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Aylin Aydinli, Marco Bertini, & Anja Lambrecht

Price Promotion for Emotional Impact

Managers and academics often think of price promotions merely as incentives that entice consumers to accept offers that they might not have considered otherwise. Yet the prospect of paying a lower price for a product of given quality can also discourage deliberation, in a sense "dumbing down" the purchase encounter by making it less consequential. The authors examine this possibility in a dual-system theory of consumer behavior. Specifically, they argue that price promotion lowers a consumer's motivation to exert mental effort, in which case purchase decisions are guided less by extensive information processing and more by a quicker, easier, strong conditioner of preference: affect. Field data from a large daily deal company and four controlled experiments support this idea and document its implications primarily for product choice, in turn providing insight into the form and cause of brand switching that manufacturers and retailers can leverage to improve the allocation of promotional budgets and category management.

Keywords: price promotion, pricing, dual-system theories, product choice, asymmetric brand switching

Perhaps the most distinguishing feature of price promotion is its emphasis on getting consumers to take action. Managers tend to defend its use as the fastest and most reliable means to increase sales. Academics tend to explain its appeal as the clearest and most direct means to increase utility. Yet just as price promotion is an incentive to purchase, it can also be a disincentive to think.

In the current research, we formalize the intuition that price promotion can "dumb down" a purchase encounter and study its implication primarily for product choice. The starting point of our theory is the familiar notion in social psychology and some areas of marketing research that people make decisions by integrating two qualitatively distinct types of thinking: one, automatic and affect laden; the other, controlled and deliberate (Epstein 1994; Gawronski and Bodenhausen 2011; Shiv and Fedorikhin 1999; Zajonc 1980). Every product evokes a quick, effortless affective response. Deliberation can intervene on these impressions, but it is costly. In this context, price promotion can discourage deliberation (i.e., reduce processing motivation; Bless and Schwarz 1999) because it makes a potential purchase less consequential: the prospect of paying a lower price for a product of given quality necessarily lowers the stakes, inviting the consumer to economize on mental effort. If this is the case, price promotion should increase the relative impact of affective responses on purchase decisions, thereby shifting preferences toward products that are rich in affect.

In the next section, we survey the relevant literature streams and describe the theory in greater detail. We then report in separate sections the empirical work carried out in the field and laboratory. We use e-mail click-through data (Study 1) and purchase data (Study 2) from a large daily deal company to test the effect of price promotion on response time (a known proxy of processing motivation; Bless and Schwarz 1999) and purchase likelihood, respectively. The results of these analyses suggest that our explanation has footing in practice, and they motivate the use of controlled experiments to improve internal validity and examine the underlying causal process. Accordingly, Study 3 replicates the field evidence in an incentive-compatible binary choice task that recorded recall accuracy—a second proxy of processing motivation (Eagly and Chaiken 1993). Studies 4 and 5 take a moderation-of-process approach (Spencer, Zanna, and Fong 2005) to test the possible mediating role of processing motivation in the relationship between price promotion and product choice. Study 4 measures individual differences in need for cognition (NFC) as a moderator of processing motivation (Cacioppo and Petty 1982), and Study 5 manipulates cognitive activity directly following a simple priming procedure established by Pham et al. (2001). Finally, in Study 6, we move away from choice to help disentangle our theory from the plausible alternative that consumers use discounts simply to justify pleasure-oriented expenses as prudent acts of saving money (Khan and Dhar 2010; Mishra and Mishra 2011). Specifically, this experiment adopts a variant of the Becker–DeGroot–Marschak (1964) procedure to show that price promotion reduces a consumer's willingness to pay for product quantity: an instance of the scope neglect effect that is characteristic of reliance on affect (Hsee and Rottenstreich 2004) but has no conceptual ties to justification.

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In the last section, we review the empirical findings and discuss conceptual and managerial implications. From the perspective of theory, although we are not the first to point out that the typical consumer in marketing research reacts to price promotion only in calculated ways, to the best of our knowledge we are the first to present an account that treats affect as a separate and independent input in the purchase decision rather than an outcome of an otherwise cognitive process (Chandon, Wansink, and Laurent 2000). Along these lines, we also add to studies on dual-system theories by reporting an application in the domain of preference construction (much as Dhar and Gorlin [2013] advocate in their review article) and by identifying a factor salient to managers that influences the relative importance of the two mental faculties. Finally, we extend research linking price premiums to consumer thinking (Wathieu and Bertini 2007) and contribute to the debate on the form and cause of asymmetric brand-switching effects from price promotion: on the latter, we point to a source of asymmetry that is independent of whether a product has a quality or price advantage over the competition—the classic result in the literature (Blattberg and Wisniewski 1989).

From the perspective of practice, our research is useful to managers of high- and low-quality brands alike because it highlights the importance of sustaining a relative advantage (or overcoming a relative disadvantage) on the more affective dimensions of product quality. More broadly, manufacturers can refer to the implications of our findings for the allocation of promotional budgets across product portfolios, and retailers can do the same with their policies governing category management. Finally, a familiar concern of businesspeople with the use of price promotion is that it can exacerbate deal-seeking tendencies, creating consumers who are more calculated in their purchase decisions than they otherwise would be. Aware of this possibility, some managers fear that price promotion turns shopping into a dispassionate affair that dilutes the connection between brand and customer (Lodish and Mela 2007). Indeed, the finding that price promotion elevates the relative standing of affect in product choice is an encouraging sign, and one may speculate that this concern of practitioners is perhaps less founded than anticipated.

A Dual-System Perspective on Price Promotion

Background and Motivation

Recent years have witnessed a surge of interest in the possibility that affect plays a significant role across a variety of marketing phenomena (Cohen, Pham, and Andrade 2008). In particular, several articles have made the case that affect and cognition, broadly defined, can have separate and independent effects on consumers' purchase behavior. For example, the seminal work by Rook (1987) distinguishes a planned purchase, which is associated with careful evaluation, from an impulse purchase, which is associated instead with transient feelings and urges. Babin, Darden, and Griffin (1994) developed a popular scale to measure the utilitarian and hedonic dimensions of shopping events, reflecting the intuition that many buying experiences combine elements of work and fun, respectively. Bloch, Sherrell, and Ridgway (1986) emphasize the division between prepurchase search, which is driven by the functional motivation to make the right decision, and ongoing search, which is driven by the experiential motivation to derive pleasure. Finally, the classic chocolate cake and fruit salad experiments of Shiv and Fedorikhin (1999) are the precursor to many investigations, including our own, on the way affect and cognition interact to shape product choice.

Despite this clear trend, a manager seeking advice from academia on the likely effects of price promotion will quickly observe that consumers are presumed to process discounts only in an analytic manner. All but a handful of studies in the literature model purchase behavior as the outcome of some calculated search for the product that yields the highest quality per dollar spent, and price promotion is conceptualized accordingly as a means to improve the utility calculus of the consumer (Blattberg and Neslin 1990). A few accounts deviate from this convention to study a richer psychology, and yet their take on consumers is similarly cognitive in the sense that price promotion is expected to trigger inferences about a product's quality and price (Alba et al. 1999; Inman, McAlister, and Hoyer 1990; Raghubir and Corfman 1999).

We echo the sentiment voiced by some scholars that a broader interpretation of the phenomenon—in particular, one that acknowledges the importance of affect—could be insightful (Chandon, Wansink, and Laurent 2000; Heilman, Nakamoto, and Rao 2002; Naylor, Raghunathan, and Ramanathan 2006). The theory we describe herein is motivated in part by this observation, but it diverges in several respects. Most importantly, whereas other studies have examined the feelings evoked by price promotion itself, determining whether the spike in incidental affect spills over onto subjective measures of product liking and purchase intention, our interest lies in the idea that price promotion discourages deliberation and therefore increases the emphasis consumers place on their integral affective responses to products.

Conceptual Framework

Consistent with a rich body of work within and outside the field of marketing, we take the view that consumers make purchase decisions by integrating two qualitatively distinct types of thinking: one, automatic and affect laden; the other, controlled and deliberate (Dhar and Gorlin 2013; Epstein 1994; Evans and Stanovich 2013; Gawronski and Bodenhausen 2011; Shiv and Fedorikhin 1999; Zajonc 1980). By many accounts, the principal—if not only—characteristic that distinguishes these two mental faculties is the extent to which they engage working memory (Dhar and Gorlin 2013; Evans and Stanovich 2013). Affective responses make only minimal demands on working memory: they are effortless and therefore primed by default whenever a behavioral opportunity presents itself. In contrast, deliberation loads heavily on working memory: it consumes scarce processing resources and therefore tends to play a secondary, more corrective role that is activated judiciously by

factors in the environment that cue the motivation to exert mental effort (i.e., factors that stimulate processing motivation; Bless and Schwarz 1999; Evans and Stanovich 2013).

The connection between these general principles about consumer behavior and price promotion surfaces when we consider the types of factors that are likely to stimulate processing motivation. Social psychologists have long argued that processing motivation is closely linked to the desire for accuracy (Chen and Chaiken 1999; Fazio and Towles-Schwen 1999). Consumer researchers have similarly made the case that people think more deeply about a purchase when faced with the need to make a high-quality decision (Johnson and Payne 1985). For our purpose, it is important to stress that the desire for accuracy stems from the perceived cost of making a judgmental mistake. This point may seem trivial, but it implies that any influence tempering a person's perception of cost likewise tempers that person's motivation to exert mental effort, thereby limiting the impact of deliberation on the purchase decision. We argue that price promotion is one such influence.

To be sure, we are not the first to argue that pricing actions and deliberation are related. For example, there is research in marketing that associates high prices with high involvement, which in turn is known to stimulate the use of processing resources (Laurent and Kapferer 1985). There are also models and experiments demonstrating that moderate price premiums can motivate consumers to introspect on the personal relevance of new or neglected product features (Wathieu and Bertini 2007). We extend these findings to the context of price promotion—certainly one of the most popular instruments in the marketer's toolbox—and assume a broader theoretical viewpoint in the sense that we consider how deliberation interacts with affect. Price promotion discourages deliberation (reduces processing motivation) because it makes a potential purchase less consequential: the prospect of paying a lower price for a product of given quality necessarily lowers the stakes, inviting the consumer to economize on mental effort. If this is the case, price promotion should enable affect to play a greater role in decision making (Eagly and Chaiken 1993), which presumably carries a consequence for the consumer's actual choice of product. Next, we present a series of hypotheses that result from this reasoning.

Testing the Theory

Two main arguments must be tested empirically. First, we want to determine whether price promotion indeed affects processing motivation. However, the methodological problem we quickly encounter is that people understandably lack the ability to introspect about mental activity, making subjective measures of processing motivation unreliable. The literature has been explicit in recognizing this limitation and has recommended focusing on proxies such as response time (Bless and Schwarz 1999) and recall accuracy (Eagly and Chaiken 1993). We take this suggestion and examine the following hypothesis in the field in Study 1 and in the laboratory in Study 3:

H_1: Consumers facing a price promotion spend less time considering choice options and recall less product information than consumers facing a regular price.

The second argument relates price promotion to consumer choice. Here, we build on the work of several researchers who have already demonstrated that relying on affect during decision making increases the appeal of stimuli that are rich in affect (Pham et al. 2001; Shiv and Fedorikhin 1999). It is reasonable to expect a similar correspondence in our context, whereby the type of thinking consumers employ influences the type of product they ultimately choose: affect-rich products are those whose attractiveness emerges spontaneously in a purchase decision and for which consumers' choice is based on the liking or disliking that they evoke. In contrast, affect-poor products are those whose attractiveness emerges through careful reasoning and for which consumers' choice is based on the advantages and disadvantages that they convey (Rottenstreich, Sood, and Brenner 2007; Shiv and Fedorikhin 1999). With this reasoning in mind, we state our second hypothesis:

H_2: Consumers facing a price promotion are more likely to choose a product that is superior in affect to its alternatives than consumers facing a regular price.

We examine H_2 in the field in Study 2 and in the laboratory in Study 3. Moreover, note that H_1 and H_2 are linked in the sense that processing motivation is expected to mediate the relationship between price promotion and product choice. We want to confirm this prediction, and yet because processing motivation is measured indirectly through proxies, the standard statistical analysis of mediation is less meaningful (Spencer, Zanna, and Fong 2005). When a presumed intervening variable is difficult to measure but relatively easy to manipulate, as is the case with processing motivation, the literature has recommended testing a causal sequence by controlling factors that are conceptually related to the mediator—an approach called moderation of process (Spencer, Zanna, and Fong 2005). There are at least two factors that serve this purpose.

First, we can determine whether the relationship between price promotion and product choice is sensitive to individual differences in the appeal of cognitive work. Prior research has already established that NFC (Cacioppo and Petty 1982) is a strong influence on people's motivation to exert mental effort (Haugtvedt, Petty, and Cacioppo 1992; Petty et al. 1993). Similarly, if the effect predicted in H_2 is mediated by processing motivation, NFC should play a moderating role such that low-NFC consumers—those who avoid cognitive work and are likely to welcome cues in the environment to limit mental effort—exhibit a stronger shift in preference toward affect-rich products as a consequence of a price promotion than high-NFC consumers—those who embrace cognitive work and are likely to resist such cues. Second, we can determine whether the same relationship is sensitive to a priming procedure developed by Pham et al. (2001) and used elsewhere in marketing research (Shampanier, Mazar, and Ariely 2007) to induce processing motivation. The procedure simply asks people to apply reason and logic to a task. Accordingly, if the effect predicted in H_2 is mediated by processing motivation, consumers who are

prompted to deliberate should rely less on affective responses when forming their preferences and therefore exhibit a weaker shift toward affect-rich products as a consequence of a price promotion than consumers who receive no such instruction. To formalize these predictions, we test the following two-part hypothesis in the laboratory in Studies 4 and 5:

H_3: The effect of price promotion on product choice predicted in H_2 is (a) stronger for low-NFC consumers than high-NFC consumers and (b) mitigated when cognitive activity is induced.

Justification as an Alternative Explanation for H_1 and H_2

A familiar characteristic of consumers is that they often justify their decisions (Shafir, Simonson, and Tversky 1993). This motivation is apparent when products differ in affective content because hedonic consumption (i.e., consumption motivated by sensual pleasure and fun rather than a functional need) is associated with a sense of guilt that makes the choice of affect-rich options relatively difficult to rationalize (Kivetz and Simonson 2002; Okada 2005). By the same token, however, affect-rich options are also more likely to gain from the introduction of a benefit that mitigates feelings of guilt and therefore makes the purchase seem more appropriate (Khan and Dhar 2006; Kivetz and Simonson 2002). Indeed, two articles have argued the guilt-reducing effect of price discounts in the context of cross-category bundles mixing affect-rich and affect-poor components (Khan and Dhar 2010) and compared with quantity-based incentives such as bonus packs (Mishra and Mishra 2011).

We stress this point because justification could be an alternative explanation for the effect we predict in H_2: consumers use price promotion to justify pleasure-oriented expenses as prudent acts of saving money. In fact, although several researchers have argued that justification is effortful and deliberate (Dhar and Gorlin 2013; Kivetz and Zheng 2006), others have made the opposite claim (Sela and Berger 2012) and therefore raise the possibility of an overlap also with respect to H_1. Accordingly, the approach we take empirically is not to dismiss the relevance of justification in our research setting, which seems inappropriate given its tradition in consumer behavior in general, but instead to provide evidence that our theory is independent and has merit in comparison. We do so in two ways.

First, note that response time and recall accuracy play different roles in the two accounts. They are indirect measures of a process in our context but direct measures of an outcome in the possible case of justification: the presence of a benefit that mitigates feelings of guilt simplifies the consumer's purchase decision, which results in faster responses and inferior recall. For this reason, the psychology of justification makes no prediction as to why manipulating processing motivation affects the relationship between price promotion and product choice (H_3).

Second, we follow the lead of other scholars (Pham and Avnet 2009) and consider an outcome other than choice that the literature has associated with reliance on affect but that has no conceptual tie to justification. Specifically, research has shown that reliance on affect changes the relationship between numerical magnitude and judgments of subjective worth: compared with careful deliberation, affective responses yield valuations that are equally or more sensitive to the presence of a stimulus but less sensitive to further changes in magnitude—a phenomenon known as scope neglect (Hsee and Rottenstreich 2004). Similarly, in Study 6 we contrast willingness to pay (the judgment of subjective worth) across different product quantities (the numerical magnitude) in the presence or absence of a price promotion, with the expectation that valuations will be less sensitive to scope in the former instance. The psychology of justification is silent on affective responses and therefore unrelated to our final hypothesis:

H_4: As quantity increases, consumers facing a price promotion are willing to pay progressively less per unit of the product than consumers facing a regular price.

Evidence from the Field

This section reports two studies of field data from the daily deal industry. The objective was to test H_1 and H_2. Daily deal companies, which include popular firms such as Groupon and LivingSocial, aggregate products and services from different merchants and sell them as deals online for a limited time at substantially reduced prices. Daily deal companies advertise deals on their respective websites and in daily e-mails to registered consumers. Consumers purchase deals in the form of vouchers that can be redeemed at a later date with the corresponding merchants.

There are several aspects of the industry that make it an appropriate field setting to test our theory. First, it is evident that consumers are confronted with price discounts rather than simple price changes. This point matters because field data often do not allow the researcher to identify these two common pricing decisions separately. Second, consumers are exposed to a large number of products that vary considerably in regular price, discount value, and affective content. Third, deals are clearly salient to consumers: people browse e-mails and visit websites because of the opportunity to save money. Fourth, the daily deal industry attracts a large number of consumers. For example, in a press release, Groupon reported that as of June 30, 2013, 42.64 million customers purchased a deal within the preceding 12 months (www.groupon.com). Fifth, and perhaps most importantly, we can accurately measure a consumer's real-life response to price promotion. It is not trivial to accurately measure the time consumers spend making purchase decisions or consumers' actual choices. Yet daily deal companies collect detailed information on purchases at the individual level and, if they have implemented the appropriate online tracking system, record the time elapsed between the opening of an e-mail with deal advertisements and any eventual click on a specific deal (i.e., the time-to-click). These features imply that we can identify the effect of price promotion on response time (H_1) and product choice (H_2).

Study 1: Time-to-Click

Data. We obtained data on e-mail click-through behavior from a large daily deal company. These data enable us to

test in the field the prediction that price promotion speeds up a consumer's purchase decision, measured in terms of time-to-click (H_1). For the company in question, self-reports indicate that 54% of registered consumers are female, with age ranging from 18 to 77 years. Demographic information is only available for a subset of consumers; therefore, we do not use these data in our analysis. A nondisclosure agreement prevents us from revealing the name of the company, the country where it is located, or the national currency. We converted all monetary values into U.S. dollars for ease of exposition.

The e-mail click-through data span a period of 15 days (beginning on November 1, 2012) and combine three separate sources of information. First, we obtained characteristics of all the deals advertised by the company in its e-mails to registered consumers in the main city where it operates. This geographic location accounts for 88.24% of all purchases. The deal characteristics include regular price (what the consumer would normally pay), selling price (what the consumer is asked to pay), and discount value (in monetary terms). We also observe six of the seven main categories (activities, beauty and wellness, events, lessons/classes, restaurants/bars, and services) and 24 of the 78 subcategories (e.g., spa/massage, hair removal, bowling, theater) that the company uses to classify its deals, as well as the position of deals within e-mails—that is, whether a particular deal was placed at the top of the e-mail, at the bottom, or somewhere in between (e-mails featured an average of 23 deals). In total, 61 deals were first advertised during the observation period. Table 1 provides summary statistics: the average regular price of these deals is $81.17 (ranging from $9.00 to $787.50), the average selling price is $18.56, and the average discount value is $62.61 (ranging from $4.10 to $765.95, for an average discount percentage of 57.54%).

Second, for the 20,505 consumers who clicked on any deal advertised in any e-mail during the observation period, we obtained the time stamp of e-mail opening, the time stamp of click, and the deal they clicked on: 77.96% of consumers clicked on a deal in one e-mail, with the remaining 22.04% having clicked on a deal in an average of 2.50 e-mails. In total, our data include 27,299 clicks in e-mails.

Third, we recruited 179 respondents from Amazon.com's Mechanical Turk (MTurk) at the standard pay rate to judge the 78 subcategories of deals on the extent to which each provides pleasure and fun (1 = "very little pleasure and fun," and 7 = "a lot of pleasure and fun") and practical benefits (1 = "very little practical benefits," and 7 = "a lot of practical benefits") (Sela, Berger, and Liu 2009). These scales capture the affective and cognitive content of a stimulus, respectively. Each respondent rated 13 subcategories selected at random. We then computed a subcategory's net affective content, which we label "net hedonism," by subtracting the mean of its "practical benefits" ratings from the mean of its "pleasure and fun" ratings—a practice that is common in the literature (Dhar and Wertenbroch 2000; Okada 2005). For the 24 subcategories in our data, we find an average net hedonism score of 1.23, but there is great variation among subcategories, with bakery goods at the top (a score of 3.43) and nutritional consultation services at the bottom (a score of –3.23) of the range.

We used the deal, e-mail, and net hedonism information to create a data set that records, for every consumer who clicked on any deal in any e-mail during the observation period, what deal was clicked on and in which e-mail, time-to-click, deal characteristics (including net hedonism), display order (the position of the deal within the e-mail), and average selling price and discount value of all other deals advertised in the same e-mail. On average, it took consumers 101.69 seconds to click on a deal after opening an e-mail. We find that 50% of consumers clicked on a deal within one minute and 95% clicked within 222 seconds (3.70 minutes) of opening the e-mail. The maximum time we observe between e-mail opening and click-through is 59.83 minutes. Our main analysis excludes the top 5% of the longest times-to-click because such high values are likely the result of consumers engaging in unrelated activities rather than prolonged deliberation. In a robustness check, we excluded only the top 1% to count all times-to-click up to 24.53 minutes.

Results. H_1 predicts that consumers facing a price promotion spend less time considering choice options than consumers facing a regular price. Accordingly, in the e-mail click-through data, a larger discount should increase the likelihood of clicking on a deal in any instance after an e-mail is opened—a positive effect of discount value.[1] In other words, we expect that deepening a price promotion reduces the time elapsed between opening the e-mail and clicking on a deal.

We use a Cox proportional hazard model to measure the effect of discount value on time-to-click (Lambrecht and Tucker 2013; Seetharaman and Chintagunta 2003). In a Cox proportional hazard model, the baseline hazard, $h_0(t)$, cap-

[1]Note that the company advertises both the discount value and discount percentage of its deals. However, research has suggested that consumers find it easier to process the former (DelVecchio, Krishnan, and Smith 2007), and this effect may be more pronounced in the context of daily deals because consumers encounter many offers at any given time. As a result, our analysis focuses on discount value.

TABLE 1
Study 1: Summary Statistics

Variable	Observations	M	SD	Min	Max
Regular price	61	$81.17	$135.00	$9.00	$787.50
Selling price	61	$18.56	$13.32	$4.46	$62.55
Discount percentage	61	57.54	15.87	40.00	98.00
Discount value	61	$62.61	$129.51	$4.10	$765.95
Net hedonism	61	1.23	1.68	–3.23	3.43

tures the effect of the time elapsed since a consumer opened the e-mail on the likelihood of clicking on any deal in any instance. If H_1 holds, the likelihood of clicking on any deal in any instance after the e-mail is opened should increase in the discount value of the deal, which implies a shorter time span between e-mail opening and click-through. The vector of covariates, X_{jk}, captures the effect of the different covariates, including discount value, on the likelihood to click. Therefore, the hazard rate for any consumer's decision when to click on deal j in e-mail k, $h_{jk}(t, X)$, is

$$h_{jk}(t, X) = h_0(t) \times \exp(X_{jk}\beta). \quad (1)$$

We specify the vector of covariates when clicking on deal j in e-mail k as

$$\begin{aligned}\exp(X_{jk}\beta) = \exp(&\beta_1 \text{DiscountValue}_j + \beta_2 \text{SellPrice}_j \\ &+ \beta_3 \text{NetHedonism}_j + \beta_4 \text{DisplayOrder}_{jk} \\ &+ \beta_5 \text{AvgPriceAll}_k + \beta_6 \text{AvgDiscountAll}_k \\ &+ \beta_7 \text{FrequencyE-mail}_{jk} + \beta_8 \text{MainCategory}_j \\ &+ \beta_9 \text{DayofWeek}_k).\end{aligned} \quad (2)$$

Here, β_1 measures the effect of the discount value (of the deal a consumer clicked on) on the time it took the consumer to click through. In addition, β_2 controls for the effect of the selling price, β_3 controls for the effect of the level of net hedonism of the deal the consumer clicked on, β_4 controls for the effect of the position in which the deal was displayed in the e-mail, β_5 controls for the effect of the average price of all deals advertised in the same e-mail, β_6 controls for the effect of the average discount value of all deals, and β_7 controls for the effect of how often the deal was advertised in previous e-mails on the likelihood to click in any instance. Finally, we include as controls dummies for the main category of the deal and the day of week the e-mail was sent, the effects of which are captured by the vectors of coefficients β_8 and β_9, respectively.

Table 2 contains the main results. Columns 1 and 2 display results when discount value, the variable of interest, is either omitted from or included in the analysis, respectively. A likelihood ratio test shows that considering discount value improves model fit significantly ($p = .022$). The specification displayed in Column 2 shows that, at any point, larger discount values increased the probability of clicking on a deal ($p = .021$). That is, consumers were quicker to click on deals as their discount value increased, which is consistent with H_1.

In Table 2, Column 3, we display the full specification, in which we further control for the average price and average discount value of other deals in the same e-mail as well as how often the deal was previously advertised. Again, the results support H_1. The results also hold in Columns 4 and 5, where we use the Weibull and exponential distributions, respectively, to model the baseline hazard. Finally, in Column 6 we omit only the top 1% of longest times-to-click. The results continue to support H_1.

Study 2: Purchase Likelihood

Data. We obtained detailed purchase data from the same daily deal company reported in Study 1. These data span a period of 12 months beginning May 2010 and combine three separate sources of information.[2] The goal is to test in the field the prediction that price promotion shifts preferences toward products that are relatively rich in affect (H_2).

First, we obtained characteristics of all the deals published on the company's website in the main city where it operates. Similar to Study 1, the deal characteristics include regular price, selling price, discount value, main category (the same six categories in the e-mail click-through data plus travel), and subcategory (the full set of 78 in this instance). Furthermore, these data include a deal's selling period (the number of days a deal is on offer), redemption period (the number of days during which a voucher can be used), and type (whether a deal was ever displayed as a main deal in the center of the website or only as a side deal in the sidebar of the website). Table 3 provides summary statistics: we have information on 647 deals, with an average regular price of $65.69, average discount percentage of 55.70%, and average discount value of $42.89. On average, a deal was on offer for 2.50 days, and the redemption period was 81.67 days. Approximately 67% of the deals in our data were main deals.

Second, we obtained a record of all individual-level purchases that occurred during the 12-month period. This level of granularity is critical because it enables us to test H_2. The data include 172,950 purchases from 85,060 consumers. In total, 58.88% of consumers bought a single deal, with the remainder buying an average of 3.51 deals. Note that the company did not keep records on the broad mailing list, which also includes consumers who did not purchase. Our results, therefore, pertain to the universe of consumers who bought one or more deals from the company during the observation period.

Third, we have the net hedonism scores from the MTurk task described in Study 1. For the 78 subcategories now in our data, we find an average net hedonism score of 1.25. Again, there is a great variation among subcategories, with helicopter tours at the top (3.97) and automotive services at the bottom (–5.00) of the range.

We used the deal, purchase, and net hedonism information to construct a panel that records, for every consumer, whether he or she purchased any of the available deals. Because we do not know when a consumer actually began to consider buying one of the deals the company offered, we assume that a consumer is an active customer from the day of the first purchase with the company and thereafter decides for each available deal whether to make a purchase (Reinartz and Kumar 2000). This means that we do not estimate any choice decision before a consumer's first purchase. In line with company policy, we consider a consumer inactive after not having purchased a deal for three consecutive months; that is, we do not estimate any choice decisions after this period. However, given that our three-month cutoff may not be an accurate representation of reality, we

[2]The time periods for the purchase and e-mail click-through data are different because the company did not keep records of e-mails sent to registered consumers in 2010 or 2011. In addition, the company first shared the purchase data used here in Study 2 and then shared the e-mail click-through data used in Study 1.

TABLE 2
Study 1: Analyses of E-Mail Click-Through Behavior

	1 Cox Hazard: Base		2 Cox Hazard		3 Cox Hazard		4 Weibull		5 Exponential		6 Cox Hazard, 99% Cutoff	
	Coefficient	**SD**	**Coefficient**	**SD**	**Coefficient**	**SD**	**Coefficient**	**SD**	**Coefficient**	**SD**	**Coefficient**	**SD**
Discount value			8.3E–05**	3.6E–05	8.1E–05**	3.6E–05	8.0E–05**	4.1E–05	4.0E–05**	2.0E–05	8.3E–05**	3.5E–05
Selling price	4.56E–04	2.90E–04	2.9E–04	2.9E–04	3.5E–04	2.9E–04	3.5E–04	3.3E–04	2.9E–04*	1.6E–04	3.3E–04	2.9E–04
Net hedonism	6.75E–03	4.80E–03	.016***	.006	.020***	.006	.021***	.007	.012***	.004	.016***	.006
Display order	–.045***	.001	–.045***	.001	–.040***	.001	–.040***	.002	–.025***	.001	–.035***	.001
Average price: all					–.004***	.001	–.005**	.002	–.002**	.001	–.003***	.001
Average discount: all					3.7E–06	1.1E–04	-5.9E–06	1.3E–04	1.3E–05	6.2E–05	1.0E–04	1.1E–04
Frequency in e-mail so far					–.018***	.004	–.018***	.004	–.010***	.002	–.015***	.003
Constant							–7.504***	.132	–3.950***	.062		
ln_p							.614***	.006				
Main category controls	Yes		Yes		Yes		Yes		Yes		Yes	
Day of week controls	Yes		Yes		Yes		Yes		Yes		Yes	
N	25,938		25,938		25,938		25,938		25,938		27,027	
Log-likelihood	–236,841.9		–236,839.3		–236,825.7		–23,830.4		–30,276.7		–248,100.9	

*$p < .10$.
**$p < .05$.
***$p < .01$.
Notes: Robust standard errors. Dependent variable is time-to-click. On days 13–15 of the data, the firm experimented with changing the timing and recipients of their e-mails, so all models include additional controls to capture potential effects on click-through behavior.

TABLE 3
Study 2: Summary Statistics

Variable	Observations	M	SD	Min	Max
Regular price	647	$65.69	$120.19	$2.25	$1,912.50
Selling price	647	$22.90	$24.00	$.90	$247.50
Discount percentage	647	55.70	9.70	35.00	99.00
Discount value	647	$42.89	$107.81	$1.35	$1,893.38
Net hedonism	647	1.25	1.74	–5.00	3.97
Redemption period (days)	647	81.67	39.16	.00	212.00
Selling period (days)	647	2.50	3.17	.00	56.00
Deal type	647	.67	.47	.00	1.00

Notes: A redemption period of 0 means a deal had to be redeemed on a specific day and time (e.g., for a concert). Deals with a selling period of 0 were available to purchase for less than a day.

check the robustness of our results to one- and two-month cutoff periods as well.[3]

Results. H_2 predicts that consumers facing a price promotion are more likely to choose a product that is superior in affect to its alternatives than consumers facing a regular price. Accordingly, in the purchase data, a larger discount should have a larger positive impact on the probability of purchasing deals for products that are rich in affect than deals for products that are poor in affect—a positive interaction between discount value and net hedonism. Empirically, we estimate whether a consumer i purchased a deal j with the following equation:

$$\begin{aligned}(3)\ \text{Purchase}_{ij} = {} & \alpha + \beta_1\text{DiscountValue}_j + \beta_2\text{NetHedonism}_j \\ & + \beta_3\text{DiscountValue}_j \times \text{NetHedonism}_j + \beta_4\text{SellPrice}_j \\ & + \beta_5\text{RedPeriod}_j + \beta_6\text{SellPeriod}_j + \beta_7\text{DealType}_j \\ & + \beta_8\text{MainCategory}_j + \beta_9\text{DayofWeek}_j + \beta_{10}\text{Month}_j \\ & + \varepsilon_i.\end{aligned}$$

Here, β_1 and β_2 measure the effect of the discount value and net hedonism, respectively, of deal j on purchase. β_3 captures the interaction between these two variables. β_4–β_7 account for the effect of additional controls: selling price, redemption period, selling period, and type of deal, respectively. Finally, β_8–β_{10} are vectors of coefficients that control for the effect of the main category of a deal and day of week and month a deal was first offered.

Note that Equation 3 refers to a linear probability model. Next, we report the results of the corresponding logit model as well as the linear probability model. In addition, our data include customers who made a single transaction as well as customers with multiple transactions. To properly identify the effect predicted in H_2, we initially focus on customers with a single purchase occasion. Subsequently, in a fixed-effects model, we confirm that the results hold for customers with multiple purchase occasions.

Column 1 of Table 4 reports the results of the logit specification for customers with a single purchase occasion, estimating whether a customer purchased a deal but excluding discount value and net hedonism—the variables of interest. We compare the fit of this model with the model presented in Column 2, which adds both variables: a likelihood ratio test confirms that their inclusion improves model fit significantly ($p < .001$).

Due to the difficulty in interpreting interaction effects in logit specifications (Ai and Norton 2003), we focus our discussion on the results of the linear probability model displayed in Column 3.[4] In support of H_2, we find the expected positive two-way interaction between discount value and net hedonism ($p < .001$). That is, in the data, a discount is more effective at increasing the purchase likelihood of products with greater levels of net hedonism. The analysis further shows that, unsurprisingly, customers were more likely to purchase deals with a lower selling price and a higher discount value—controlling for selling period, redemption period, type of deal, and net hedonism. Note that all specifications control for main category and include day-of-week and month controls for the day and month the deal was first offered, respectively.

Columns 4, 5, and 6 confirm that the results hold for customers with multiple purchase occasions during the observation period. These models are estimated with consumer-level fixed effects. Column 4 reports a base model that excludes the variables of interest. A likelihood ratio test shows that model fit improves in Column 5, where we add discount value and net hedonism ($p < .001$). Column 6 reports the results of a linear probability model. Again, we find the positive interaction between discount value and net hedonism that supports H_2.

To test the robustness of our results to the three-month inactivity cutoff, we include in Table 5 a set of results in which we assume that a customer is inactive after he or she has not purchased a deal for two consecutive months. The results are robust. In unreported results, we likewise used a cutoff of one month and again find that the results hold.

Discussion

Studies 1 and 2 provide field evidence that consumers facing a price promotion spend less time considering choice options (H_1) and are more likely to choose products rich in affect (H_2) than are consumers facing a regular price. Note that researchers studying consumer choice from the perspective of justification have demonstrated a result similar

[3]Indeed, it may also be that consumers are not always aware of all the deals available at any point in time. Although we acknowledge this limitation, our data unfortunately do not enable us to model this contingency.

[4]We also checked the interpretation of the logit results using a simulation-based approach, as suggested by King, Tomz, and Wittenberg (2000) and Zelner (2009). The results hold.

TABLE 4
Study 2: Analyses of Purchase Behavior

	Consumers with a Single Purchase Occasion						Consumers with Multiple Purchase Occasions					
	1 Logit: Base Model		2 Logit		3 Linear Probability		4 Logit (Fixed-Effects): Base Model		5 Logit (Fixed Effects)		6 Linear Probability (Fixed Effects)	
	Coefficient	SD	Coefficient	SD	Coefficient	SD	Coefficient	SD	Coefficient	SD	Coefficient	SD
Discount value			.0015*	.0000	7.3E–06*	2.4E–07			.0013*	.0000	9.0E–06*	3.1E–07
Net hedonism			–.1367*	.0046	–.0005*	.0000			–.0534*	.0028	–.0007*	.0000
Discount value × Net hedonism			.0005*	.0000	1.3E–06*	9.7E–08			.0005*	.0000	2.3E–06*	1.3E–07
Selling price	–.0083*	.0002	–.0125*	.0003	–3.1E–05*	7.3E–07	–.0117*	.0001	–.0157*	.0002	–5.9E–05*	9.9E–07
Redemption period	.0092*	.0002	.0084*	.0002	6.4E–05*	8.8E–07	.0087*	.0001	.0081*	.0001	.0001*	.0000
Selling period	–.0050*	.0012	–.0051*	.0012	–1.9E–05*	5.8E–06	.0155*	.0005	.0152*	.0005	.0003*	.0000
Deal type	1.1507*	.0154	1.1032*	.0155	.0041*	.0001	1.2171*	.0095	1.1989*	.0095	.0091*	.0001
Constant	–2.3484*	.1070	–1.6900*	.1088	.2101*	.0029					.2801*	.0028
Day-of-week controls	Yes		Yes		Yes		Yes		Yes		Yes	
Main category controls	Yes		Yes		Yes		Yes		Yes		Yes	
Month controls	Yes		Yes		Yes		Yes		Yes		Yes	
N	8,353,937		8,353,937		8,652,989		11,100,000		11,101,813		11,101,813	
Log-likelihood	–233,490		–232,215				–512,179		–511,057			

*$p < .01$.

TABLE 5
Study 2: Purchase Behavior with Two-Month Cut-Off for Inactivity

	Consumers with a Single Purchase Occasion				Consumers with Multiple Purchase Occasions			
	1 Logit		2 Linear Probability		3 Logit (Fixed Effects)		4 Linear Probability (Fixed Effects)	
	Coefficient	SD	Coefficient	SD	Coefficient	SD	Coefficient	SD
Discount value	.0015*	.0000	1.0E–05*	3.3E–07	.0013*	.0000	1.1E–05*	3.8E–07
Net hedonism	–.1394*	.0046	–.0007*	.0000	–.0546*	.0028	–.0008*	.0000
Discount value × Net hedonism	.0005*	.0000	2.0E–06*	1.3E–07	.0005*	.0000	2.9E–06*	1.5E–07
Selling price	–.0125*	.0003	–4.1E–05*	1.0E–06	–.0157*	.0002	–7.0E–05*	1.2E–06
Redemption period	.0084*	.0002	8.6E–05*	1.2E–06	.0079*	.0001	.0001*	.0000
Selling period	–.0050*	.0012	–3.1E–05*	7.9E–06	.0157*	.0005	.0004*	.0000
Deal type	1.0975*	.0155	.0056*	.0001	1.1977*	.0095	.0111*	.0001
Constant	–1.6808*	.1088	.2098*	.0034			.2842*	.0031
Day of week controls	Yes		Yes		Yes		Yes	
Main category controls	Yes		Yes		Yes		Yes	
Month controls	Yes		Yes		Yes		Yes	
N	6,197,957		6,296,603		9,091,686		9,092,075	
Log-likelihood	–221,967				–501,376			

*$p < .01$.

to the one predicted in H_2 (Khan and Dhar 2010; Mishra and Mishra 2011), but such findings are confined to the laboratory. More broadly, Studies 1 and 2 in combination illustrate how researchers studying behavioral phenomena can use fine-grained field data available in digital environments to add external validity to findings related to consumer decision processes and their outcomes.

Evidence from the Laboratory

This section reports four controlled experiments conducted with three objectives in mind. First, we wanted to improve the internal validity of the field evidence supporting H_1 and H_2. We do so primarily in Study 3, in which the focus shifted from response time to recall accuracy as an alternative proxy of processing motivation (Eagly and Chaiken 1993) and participants faced a binary choice task. Second, we wanted to provide evidence of the links between price promotion, processing motivation, and product choice. To that end, Studies 4 and 5 controlled two factors expected to moderate processing motivation—the first, dispositional (NFC), the second, situational (decision process)—with the goal of showing that the effect of price promotion on choice predicted in H_2 is contingent on the level of these factors. Thus, Studies 4 and 5 test H_3. Third, we wanted to strengthen the argument that our theory holds independent of the justification account. We did this in Study 6 by testing the impact of price promotion on the evaluation of product quantity, with the expectation of replicating the scope neglect effect that is characteristic of reliance on affect but, as we argue, has no conceptual tie to justification (H_4).

Study 3: Recall Accuracy and Binary Choice

Participants. Participants (n = 79) were registered members of a subject pool managed by a business school in the United Kingdom. At the time of the experiment, this subject pool had 5,098 active members, of which 62% were female and 81% were completing undergraduate education. The median age was 24 years old. Participants were assigned at random to the experimental conditions and informed that the research examined the role of product information on choice, that there were no right or wrong answers to the questions, and that they should rely exclusively on their preferences when responding. Participation was voluntary, compensated by the customary £10 payment plus an additional £2, paid up front, to motivate transactions. The experiment was grouped with several unrelated tasks to fill a one-hour laboratory session.

Design and procedure. The experiment manipulated one between-subjects factor, price, across two levels: regular price or price promotion. After arriving at the laboratory, participants were directed to one of two rooms and asked to approach a table displaying a Snickers candy bar and a Nature Valley granola bar, each flanked by a price tag and fact sheet listing ingredients and nutritional information. Both snacks were priced at £.80 in the regular price condition (the market price) or £.40 in the price promotion condition. Note that the promotional offer was clearly labeled with a "50% off" caption. The fact sheets provided a general description of the products with details about country of origin, manufacturer, ingredients, possible allergies, serving size, calories, total fat content, and saturated fat content. Participants were instructed to examine the snacks as well as the accompanying information. They were allowed as much time as they needed to do this, and the experimenter removed the fact sheets when permitted.

Pretest. A pretest (n = 10) confirmed that participants perceived the Snickers candy bar to be more hedonic (M_S = 5.80 vs. M_{NV} = 4.00; t(9) = 3.52, p = .007; 1 = "not at all

hedonic," and 7 = "extremely hedonic") and less utilitarian (M_S = 2.00 vs. M_{NV} = 4.20; t(9) = –6.74, $p < .001$; 1 = "not at all utilitarian," and 7 = "extremely utilitarian") than the Nature Valley granola bar. In the literature, these scales gauge the affective and cognitive content of stimuli, respectively (Okada 2005).

Measures. Participants' first task was to purchase one of the snacks. Next, they received versions of the fact sheets with missing entries for country of origin, possible allergies, calories, and total fat content. They were asked to remember these data (four entries for each snack, eight entries in total). They were also asked to remember the magnitude of the price promotion. Four participants failed this manipulation check, and we excluded their data from further analysis. Finally, participants answered the questions "How much do you normally like eating Snickers candy bars/Nature Valley granola bars?" (1 = "not at all," and 7 = "very much").

Results and discussion. H_1 predicts that consumers facing a price promotion recall less product information than consumers facing a regular price. Importantly, we use recall accuracy to gauge processing motivation, as suggested by Eagly and Chaiken (1993). Consistent with H_1, participants presented with the £.40 promotional offer remembered fewer missing entries (M = 2.62) than participants presented with the regular £.80 price (M = 3.50; F(1, 73) = 5.33, p = .024). Furthermore, separate analyses of variance (ANOVAs) with recall accuracy as the dependent measure, price as a between-subjects factor, and snack type as a repeated measure or snack choice as a second between-subjects factor show no significant interactions (p = .711 and p = .496, respectively), suggesting that the drop in recall was homogeneous across alternatives and was not driven by the participants' preferences.

H_2 predicts that consumers facing a price promotion are more likely to choose a product that is superior in affect to its alternatives than consumers facing a regular price. The result of a binary logistic regression of snack choice on price is consistent with this statement: the promotional offer had a significant positive impact on the purchase of the hedonic (affect-rich) Snickers bar (Wald $\chi^2(1) = 5.41$, p = .020), with its choice share rising from 44.73% in the regular price condition to 54.05% in the price promotion condition. Note that this regression includes the responses to the brand liking questions to control for existing brand preferences (Inman, McAlister, and Hoyer 1990; Shiv and Fedorikhin 1999).

In summary, Study 3 replicates the results obtained in the field with respect to H_1 and H_2. The goal of the next study was to test the causal sequence linking price promotion, processing motivation, and product choice. Specifically, we determined whether the relationship between price promotion and product choice is sensitive to individual differences in the appeal of cognitive work, a dispositional factor known to affect processing motivation. This is the first prediction presented in H_3.

Study 4: Individual Differences in Processing Motivation

Participants. The sample comprised 92 graduate students enrolled in a Master of Business Administration program at a business school in the United Kingdom. At the time of the experiment, the average age of participants was 34 years. Participants were not compensated for their time.

Design and procedure. The stimulus described the possible purchase of a week-long vacation in Jimbaran Bay (Bali, Indonesia) from a travel agent. Participants considered a choice between two similarly priced rooms at competing resorts. To assist this decision, we provided a table describing Room A and Room B on four attributes: distance to beach, size, view, and interior design. We expected distance and size to be predominantly utilitarian, whereas we expected view and interior design to be predominantly hedonic. The specifications of these attributes were such that Room A dominated Room B on distance and size, but Room B dominated Room A on view and interior design. Therefore, we wanted participants to view Room B as the affect-rich option in the pair. The experiment manipulated one between-subjects factor, price, across two levels: regular price or price promotion. Participants in the first condition proceeded directly to the measures. Participants in the second condition read that the travel agent was offering for a limited time a discount of 30% on any booking made at either resort.

Pretest. Twenty-six participants studied the attributes table used in the experiment (see Table 6). First, they read the definitions of utilitarian and hedonic attributes developed by Dhar and Wertenbroch (2000). Second, they rated each attribute on a nine-point (1 = "utilitarian," and 9 = "hedonic") scale used by the same authors. Unlike the scales used in Studies 1–3, this scale defines hedonic (affective) and utilitarian (cognitive) content as endpoints of the same underlying dimension. An exploratory factor analysis with Varimax rotation indicated two orthogonal factors (71.37% of variation explained): one consisting of distance and size, and the other consisting of view and interior design. Third, participants allocated 100 points to capture the relative importance of each room attribute. They perceived the hedonic attributes to be marginally less important (M = 44.62) than the utilitarian attributes (M = 55.38; t(25) = –1.73, p = .096). Fourth, they judged which room was superior on the hedonic attributes and which room was superior on the utilitarian attributes. Most of the participants perceived the two rooms as we intended (76.67% and 86.67%, respectively).

TABLE 6
Study 4: Description of Resort Rooms

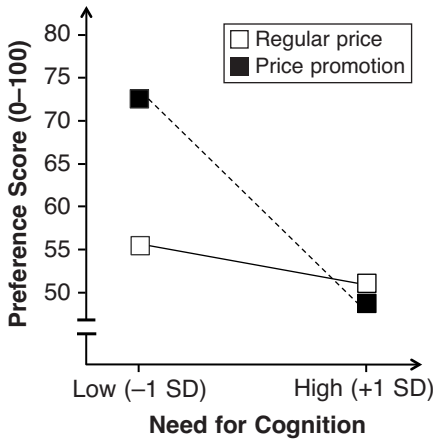
	Room A	Room B
Distance to beach	5-minute walk	15-minute walk
Size	Large (60 m²)	Medium (32 m²)
View	Internal (courtyard)	External (ocean)
Interior design	Standard	Unique

Measures. We gauged relative preference on a 0 ("strongly prefer Room A") to 100 ("strongly prefer Room B") sliding scale. Participants also completed the reduced-version NFC scale adopted by Epstein et al. (1996) (five five-point scales; Cronbach's $\alpha = .72$). Three participants reported an NFC score greater than three standard deviations from the mean, and we excluded their data. Finally, participants evaluated each room attribute on the same utilitarian–hedonic scale as the pretest. Consistent with the pretest, participants perceived view and interior design as hedonic (affective) attributes ($M = 8.55$, $t(88) = 20.36$, $p < .001$; $M = 7.84$, $t(88) = 13.93$, $p < .001$, respectively) and perceived distance and size as utilitarian (cognitive) attributes ($M = 2.72$, $t(88) = –12.72$, $p < .001$; $M = 3.79$, $t(88) = –5.39$, $p < .001$, respectively) when compared with the neutral point of the scale. The experimental manipulation did not affect these ratings: all p-values ≥ .096.

Results and discussion. H_3 predicts that NFC moderates the relationship between price promotion and product choice. Specifically, we expect the effect to be weaker for high-NFC consumers and stronger for low-NFC consumers. To confirm this prediction, we regressed relative preference on NFC, price, and the corresponding two-way interaction. The variable NFC includes the mean-centered composite scores from the five-item scale, and we contrast-coded the variable price to capture the experimental manipulation.

The regression shows a main effect of NFC ($\beta = –.32$, $p = .002$) and a simple effect of price ($\beta = .21$, $p = .036$); the latter result is consistent with H_2. Importantly, the coefficient of the two-way interaction is significant and negative ($\beta = –.26$, $p = .013$). To understand whether the interaction supports H_3, we examined the slopes of NFC in separate regressions at each level of price. The slope of NFC is significant and negative in the price promotion condition ($\beta = –20.69$, $p = .001$) but not in the regular price condition ($p = .618$). Next, spotlight analyses at one standard deviation below and above the mean of NFC show an effect of price for low-NFC participants but not for high-NFC participants. Figure 1 displays this pattern. People with low NFC are sensitive to cues in the environment to limit mental effort, whereas people with high NFC tend to resist them (Cacioppo and Petty 1982). Thus, low-NFC participants in the experiment presumably were less motivated to exert mental effort in the presence of a price promotion than in its absence, which explains the increase in the appeal of the hedonic (affect-rich) Room B ($\beta = .47$, $p < .001$). For high-NFC participants, the presence of a price promotion did not affect processing motivation and, therefore, did not affect preferences ($p = .737$).

FIGURE 1
Study 4: Preference for Affect-Rich Resort Room by NFC and Price Condition



Overall, Study 4 provides additional support for H_2 and, more importantly, shows that this effect is likely driven by the negative impact of price promotion on processing motivation. The approach we took was to measure NFC, a personality trait known to affect processing motivation, and test whether the relationship between price promotion and product choice changed at different levels of this moderating variable as predicted in the first part of H_3. The next study follows the same strategy, although our attention shifted to priming changes in processing motivation directly—the second prediction in H_3.

Study 5: Priming Processing Motivation

Participants. One hundred eleven participants were recruited from MTurk at the standard pay rate to complete a short online survey.

Design and procedure. The experiment assigned participants at random to one of four conditions in a 2 (price: regular price or price promotion) × 2 (decision process: unspecified or deliberative) between-subjects design. The stimulus described the use of a fictional online DVD rental service called ABC Films. Participants were asked to take the perspective of a potential customer. They were first told what the service entails. Next, they read that the company sells tiered memberships representing different levels of service and that their preference was for the $14.00/month option allowing a maximum of three rentals at a time.

At this point, one group of participants was further told that ABC Films was trying to boost subscriptions with a price promotion offering 50% off the regular price for three months. The other group proceeded directly to the final section of the stimulus, which provided information on 20 movies in ABC Films' library. All participants were asked to study this information carefully. The 20 movies, described by title, cover image, year of release, and synopsis, were presented separately and in random order. Importantly, the sample contained an equal number of lowbrow and highbrow movies.

Pretest. We populated ABC Films' library on the basis of the results of a pretest (n = 15) that scored 20 movies on a seven-point (1 = "highbrow movie," and 7 = "lowbrow movie") scale. According to extant literature, a lowbrow movie is "one that someone would choose to see for the pure enjoyment of it. The decision to watch a lowbrow movie is indulgent and pleasure-based," whereas a highbrow movie is "one that someone would feel compelled to watch. This might be because the movie is expected to improve the viewer in some way—intellectually, socially, or otherwise" (Milkman, Rogers, and Bazerman 2009, p. 33). These defi-

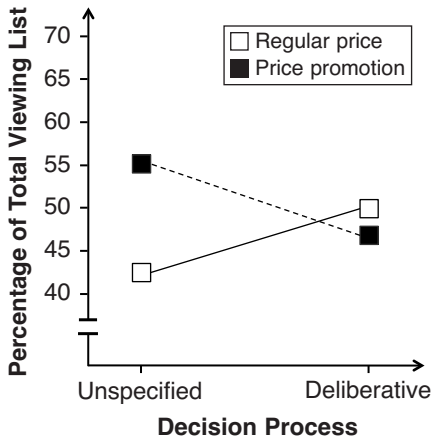
nitions are consistent with the idea of an affect-rich or affect-poor movie, respectively. The ten movies we expected to be lowbrow all received higher ratings than the ten movies we expected to be highbrow (M_{LB} = 6.59 vs. M_{HB} = 3.18; t(18) = 9.94, $p < .001$).

Measure. The participants' task was to create a viewing list by picking ten movies from the library. Roughly half the participants began the exercise directly, while the rest were first instructed: "While creating your list, please focus on reason and logical arguments about watching each DVD. Try to be analytical. We have found that people's responses are better when they just make their decisions based on reason and logic." This statement has been shown to prime processing motivation (Pham et al. 2001).

Results and discussion. H_3 predicts that the relationship between price promotion and product choice is mitigated when cognitive activity is induced. To test this idea, we computed the percentage of movies in the participants' viewing list that are lowbrow (affect-rich) and applied a variance-stabilizing arcsine transformation to prepare the data for ANOVA (Kirk 1982). We use the transformed values in the analysis but report the original (raw) means for interpretability. A full-factorial ANOVA with price and decision process as between-subjects factors shows only the expected two-way interaction predicted in H_3 ($F(1, 107) = 5.68$, $p = .019$; all other p-values ≥ .188). As Figure 2 shows, participants who did not receive processing instructions selected more lowbrow movies in the price promotion condition (M = 54.84%) than in the regular price condition (M = 42.73%; $F(1, 107) = 6.50$, $p = .012$). This result supports H_2. In contrast, participants who were instructed to rely on reason and logic made similar movie selections across the two price conditions (M_{PP} = 46.67% vs. M_{RP} = 50.32%; $p = .442$).

Studies 4 and 5 are important because under the logic of moderation of process (Spencer, Zanna, and Fong 2005), the pattern of the interaction effects in the data is evidence that price promotion affects product choice through changes in processing motivation. We noted previously that such results are not only consistent with our dual-system view of price promotion but also clearly independent of the psychology of justification. To further separate the two accounts, Study 6 moved away from product choice to test for scope neglect in the relationship between price promotion and the evaluation of product quantity (H_4).

FIGURE 2
Study 5: Affect-Rich Movies Selected to Viewing List by Decision Process and Price Condition



Study 6: Scope Neglect as an Alternative to Product Choice

Participants. Participants (n = 110) were recruited from the same subject pool as in Study 3. They were compensated by the customary £10 payment plus an additional £4, paid up front, to motivate transactions.

Design, procedure, and measures. The experiment adopted a variant of the Becker–DeGroot–Marschak (1964) procedure to elicit incentive-compatible reservation prices. Specifically, we presented the task as an opportunity for participants to purchase one or five Lindt Lindor milk chocolate truffles. The number of truffles offered represented the between-subjects manipulation of product quantity. We then informed participants of the retail price at the local supermarket (£.35 for one unit, £1.75 for five) but stressed that the purchase price in the experiment would be determined as follows: First, participants needed to state "the maximum price they were prepared to pay" or "the minimum discount on the retail price they were prepared to accept" to make a purchase. This variation in the task represented the between-subjects manipulation of instruction. The maximum price and minimum discount conditions are analogous to the regular price and price promotion conditions, respectively, in Studies 3 to 5. The distinction is that the goal in this study was to elicit reservation prices rather than to record how people respond to a predetermined price. Second, participants picked a purchase price at random from an urn containing values from £.10 to £4.00, in £.10 increments. The range and distribution of these values were not disclosed. If the purchase price picked from the urn exceeded the reservation price, no transaction took place. If the purchase price did not exceed the reservation price, a transaction took place at the purchase price.

Results. H_4 predicts that, as quantity increases, consumers facing a price promotion are willing to pay progressively less per unit of the product than consumers facing a regular price. To test this idea, we first truncated the reservation prices of the 18 participants in the maximum price condition at the corresponding retail prices: £.35 if they were evaluating one truffle, £1.75 if they were evaluating five. The reason for the cap was to make the data comparable across instruction conditions because a reservation price in the minimum discount condition cannot exceed the retail price.[5] A full-factorial ANOVA shows that participants were

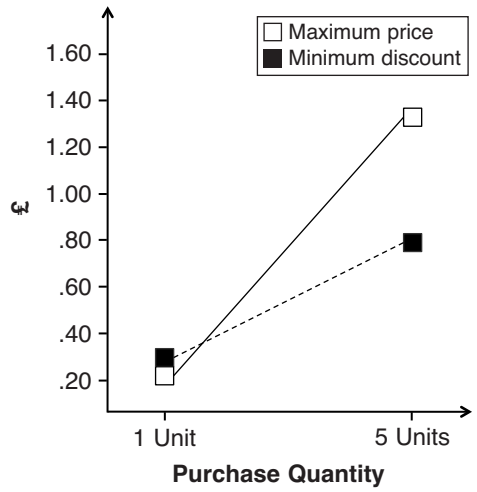
[5]This step in the analysis did not jeopardize the incentive-compatible nature of the procedure, because participants were not aware of our intention. In addition, although the results of the analysis also hold with the original (uncapped) data, note that placing a cap on reservation prices in the maximum price condition makes the test of H_4 more conservative.

prepared to pay more in the maximum price condition (M = £.82) than the minimum discount condition (M = £.50; F(1, 106) = 27.16, $p < .001$). Unsurprisingly, they also valued five units of the product more (M = £1.06) than a single unit (M = £.26; F(1, 106) = 178.06, $p < .001$). The key result, however, is the two-way interaction displayed in Figure 3 (F(1, 106) = 13.73, $p < .001$). Consistent with H_4 and the idea of scope neglect, which the literature has uniquely associated with reliance on affect (Hsee and Rottenstreich 2004), we find that participants in the minimum discount condition provided lower valuations than participants in the maximum price condition in the context of five truffles (M_{MD} = £.79 vs. M_{MP} = £1.33; F(1,106) = 39.70, $p < .001$) but not in the context of one (M_{MD} = £.30 vs. M_{MP} = £.21; $p = .289$). In percentage terms, the discount participants demanded in the minimum discount condition increased from 39.77% of the retail price of one truffle to 54.65% of the retail price of five (F(1, 106) = 5.13, $p = .025$).

General Discussion

Our objective in this article is to present a different interpretation of the way consumers respond to price promotion. This interpretation is rooted in the argument familiar to social psychologists and some marketing researchers that people make decisions by integrating two qualitatively distinct types of thinking: one, automatic and affect laden; the other, controlled and deliberate. We make the case that price promotion influences the relative influence of these two mental faculties on purchase decisions by reducing a consumer's motivation to exert mental effort; in other words, it can "dumb down" a potential purchase by making it less consequential. Because mental effort is critical only to deliberative thinking, price promotion ultimately places greater emphasis on the affective responses that products spontaneously trigger, which in turn makes affect-rich products more appealing. In this section, we review our empirical tests of this theory, entertain ideas for further research, and discuss potential implications.

FIGURE 3
Study 6: Reservation Price by Purchase Quantity and Instruction Condition



Summary of Empirical Findings

We conducted our empirical work—a total of six studies—in the field and laboratory. Taken as a whole, these tests cover a broad range of product categories, choice problems, definitions and measures of affective content, implementations of price promotion, and indicators and moderators of processing motivation.

The main results pertain to H_1 and H_2. H_1 predicted that price promotion reduces processing motivation. In Study 1, we used e-mail click-through data obtained from a large daily deal company to show that deeper discounts speed up the consumer's purchase decision, which we measured in terms of time-to-click (i.e., the time from opening an e-mail to clicking on a deal advertised in the e-mail). In Study 3, we asked participants in a controlled experiment to recall attribute information for two snacks. Consistent with the field evidence, we found that participants facing a price promotion were less accurate in this task than participants facing a regular price.

H_2 predicted that price promotion increases the choice share of products that are rich in affect. In Study 2, we used a different data set from the same daily deal company to show that larger discounts have a larger positive impact on the probability of purchasing deals for products that are rich in affect. The participants in Study 3 faced a choice between purchasing a Snickers candy bar and a Nature Valley granola bar and chose the former more often when the prices of both snacks were discounted by 50%. In Study 4, participants on average indicated a stronger preference for the resort room with better view and interior design (the two hedonic or affect-rich attributes) when the travel agent making the booking offered a 30% discount on any accommodation. Finally, participants in Study 5 who did not receive specific processing instructions added more low-brow titles to their viewing list (i.e., titles that "someone would choose to see for the pure enjoyment of it"; Milkman, Rogers, and Bazerman 2009, p. 33) when they joined the DVD rental service on a three-month promotional offer.

We also raised the possibility that justification is an alternative explanation for the effects predicted in H_2, and perhaps even H_1. Although we were careful not to conclude that justification is irrelevant in the context of price promotion and could be safely ruled out, we did take two steps to strengthen the argument that our account is independent and has merit in comparison.

First, we considered factors that might influence processing motivation and, therefore, moderate the effect of price promotion on product choice (H_3). This prediction makes sense in the context of dual-system theories of human reasoning but has no parallel in the psychology of justification. In particular, we examined one dispositional moderator in Study 4, NFC (Cacioppo and Petty 1982), and one situational moderator in Study 5, decision process (Pham et al. 2001). The NFC moderator fit our objective because some people are inherently motivated to exert mental effort, whereas others are not. That is, there are individ-

ual differences in the likelihood that a person responds to the cue provided by a price promotion. Instructing people to rely on reason and logic during a task also fit our objective because the experimenter is priming processing motivation. The results of these experiments confirmed H_3 and, therefore, the causal sequence linking price promotion, processing motivation, and product choice.

Second, we took a step away from choice and examined instead the impact of price promotion on the evaluation of product quantity (H_4). Specifically, in Study 6 we adopted a variant of the Becker–DeGroot–Marschak (1964) procedure to show that the mere presence of a price promotion reduced the participants' willingness to pay for five Lindt Lindor milk chocolate truffles, but not for one—an instance of the scope neglect effect that is characteristic of reliance on affect (Hsee and Rottenstreich 2004) but, again, has no conceptual ties to justification.

Further Research

In our view, there are at least two clear avenues for further research. First, scholars can take our results and examine behavioral outcomes of reliance on affect that are unrelated to choice but still relevant to businesspeople. Study 6 is an example of what we have in mind as well as an encouraging sign that such an extension could be fruitful: for a firm aiming to increase the quantity that consumers purchase on a shopping trip, this experiment suggests that the optimal discount schedule needs to reflect the nonlinearity in valuation primed by the mere presence of a discount. Similarly, one could claim on the basis of our theory that consumers facing a price promotion provide product ratings that are more extreme than consumers facing a regular price. This occurs because affective responses to everyday objects tend to be more extreme than cognitive appraisals of the same objects (Pham et al. 2001). For a firm that cares about the image of its offerings, this possibility is important because would-be buyers may draw conclusions about products from the distribution of ratings given by previous customers—which is likely to occur, for example, in online environments similar to the one we studied in the field.

Second, scholars could extend the research to other forms of sales promotion or to permanent price reductions. It was important for us to focus on the most common form of sales promotion to strengthen our general claim that an incentive to purchase can also be a disincentive to think. Moreover, focusing on price promotion was important because manufacturers and retailers frequently face the challenge of managing complicated promotional campaigns that span products and categories. However, moving forward, it is an open question whether the interplay between affect and cognition in the consumer's mind is influenced also by the form of the sales promotion—holding the actual saving constant. Similarly, researchers could test whether our findings replicate in the context of a simple price change, when the incentive to consumers is arguably less salient.

Implications for Theory and Practice

The theoretical contributions of this article lie within and outside the marketing field. There is considerable debate in social psychology on the exact nature of the mental faculties that underlie human reasoning (Evans and Stanovich 2013). We have purposely steered away from specifying the roots of deliberation and affective responses or from providing an extensive list of all the characteristics that may help distinguish the two. Instead, our goal was to demonstrate an application of dual-system theories to the domain of preference construction, much as Dhar and Gorlin (2013) advocate. Researchers have argued that people rely on deliberation to the extent that they are motivated to do so and that this motivation is determined by environmental factors that cue the need to exert mental effort (Fazio and Towles-Schwen 1999). They have also argued that a lack of processing motivation has implications beyond deliberation—in particular, increasing the impact of affect on a person's decisions (Epstein 1994; Gawronski and Bodenhausen 2011; Zajonc 1980). We confirmed these ideas in the field and laboratory. What is particularly exciting to us is that the environmental factor in question is anything but theoretical: price promotion is something that most managers are familiar with and use routinely, some even to excess.

Within the marketing field, our first ambition was to stretch the current understanding of how price promotion works. As discussed, we are not the first to point out that, in general, research in this area has taken a cognitive view of the consumer (Chandon, Wansink, and Laurent 2000). There are probably several reasons for this narrow stance. For example, the study of price promotion typically relies on scanner data, and these data attract econometric models predicated on the principle of utility maximization (Blattberg and Neslin 1990). Similarly, it is easy to understand how consumers may be unemotional about price: it is a simple, objective, and concrete stimulus typically associated with cognitive tasks such as search and relative evaluation. To the best of our knowledge, we are the first to present a theory of price promotion that treats affect as a separate and independent input in the purchase decision.

In terms of specific lines of research, our work illustrates how researchers can leverage fine-grained field data available in digital environments to demonstrate the external validity of findings related to consumer decision processes and their outcomes (Lambrecht, Seim, and Tucker 2011). We also offer a contribution to recent studies linking pricing interventions to consumer thinking. Our approach is consistent with that of Wathieu and Bertini (2007) in the sense that a price promotion can be interpreted as a negative price differential that triggers a state of inattention similar to the one identified in their article. However, whereas their work considers only the cognitive side of the consumer, our research is explicit about the additional presence—and eventual importance—of affect.

Third, we believe that our work adds to the debate on the form and cause of brand switching. The literature has already argued that price promotion induces brand switching and that the effect is asymmetric across price-quality positions in a market. Specifically, researchers have pro-

posed economic and psychological explanations for the observation that price concessions by higher-quality, higher-price brands tend to attract more business than do similar incentives by lower-quality, lower-price brands because the former typically count with a higher proportion of loyal (less price-sensitive) customers (Blattberg and Wisniewski 1989). Our research complements this explanation by pointing to a more granular source of asymmetry: the affective content of a brand. We showed that this pattern of substitution occurs irrespective of whether a particular product possesses an overall quality or price advantage. We also showed that affective content is interpreted relatively. For example, a product that is purely cognitive is not necessarily hurt by a price promotion at the category level if its competitors have the same makeup. Similarly, a product that is purely affective does not necessarily benefit from a similar offer if its competitors are equally endowed.

From the perspective of practice, managers of high- and low-quality brands alike may find our conclusion with respect to brand switching useful because it highlights the importance of sustaining a relative advantage (or overcoming a relative disadvantage) on the more affective dimensions of product quality. Manufacturers can use our research as guidance on how to better allocate their promotional budgets across the product portfolio: it seems that one can get "more bang for the same buck" when the promoted product is affect rich. Similarly, retailers can use our research to review their policies with respect to category management: affect-poor products need the most support from the manufacturer and, perhaps, the best positions on shelves to overcome their disadvantage.

In conclusion, we return to the broader practical question with which we closed the introduction to this research. Increasingly, managers lament having to entice consumers with ever larger and more frequent price promotions, fearing that their interventions jeopardize the brand's ability to drive future purchase behavior. Although this article is not intended to study the long-term effects of price promotion, we view our results as a notable and encouraging sign that managers and scholars can develop further. Although it may well be the case that the act of buying a product on promotion denotes a certain detachment from the brand (Lodish and Mela 2007), we speculate that the price reduction opens the door for firms to step in and reinvigorate interest in the more emotional aspects of their relationship with customers. Our results show that price promotion is more than a simple monetary incentive; indeed, it can change the way consumers think.

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