

**The Freedom of Constraint:
How Perceptions of Time Limitations Alleviate Guilt from Two-Phase Indulgent
Consumption**

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When purchasing indulgent products, the characteristics of the purchase, such as price discounts and redemption windows (the amount of time available to consume the product), can affect the likelihood of purchase. We show how these characteristics jointly influence consumers' likelihood of purchasing indulgent products and identify the consumer lay theories that drive this effect. Although price discounts can alleviate the anticipated guilt associated with indulgent consumption, we propose that consumers believe the guilt-reducing effects of discounts fade over time. In four experiments, we show that, based on this belief, consumers strategically protect their enjoyment of indulgent products by choosing shorter time periods to consume discounted indulgent purchases, and by preferring discounted indulgent products offered with shorter (versus longer) redemption windows. We find convergent evidence in sales data from a large discount offers website, observing higher purchase rates for discounted products with shorter redemption windows compared with those for longer ones.

Words: 150

Keywords: indulgent consumption; anticipated guilt; price discounts; lay theories

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The consumption of indulgent products, such as relaxing massages, rich chocolates, and elaborate vacations, can provide happiness to consumers, but this may come at considerable cost to long-term goals, for instance, saving money or losing weight. These potential future costs could lead consumers to anticipate feeling guilty when considering purchasing such products. Promotional strategies such as price discounts can be effective in alleviating guilt associated with indulgent purchases, thus increasing consumers' willingness to engage in indulgent consumption (Kivetz and Zheng 2017; Khan and Dhar 2010). Online retailers such as Groupon and LivingSocial seem to follow this approach and offer indulgent goods and services with price discounts (Aydinli, Bertini and Lambrecht 2014). A critical feature of such online retailers is that their price-discounted offers involve two steps: an initial purchase or "pre-commitment" to indulgent consumption (Kivetz and Simonson 2002), followed by a time window in which the consumption can take place. This raises an interesting question: How does the presence of a time delay between purchase at a discount and subsequent indulgent consumption affect consumers' likelihood of purchasing such offers?

Given a choice, consumers should prefer offers with longer redemption windows, all else equal. From a rational economic perspective, in the presence of uncertainty surrounding consumption, consumers should want to maximize the amount of time available for them to consume the products they have already purchased. Work in mental accounting would also suggest that, as more time elapses between the time of purchase and the time of consumption, consumers may adapt to the "pain" associated with the earlier payment and consequently may enjoy their purchase more (Gourville and Soman 1998). This is especially likely to be true for indulgent purchases, where consumers are

more likely to commit to consumption if it occurs in the distant rather than near future (Kivetz and Simonson 2002) because, with the longer time perspective, the fear of missing out on these opportunities may attenuate the guilt associated with consuming them (Kivetz and Keinan 2006). Further, longer time periods may increase the likelihood of choosing indulgent options because spreading indulgences over time is more compatible with consumers' self-control goals (Siddiqui, May and Monga 2017). Taken together, these findings seem to suggest that consumers would prefer to have longer time periods to engage in indulgent consumption after making a purchase.

In contrast, we propose that the presence of a price discount at the time of purchase would instead lead consumers to prefer shorter consumption periods for indulgent purchases. We argue that this occurs due to consumers' lay beliefs about how price discounts affect their subsequent consumption of indulgent goods over time. Price discounts can serve as a means to lower the guilt associated with consuming indulgent products (Mishra and Mishra 2011); thus, these discounts increase purchase likelihood for indulgent products more effectively than for less indulgent "virtuous" products (Kivetz and Zheng 2017; Khan and Dhar 2010). Yet, this guilt-reducing effect of price discounts is likely to change over time, such as when there is a temporal separation of the purchase (when the price discount is applied) and consumption (when the indulgent product is experienced). Prior work has shown that emotions have fleeting effects on hedonic consumption (Pocheptsova and Novemsky 2010), and a positive effect from buying a product at a discounted price improves immediate but not delayed consumption experiences (Lee and Tsai 2014). This suggests that, if consumers have a lay intuition about the fleeting effects of price discounts on the guilt of indulgent consumption, it

should affect their preference for redemption windows. Specifically, we argue that, because consumers want to protect their enjoyment of indulgent products from feelings of guilt, they deliberately make choices that limit the temporal distance between purchase (at a discount) and indulgent consumption, as this allows them to benefit the most from the guilt reducing effects of the price discounts.

Indulgent Consumption and Anticipated Guilt

Indulgent consumption involves consuming products and services that satisfy hedonic goals but impose long-term costs (Dhar and Wertenbroch 2012; Wertenbroch 1998). Buying indulgent goods is often seen as a failure of self-regulation or to be in conflict with the pursuit of important long-term goals, such as maintaining a healthy diet or avoiding frivolous spending (Dahl, Honea, and Manchanda 2003). This leads consumers to anticipate feelings of guilt regarding impending indulgent consumption (Goldsmith, Cho, and Dhar 2012; Khan and Dhar 2007, 2010; Kivetz and Zheng 2006; Okada 2005). In fact, during indulgent consumption, prior work has shown that feelings of pleasure and guilt are closely interlinked and experienced together (Goldsmith et al. 2012). Consequently, goods that provide the highest pleasure (i.e., desired hedonic items) may also induce the most guilt (Lascu 1991).

Prior research has shown that, because consumers are often motivated to reduce feelings of guilt associated with indulgent consumption, actions that can reduce anticipated guilt, such as performing altruistic acts (Khan and Dhar 2006) or pairing a purchase with a donation (Zemack-Rugar et al. 2016), may lead to higher purchase intentions. Marketers also use levers under their control to have an impact on the

anticipated guilt associated with consumption: for example, by increasing the effort requirements for rewards in loyalty programs (Kivetz and Simonson 2002) or by offering products at price discounts (Khan and Dhar 2010). Promotions, such as gifts-with-purchase and price discounts, can provide justifications for consumption, which reduces the anticipated feelings of guilt (Lee-Wingate and Corfman 2010; Mishra and Mishra 2011). They are of particular importance in the consumption of indulgent products, where guilt-reducing marketing efforts have been shown to increase purchase intentions for products that might otherwise present threats to self-control goals (Khan and Dhar 2006; Mishra and Mishra 2011; Kivetz and Zheng 2017).

However, these guilt-reducing effects of price discounts may change when the consumption context introduces a separation between discount purchases and indulgent consumption, such as might be the case when buying products and services online and consuming them at a later point in time. Prior work has demonstrated that temporal separation affects consumer experiences and judgments. For instance, consumers adapt to the costs associated with purchases as time passes, thus reducing the impact of sunk costs (Gourville and Soman 1998), and price promotions that reduce these sunk cost effects only influence behavior in the short-term (Arkes and Blumer 1985). Similarly, incidental emotional states affect consumer product evaluations immediately, but not when consumers make evaluations later in time (Pocheptsova and Novemsky 2010). These findings suggest that the guilt-reducing effects of price discounts may be sensitive to the temporal separation of purchase and consumption, with the impact of discounts decreasing over time. Consistent with this proposition, Lee and Tsai (2014) demonstrated

that promotional discounts increase positive affect for immediate consumption, but not for delayed consumption.

While this work has focused on the effects of a time delay on *real-time* evaluations and judgments, we extend this work by examining consumer decisions about *future* consumption and delineating how *anticipated guilt* regarding upcoming indulgent consumption is jointly affected by time and price discounts. Specifically, we examine whether consumers, who have purchased an indulgent item at a discount, will behave strategically by preferring to constrain the amount of time available for consumption, based on their lay belief that the guilt reduction from price discounts is temporary.

Decisions about future consumption often rely on these types of lay theories (Novemsky and Ratner 2003; Pocheptsova and Novemsky 2010). Furthermore, consumers often behave strategically to ensure hedonic enjoyment based on their lay beliefs: for example, consumers choose to avoid repeated consumption if doing so threatens their positive recall of the prior consumption (Zauberman, Ratner and Kim 2009). Consumers will behave economically irrationally to protect the enjoyment of their experiences by choosing to pre-pay for hedonic items (Patrick and Park 2006) and by paying off lower interest rate debts more rapidly to preserve the hedonic enjoyment of a purchase (Besharat, Varki and Craig 2015). Similarly, consumers may be willing to constrain the time available for consumption to strategically protect the enjoyment of indulgent products purchased at a discount.

We therefore expect that consumers will prefer to have a shorter amount of time, manifested in shorter redemption windows, during which to use indulgent products purchased at a discount, because they anticipate the guilt-reducing effects of the price

discounts will diminish as temporal separation of purchase and consumption increases (see Figure 1). Formally, we propose:

H1: For indulgent products offered at a price discount, shorter redemption windows will be preferred and lead to higher levels of purchase intentions.

H2: The relationship between redemption windows and purchase intentions for indulgent products purchased on discount will be mediated by the anticipated guilt of indulgent consumption.

In support of these predictions, we present the results of five studies. In a pilot study, we demonstrate that consumers possess a lay theory that the guilt-reducing effects of a price discount for an indulgent product will be strongest immediately, but that these effects will fade over time. Next, we show that these beliefs affect consumer preferences for the timing and likelihood of consumption. In Study 1, we show that consumers prefer shorter lengths of time in which to consume a discounted indulgent product, compared with when there was no discount, but that these differences do not emerge for less indulgent products. In Study 2, we show that purchase intentions for an indulgent product offered at a discount increase as the temporal distance between purchase and consumption decreases. In Study 3, we demonstrate the mediating role of anticipated guilt on the purchase likelihood for an indulgent product offered on a discount. In our final study, we examine real-world sales data from a large promotional discounts website and show how redemption windows affect sales of indulgent products and services offered at price discounts.

FIGURE 1 ABOUT HERE

Pilot Study

The purpose of the pilot study was to provide initial evidence that consumers possess a lay theory about the time-varying effects of price discounts on guilt associated with indulgent purchases. Specifically, we predict consumers believe that when the price of an indulgent product is discounted, the reduction in the anticipated guilt of consumption will be highest immediately after purchase and will decrease over time.

Design

Thirty-eight undergraduate students from a large public university completed this study in exchange for partial course credit (55.3% female). The study employed a 2 (price: discounted, full) X 4 (consumption timing: immediate, one week, one month, three months) mixed design, with price as a between-subjects factor and consumption timing as a within-subjects factor. Participants were randomly assigned to a price condition and were asked to evaluate an hour-long spa treatment, a product frequently used in studies of indulgent consumption (Kivetz and Zheng 2006; Xu and Schwarz 2009). The product was described as either costing \$60 (full price condition) or being offered at a 50% discount, for \$30 (discounted price condition).

Participants then responded to four sets of two questions measuring anticipated guilt, with one set for each period of consumption timing. The first set asked participants to consider how they would feel when they received the massage if they had purchased the item immediately and got an appointment right away, the second set if they could only get an appointment for the next week, the third set for the next month, and the final

set if they could get an appointment three months from now. Participants responded using two 10-item measures, anchored by 1 = “not at all guilty” and “not at all bad,” and 10 = “very guilty” and “very bad.” These two items were combined to form a measure of anticipated guilt ($R = .93$; $p < .01$).

Results

A continuous variable representing the number of days until consumption could occur (i.e., 1, 7, 30, 90) was created to represent the consumption timing variable, which was log-transformed, though similar results were obtained using indicators for consumption timing as well as without the transformation.

The data were analyzed using a regression model, including individual-specific random effects to account for between-subjects variance that was not the focus of our analysis. A Hausman test comparing this model to one including fixed effects suggested that the random effects model was consistent ($\chi^2(3) = 2.09$, $p = .554$), leading it to be preferred. The model revealed a significant interaction effect of price and consumption timing ($b = .447$, $z = 2.13$, $p = .033$), and no other simple effects were significant (all F s < 1.36 , all p s $> .172$). Marginal effects were used to explore the interaction, which indicated that, when participants paid full price for an indulgent product, they did not report any difference in the anticipated guilt of consumption as a function of time ($b = .11$; $z = .74$; $p = .461$). However, as predicted, when the price was discounted, there was a significant positive effect of consumption timing on anticipated guilt ($b = .56$; $z = 3.74$; $p < .001$). This indicates that participants anticipated that the guilt-reducing effects of

discounts would decrease over time, leading to an increase in anticipated guilt (see Figure 2).

FIGURE 2 ABOUT HERE

Discussion

The results of our pilot study provide initial evidence that consumers possess a lay theory about the time-varying nature of anticipated guilt of indulgent consumption, such that the guilt-reducing effects of price discounts on indulgent consumption shown in prior work (Lee-Wingate and Corfman 2010) are likely to fade as consumption occurs at a more distant time in the future relative to the initial purchase.

Study 1

Having demonstrated that consumers believe that the effects of discounts on the anticipated guilt of indulgent consumption will diminish with time, in our next study, we test whether these beliefs affect preferences for the amount of time available to consume indulgent products, as predicted by H1. Specifically, we test whether consumers engage in strategic behavior by choosing a shorter redemption window for indulgent products when offered at a discount.

Design

One hundred twenty-one undergraduate students from a large public university completed this study in exchange for partial course credit (46.3% female). The study

employed a 2 (product type: more indulgent, less indulgent) X 2 (price: discounted price, full price) between-subjects design, and participants were randomly assigned to one of the four conditions. Participants were asked to evaluate a promotion for one of two products: either a less indulgent, goal-oriented dry-cleaning service or a more indulgent, pleasure-oriented spa service. The price of the product was held constant at \$50. The price was described as either representing a 50% discount from the original price in the discounted price condition, or, in the full price condition, no additional information was given. For example, in the more indulgent product type full-price condition, participants saw a picture of a spa service and read, “The promotion gives you the option to purchase a voucher on your smart phone for \$50. This voucher gives you a 60-minute hot stone massage,” while participants in the discounted price condition read: “The promotion gives you the option to purchase a voucher on your smart phone for \$50. This coupon gives you a 60-minute hot stone massage, *representing a 50% discount*” (emphasis added).

Next, participants indicated how long they would prefer the redemption window to be using an 11-point scale (0 = “one week,” 10 = “one year,” with a midpoint labeled “six months”). They subsequently completed manipulation checks, rating the extent to which they felt the offer represented a large discount and to whether they felt the product was indulgent (1 = “not at all,” 7 = “very much”).

Results

FIGURE 3 ABOUT HERE

Manipulation Checks. A two-way ANOVA with product type and price as independent factors revealed a significant main effect of price on the size of discount ($F(1, 117) = 18.50, p < .001$). As expected, participants rated the offer as having a larger discount when presented as a 50% discount ($M = 5.25$) than in the full-price condition ($M = 4.00$). A two-way ANOVA with product type and price as independent factors revealed a significant main effect of product type on the extent to which the product was seen as indulgent ($F(1, 117) = 37.15, p < .001$). Participants rated the product as more indulgent in the spa condition ($M = 5.37$) compared with the dry cleaners condition ($M = 3.44$). No other effects were significant (all F s < 3.06 , all p s $> .083$), confirming that the manipulations were successful.

Choice of Redemption Windows. A two-way ANOVA with product type and price as independent factors was used to analyze the preference for the length of redemption window, which revealed a significant interaction effect ($F(1, 117) = 4.24, p = .042$; see Figure 3). Planned contrasts indicated that, for the more indulgent spa service, when it was offered at a discount, participants preferred shorter redemption windows ($M = 4.80$) compared with the full-price condition ($M = 7.09, F(1, 117) = 7.35; p = .008$). However, for the less indulgent dry cleaner, there was no difference in the preferred redemption window length between the price conditions ($M_{\text{Discounted}} = 5.86, M_{\text{Full}} = 5.76; F(1, 117) = .02, p = .902$). Finally, there were no differences between the product types within each price condition (all F s < 2.70 ; all p s $> .10$).

Discussion

As predicted, for more indulgent products, participants preferred shorter redemption windows when the products were offered at a discount, but these differences did not emerge for less indulgent products. These findings are consistent with the lay belief demonstrated in the pilot study and provides support for H1 by demonstrating that these beliefs lead consumers to choose shorter redemption windows, where the guilt-reducing benefit of price discounts is maximized.

We also replicated these results in a within-subjects design, where undergraduate participants ($N = 107$) chose their preferred lengths of redemption windows for both more (pastries) and less (coffee) indulgent products purchased at a discount (“50% off (pay \$5 to get \$10)”) from a single store, Starbucks. We observed the same pattern as in the main study, with participants preferring shorter redemption windows for the more indulgent pastries ($M_{\text{Coffee}} = 4.89$ vs. $M_{\text{Pastry}} = 3.89$; $t(104) = 1.93, p = .057$). Thus, even when participants saw and evaluated both the more and less indulgent consumption options, they chose to limit the amount of time available to consume the more indulgent option, strongly supporting our proposition that this is a strategic decision to protect the enjoyment of indulgent products that were purchased at a discount.

In the marketplace, however, consumers are rarely given the opportunity to choose how long they have to redeem a product after purchasing it; instead, the company typically sets the length of redemption window. In this context, consistent with H1, we expect that consumers will have higher purchase intentions for a discounted indulgent product offered for sale with a shorter redemption window. In the next study, we test this proposition by manipulating the length of time given to participants to consume a product after purchase.

Study 2

Design

The study employed a 2 (product type: less indulgent, more indulgent) X 2 (redemption window: shorter, longer) between-subjects design. Two hundred ninety-nine undergraduate participants from a large public university completed the study in exchange for partial course credit (57.9% female). Participants were asked to evaluate a promotion, costing \$5, from Starbucks for 50% off of coffee (less indulgent) or for pastries (more indulgent). A pre-test drawn from the same population ($N = 117$) asked participants to rate the indulgence of these products using a 7-point scale (1 = “utilitarian product,” 7 = “indulgent product”). Participants rated the pastry from Starbucks as more indulgent ($M = 4.56$) compared with a coffee from Starbucks ($M = 3.87$, $t(116) = 3.18$, $p = .002$). Using a between-subjects design, a post-test was also conducted using the MTurk panel ($N = 303$), with participants rating their anticipated level of guilt associated with consuming Starbucks pastries and coffee, using the same scale. Again, participants anticipated higher guilt associated with pastries ($M = 3.98$) compared with coffee ($M = 3.14$, $t(301) = -3.62$, $p < .001$).

In the main study, participants were told that the offer, if purchased, had to be redeemed within one month (shorter window) or six months (longer window). The primary dependent measure was whether participants wanted to buy the deal (yes or no), which was indicator coded. Finally, participants rated how much they liked Starbucks (1 = “not at all,” 7 = “very much”) and how often they visited Starbucks to purchase either coffee or pastries, depending upon the condition (1 = “never,” 7 = “daily”). The last item

was included to assess the possibility that the preference for shorter redemption windows was driven by frequency of product use and not by our proposed mechanism.

Results

FIGURE 4 ABOUT HERE

Manipulation Checks. We found no effect of the manipulated variables on the liking of Starbucks (all F s < .83, all p s > .365), and participants overall liking for the brand was high ($M = 5.21$). Further, while we observed a main effect of product type on the frequency of visits ($M_{\text{Coffee}} = 2.92$ vs. $M_{\text{Pastry}} = 2.37$, $F(1, 295) = 11.22$, $p < .001$), this effect is in the opposite direction to the observed preference for shorter redemption windows for indulgent products and thus does not provide an alternative explanation for our findings. All other main and interaction effects were not significant (all F s < 2.44, all p s > .12).

Purchase Intentions. A logistic regression with redemption window, product type, and their interaction as independent variables and the choice to buy the deal as the dependent variable revealed a significant interaction effect on the likelihood of buying the product ($b = -1.23$, $z = -2.03$, $p = .042$, see Figure 4). Specifically, for the less indulgent product, we found no difference in the proportion of participants who indicated they would purchase the product based on the length of the redemption window (80% for a shorter window and 85% for a longer window, $z = .84$; $p = .403$). However, consistent with H1 and the results of the previous study, a greater proportion of participants chose to

buy the more indulgent product when it was offered with a shorter (88%) versus a longer redemption window (74%, $z = -2.05$, $p = .041$).

Discussion

The results of Study 2 extend the findings of Study 1 by showing that the preference for faster consumption of indulgent products bought on discount also has an impact on purchase intentions for these products when offered with different redemption windows. Both results are consistent with those of the pilot study, where consumers anticipated that the guilt-reducing effect of discounts on indulgent consumption was short-lived. However, while the results match our proposed process driven by anticipated guilt, thus far, we have not directly tested it, which we do in our next study.

Study 3

The purpose of our third study was to test the mediating role of anticipated guilt on the likelihood of purchase, as proposed in H2. Because consumers possess a lay theory that the positive effects of price discounts on the anticipated guilt of consuming indulgent products will attenuate with time as shown in the pilot study, we expected that anticipated guilt will increase as the time available to redeem the price discounted offer increases. Based on the results of Study 2, we further expected that this effect on anticipated guilt will positively affect the preference for indulgent consumption with shorter (vs. longer) redemption windows.

Design

The study employed a 2 level (redemption window: shorter, longer) between-subjects design. Eighty-four undergraduate participants from a large public university completed the study in exchange for partial course credit (43.0% female). Participants were asked to evaluate an offer from CVS (which had multiple locations on and near the campus on which the study was conducted), which offered a 50% discount on candy and chocolate (pay \$2.50 to get \$5.00). Therefore, all participants were making judgments about indulgent consumption purchased at a discounted price.

As in Study 2, participants were told that the offer would have to be redeemed within one month (shorter window) or six months (longer window), and the primary dependent measure was whether participants wanted to purchase the deal, which was indicator coded. On the following page, participants were asked to indicate how guilty and happy they would feel when using this deal (1 = “not at all,” 7 = “very much”). Finally, to address the possibility that length of redemption windows affects perceptions of a deal’s scarcity, we asked consumers to estimate how many of these deals CVS had issued and how many consumers would use these deals (1 = “very few,” 7 = “a lot”).

Results

A logistic regression with redemption window as the independent variable and the choice to buy the deal as the dependent variable revealed a significant effect on the likelihood of buying the product ($b = -.93, z = 2.02, p = .043$), such that 70.7% of participants decided to purchase the offer when it was to be redeemed within the shorter

window, compared with only 48.8% when it was to be redeemed within the longer window, consistent with H1 and the results of Study 2.

Further, participants anticipated experiencing marginally higher levels of guilt ($M_{\text{Shorter}} = 1.49$ vs. $M_{\text{Longer}} = 2.16$, $t(82) = -1.96$, $p = .053$) and lower levels of happiness ($M_{\text{Shorter}} = 6.15$ vs. $M_{\text{Longer}} = 5.19$, $t(82) = 2.25$, $p = .027$) when a discounted offer had a longer, as opposed to a shorter redemption window, consistent with the results of the pilot study.

To test the proposed mediating role of anticipated guilt (H2), we employed bias-corrected bootstrapping (Hayes 2013; Model 4). As expected, the anticipated guilt associated with consumption mediated the relationship between redemption window length and the likelihood of purchasing a discounted offer, as indicated by a significant indirect effect ($b = -.204$, $SE = .197$, 95% CI: $[-.810, -.002]$).

Finally, we observed no differences on the measures of perceived scarcity and competition with other consumers for the deals (all t s < 1.02 , all p s $> .309$), ruling out this factor as a potential driver of our effects.

Discussion

The results of this study extend our earlier findings by providing evidence for the mediating role of anticipated consumption guilt, by showing that participants anticipate different levels of guilt of consuming indulgent products with a shorter versus longer redemption window. These anticipated feelings of guilt, as predicted by H2, drive consumers to purchase a discounted offer with shorter (vs. longer) redemption windows.

Thus far, our results have shown that consumers prefer shorter redemption

windows for indulgent products when offered at a discount, and that these effects are driven by consumers' anticipation of the temporary nature of the guilt-reducing effects of discounts on indulgent consumption. However, all of our studies thus far have involved experimental scenarios and hypothetical consumer decisions. In our final study, we analyze actual sales data from an online retailer that focuses on selling indulgent products and services at a discount. We expect that, consistent with the findings of our earlier studies, for these types of products, discounts would lower the anticipated guilt associated with purchase, and that this lower anticipated guilt will positively affect sales for discounted offers with short but not long redemption windows.

Study 4

Data

We recorded data from the LivingSocial website during March and April 2011, which sold localized promotional offers in markets across the United States and Canada. The products offered consisted primarily of hedonic goods and services, as observed in prior work (Aydinli et al. 2014). Data on 2,460 promotional offers across 144 markets were collected. Seventy-five offers that sold out before the original sale period expired were excluded from the analysis because, for these offers, the number sold was artificially right-censored and would bias the estimates, though including these offers does not have a significant impact on the results. The final data set contained 2,385 offers.

For each offer, we observed the total number of deals sold, the purchase price of the offer, the percentage discount off its original price, the total selling period that the

offer was available for sale, and the length of time in which the offer could be redeemed after purchase (the redemption window). Across the offers in the final set, on average, offers were sold at a 56.5% discount and a sale price of \$35.76, with a redemption window length of 233.6 days. Redemption window length was log-transformed due to its skewness, though the primary results do not depend upon this transformation. In addition to these variables, we collected the merchant-assigned category of the offer, the duration it was offered for sale, and the day of the week that sales initially began to include as controls in our analysis, as in prior work (Aydinli et al. 2014).

In addition, we collected text descriptions of each offer, which included descriptions of the product or service and the original and discounted prices. We presented these text descriptions to 444 participants on an MTurk panel to be evaluated for a small payment. Three individual participants examined and responded to the dependent measures about each offer, and participants could choose to evaluate as many of the offers as they wished, with each participant evaluating on average 16.1 offers. The ratings provided by each of the three participants who saw an offer were averaged together to form the measures used in the subsequent analysis. The offers were evaluated on the extent to which participants would feel guilty using the offer (1 = “not at all guilty,” 7 = “very guilty”), which served as a measure of conditional anticipated guilt of consumption. Participants also rated the extent to which the offer was attractive (1 = “not at all,” 7 = “very much”) as well as hedonic (three items, $\alpha = .93$) and utilitarian (three items, $\alpha = .84$) using items adapted from prior work (Voss, Spangenburg and Grohmann 2003). Summary statistics for all measures are presented in Table 1.

TABLE 1 ABOUT HERE

Empirical Approach

To test our theory, we first ran a series of regressions to demonstrate the relationship between price discounts and conditional anticipated guilt (reported in Column 1). To demonstrate the robustness of our findings, we report analyses when including sale price, along with ratings of attractiveness and the offer's hedonic and utilitarian characteristics as control variables (Column 2). Because the individuals who rated each offer were not provided with the redemption window for each offer, this variable is not included in these models.

Next, to test for the effects of conditional anticipated guilt and redemption window length on sales, a negative binomial model was used (Column 3). This was due to the count nature of sales, and because the variance of sales (241,376.27) was significantly higher than its mean (370.91), conditions for which the negative binomial is better suited compared to a Poisson model. As with the model of conditional anticipated guilt, we report an analysis including the same control variables (Column 4) and including indicators for offer duration, the day of the week of the offer's initial sale, and the offer's product category (column 5). Finally, we report the results of a model using log-transformed sales estimated using OLS with similar results (Column 6). Robust standard errors were used in the estimation of all models to address potential heteroskedasticity.

Results

TABLE 2 ABOUT HERE

The full results are reported in Table 2. In the base guilt model (Column 1), we observe a significant negative effect of discount percentage on the conditional anticipated guilt ($b = -.74$, $t(2383) = -3.55$, $p < .001$), indicating that, as the amount of discount increased, the conditional anticipated guilt associated with consumption decreased, replicating prior work. As reported in Column 2, these effects were robust to the inclusion of covariates ($b = -.61$, $t(2379) = -2.94$, $p = .003$).

In the base sales model, we observe the predicted negative interaction effect of conditional anticipated guilt and log-transformed redemption window length (Column 3: $b = -.19$, $z = -2.84$, $p = .004$). This interaction was robust to the inclusion of covariates (Column 4: $b = -.16$, $z = -2.93$, $p = .003$) as well as indicators for offer duration, offer category, and days of the week (Column 5: $b = -.17$, $z = -3.29$, $p = .001$). Finally, we also observed the predicted interaction effect in a model with log-transformed sales as the dependent measure estimated using OLS (Column 6: $b = -.12$, $t(2380) = -2.26$, $p = .024$).

To probe the nature of this interaction, a Johnson–Neyman analysis (Bauer and Curan 2005; Johnson and Fay 1950) was used with the base sales model (3) to identify the levels of conditional anticipated guilt where the effect of redemption windows was significant (see Figure 5). Using a pick-a-point approach, for offers whose conditional anticipated level of guilt was below 2.89, there was a significant positive effect of redemption window length, indicating that longer redemption windows were associated with increased sales. However, for offers whose conditional anticipated level of guilt was

above 5.86, there was a significant negative effect of redemption window length such that shorter redemption windows were associated with higher sales.

FIGURE 5 ABOUT HERE

Discussion

The results of our final study provide convergent evidence for the effects of consumers' beliefs about how discounts influence the guilt associated with indulgent consumption over time using sales data from LivingSocial. We replicate the findings of prior work showing that promotions decrease the anticipated guilt associated with indulgent consumption. We also replicate the results of our earlier experimental studies by showing that the guilt-reducing effects of discounts on sales are sensitive to the length of redemption windows. Most importantly, we demonstrate the relationship between anticipated guilt, price discounts and redemption windows using real-world consumption choices.

General Discussion

Considerable work has investigated the effect of price promotions on purchase intentions of indulgent goods (Kivetz and Zheng 2017; Khan and Dhar 2010) and particularly the role of emotions, such as guilt, in consumer decisions to acquire such goods (Mishra and Mishra 2011). Our paper makes a substantial contribution to this growing literature by showing that a) consumers possess lay theories about how price discounts affect anticipated guilt of indulgent consumption over time, and b) consumers

act strategically to protect their enjoyment of indulgent products bought at a discount based on these lay theories. Our studies demonstrate that consumers prefer to have shorter redemption windows for discounted indulgent consumption, and prefer to buy indulgent goods on discount when offered with a shorter rather than longer redemption window. In support of our proposed mechanism, we provide evidence that these preferences are driven by the differences in the anticipated guilt associated with indulgent consumption for longer- versus shorter-term redemption periods. We show these effects experimentally across a variety of indulgent products and provide convergent evidence in sales data for over 2,300 products and services sold on a website specializing in discounted sales of indulgent goods, LivingSocial.

Our findings complement those of Lee and Tsai (2014) on the time-varying effects of price promotions on real-time enjoyment of indulgent consumption. While Lee and Tsai (2014) demonstrate that the effect of price discounts on positive mood is attenuated following a time delay, we extend this work by demonstrating that consumers anticipate this time varying effect of price discounts on guilt. Further, we show that these expectations guide consumer choices, leading consumers to prefer shorter amounts of time to consume indulgent products that are purchased at a discount.

Our work also contributes to the literature on consumer lay beliefs. Prior studies have demonstrated that consumers hold lay beliefs in multitudes of domains regarding hedonic consumption, such as the enjoyment from variety in consumption (Read and Loewenstein 1995; Simonson 1990), the presence of contrast and assimilation effects (Novemsky and Ratner 2003; Pocheptsova and Novemsky 2010), and the adaptation to product attributes (Wang, Novemsky and Dhar 2009). Importantly, people also tend to

act in accordance with their lay beliefs (Kahneman 1994; Kahneman and Snell 1992; Novemsky and Ratner 2003; Simonson 1990). We extend this literature by documenting consumers' lay theories about the dynamic nature of the effects of discounts on anticipated guilt associated with indulgent consumption, and by demonstrating that these lay beliefs drive consumer behaviors.

Interestingly, unlike these prior studies where consumers' reliance on lay theories in making choices leads to suboptimal outcomes, such as lower immediate enjoyment of consumption, we find that consumers act strategically to protect their enjoyment of consumption. We add to the body of work showing that consumers place a premium on their hedonic experiences, and engage in behaviors to protect those experiences (Zauberman et al. 2009; Reed, Mercurio and Forehand 2013; Patrick and Park 2006; Besharat et al. 2015). This highlights the importance of understanding how consumers make the trade-offs between the utility of hedonic consumption and achievement of long-term goals.

It is important to distinguish our proposed account of the relationship between time delay and desires to acquire indulgent goods from other possible mechanisms. For example, prior work demonstrates that perceptions of urgency, created by limited product or discount availability, can positively affect purchase likelihood, as it can enhance perceptions of a product's popularity or quality (Inman and McAlister 1994; Inman, Peter, and Raghurir 1997; Parker and Lehmann 2011; van Herpen, Pieters, and Zeelenberg 2009). We believe this account cannot explain our results. First, if shorter redemption windows indeed signal higher product popularity, this should be true for both more and less indulgent goods, which contradicts the findings of Study 2. Second, we

directly measured perceptions of scarcity and popularity in Study 3, and we did not find any difference based on the length of the redemption window. By contrast, in the same study, we found that the anticipated guilt of indulgent consumption did change with the length of redemption window, and subsequently affected the likelihood of purchase for an indulgent product. Finally, because the urgency account is based on consumers' inferences about the reasons why companies would issue limited time offers, it is not clear how this account can explain consumers' strategic decisions to self-impose limited time periods for consumption on themselves, as demonstrated in Study 1. Thus, we do not believe that the urgency account provides a strong alternative explanation to the findings in this paper.

It is possible, though, that perceptions of urgency, for example, in the form of limited quantity of indulgent products, reduce anticipated guilt of indulgent consumption similar to other guilt-reducing promotions identified in prior work (see Kivetz and Zheng 2017 for an overview of promotions that affect indulgent consumption via guilt-reducing mechanisms). If consumers hold similar intuitions about the temporal nature of any type of guilt-reducing promotions (including those other than price promotions), similar effects to the ones reported in this work might be observed, when consumers are making pre-consumption decisions based on marketing offers that highlight product scarcity. This remains an interesting avenue for future research.

Prior work (Prelec and Loewenstein 1998) indicates that closer coupling of purchase and consumption has two distinct effects on consumer judgments: first, it improves transactional utility by incorporating thoughts about impending hedonic consumption, and second, it negatively affects consumption utility by reminding

consumers about the pain of payment during the consumption experience. Thus, a focus on transaction utility would lead consumers to closely couple payments and consumption, while a focus on consumption utility would suggest the opposite. By contrast, in this paper, we identify a context where the focus on consumption utility leads to a preference for shorter amounts of time between purchase and consumption. This occurs because in the context of buying indulgent products on discount, consumers focus on future consumption utility by incorporating the time-varying nature of anticipated guilt into their decisions. Specifically, to realize the benefits of the guilt-reducing effects of discounts, consumers prefer to plan consumption closer to the purchase time. In our paper, however, we did not explore the role of transaction utility. Related work by Patrick and Park (2006), demonstrate that consumers preference to pre-pay (as opposed to post-pay) for hedonic consumption is especially high when transaction utility is high, suggesting that focusing on transaction utility can also affect consumers' preference for timing of payment and consumption. Future research should explore factors that would highlight transactional versus consumption utility of hedonic purchases to provide a comprehensive picture of the influence of both in consumer decisions that involve separation of purchase and consumption.

Managerial Implications

The present results suggest several important considerations for marketing practice. Though prior work has demonstrated the effectiveness of promotions in reducing anticipated guilt of indulgent consumption, our results show that consumers anticipate that these guilt-reducing effects will diminish over time and that these beliefs

subsequently influence purchase intentions and actual purchase behavior. Thus, from a manager's perspective, it is important to consider how consumers will perceive the effect of a marketing intervention on the anticipated guilt associated with consumption, and to design these interventions to consider the interactive effects of price discounts and time of consumption. If a marketer intends to help alleviate the guilt of an indulgent purchase through a price promotion, they should be mindful of consumers' lay theories and limit the amount of time available for consumers to use the product. Thus, our findings can have direct implications on managers' actions in designing promotional campaigns.

Conclusion

Consumers' beliefs about the time-varying nature of the effects of price discounts on the anticipated guilt associated with indulgent consumption have an impact on their decision-making, as shorter time windows protect discounted indulgent consumption by maximizing the impact of price discounts of guilt. Marketers and consumers both should consider how these marketing tools could be used to help manage occasional guilty pleasures as well as to reduce suboptimal decisions.

Acknowledgements

The authors are grateful to Zachary G. Arens, Kelly Kiyeon Lee, Steven Shepherd, and participants in the Behavior Group and Quantitative Group Seminar Series at the University of Maryland for their feedback on earlier versions of this manuscript. We also thank Peggy H. Tseng for her help with the collection of data from LivingSocial.

Finally, we thank two anonymous reviewers and the guest editor for their insightful comments during the review process.

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Figure 1: Conceptual diagram of relationship between product types, discounts, anticipated guilt, redemption window length and purchase decisions

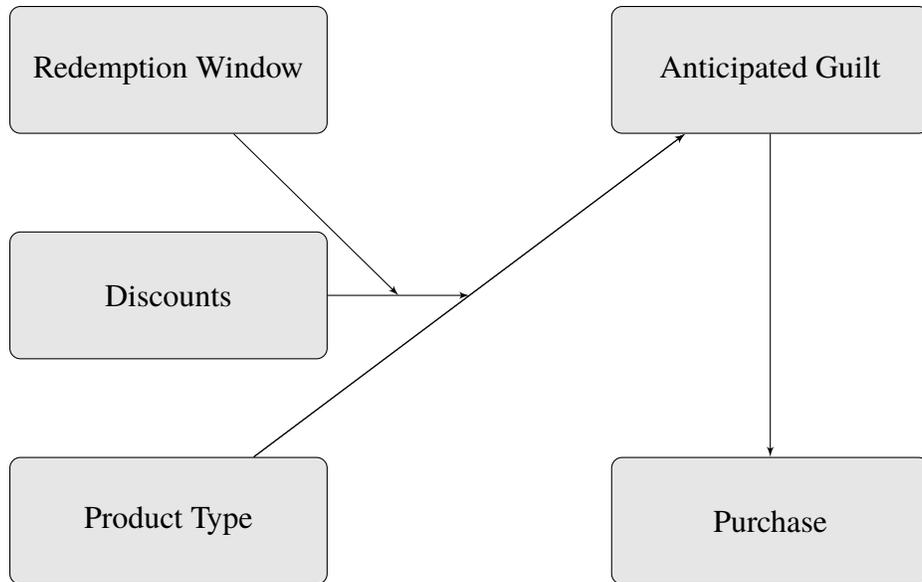
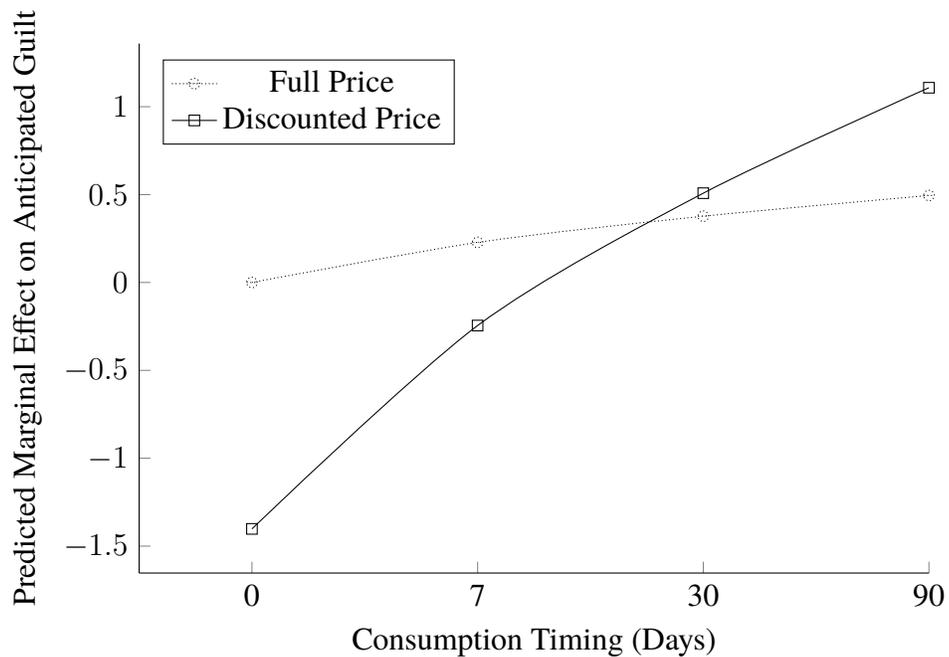


Figure 2: Anticipated guilt for indulgent products purchased at full price or discounted price (Pilot study)



The figure depicts the marginal effects of consumption timing and full or discounted pricing on anticipated guilt, accounting for individual differences in response characteristics. In the full price condition, the level of anticipated guilt was not affected by the amount of time between purchase and consumption ($b = .11, z = .74, p = .461$). In the discounted condition, anticipated guilt increased as the amount of time between purchase and consumption increased ($b = .56, z = 3.74, p < .001$).

Figure 3: Preferred redemption window length for full price and discounted offers on more and less indulgent products (Study 1)

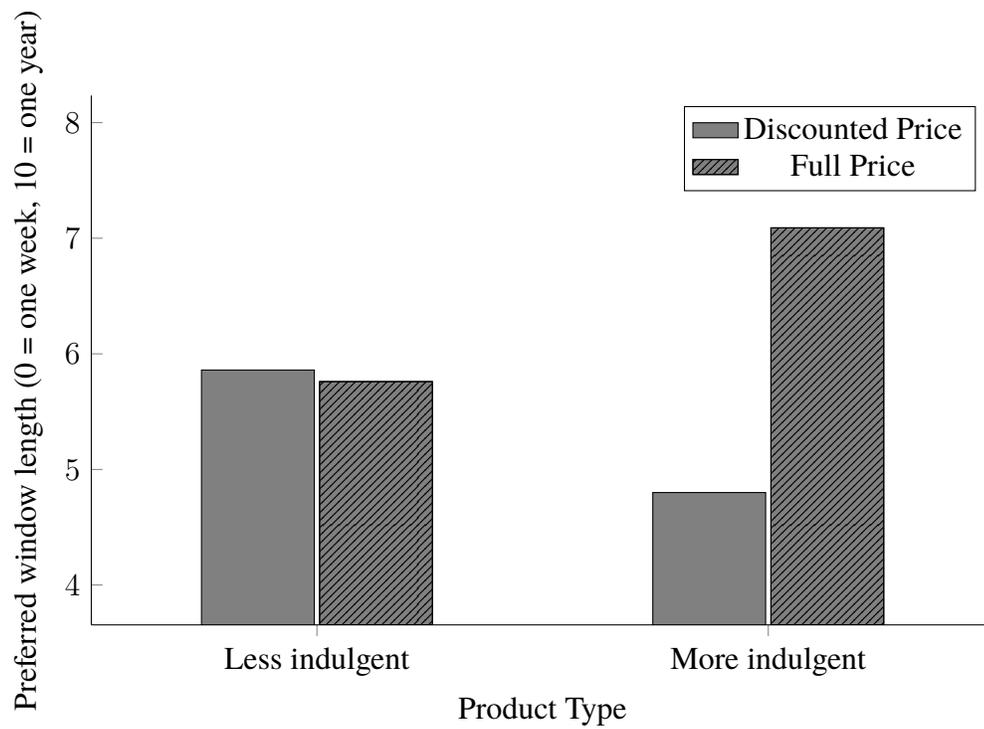


Figure 4: Purchase intention for more and less indulgent products offered with short and long redemption windows (Study 2)

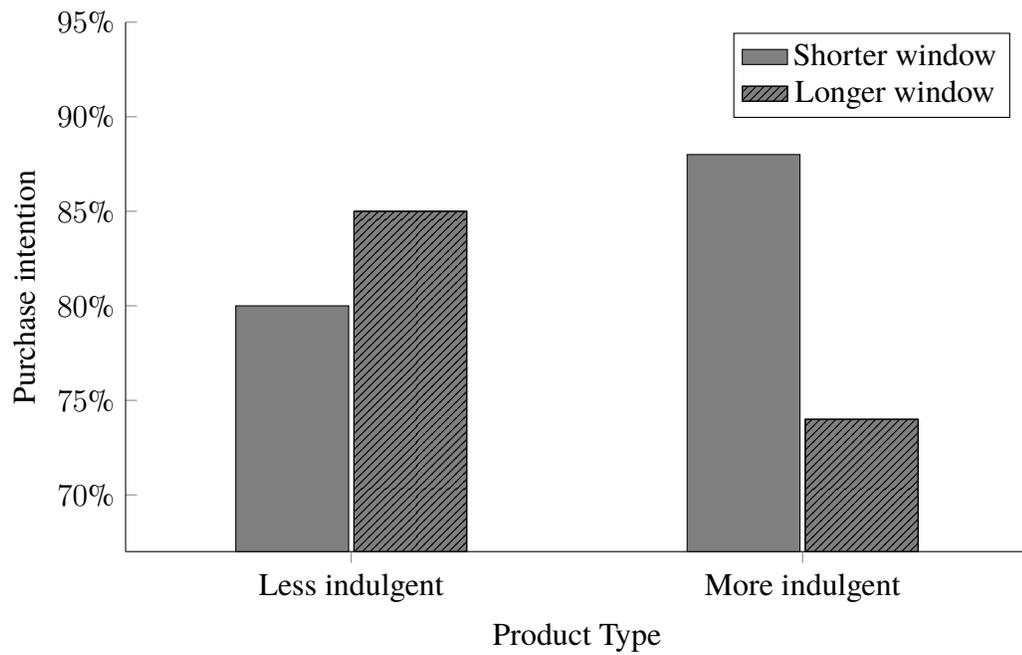


Table 1: Means and Correlations for Study 4 Measures

Variable	Mean	Std. Dev.	1	2	3	4	5	6	7	8
1. Number sold	370.909 ¹	491.301	1.000							
2. Discount (%)	0.565	0.106	-0.052*	1.000						
3. Redemption Window	233.562 ¹	92.827	0.026	0.110***	1.000					
4. Cond. Anticipated Guilt	2.889	1.082	-0.009	-0.072***	0.021	1.000				
5. Price (USD)	35.758	40.394	-0.251***	0.180***	0.125***	-0.106***	1.000			
6. Attractiveness	5.146	0.991	0.110***	0.039	0.028	-0.130***	-0.076***	1.000		
7. Utilitarian	5.004	0.894	0.009	0.088***	0.085***	-0.231***	-0.025	0.601***	1.000	
8. Hedonic	5.049	1.057	0.123***	-0.109***	-0.065**	-0.035	-0.161***	0.593***	0.433***	1.000

*** $p < .001$, ** $p < .01$, * $p < .05$.

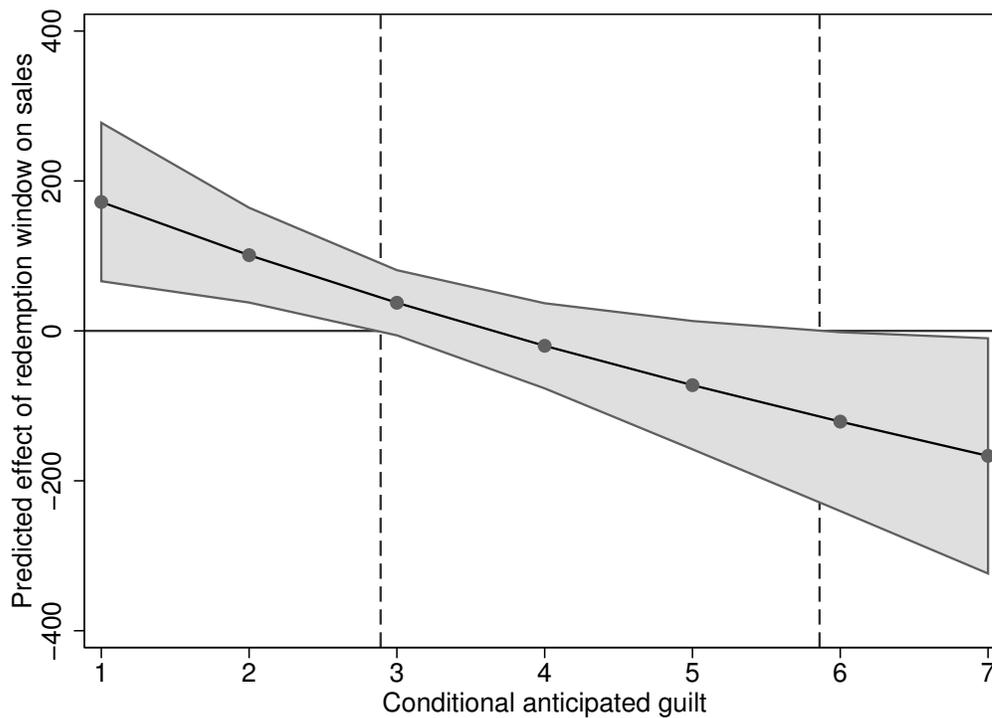
¹ Untransformed values reported here.

Table 2: Estimates of effects of discounts and redemption window length on anticipated guilt and sales (Study 4)

Dependent Variable	Guilt		Sales		Ln(Sales)	
	(1)	(2)	(3)	(4)	(5)	(6)
Discount (%)	-0.737*** (0.207)	-0.614** (0.209)		-0.082 (0.260)	0.659* (0.288)	-0.608** (0.225)
Ln(Redemption Window)			0.578*** (0.177)	0.672*** (0.179)	0.701*** (0.168)	0.432** (0.164)
Cond. Anticipated Guilt			0.806** (0.303)	0.825** (0.299)	0.863** (0.282)	0.629* (0.284)
Ln(Redemption Window) X Cond. Anticipated Guilt			-0.159** (0.056)	-0.160** (0.055)	-0.171*** (0.052)	-0.120* (0.053)
Price		0.003*** (0.001)		-0.005*** (0.001)	-0.005*** (0.001)	
Attractiveness		-0.033 (0.031)		0.134*** (0.036)	0.078* (0.036)	
Utilitarian		-0.303*** (0.030)		-0.127** (0.037)	-0.099** (0.036)	
Hedonic		0.108*** (0.026)		0.063 (0.024)	0.072* (0.035)	
Constant	3.305*** (0.120)	4.259*** (0.178)	2.943** (0.961)	2.211* (1.068)	0.372 (1.029)	3.406*** (0.882)
Indicators						
Offer Duration	N	N	N	N	Y	N
Day Of Week	N	N	N	N	Y	N
Offer Category	N	N	N	N	Y	N
N	2,385	2,385	2,385	2,385	2,385	2,385
R ²	0.005	0.076				0.006
Wald χ^2			15.202	119.253	366.712	

*** $p < .001$, ** $p < .01$, * $p < .05$. Robust standard errors in parenthesis.

Figure 5: Predicted marginal effect of redemption window length on sales by conditional anticipated guilt (Study 4)



The marginal effect represents the predicted difference between longer redemption windows (+1SD) and shorter redemption windows (-1SD). The shaded area represent the 95% confidence band of the marginal effect. The dashed vertical lines represent the Johnson-Neyman points for conditional anticipated guilt of 2.89 and 5.86. Below 2.89, there was a significant positive effect of redemption window such that longer windows were associated with increased sales. Above 5.86, there was a significant negative effect, with longer windows associated with decreased sales.