainty is contingent on a lack of careful thought, and that when probability estimates are elicited prior to the behavioral measures, it will negate the positive effect of the uncertain incentive by forcing considerations.

EXPERIMENT 2a: PROBABILITY CONSIDERATION AS A BOUNDARY CONDITION TO THE EFFECTIVENESS OF UNCERTAIN INCENTIVES

Method

Participants were 154 students who volunteered to participate in a pencil-and-paper study and were not compensated for their participation. All participants were randomly assigned to one of four conditions: valued reward; inferior reward; uncertain incentive (elicitation prior); and uncertain incentive (elicitation post). Participants in all conditions read instructions asking them to imagine that a soft drink company was running a promotion. As part of this promotion, a

prize was contained on the underside of every soda cap. In the valued [inferior] reward condition, the prize under every cap was one iTunes song download [one point, such points could be collected and used towards a potential prize]. After reading the description of the incentive, participants indicated their likelihood of purchasing this soft drink (scale: 0% - not at all likely to 100% - extremely likely) as well as how attractive they found the offer (1 – not at all attractive to 7 – very attractive).

In the uncertain incentive conditions, participants were told that their prize would be either the valued or the inferior reward (either one iTunes song download or one point toward a potential prize). These participants were also given an additional question asking them to indicate what they believed their percentage likelihood of receiving the valued reward would be if they purchased the soft drink (scale: 0 – 100%). In the uncertain incentive (elicitation post) condition, this question was either asked on a second page, subsequent to the intention and judgment measures. In the uncertain incentive (elicitation prior) condition, this question directly followed the description of the incentive, and came prior to the two dependent measures.

Results and Discussion

We predict that consumers will respond to uncertain incentives almost as if they expect to receive the best possible outcome, in part because they will respond without much thoughtful consideration; when considerations are made, the positive effect of uncertainty will attenuate. The results of Experiment 2a support this. First, comparing the valued and inferior reward conditions to the uncertain incentive (elicitation post) condition, we observe that participants reported a significantly greater likelihood of purchasing the soft drink when the soft drink was

accompanied by either a valued reward ($M_{\text{valued}} = 56.0\%$) or an uncertain incentive ($M_{\text{uncertain (elicitation post)}} = 53.0\%$), as compared to an inferior reward ($M_{\text{inferior}} = 33.9\%$; $t(74) = -3.03$ and $t(76) = -2.83$ respectively, p 's $< .01$). Participants also rated the valued reward and uncertain incentive as more attractive than the inferior reward ($M_{\text{valued}} = 4.2$; $M_{\text{uncertain (elicitation post)}} = 4.1$, $M_{\text{inferior}} = 3.3$; $t(74) = -2.22$, $p < .05$ and $t(76) = -1.89$, $p = .06$ respectively). Across all dependent measures the difference between the valued reward and the uncertain incentive was not significant (p 's $> .5$).

In line with our prediction that probability considerations will dampen the attractiveness of the uncertain incentive, manipulating when the probability estimates were elicited had a significant effect on participants' response to the uncertain incentive. When participants were asked to indicate their perceived likelihood of receiving the valued reward prior to the interest measures, the reported purchase likelihood and the attractiveness of the incentive dropped significantly, as compared to when the question was asked after the interest measures (Purchase likelihood: $M_{\text{uncertain (elicitation post)}} = 53.0\%$, $M_{\text{uncertain (elicitation prior)}} = 33.8\%$; $t(76) = 2.77$, $p < 0.01$; Attractiveness: $M_{\text{uncertain (elicitation post)}} = 4.1$, $M_{\text{uncertain (elicitation prior)}} = 3.1$; $t(76) = 2.45$, $p < .05$). This occurred despite the fact that there was no significant difference in participants' reported likelihood of receiving the valued reward across the two uncertain incentive conditions ($M_{\text{uncertain, elicitation prior}} = 32.4\%$; $M_{\text{uncertain, elicitation post}} = 34.1\%$, $p > .7$).

-- Insert Table 2 here --

The results of Experiment 2a demonstrate that the uncertain incentive was as effective at driving purchase intent as the more costly alternative of providing the valued reward with

certainty; however, this effect disappeared when participants receiving the uncertain incentive were asked to consider their probability of receiving the valued reward prior to stating their intentions and judgments. In line with prior research demonstrating that outcome, desirability may not always have a motivated effect on likelihood perceptions (Bar-Hillel and Budescu 1995; Krizan and Windschitl 2007; for an exception see Dai, Wertenbroch and Brendl 2008 who find that frequency perceptions can decrease with valuations), participants' ratings of their probability of receiving the valued reward were unaffected by timing of the probability consideration. The effect of the probability consideration manipulation on the interest measures suggests an important first step toward reconciling when consumers may have a positive response to uncertain incentives: while ex-ante consideration negated the innate optimism that benefited the uncertain incentive, ex-post consideration yielded the same pattern of results, supporting the notion that the positive reaction to this uncertainty is not driven by conscious optimism or a bias in probability estimates.

One important boundary condition we have not investigated is the extent to which, in certain contexts, the nature of the incentive itself might generate careful thought or even probability considerations, which would thus inhibit the positive response to an uncertain incentive. One example of when this may occur is when one of the options in the uncertain incentive is vastly superior to the other on some dimension (e.g., the variance in value between the two options is large). A massive disparity in value might prompt consumers to carefully consider their odds of receiving the superior incentive. Extending the results of Experiment 2a, Experiment 2b will replicate the three conditions common to the experiments thus far (valued reward vs. inferior reward vs. uncertain incentive) with one critical change: the difference in value between the valued and inferior rewards will be more substantial (valued reward = 100

iTunes song downloads; inferior reward = one iTunes song download). We argue that when there is a high variance in value, consumers will be more likely to think carefully about their decision. Due to this careful processing, we will no longer observe consumers' responding to the incentive as if they believe they will receive the best possible outcome. As in Experiment 2a, when the decision promotes thoughtful consideration, interest in the uncertain incentive will fall significantly below interest in the valued reward.

EXPERIMENT 2b: THE NATURE OF THE INCENTIVE AS A BOUNDARY CONDITION TO THE EFFECTIVENESS OF UNCERTAIN INCENTIVES

Method

Participants were 76 individuals from an online pool who were compensated with entry into a lottery for a \$40 gift certificate for an online retailer. All participants were randomly assigned to one of three conditions: valued reward, inferior reward and uncertain incentive. Participants in the valued and inferior reward conditions read instructions asking them to imagine that their favorite soft drink company was running a promotion: anyone purchasing a six-pack of soft drinks would receive a free gift with purchase. Participants in valued [inferior] reward condition were offered 100 iTunes song downloads [one iTunes song download] as their gift with purchase. Participants in the uncertain incentive condition were told that their gift would be “*either* 100 iTunes song downloads *or* one iTunes song download.” After reading the description of the incentive, participants indicated their likelihood of purchasing the six-pack

(scale: 0% - not at all likely to 100% - extremely likely) as well as how attractive they found the offer (1 – not at all attractive to 7 – very attractive).

Results and Discussion

Participants reported they would be significantly more likely to purchase the six-pack of soft drinks and found the incentive more attractive when the incentive was a valued reward as opposed to an inferior reward (Purchase likelihood: $M_{\text{valued}} = 78.5\%$; $M_{\text{inferior}} = 49.6\%$, $t(50) = 2.96$; Attractiveness: $M_{\text{valued}} = 5.74$; $M_{\text{inferior}} = 3.38$, $t(50) = 4.37$; p 's $< .005$). More important for our current account, we observe no positive effect of uncertainty, participants' reactions to the uncertain incentive were significantly less positive than reactions to the valued reward ($M_{\text{uncertain}} = 49.05\%$, $t(49) = 2.92$, $p < .001$; Attractiveness: $M_{\text{uncertain}} = 3.18$, $t(50) = 4.52$, $p < .005$). In contrast to the results of Experiment 1, participants reactions to the uncertain incentive approximated reactions to the inferior reward ($t(45) = .12$, $p = .9$, and $t(45) = .34$, $p = .73$, respectively).

-- Insert Table 3 here --

As Experiments 2a and 2b suggest that thoughtful consideration attenuates the positive effect of uncertainty demonstrated in Experiment 1, one might argue that any positive effect of uncertainty could be an artifact of experimental designs using hypothetical vignettes. Logically, hypothetical choices might elicit fewer considerations than real choices involving actual monetary transactions. As such, Experiment 3 is designed to test the implications of uncertain

incentives for actual shoppers making real decisions (e.g., whether or not to purchase of a candy bar accompanied by a gift with purchase). While the pervasive incorporation of such incentives in the marketplace suggests that retailers believe such promotions can be effective, Experiment 3 is designed to empirically test if the positive effect of uncertainty is ecologically valid.

EXPERIMENT 3: FIELD EXPERIMENT

Method

Pre-testing was conducted to identify rewards that could be offered as a gift with purchase at an on-campus snack shop that varied significantly in value to the consumer. Based on the results of an initial exploratory pre-test, we identified one valued reward (a can of soda of one's choice) and a comparatively inferior reward (a bag of microwavable popcorn, unpopped). Next, a comparative pre-test was conducted where participants indicated which of the two rewards they would prefer to receive as a gift with purchase on a 1 to 9 Likert scale, with 1 corresponding to the bag of microwavable popcorn, 9 corresponding to the can of soda of one's choice, and 5 corresponding to indifference. Participants in this pre-test indicated that they would prefer to receive a can of soda of their choosing over the bag of microwavable popcorn (Mean = 6.31; $p < .001$). Based on this, the can of soda of one's choice was selected as the valued reward and the bag of microwavable popcorn was selected as the inferior reward.

The main experiment utilized a three group between-participants design, where the incentive (valued reward vs. inferior reward vs. uncertain incentive) was the manipulated factor. Participants were 100 customers at an on-campus snack shop. At this shop, customers would

approach the cashier with the item(s) that they had selected for purchase⁴. Prior to paying for the items that they selected, all customers were informed by the cashier that the store was currently running a promotion: All customers would receive a gift with purchase if they purchased a candy bar from a given set of candy bar options. The customers were then told that the gift with purchase was either a valued reward (a can of soda of their choosing), an inferior reward (a bag of microwave popcorn, unpopped), or an uncertain incentive that could be either of the two rewards (either a can of soda of their choosing or a bag of microwave popcorn, unpopped). Customers then verbally indicated whether they would like to buy a candy bar. The cashier recorded all responses. Finally, each customer paid for the items that they had chosen for purchase. Those who had chosen to purchase a candy bar paid for the candy bar and were given the incentive corresponding to the condition to which they were assigned. For those in the uncertain incentive condition, the cashier determined which incentive they would receive by flipping a coin under the service counter, where it could not be seen by the customer. This was done to keep the probability distribution confidential.

Results and Discussion

Consistent with the pre-test, customers were significantly more likely to purchase the candy bar when the reward was valued as opposed to inferior (Purchase rates: $P_{valued} = 38.7\%$, $P_{inferior} = 13.4\%$, $\chi^2(1) = 5.71, p < .05$). More importantly, there was no significant difference between the purchase rates for the valued reward and for the uncertain incentive ($P_{uncertain} = 34.4\%$, $\chi^2(1) = .13, p > .7$). In line with our prediction, customers in the uncertain incentive

⁴ Customers who approached the register already intending to purchase one of the candy bars that was on promotion or a can of soda were excluded from our sample ($n = 2$). No one approached intending to buy a bag of unpopped microwave popcorn.

condition were significantly more likely to purchase the candy bar than those in the inferior reward condition ($\chi^2(1) = 4.19, p < .05$).

This field experiment demonstrates that uncertain incentives can promote actual purchase behavior on par with that incentive's best possible outcome. Further, uncertain incentives can increase purchase rates significantly above offering only an inferior reward. Thus this experiment demonstrates the ecological validity our previous findings; though these consumers may have engaged in more thoughtful consideration than participants responding to hypothetical vignettes, the consideration they engaged in was not enough to disable the positive effect of uncertainty.

GENERAL DISCUSSION

How to attract consumers with incentives that are appealing yet are cost effective is a question that many marketers face. The literature on common risk attitudes would predict that adding uncertainty to a reward, e.g. offering a either a valued or an inferior reward as opposed to a valued reward with certainty, would decrease its effectiveness, paralleling the decrease in expected value. Further, previous research has shown that when in the domain of gains, consumers tend to be risk averse (Kahneman and Tversky 1979; Gneezy, List and Wu 2006) and that generally, adding uncertainty to a benefit makes it comparatively less attractive (Kimball 1993). However, there is ample evidence of such promotions being used in the market place and work on uncertainty demonstrates that it is possible for consumers to generate more optimistic interpretations when benefits are uncertain (Dhar, Gonzales-Vallejo and Soman 1999; Hsee 1995). Our research helps bridge the gap between these seemingly disparate view points. We

demonstrate across a series of experiments that uncertain incentives can generate a response on par with their best possible outcome in the absence of thoughtful consideration. These findings offer compelling insights for marketers, as adding uncertainty to an incentive may be one way to reduce promotion costs while at the same time maintaining consumer interest.

The current set of experiments achieves several goals. In support of our central hypothesis, these experiments demonstrate that an uncertain incentive may be almost as effective as offering the best possible outcome at certainty. We find that the pattern is unique to intuitive, low-consideration decisions and may be negated by probability considerations (Exp. 2a) or by contexts that naturally evoke more careful thinking (Exp. 2b). Importantly, in Experiment 2a ratings of one's likelihood of receiving the high-value reward made ex-post were statistically indistinguishable from those made ex-ante, supporting the claim that this effect is not driven by a biased understanding or application of base rates (Bar-Hillel and Budescu 1995; Krizan and Windschitl 2007). Finally, Experiment 3 shows that this effect holds in an actual retail context involving consequential purchase decisions.

It is noteworthy that researchers have documented non-negative effects of uncertainty in other types of retail promotions. Specifically, such effects have been observed in research on price promotions investigating the effects of discount ambiguity (Mobley, Bearden and Teel 1998; Tan and Hwang Chua 2004). For example, a price promotion stating "Save up to X%" vs. "Save X%" has little effect on the perceived value of the discount when the percentage discount is low (e.g., 25%) (Dhar, Gonzales-Vallejo, and Soman 1999; Mobley, Bearden, and Teel 1998). Further research demonstrates that effects of vague price discounts are sensitive to the sizes of the discounts and rewards: for example, consumers overvalue large rewards when told the probability of receiving the reward is low (Dhar, Gonzalez-Vallejo and Soman 1995). Our

current work extends this body of knowledge and identifies the extent of consideration as one factor that may contribute to these effects.

Potential explanations

Although this paper begins to reconcile the existing disparity between academic research on uncertainty and the pervasiveness of uncertain incentives, the extant studies only begin to shed light on potential origins to the positive effects of uncertainty. We believe there are several possible drivers of this effect and that it would be difficult, if not impossible, to state that only one of these factors is responsible for the pattern of results. In particular, we will focus on three alternative accounts: the joy of winning; perceptual contrast and selective emphasis (on the more positive or the more extreme) as candidate explanations for the observed results.

One could argue that increased excitement caused by the prospect of “winning” is what generates the observed positive response to uncertainty. Prior research has shown that under certain circumstances, consumers may prefer some uncertainty surrounding potential positive outcomes. For example, at times consumers may prefer probabilistic discounts (e.g., a 10% chance of getting your purchase for free) to fixed discounts (e.g., a 10% discount off your purchase price) (Mazar and Ariely 2007), tensile price claims (e.g., a 10 – 30% discount) to precise price claims (e.g., a 20% discount) (Dhar, Gonzales-Vallejo and Soman 1999), or prefer a live TV broadcast of a sporting event to a previously recorded one (Vosgerau, Wertenbroch, and Carmon 2006). While one might argue such excitement aroused by the prospect of “winning” might persist in the face of probability considerations, counter to what we observe in Study 2a, the current data cannot rule out this explanation. However, it is important to notice

that the “joy of winning” is in itself an overly general concept, and that the added value aroused by uncertainty may be bounded. Building on the tensile pricing literature, we propose that the pattern of results we uncover is driven by an optimism is specific to intuitive low-consideration decisions. Dhar, Gonzales-Vallejo and Soman (1999) find that the positive effect of an uncertain promotion size (e.g. a range of possible discounts) occurs when the situation does not arouse suspicion or curtail optimism. For example, a retailer with an established high-price image offering an uncertain discount might benefit much more than a low-price image retailer. Together their results and ours illustrate specific conditions under which uncertain promotions may permit the potential “joy of winning” to operate.

Next, a perceptual contrast account would suggest that juxtaposition of the valued and inferior rewards in the uncertain incentive condition might increase the valuation of the uncertain incentive. Specifically, consumers might use the inferior reward as a standard against which to compare the valued reward. Such a comparison could inflate the value consumers place on the valued reward, and hence inflate the overall perceived value of the uncertain incentive.

However, two findings in our data suggest that perceptual contrast cannot explain the observed effect. First, we find that when participants were asked to report the value of the promotion, participants in the uncertain incentive condition reported a significantly lower value than those in the valued reward condition (Experiment 1). Second, in an unreported experiment, we replicated Experiment 1 showing all participants each possible promotion. In this experiment, all participants were given descriptions of three stores: one offering the valued reward with purchase; one offering the inferior reward with purchase; and one offering an uncertain incentive with purchase that could be either the valued reward or the inferior reward. We then randomly assigned participants to shop in one of the three stores. Using this design, we

find the same pattern of results observed in Experiment 1: the response to the uncertain incentive approximated the response to the valued reward even though those assigned to the valued reward were aware that the inferior reward existed and could compare the two.

Finally, people may naturally put greater focus on the more positive or extreme outcome contained in the uncertain incentive (e.g., the valued reward). This could, in turn, cause the valued (extreme) reward to exert a greater influence on consumers' response. To test for this, future research might examine if consumers spend more of time considering the valued (as opposed to the inferior) reward in the uncertain incentive condition or if manipulations making the inferior outcome in the uncertain incentive more salient (e.g., bold text or a larger font) attenuate the positive effect of uncertainty.

Similarly, because the more positive (valued) outcome was always the more extreme outcome in the current experiments, one could test if a focus on the more "extreme" of the two outcomes promoted the pattern of results. Such an argument would suggest that if there were uncertainty between two possible negative outcomes (e.g., if a consumer were told that the side effects of flu shot could be either mild or severe), we would observe the opposite pattern of results: focus would be on the more extreme (e.g. severe) outcome and the uncertain incentive would generate less interest than the more positive outcome (e.g., the mild side effect).

Preliminary evidence suggests that this class of explanations may not explain our results. In a second unreported experiment, we presented participants with an equivalent decision situation in the negative domain (a flu vaccine with either the guarantee of a severe side effect, the guarantee of a mild side effect, or the guarantee of either a severe side effect or a mild side effect but never both). Though the more extreme outcome was the more negative outcome, we

again found that the uncertain condition generated interest approximating the more positive outcome (mild side effect) as opposed to the more negative (and more extreme) outcome.

Although these arguments offer a more perceptual process explanation, it is also possible that for low-involvement decisions people apply a lexicographic heuristic (e.g., “assume the best”) that would predict the same results. For example, participants’ default behavior may be to focus exclusively on the more positive outcome when their perceived likelihood of receiving the valued reward exceeds some threshold (Brandstatter, Gigerenzer, and Hertwig 2006). At present, we cannot rule out this account and it is our hope that more research in this direction will help to better expose the underpinnings of the process driving the positive effect of uncertainty observed here.

The results presented in this paper enrich our understanding of how consumers react to uncertainty and suggest clear practical implications for marketers. Our findings imply that marketers looking to employ cost-effective promotions might be wise to consider adding uncertainty to their incentives as opposed to simply offering valued rewards. Understanding the underlying drivers of this phenomenon is crucial, however, as our studies begin to outline important boundary conditions. Specifically, our findings suggest that the positive response to uncertainty is mitigated when consumers carefully consider their decisions. As such, promotions with uncertain components may be most effective for impulse purchase products or low involvement purchases. Purchases that involve extensive consideration may not be suitable for such promotions. We hope that this paper will promote future research on this topic.

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TABLE 1

Results: Experiment 1

	Experiment 1	
	Purchase likelihood	Promotion attractiveness
Valued reward	73.5%	5.5
Inferior reward	44.6% **	2.6**
Uncertain incentive	67.8%	4.6*

Purchase likelihood:

**Differences between the inferior reward condition and both the valued reward and uncertain incentive conditions are significant at $p < .01$; there were no reliable differences between the valued reward and the uncertain incentive.

Promotion attractiveness:

**Differences between the inferior reward condition and both the valued reward and uncertain incentive conditions are significant at $p < .01$

* The difference between the valued reward condition and the uncertain incentive condition was significant at $p = 0.04$

TABLE 2

Results: Experiment 2a

	Certain		Uncertain	
	Inferior Reward	Valued Reward	Probability elicitation Post	Prior
Purchase likelihood	33.9%	56.0%	53.0%	33.8%
Promotion Attractiveness	3.3	4.2	4.1	3.1

TABLE 3

Results: Experiment 2b

	Experiment 1	
	Purchase likelihood	Promotion attractiveness
Valued reward	78.52%**	5.74**
Inferior reward	49.62%	3.38
Uncertain incentive	49.05%	3.18

**Differences between the valued reward condition and both the inferior reward and uncertain incentive conditions are significant at $p < .005$; there were no reliable differences between the inferior reward and the uncertain incentive.