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The Role of Expectations in Unfolding Experiences

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Adding a positive aspect to the beginning of an experience can actually dampen evaluations of the experience by setting high expectations against which subsequent pieces are evaluated. Making the beginning worse can lower expectations and raise overall evaluations. This effect is not typically incorporated in lay predictions of enjoyment.

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SPECIAL SESSION

Adaptation Can Enhance Consumption Experiences

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EXTENDED ABSTRACTS

“Thought for Food: Top-down Processes Moderate Sensory-Specific Satiation”

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Hedonic adaptation (Fredrickson and Loewenstein 1999) denotes the typically observed decline in pleasure when positive consumption experiences are repeated. In food consumption, it has been shown that consumption of a specific food leads to a decrease in liking of the food, without diminishing liking of foods not consumed. Such food specific adaptation is called sensory-specific satiation (Rolls, Rowe, and Roll 1982; Rolls, Rolls, Rowe, and Sweeney 1981). People typically react to sensory-specific satiation by switching to alternatives or consuming less (Herrnstein and Prelec 1991; McAlister 1982).

Whereas extant research on satiation has focused on the impact of initial consumption on the pleasure from subsequent consumption, this research focuses on the effect of imagined consumption on subsequent actual consumption. Mental imagery has been found to produce similar physiological responses (e.g., Brandt and Stark 1997; Huber and Krist, 2004), neurological processes (Kosslyn, Ganis, and Thompson 2001), and behavioral responses (e.g., Garcia, Weaver, Moskowitz, and Darley 2002; Woldmann, Healy, and Bourne 2007) as the actual consumption experience. If imagined consumption can act as a substitute for the sensory experience of consuming a food, imagining consuming a food should, like actual consumption of the food, lead to a decrease in its subsequent actual consumption. We investigated this possibility in five studies.

In study 1, participants were assigned to one of three conditions. In the control condition, participants imagined inserting 33 quarters into a laundry machine, one at a time. Participants in the small virtual consumption condition imagined inserting 30 quarters into a laundry machine and then imagined eating 3 M&M's. Participants in the large virtual consumption condition imagined inserting 3 quarters into a laundry machine and then imagined eating 30 M&M's (so in all conditions participants imagined 33 repetitive actions). After their imagination task, participants were given a bowl containing 40g of M&M's and ate as many M&M's as they would like to. Participants who imagined eating 30 M&M's ate significantly fewer M&M's than did participant who imagined eating 3 M&M's or no M&M's. Moreover, the amount of M&M's eaten in participants who imagined eating 3 M&M's or no M&M's did not significantly differ between conditions. These results suggest that imagined consumption of a food leads to virtual satiation rather than a whetting effect.

In study 2, we orthogonally manipulated imagined consumption experience (eating M&M's vs. inserting quarters into a laundry machine) and the amount of imagined consumption (3 M&M's/quarters vs. 30 M&M's/quarters) between-subjects. Participants who imagined eating thirty M&M's subsequently consumed fewer M&M's than participants who imagined eating three M&M's. No difference was found for respondents who imagined inserting thirty or three quarters into a laundry machine.

Study 3 employed a 2 (imagined consumption experience: eating M&M's vs. putting M&M's into a bowl) x 2 (amount of imagined consumption: 3 M&M's vs. 30 M&M's) between-subjects

design. As in the previous studies, participants who imagined eating thirty M&M's consumed significantly fewer M&M's than did participants who imagined eating three M&M's. The amount of M&M's eaten by participants who imagined putting 3 M&M's or 30 M&M's into a bowl did not differ. This finding demonstrates that virtual satiation is indeed caused by the imagined experience (consumption vs. putting M&M's into bowl) rather than the imagined stimuli (which were constant across experimental conditions).

An alternative explanation for the above results might be that participants who imagined eating many M&M's might have been primed to feel “full” and thus subsequently ate fewer M&M's. Study 4 ruled this out by employing a 2 (imagined consumption experience: eating M&M's vs. eating Gummi Bears) x 2 (amount of imagined consumption: 3 M&M's/Gummi Bears vs. 30 M&M's/Gummi Bears) between-subject design. Participants who imagined eating 30 M&M's ate fewer M&M's than participants who imagined eating three M&M's. Contrarily, participants who imagined eating 30 Gummi Bears ate more M&M's than those who imagined eating 3 Gummi Bears. These results demonstrate that imagined consumption induces sensory-specific satiation (as does actual food consumption) and not simply a feeling of being full.

Study 5 extended the findings to another food. Half of participants imagined eating 3 M&M's or 30 M&M's and the other half imagined eating 3 Cheese Cubes or 30 Cheese Cubes. Unlike the previous experiments, participants in Study 5 ate Cheese Cubes after their imagined consumption. Participants who imagined eating 30 Cheese Cubes ate less Cheese Cubes than those who imagined eating 3 Cheese Cubes. The amount of Cheese Cubes eaten by participants who imagined eating 3 M&M's or 30 M&M's did not differ.

The present research demonstrates that satiation can be induced without external stimuli through virtual consumption; thus, satiation is not only a consequence of physiological processes (a bottom-up process) but also involves cognitive “top-down” processes. We believe the foregoing research may help develop effective behavioral interventions to combat obesity. Thought suppression, a popular self-control method that many dieters use, has been shown to increase craving for the to be avoided food (Johnston, Bulik, & Anstiss 1999). Our research proposal examines whether the exact opposite may be most effective. Because people can habituate to a food by merely imagining eating it, willful and controlled imaginary consumption of foods that a dieter tries to avoid could be an effective way to decrease the appeal of, craving for, and intake of the food.

“Motivated Taste Change for Diet Coke”

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While a number of studies have shown that changes in preference can occur with changes in consumption and exposure (Rozin, 1999), the question of whether taste change can be facilitated by motivation is more controversial (Loewenstein & Angner, 2003). Evidence for motivated taste change comes mostly from studies of dissonance, whereby people are thought to reduce negative feelings of disappointment by shifting their preferences to objects that happen to be in their possession (Brehm, 1956). In the present work, we investigate taste change that is motivated by concerns about health, and find that such concerns can influence awareness of taste change, and that this awareness has implications for future choice intentions.

The particular source of motivation that we investigate is the widespread concern about the health effects of sugared soda consumption. Obesity is considered by some public health experts to be the second leading cause of preventable death in America, and at least a third of American adults are attempting to lose weight (Kruger et al., 2004). Sugared sodas are thought to be one of the major contributors to the obesity epidemic, and diet sodas are rapidly gaining market share from sugared sodas.

Interestingly, many people claim that not only do they prefer diet soda because it is healthier, but that they also prefer the taste. In a pilot study with participants drawn from a paid, nationally representative panel, we found that 85% of the 120 frequent Diet Coke drinkers in the sample said that Diet Coke tasted better than regular Coke. More impressively, however, 70% of those who preferred the taste of Diet Coke said they used to prefer the taste of regular Coke. They also cited concerns about health and fitness, and not taste, as their original reason for switching to Diet Coke. These data are consistent with the possibility that concerns about health (i.e., motivation) led to an actual change in the liking of a product. Along these same lines, a recent Diet Coke ad even claims that, "It's the no calories that make it taste so good"

In the present studies we sought to test this possibility. In Study 1 we examined whether or not motivation is related to expectation of taste change. We hypothesized that it would be. People tend to be optimistic in their estimates of the likelihood of good outcomes (Weinstein, 1980). Since health-motivated people would be more likely to consider a taste improvement for a healthy product to be a good outcome, they should thus be more likely to expect this outcome to occur. This is indeed what we found. We asked 58 regular Coke drinkers to imagine that they were to drink Diet Coke daily for two weeks. The health-motivated participants predicted that their liking of Diet Coke would improve during such a trial, while the unmotivated participants predicted that they would come to like Diet Coke even less.

In Study 2 we actually examine taste change by exposing both motivated and unmotivated Coke drinkers to Diet Coke for two weeks. Based on previous mere exposure studies (e.g., Bertino et al., 1982, 1986), we expected blind taste tests to reveal increased liking of Diet Coke in both groups. In branded tests, however, we expected the groups to differ, with the motivated participants being more likely to report increased liking.

Participants were selected based on a pre-screening survey for heavy consumption of Coca Cola (mean of 3.8 cans per week) and for their level of concern about the effects of sugared soda on their health. Half of the participants were highly concerned (i.e., "motivated") and half were minimally concerned (i.e., "unmotivated"). The two groups did not differ in their soda consumption habits. Both groups were given a two week supply of Diet Coke, with the instruction to drink one can each day, and to refrain from drinking sugared soda. (Compliance, reported anonymously, was very high.) Participants were not asked about their expectations of taste change for fear that this would influence their subsequent reporting. Two kinds of taste tests were given, both at the beginning and end of the two week consumption period. In blind tests, participants drank several colas in clear, unlabelled plastic cups, and then rated the taste of each one on a 9 point scale (anchored at "dislike very much" and "like very much"). In "branded" taste tests, participants opened a can of Diet Coke, poured approximately one ounce into a clear plastic cup, tasted it, and then rated the taste using the same 9 point scale.

Both high-concern and low-concern participants revealed a large (4/5ths of a standard deviation) increase in liking of Diet Coke following the two-week consumption period. However, with

the branded test, only the high concern participants revealed an increase in liking. Furthermore, the high concern subjects reported a greater increase in intention to purchase Diet Coke in the future. These results suggest that motivation for taste change may be independent of its actual occurrence, but that it may be required for awareness of its occurrence, and, importantly, for the intent to act on that taste change. The results do not isolate expectation as the mechanism of the motivational effect, although the results of Study 1 are consistent with this possibility.

"Processing Fluency and Satiation"

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Consumers frequently consume products and experiences to the point where they no longer enjoy them, a process commonly referred to as "satiation" (Coombs and Avrunin 1977). This happens for a variety of stimuli ranging from the primarily physiological like food (Rolls, van Duijvenvoorde, and Rolls 1984) and sex (O'Donohue and Geer 1985), to the primarily non-physiological like music (Ratner, Kahn, and Kahneman 1999), television programs (Nelson, Meyvis, and Galak in press), art (Berlyne 1971), homes (Hsee et al. In Press), and cars (Frank 1999). In fact, satiation is often cited as a primary barrier to enduring happiness since, regardless of how satisfying a stimulus might be initially, that satisfaction tends to fade with repetition (Brickman and Campbell 1971).

One way to reduce unwanted satiation is to change the consumption experience. Prior work has shown that people satiate less when they consume slower (Galak, Kruger, and Loewenstein 2009), can more easily perceive the variety of an assortment being consumed (Kahn and Wansink 2004), or can subcategorize the consumption episodes (Raghunathan and Irwin 2000; Redden 2008). These approaches all act as preventive measures that slow satiation. In the present work, we instead explore remedies that can be used *after* satiation has occurred. If people can recover quickly and easily from a satiated state, then satiation poses a smaller problem for consumer enjoyment and happiness. In other words, people can fight satiation by either limiting it in the first place, or reversing it after the fact. We focus on the latter.

Past research has demonstrated that one antecedent to satiation is the degree to which an individual recalls past consumption experiences (Higgs 2002, 2008). We propose that while memory for past experiences is central in informing satiation, the subjective feeling of how much one has consumed is as, if not more, important. Specifically, we propose that when a person finds it particularly difficult to recall past consumption experiences, he or she will feel less satiated, as compared with someone who does not find the recall task difficult. For example, when a person attempts to recall many past consumption episodes, that recall task is subjectively difficult and he or she will feel like he or she has not consumed much—regardless of the fact that he or she may have recalled quite a number of past consumption episodes and thus should feel quite satiated. In contrast, a person who's task is to recall only a few past consumption episodes, will find the task relatively easy and thus infer that he or she has consumed a lot, leading to a heightened degree of satiation.

In Studies 1 and 2 we adapt the classic processing fluency paradigm from Schwartz et al. 1991. Participants recalled either the last 3 or 10 most recent television programs that they had seen (Study 1), or the last 2 or 6 times they consumed their favorite food (Study 2). We found that, presumably because it was subjectively more difficult to recall 10 television programs and 6 eating occasions, participants in the former conditions reported feeling less satiated even though they, in fact, recalled more instances.

In Study 3, satiation was induced in participants by exposing them to a photograph 20 times in a row (without explicit knowledge of how many times they were exposed to the photograph). Following this exposure and a short filler task, participants were asked to recall how many times they had seen the photograph with two different sets of response options created by adapting the paradigm from Schwartz et al. 1985. Participants in the *saw many* (*saw few*) condition answered the question with response options that ranged from “1-3 times” (“1-30 times”) to “more than 15 times” (“more than 150 times”). Consistent with the first two studies, participants who were made to feel like they had seen the photo many times (*saw many*), felt more satiated than those who were made to feel like they had seen it few times (*saw few*). In summary, the subjective sense of how much one has consumed was a strong antecedent of satiation.

Across these three studies we demonstrate that feelings of satiation are malleable even after the consumption experience has ended and that they are informed based on the subjective sense of how much one has previously consumed.

“The Role of Expectations in Unfolding Experiences”

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Suppose you bought a present for your friend, and the store offered an option of gift wrapping at additional cost, or suppose your waiter in a restaurant suggested a glass of a special champagne before your meal. Would accepting these offers enhance the enjoyment of the gift or the meal, respectively? People generally believe that adding positive aspects to an experience will make the experience better. Therefore, we wrap gifts attractively to raise enjoyment of the gifts, and sometimes have a glass of champagne before a meal to make the experience better. Of course, adding positive features to the beginning of an experience can increase enjoyment of the experience, but it can also trigger unexpected effects. Positive moments early in an experience can establish high expectations against which the subsequent moments are compared, leading to a worse overall experience.

A large body of research has demonstrated that hedonic experiences can be contrasted with a prior expectation when there is a discrepancy between the expectation and the actual experience. Drawing from research on this expectation-disconfirmation model, we propose that adding positive moments early in an experience may result in lower satisfaction if subsequent moments in the experience do not meet the high expectations set by the early moments. For example, gift wrapping can decrease the liking of the gift, and great tasting champagne can detract from the rest of the dinner by establishing high expectations that are not met.

Study 1a examines people’s lay beliefs about the effects of wrapping on evaluations of gifts. The results show that people believe gift wrapping increases liking of a gift regardless of the attractiveness of the gift (e.g. attractive DVD: the Lord of the Rings or unattractive DVD: Microcosmos documentary). Study 1b compares the enjoyment of wrapped and unwrapped presents to test the accuracy of the beliefs documented in study 1a. In study 1b, participants evaluated a hypothetical gift from a friend in a 2(wrapped vs. unwrapped) X 2(attractive vs. unattractive gift) between subjects design. Participants in the wrapped condition were told that their friend gave them a birthday present and were shown a picture of an appealing wrapped gift box. On the next page, participants imagined that they found a DVD set when they opened the wrapping. People in the unwrapped condition simply imagined that their friend gave them a DVD set as a present. Half of the participants in each condition were told the DVD set was the Lord

of the Rings (attractive condition) or Microcosmos documentary (unattractive condition). The results showed that for the attractive gift, participants showed a non-significant trend toward liking the gift more when it was wrapped compared to unwrapped. However, for the unattractive gift, participants liked the gift significantly *less* in the wrapped condition than the unwrapped condition. This result partially contradicts the lay beliefs in study 1a that gift wrapping raises evaluations of both attractive and unattractive gifts.

The result of Study 1b supports our proposition that appealing gift wrapping sets high expectation for the gift and can decrease the evaluation of unattractive gifts. In Study 2, we manipulate the level of expectations established by using both appealing and unappealing gift wrapping to test whether setting low expectations compared to high expectations can raise evaluations of unattractive gifts. Participants in Study 2 imagined that they received a birthday present and were shown a picture of either an appealingly or unappealingly wrapped gift box. Participants then imagined that they found the Microcosmos (unattractive) DVD inside the wrapping and evaluated the gift. The results showed that participants liked the gift *more* in the unappealing wrapped condition than the appealing wrapped condition. This result is consistent with our prediction that unappealing gift wrapping sets low expectations leaving recipients less likely to be disappointed with the unattractive gift.

Study 1a suggests that when people predict the impact of gift wrapping they do not incorporate the idea that gift wrapping establishes expectations against which the gift is compared. In Study 3, we examine whether erroneous prediction for gift wrapping documented in Study 1a can be corrected by providing a cue to think about expectations. Participants predicted the impact of gift wrapping in a 2 (cue vs no-cue) X 2(attractive vs. unattractive gift) between subjects design. All the participants were asked to consider receiving both an appealingly wrapped and an unwrapped present from a friend. Participants in the cue condition answered a question about when they would set a higher expectation for the gift between the two situations: receiving a wrapped vs. unwrapped gift. Participants in the no-cue condition were not asked such a question. Next, participants imagined that they found either the Lord of the Rings (attractive) or Microcosmos (unattractive) DVD when they opened the wrapping. The results demonstrated that for the attractive gift, participants in both the cue and no-cue conditions believed that appealing gift wrapping would raise liking of the gift. For the unattractive DVD, however, providing a cue significantly changed participants’ prediction. Participants in the cue condition were less likely to predict that gift wrapping will increase liking of the gift than those in the no-cue condition. This result suggests that people do not spontaneously consider expectation in prediction, but when their attention was drawn to expectations, they make more accurate predictions.

In summary, we find that appealing gift wrapping can decrease evaluations of a gift by setting high expectations. Using less appealing gift wrapping can actually set lower expectations and thereby enhance evaluations of a gift. However, people often fail to accurately predict this trend because they do not think about expectations spontaneously. Once reminded to consider expectations, however, people incorporate expectations into their predictions.