Michael Tsiros & David M. Hardesty

Ending a Price Promotion: Retracting It in One Step or Phasing It Out Gradually

Using the literature on both pricing and regret, the authors develop a conceptual model of purchase likelihood and propose a pricing tactic that appears to have marketplace potential. Sellers currently using a hi–lo pricing tactic discount a product for a limited time and then raise the price back to its original level in one step. Here, the authors investigate whether sellers should return prices to their prepromotion levels all at once or in steps. They propose that sellers should consider an alternative tactic, labeled "steadily decreasing discounting" (SDD). This alternative tactic requires that the seller offer one or more additional discounts that are less than the prior discount before returning the product to its original price. Study 1 is a laboratory experiment that tests the proposed underlying mechanisms (future price expectations and anticipated inaction regret) influencing likelihood to buy. In Study 2, an additional laboratory experiment is undertaken to provide further empirical support in favor of the SDD tactic, to address alternative explanations for the findings, and to demonstrate that there are no negative perceptions associated with using SDD. Study 3 is a field experiment that assesses the effectiveness of SDD, and Study 4 examines scanner panel data to evaluate its generalizability.

Keywords: pricing tactics, regret, price promotions, expectations, hi–lo pricing, everyday low pricing

Price promotions have been demonstrated to be profitable in the long run, and it has been suggested that sellers should continue to employ them (Kopalle, Mela, and Marsh 1999; Pauwels, Hanssens, and Siddarth 2002). In a review of reference pricing research, Mazumdar, Raj, and Sinha (2005) conclude that how a firm frames a price offer may influence a consumer's decision to buy the brand. Occasionally, after offering an initial price discount, companies such as New York & Company, Boden Clothing, and Time Warner Cable offer a series of additional price promotions before returning the price of a product to its original level. For example, Boden has advertised a series of consecutive promotions, such as 15% off for three days, followed by 13% off for a day, 11% off for a day, and 10% off for a day, before returning merchandise to its original price. These pricing practices raise the question whether prices should be returned to their original level, after an initial discount, all at once, as is typically the case for the hi–lo pricing tactic, or in steps. In the current research, and consistent with these examples, we propose that sellers could offer one or more additional discounts that are smaller in size than the prior discount before returning the product to its original price. We label this practice "steadily decreasing discounting" (SDD).[1]

Two particularly popular price promotion tactics are everyday low pricing (EDLP) and hi–lo pricing. Sellers that employ an EDLP tactic charge a constant, everyday price with no (or very infrequent and small) temporary price promotions (Monroe 2003). Alternatively, sellers that employ a hi–lo pricing tactic set relatively higher prices on an everyday basis but offer frequent and substantial price promotions. Sellers use a hi–lo pricing tactic in an effort to discriminate between price-sensitive and price-insensitive consumers.

Given that many sellers employ hi–lo pricing, the current research examines the relative effectiveness of the alternative pricing tactic, SDD, versus the existing and more often used hi–lo pricing tactic. In addition, Study 1 evaluates the EDLP tactic. Drawing from literature on both future price expectations and anticipated regret, we argue that the increasing price trends associated with the SDD tactic versus the hi–lo pricing tactic may increase con-

Michael Tsiros is Associate Professor of Marketing, School of Business Administration, University of Miami, and Tassos Papastratos Research Professor of Marketing, ALBA Graduate Business School, Athens, Greece (e-mail: tsiros@miami.edu). David M. Hardesty is Associate Professor of Marketing, Gatton College of Business & Economics, University of Kentucky (e-mail: david.hardesty@uky.edu). The authors acknowledge the valuable feedback from the anonymous *JMR* review team, as well as Bill Bearden, Allan Chen, Blair Kidwell, Tatiana Levit, Kent Monroe, Akshay Rao, Terry Shimp, and Danny Weathers. The authors contributed equally to this research.

[1]Airlines typically start with low prices for a scheduled flight and progressively increase the price as certain quotas are met and the departure date gets closer. Although this pricing resembles SDD, it does not start with the regular price and eventually reach that price as the departure date approaches. In addition to the price not having the same start and end level, prices may fluctuate because reservations may be cancelled or the company reassigns quota. Finally, airlines also often offer last-minute sales to reach capacity. As such, SDD is not a dynamic pricing tactic (Desiraju and Shugan 1999), nor is it being compared with dynamic pricing in this research.

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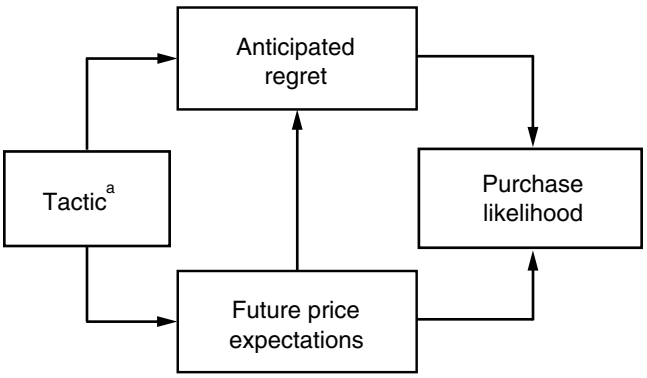
sumers' purchase likelihood in the current period through higher future price expectations (Jacobson and Obermiller 1990) and greater anticipated inaction regret (Sevdalis, Harvey, and Yip 2006; Tsiros 2009).

We begin our assessment of SDD by conducting a lab experiment (Study 1) to test a theoretical framework regarding the benefits of SDD's effectiveness compared with the hi–lo pricing and EDLP tactics; we show that SDD generates higher future price expectations and leads to greater anticipated inaction regret, each of which affects purchase likelihood. Consequently, we show that SDD generates more revenue than the existing hi–lo and EDLP pricing tactics.[2] In Study 2, we offer additional empirical support for the effectiveness of SDD, examine alternative explanations for the findings, and demonstrate that there are no negative perceptions associated with employing the SDD tactic. In Study 3, we conduct a field study that compares the relative effectiveness of hi–lo pricing with that of the SDD tactic. We show that revenues are higher when using the SDD tactic. Finally, in Study 4, we assess scanner panel data to uncover several instances of the effectiveness of the SDD tactic. This research contributes to the pricing literature by demonstrating that the theoretical mechanisms driving the effectiveness of the SDD tactic relative to the hi–lo tactic are future price expectations and anticipated inaction regret. Moreover, this research has implications for managers in that SDD appears to be a more profitable pricing tactic than both hi–lo pricing and EDLP and is free of negative perceptions associated with using it. In the next section, we outline the theoretical framework guiding our research hypotheses (see Figure 1).

FIGURE 1
Conceptual Framework



[a]Tactic: hi–lo = 1, SDD = 2.

Conceptual Framework

Consumer Future Price Expectations

Research by Ariely (1998) and Hsee, Abelson, and Salovey (1991) shows that evaluation of a stimulus is determined not only by its position (the actual value of its outcome) but also by its velocity (the change in the value). Given the pricing pattern associated with SDD, we focus on consumer expectations of future prices, an understudied, forward-looking reference price (DelVecchio, Krishnan, and Smith 2007; Sun, Neslin, and Srinivasan 2003). Winer (1985) finds that consumer expectations of future prices play a significant role in purchase decisions. Similarly, and in line with neoclassical economic theory, Jacobson and Obermiller (1990) suggest that consumers compare the sticker price with expected future price. Consumers expecting higher future prices are encouraged to purchase sooner; those expecting lower future prices are more likely to wait. On the basis of an analysis of 151 weeks of scanner data, Jacobson and Obermiller find empirical support that consumers conceptualize a reference price as an expectation of future price. Higher future price expectations resulted in increased quantity sold in the current period. More recently, DelVecchio, Krishnan, and Smith (2007) examined the effect of price promotion format, demonstrating that people have higher future price expectations for price promotions presented in percentage terms versus dollar terms. These higher future price expectations result in greater choice of the percentage-framed price promotions. Similar to DelVecchio, Krishnan, and Smith's research, we investigate the effect of expected future price on purchase likelihood during both the current and the future promotion periods.[3]

The hi–lo and the SDD pricing tactics differ in terms of both the individual discounts offered and the pattern of prices. Prior research (Alba et al. 1999; DelVecchio, Krishnan, and Smith 2007) has demonstrated that deeper discounts produce lower future price expectations. In the current research, the average promotion size is held constant across the two pricing tactics. As such, the impact of the depth of the discounts offered is controlled for and should not have a differential impact across the tactics. However, the pattern of prices is different between the two pricing tactics and may affect future price expectations. Importantly, prior research has established that price judgments are affected by the ordering of past prices (Buyukkurt 1986; Krishna 1991, 1994; Meyer and Assuncao 1990; Slonim and Garbarino 1999).

Here, we expect that consumers will have higher future price expectations for SDD versus hi–lo pricing due to the greater prevalence of upward price trends when using the SDD tactic. Adaptation-level theory (Helson 1964) suggests that consumers judge current prices relative to their internal norms (adaptation levels), representing the combined effects of past, present, and future prices. For example, a marketer employing the SDD tactic might sell a product regularly at $499 and offer an initial large sale at $349 and then two smaller sales at $399 and $449 before returning the price to its original level. These additional sales result in

[2]We believe that SDD is most relevant for products with at least a moderate profit margin and for products that are purchased infrequently (once a year or less often). In this article, we provide consistent evidence using different products (a personal digital assistant [PDA] in two lab studies and a wine stopper in a field study). However, we also show some initial evidence in support of SDD for grocery store items (e.g., soda, cereal).

[3]Kalwani and Yim (1992) gather expected future price data and assess purchases for a future occasion, as we do in Study 2, instead of assessing purchase intentions for the current sale, as we do in Study 1.

more weeks containing an upward trend in price compared with using hi–lo pricing, and consumers are expected to have higher future price expectations as a result. Each of the additional sales associated with the SDD tactic acts as a price anchor, leading to an upward shift in price expectations and a new, higher adaptation level. This increased adaptation level associated with the SDD tactic makes the current price appear more attractive and results in greater likelihood to buy for SDD than for hi–lo. For example, when a product regularly priced at $499 is discounted to $349 and then raised to $399, we expect that the upward trend from $349 to $399 (and because it has not reached its regular price of $499) will result in higher adaptation levels and, thus, higher future price expectations.[4]

In addition to the advantage that SDD receives from its upward price trend by shifting consumers' adaptation levels upward, price promotion research (Mace and Neslin 2004) has identified the phenomenon of a postpromotion dip (a significant drop in sales after a large discount is retracted). Under SDD, we expect this phenomenon to be significantly reduced compared with the hi–lo tactic because the price returns to the regular price in stages.

Anticipated Regret

Another explanation for the success of SDD in generating greater likelihood to buy after missing a previous sale is consumers' anticipating feelings of regret. Social psychology and behavioral decision theory have given much attention to regret, but regret is only beginning to be fully examined in the marketing literature on purchase decisions (Simonson 1992) and customer satisfaction and repurchase intentions (Inman, Dyer, and Jia 1997; Inman and Zeelenberg 2002; Taylor 1997; Tsiros and Mittal 2000; Zeelenberg and Pieters 1999). Simonson (1992) finds evidence that anticipated regret influences brand preference and timing of a purchase. Simonson asked consumers to anticipate how they would feel if they passed on a current sale and learned later that the price was higher. Compared with those who were not asked to anticipate, consumers who anticipated such a scenario were more likely to make an immediate purchase than to wait for a better price. Anticipated regret provides an important explanation for the success of SDD in generating greater likelihood to buy after missing a previous sale.

The current research is also consistent with research on inaction inertia, or the tendency of consumers to defer choice following a missed sale (Tsiros 2009; Tykocinski and Pittman 1998; Tykocinski, Pittman, and Tuttle 1995). This stream of research has found that after consumers realize that they missed a large sale (e.g., 40% off), they are less likely to purchase a product at a significantly smaller sale in the future (e.g., 10% off). When the difference between the two sales (the one missed and the current one) is small (e.g., 40% off versus 30% off), consumers do not vary significantly from the control group (those never missing the large sale) in their likelihood to take advantage of the smaller sale (Tykocinski and Pittman 2001). As such, inaction inertia should favor SDD because the difference between the consecutive sales is smaller (e.g., always 10%, such as 40% off versus 30% off or 30% off versus 20% off) than the one experienced under hi–lo pricing (e.g., 40% off versus no sale). More recently, Sevdalis, Harvey, and Yip (2006) distinguish between two types of anticipated regret: anticipated inaction regret (regret anticipated to be experienced after forgoing the second sale) and anticipated action regret (regret anticipated to be experienced after buying the item during the second sale). Across two studies, support for the role of anticipated inaction regret in predicting likelihood to buy was evidenced, while anticipated action regret did not significantly impact purchase intentions.

Here, we expect that SDD will lead consumers to experience higher levels of anticipated inaction regret at the current sale price than hi–lo pricing as a result of their expectations that the price will slowly return to its original level. For example, if a product is regularly priced at $499 but recently sold for $349 and is now on sale for $399, we expect consumers to anticipate regretting not buying the product at $399 (anticipated inaction regret) because they expect the price to eventually go back to the regular level of $499. Given that SDD has additional weeks with an upward trend in price, we expect that anticipated regret will be greater for SDD than for hi–lo pricing. We also expect that anticipated inaction regret will mediate the effect of future price expectation on likelihood to buy.

In summary, we expect that higher future price expectations and more anticipated inaction regret associated with the SDD tactic will lead to greater likelihood to buy. In addition, we expect anticipated inaction regret to play a dual role because it is also expected to mediate the effect of future price expectation on likelihood to buy. This greater likelihood to buy is expected to result in increased purchase likelihood at higher prices for the SDD tactic than for the hi–lo tactic as a result of anticipation that the price will come back to the regular price in stages. As such, and in addition to greater purchase likelihood, revenues are expected to be greater when using the SDD tactic than the hi–lo tactic. Formally, we propose the following:

- H_1: Compared with hi–lo pricing, SDD generates higher revenue.
- H_2: Compared with hi–lo pricing, SDD leads to (a) higher future price expectations and (b) more anticipated regret from not buying the product (anticipated inaction regret). Thus, SDD results in greater likelihood to buy.
- H_3: Anticipated inaction regret mediates the effect of future price expectations on likelihood to buy.

Study 1 is a laboratory experiment that assesses the relative effectiveness of SDD versus hi–lo pricing (i.e., H_1) and EDLP and tests the theoretical rationale (i.e., H_2 and H_3) pertaining to the expectation that SDD will outperform hi–lo pricing. Study 2 attempts to resolve several limitations associated with Study 1. In particular, Study 2 further evaluates the effectiveness of the SDD tactic, showing that there are no negative effects associated with employing SDD over

[4]We assume that consumers expect prices to eventually reach the regular price level and not exceed it. This is why SDD outperforms hi–lo. Otherwise, going from $349 to $499 in hi–lo may indicate further, more drastic price increases than SDD's smaller increments.

a substantial period, and it assesses consumers' likelihood to visit a store that employs SDD versus hi–lo pricing. Importantly, in both Studies 1 and 2, store and brand image are compared across tactics because price promotion activity has been shown to negatively affect consumer perceptions (Grewal et al. 1998). Specifically, SDD offers an additional (though shallower) price promotion and, because of the higher frequency of promotions, may result in more negative perceptions. Finally, in Studies 3 and 4, a field experiment is conducted and an evaluation of scanner panel data is undertaken to demonstrate further the effectiveness and generalizability of the SDD pricing tactic.

Study 1: Theoretical Assessment

Method

In an initial effort to investigate the effectiveness of SDD versus hi–lo pricing and to evaluate the theoretical rationale that might explain the relative effectiveness of SDD, we manipulated prices between participants at several levels for an iPAQ 4155 personal digital assistant (PDA) (see Table 1).[5] Each participant was randomly placed in one of the week conditions displayed in Table 1, and each saw three price points.[6] For example, the \$499, \$379, \$409 condition (see Week 3 of SDD in Table 1) represents a regular price of \$499, a most-recent past price of \$379, and a current price of \$409. Importantly, we manipulated these prices so that the average regular price (\$499), the average most-recent past price (\$435), and the average current price (\$435) were the same for both tactics. Thus, this design allowed for a fair comparison between the two tactics.

To empirically test the two hypotheses, we collected data from 463 undergraduate business students who were then entered into a cash prize raffle for their participation. Because of several missing values, we removed three respondents. There was a similar number of participants per condition. To begin the experiment, participants were given a scenario regarding the sale of an iPAQ 4155 PDA. The Appendix shows an example of the scenario for the \$499, \$379, \$409 condition. After reading the scenario and looking at two price advertisements, participants indicated whether they would buy the PDA. In addition, they listed their thoughts regarding their buying decision. Then, they estimated what the price of the PDA would be one week from now (Janiszewski and Lichtenstein 1999). Next, participants completed two-item measures for store and brand image. Each pair of items constituting the image measures was significantly correlated (ps < .01), and we averaged the items to form composite variables for each construct. Finally, we obtained a single-item measure for anticipated inaction regret. These scales appear in the Appendix.

Results

H_1 states that sellers will generate higher revenue when employing an SDD pricing tactic rather than a hi–lo pricing tactic. To assess this prediction, we first compared the revenue generated across the weeks.[7] We calculated revenue as the current price times the percentage willing to purchase at the given price. As Table 2 shows, and consistent with H_1, the results reveal that across the weeks, SDD generated \$1,076.73 of revenue, while hi–lo generated only \$990.88 ($t_{406} = 3.55$, $p < .01$; d = .35). Thus, the SDD tactic resulted in 8.7% higher revenue. These findings support H_1 and provide initial evidence that SDD may be a viable pricing tactic for sellers to employ. We next examined profits for the case in which the product cost was assumed to be \$349 (the estimated cost to the retailer for the iPAQ 4155 PDA at the time of the study), a 30% profit margin that is representative of the PDA marketplace.[8] The SDD tactic generated

[5]The discount sizes used are consistent with prior reference pricing research (Grewal, Marmorstein, and Sharma 1996).

[6]The "weeks" terminology is arbitrary; we use it for simplicity of explication. The periods could be time frames other than weeks (e.g., days). In addition, each participant saw and responded to prices for only one of the weeks displayed in Table 1. As such, we make an assumption that consumers remember the most-recent promotion. This appears to be a reasonable assumption given the product category examined here (consumer electronics) and findings from prior research indicating that consumers have some knowledge about past deals (Dickson and Sawyer 1990; Krishna 1994; Le Boutiller, Le Boutiller, and Neslin 1994; Vanhuele and Drèze 2002). However, we relax this constraint in Study 2 because participants see 20 weeks of price data.

[7]We assumed a 100% conversion rate of the participants who indicated their willingness to purchase the product at a given price. Although this conversion rate is for explication purposes only, note that we obtain similar results for any other conversion rate, and we assume that conversion rate does not vary systematically with price.

[8]After contacting store managers of two major electronics stores and the headquarters of major manufacturers of PDAs, we determined that estimated profit margin for the retailer was 30%.

TABLE 1
Study 1 Experimental Conditions

	Hi–Lo Pricing			SDD Pricing		
Period	Regular Price	Past Price	Current Price	Regular Price	Past Price	Current Price
Week 1	\$499	\$499	\$349	\$499	\$499	\$349
Week 2	\$499	\$349	\$349	\$499	\$349	\$379
Week 3	\$499	\$349	\$349	\$499	\$379	\$409
Week 4	\$499	\$349	\$499	\$499	\$409	\$439
Week 5	\$499	\$499	\$499	\$499	\$439	\$469
Week 6	\$499	\$499	\$499	\$499	\$469	\$499
Week 7	\$499	\$499	\$499	\$499	\$499	\$499
Average	\$499	\$435	\$435	\$499	\$435	\$435

TABLE 2
Study 1 Results

Pricing Tactic Condition	Expected Future Price	Anticipated Regret	Percentage Likely to Buy	Potential Revenue per Person per Week	Total Revenue
Hi–Lo	$415.89	2.52			
$499, $499, $349	$387.33	3.50	76%	$349 × .76 = $265.24	
$499, $349, $349	$365.56	3.01	67%	$349 × .67 = $233.83	
$499, $349, $349	$370.55	3.10	68%	$349 × .68 = $237.32	
$499, $349, $499	$407.62	1.78	10%	$499 × .10 = $49.90	$ 990.88
$499, $499, $499	$462.56	2.12	14%	$499 × .14 = $69.86	
$499, $499, $499	$462.09	2.10	14%	$499 × .14 = $69.86	
$499, $499, $499	$455.55	2.06	13%	$499 × .13 = $64.87	
SDD	$430.14	3.32			
$499, $499, $349	$382.54	3.52	74%	$349 × .74 = $258.98	
$499, $349, $379	$402.18	4.37	62%	$379 × .62 = $234.98	
$499, $379, $409	$411.83	3.78	50%	$409 × .50 = $204.50	
$499, $409, $439	$442.40	3.54	30%	$439 × .30 = $131.70	$1,076.73
$499, $439, $469	$451.05	3.21	24%	$469 × .24 = $112.56	
$499, $469, $499	$461.67	2.70	13%	$499 × .13 = $64.87	
$499, $499, $499	$459.33	2.09	14%	$499 × .14 = $69.86	
Random Discounting	$419.51	2.79			
$499, $499, $349	$383.61	3.47	75%	$349 × .75 = $261.75	
$499, $349, $439	$449.88	3.60	30%	$439 × .30 = $131.70	
$499, $439, $409	$390.44	2.91	38%	$409 × .38 = $155.42	
$499, $409, $469	$475.08	2.68	21%	$469 × .21 = $98.49	$ 983.15
$499, $469, $379	$371.11	3.09	57%	$379 × .57 = $216.03	
$499, $379, $499	$412.68	1.79	11%	$499 × .11 = $54.89	
$499, $499, $499	$453.76	2.02	13%	$499 × .13 = $64.87	

$144.90 in cumulative profit, while the hi–lo tactic only resulted in $76.50 in cumulative profit per person. We also observed similar results for profit margins within 10% of the estimated profit margin for retailers.

Although SDD generated more profit, reducing prices may negatively affect the image of both the brand and the store; these variables have been shown previously to be affected by price promotion activity (Grewal et al. 1998). Because SDD involves two additional sales compared with hi–lo, we examine the effect of both tactics on brand and store image. For store image, we find no significant effects across pricing tactics (4.76 versus 4.65; $t_{406} = .49$, $p > .10$). Similarly, brand image was not significantly affected by the SDD tactic (5.19 versus 5.22; $t_{406} = -.21$, $p > .10$). These results are consistent with Monroe and Krishnan's (1985) finding that discounts on branded products may not affect brand image. Overall, SDD benefits the seller through higher revenue without any negative impact on store or brand image.

H_2 posits that SDD will generate higher future price expectations and result in higher levels of anticipated regret for not buying the product so that SDD will lead consumers to be more likely to buy than hi–lo pricing. To test this hypothesis, we asked participants to estimate what the product would cost in one week. In addition, we asked participants to determine how much regret they would feel if they did not buy the product now (see the Appendix). Participants estimated next week's average price to be $415.89 for hi–lo pricing compared with $430.14 for SDD ($t_{406} = 2.41$, $p < .01$; d = .24). Similarly, and as Table 2 shows, SDD resulted in higher anticipated regret levels for not buying now than hi–lo pricing (3.32 versus 2.52; $t_{406} = 2.46$, $p < .01$; d = .24). These results suggest that the relatively higher future price expectations and greater anticipated inaction regret associated with SDD pricing should enhance its effectiveness compared with the hi–lo tactic. Each of these findings supports H_2.

In addition to the preceding analyses, we content-analyzed responses to the open-ended question that asked participants to describe their thoughts leading to their decision. We expected hi–lo to generate a greater number of lower future price expectations and SDD to generate greater anticipated regret from not buying the product. We asked two graduate students to code the responses on the basis of the following categories: (1) lower future price expectations, (2) anticipated regret from not buying the product, and (3) other thoughts that could not be classified in the previous two categories. Interjudge agreement was 88%, and all disagreements were resolved by a third judge. As expected, we observed moderately more lower future price expectations for the hi–lo pricing tactic than for the SDD pricing tactic (46% versus 32%, $\chi^2 = 2.83$, $p < .10$; w = .15) and significantly more thoughts dealing with anticipated regret from not buying the product for the SDD pricing tactic than for the hi–lo pricing tactic (40% versus 12%; $\chi^2 = 13.81$, $p < .01$; w = .34). A sample of lower-future-price-expectation thoughts from the hi–lo $499, $349, $499 condition includes "Why buy the PDA for $499 if I can buy it for $150 less at a later time?" and "The fact that the PDA has sold for $349 in the past led me to conclude there could

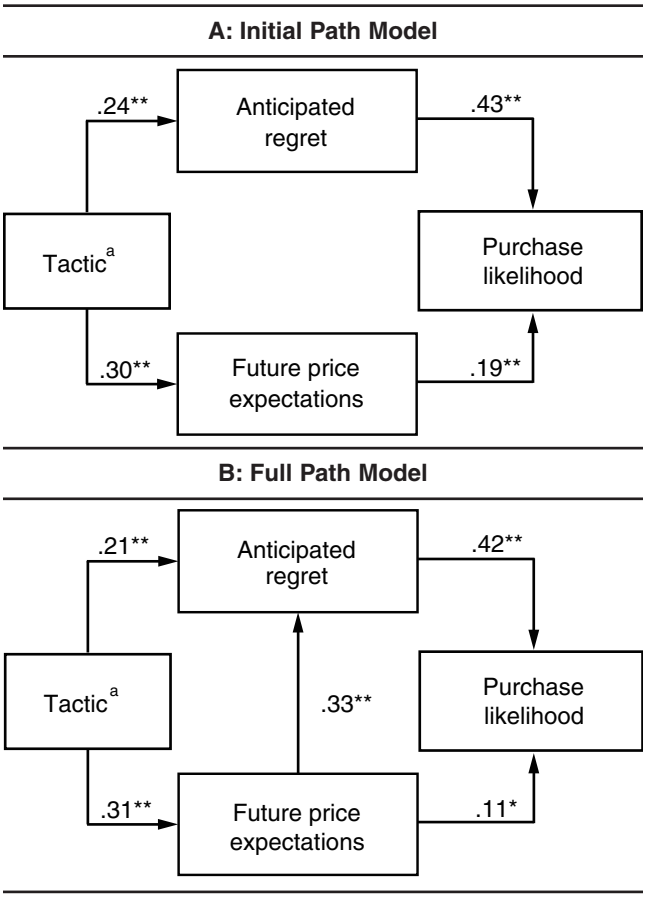
be another sale and I would rather wait and save $150." An example of an anticipated-inaction-regret thought in the SDD $499, $349, $379 condition was "$379 is not that much more than the sale price of $349, and you never know when it will be that price again." Another respondent in the SDD $499, $439, $469 condition wrote, "The price would go up now if I don't take it now and I would miss an opportunity."

On the basis of our findings thus far, SDD appears to perform better than hi–lo pricing because of the higher future price expectations and increased anticipated inaction regret associated with the SDD price combinations. In addition to the preceding analyses, we performed a path analysis (see Figure 2) to test the mediating effect proposed in H_3. First, and in support of H_2, "tactic" (hi–lo = 1, SDD = 2; see Figure 2, Panel A) had a positive influence on both expected future price expectations (.30, $p < .01$) and anticipated regret (.24, $p < .01$). As we expected, both future price expectations and anticipated regret were positively related to purchase likelihood (.19, $p < .01$, and .43, $p < .01$, respectively). In addition, when we included a path from future price expectations to anticipated regret (see Figure 2, Panel B), we observed a positive relationship between future price expectations and anticipated regret (.33, $p < .01$). Consistent with H_3, it appears that anticipated inaction regret plays a dual role in influencing purchase likelihood. First, and consistent with prior studies (Sevdalis, Harvey, and Yip 2006), anticipated inaction regret has a direct effect on purchase likelihood. Second, anticipated inaction regret partially mediates the effect of future price expectations on purchase likelihood. In the model in Figure 2, Panel A, when the path from future price expectations to anticipated regret is set to zero, the direct effect from future price expectations on purchase likelihood is more significant (.19, $p < .01$) than when the path from future price expectations to anticipated regret is estimated (.11, $p < .05$). Thus, anticipated inaction regret partially mediates the relationship between future price expectations and purchase likelihood because the coefficient for this path is reduced (from .19 to .11) but is still significant.

Several researchers (Baron and Kenny 1986; Sobel 1982) have proposed a more formal test of mediation. Conducting a Sobel (1982) test (and the Aroian version of the Sobel test popularized by Baron and Kenny [1986]), we find a significant mediation effect of anticipated inaction regret on the relationship between future price expectations and purchase likelihood (Sobel: z = 2.33, $p < .05$; d = 28; Aroian: z = 2.31, $p < .05$; d = 28). Thus, H_3 is supported.

Although our results provide support for our conceptual framework, suggesting that future price expectations and anticipated inaction regret are the underlying mechanisms for SDD's success over hi–lo pricing, it is possible that SDD outperforms hi–lo pricing because there is less price volatility associated with the SDD tactic. Price volatility in Study 1 (as measured by the standard deviation) was 80.2 for hi–lo and 58.6 for SDD. To rule out price volatility as an alternative explanation for the superiority of SDD over hi–lo pricing, we also empirically evaluated EDLP in this study. If price volatility drives the results related to SDD and hi–lo pricing, EDLP should be preferred over both

FIGURE 2
Study 1 Path Analyses



*$p < .05$.
**$p < .01$.
[a]Tactic: hi–lo = 1, SDD = 2.

because EDLP has no price volatility. Forty-four undergraduate student participants from the same population were assigned to the EDLP condition. For the EDLP condition, the normal price, the most-recent past price, and the current price were all $435. Thus, both the average most-recent past price and the average current price were the same for the hi–lo and SDD pricing conditions. The results revealed that 27% of participants were likely to buy, yielding revenues of $829.71 across the seven weeks for EDLP compared with $990.88 in revenues generated from hi–lo pricing and $1,076.73 from SDD. Thus, EDLP resulted in 16.3% lower revenues than hi–lo pricing and 22.9% lower revenues than SDD. These results rule out the price volatility alternative explanation because EDLP would be superior if price volatility explained the effects. Moreover, these results suggest that the SDD tactic results in higher revenues than EDLP as well.

To further test the proposed mechanism advanced here, we extended our study by varying the order of the intermediate steps for SDD. In this design, we modified the order of the steps for SDD presented in Study 1 (see Table 2). The only difference in the design of the study was in the four intermediate discounts, which in this case did not follow a strict "steadily decreasing" trend, though on a couple of occasions the discounts were larger than the one offered in

the previous promotion period. We collected data from 196 undergraduate students from the same population as previously; they saw the same stimuli. Each of the seven conditions had the same number of participants. The results show that the new pricing tactic, without the steadily decreasing trend in the discounts, performs similar to hi–lo and worse than SDD ($983.15 versus $1,076.73; $t_{397} = 3.88$, $p < .01$; d = .39). Similarly, participants estimated next week's average price to be $419.51 compared with $430.14 for SDD ($t_{397} = 2.09$, $p < .05$; d = .21), and anticipated regret levels from not buying now were 2.79 compared with 3.32 for SDD ($t_{397} = 2.25$, $p < .05$; d = .23). If we take as an example the condition in which the regular price is $499, the last price was $439, and the current price is $409, even with a higher last price than the SDD condition with the same current price ($499, $379, $409), future price expectations are lower ($390.44 versus 411.83), anticipated inaction regret is lower (2.91 versus 3.78), and likelihood to buy is lower (38% versus 50%). In this case, consumers might expect the price to keep going down. Therefore, we argue that there is something fundamental about the order and magnitude of the price increments that offer a signal to consumers that the price is indeed in a trajectory that will reach the regular price, and this signal drives both higher future price expectations and greater anticipated inaction regret, which lead to greater likelihood to buy and higher revenue.

In summary, Study 1 provides initial empirical support in favor of SDD and the conceptual model. However, this study has a few limitations that must be addressed. First, the study limited participants in terms of the number of prices received. Study 2 addresses this limitation by employing 20 weeks of price information to allow for a more complete assessment of image perceptions. These new stimuli provide a stronger test of the potentially deleterious impact on image perceptions because it has been shown that such assessments are long-term (Blattberg, Briesch, and Fox 1995; Mela, Gupta, and Lehmann 1997).

A second limitation is that we considered only one store and one pricing tactic at a time. Study 2 addresses this limitation by giving some participants historical pricing information from two stores, one employing a hi–lo pricing tactic and the other employing SDD. A third limitation is that the hi–lo pricing condition included three large discounts of $150, while SDD employed five discounts (one at $150, one at $120, one at $90, one at $60, and one at $30). In Study 2, we include a condition in which both tactics employ the same number of discounts to assess the potential alternative explanation of discount frequency (Alba et al. 1999). Moreover, by including an equal number of discounts, we alleviate concerns about potential administrative cost differences associated with the SDD tactic. In particular, and as we tested in Study 1, SDD would require store managers to make more price changes and potentially incur higher advertising expenses because more sales would need to be promoted. In addition, Study 2 assesses participants' willingness to pay and likelihood to visit the store in the future after exposure to 20 past prices for the SDD and hi–lo pricing tactics. The willingness-to-pay assessment allows for another comparison of the effectiveness of SDD, and our measure of the likelihood to visit the store provides an opportunity to evaluate whether one tactic generates greater store traffic than the other. Finally, and similar to Krishna's (1994) assessment of the certainty consumers associate with a deal occurring, Study 2 examines whether SDD generates higher levels of price certainty than hi–lo. That is, if SDD generates greater price certainty, this could be an alternative explanation for its relative effectiveness.

Study 2: Price History Design

Method

Having established the underlying theoretical mechanisms (future price expectations and anticipated inaction regret) associated with the effectiveness of SDD in Study 1, we conducted Study 2 to further investigate the relative effectiveness of SDD versus hi–lo pricing and to address the limitations associated with Study 1. Specifically, we manipulated the price histories that participants were exposed to using similar discount sizes to those used in Study 1. Participants were randomly assigned to one of five conditions (see Table 3). Three of the conditions involved a single-store pricing tactic, and two conditions involved two-store pricing tactics. For example, in the single-store conditions, each participant saw only one pricing tactic (A, A′, or B). Condition A involved a hi–lo pattern (four sales of $349). Condition A′ was a variation of hi–lo involving the same number of promotions as in SDD (six sales of $399). Finally, Condition B involved the SDD pattern of prices (two sets of the following pattern of sales: $349, $399, $449). In addition, we included two more conditions in which participants observed two stores (one following the hi–lo and the other the SDD pricing pattern). In one condition (AB), the store that used hi–lo pricing included four sales (A), and the store that used the SDD tactic (B) included six sales (see Table 3). In the other condition (A′B), both stores had six sales, with Store A′ using hi–lo pricing and Store B using SDD. Importantly, and for all conditions, each store had the same average price ($469) across each 20-week period.

We collected data from 247 undergraduate business students who were entered into a cash prize raffle for their participation. Participants began by reading a scenario and looking at price information available from two stores (or one store in the three single-store conditions). Under the scenario, participants were told to imagine that they had consulted pricetrack.com (a fictitious Web site) to gather past prices for a PDA described in the scenario and that the Web site revealed the 20 most-recent weekly prices for the PDA at two stores (A and B, or A′ and B) or at one store (A, B, or A′). After evaluating the price information, participants were asked to assume that they had gone home to visit family during a school break. Returning to school a few weeks later, they had gone to pricetrack.com to check prices again because they wanted to purchase the PDA, but the Web site was no longer available and had not been available while they were away. After reading this scenario, participants indicated the highest price they were willing to pay for the PDA, their likelihood of visiting the store, their best estimate of the price of the PDA after they went away, and

TABLE 3
Study 2 Experimental Conditions

	Conditions						
				AB(Hi–Lo and SDD)		A′B(Hi–Lo′ and SDD)	
Period	A(Hi–Lo)	A′(Hi–Lo′)	B(SDD)	A(Hi–Lo)	B(SDD)	A′(Hi–Lo′)	B(SDD)
Week 1	V[a]	V	V	V	V	V	V
Week 2	V	V	V	V	V	V	V
Week 3	V	X	V	V	V	X	V
Week 4	V	V	V	V	V	V	V
Week 5	V	V	V	V	V	V	V
Week 6	W	X	W	W	W	X	W
Week 7	V	V	X	V	X	V	X
Week 8	V	V	Y	V	Y	V	Y
Week 9	W	X	V	W	V	X	V
Week 10	V	V	V	V	V	V	V
Week 11	V	V	V	V	V	V	V
Week 12	V	X	V	V	V	X	V
Week 13	V	V	V	V	V	V	V
Week 14	W	V	V	W	V	V	V
Week 15	V	X	W	V	W	X	W
Week 16	V	V	X	V	X	V	X
Week 17	W	V	Y	W	Y	V	Y
Week 18	V	V	V	V	V	V	V
Week 19	V	X	V	V	V	X	V
Week 20	V	V	V	V	V	V	V
Average	Z	Z	Z	Z	Z	Z	Z

[a]V: $499, W: $349, X: $399, Y: $499, Z: $469.

their level of certainty regarding their price estimate. Then, respondents indicated their image of the stores along with their image of the brand using the two-item measures from Study 1 (see the Appendix).

Results

Willingness to pay. Table 4 includes all the results for Study 2. We first evaluated willingness to pay across the two pricing tactics. We assessed willingness to pay here instead of likelihood to buy (as in Study 1) because respondents were not presented with a current price and, therefore, a decision of whether to buy. The results revealed that SDD generated a higher willingness to pay than both versions of hi–lo (B versus A: $435.63 versus $385.25; $t_{92} = 3.42$, $p < .01$; d = .71; and B versus A′: $435.63 versus $392.76; $t_{90} = 3.43$, $p < .01$; d = .72). These findings provide further support for the relative effectiveness of the SDD tactic. Moreover, willingness to pay was not significantly different between Conditions A ($385.25) and A′ ($392.76, $p > .10$). In the two-store conditions, we estimated only one willingness to pay for the PDA (as opposed to one for each store), and both versions of hi–lo (AB and A′B) generated similar results ($393.95 versus $371.29; $t_{86} = 1.22$, $p > .10$, respectively).

Likelihood to visit the store. Next, we wanted to assess whether the SDD tactic resulted in greater likelihood to visit the store than the hi–lo pricing tactic. We evaluated this by assessing participants' likelihood to visit each store after experiencing (1) each tactic for a period of 20 weeks or (2) both tactics for a period of 20 weeks. Respondents were asked how likely they were to visit the store (7 = "very likely," and 1 = "very unlikely"). Compared with the SDD (B) condition's average store traffic (4.61), the hi–lo (A) condition averaged 3.86 ($t_{92} = 2.71$, $p < .01$; d = .57) and the hi–lo (A′) condition averaged 3.88 ($t_{90} = 2.01$, $p < .05$; d = .42). As with willingness to pay, store traffic was similar for the two hi–lo conditions (A and A′). In the AB condi-

TABLE 4
Study 2 Results

	Conditions						
				AB(Hi–Lo and SDD)		A′B(Hi–Lo′ and SDD)	
Measures	A(Hi–Lo)	A′(Hi–Lo′)	B(SDD)	A(Hi–Lo)	B(SDD)	A′(Hi–Lo′)	B(SDD)
Willingness to pay	$385.25	$392.76	$435.63[a,b]	$393.95	$393.95	$371.29	$371.29
Likelihood to visit store	3.86	3.88	4.61[a,b]	4.13	5.07[a]	4.05	5.10[b]
Store image	4.27	4.47	4.62	4.94	4.92	4.99	4.92
Brand image	5.39	5.60	5.53	—[c]	—[c]	—[c]	—[c]

[a]Indicates significant differences ($p < .05$) between conditions B and A within the same row.
[b]Indicates significant differences ($p < .05$) between conditions B and A′ within the same row.
[c]Brand image measures were not included in the AB and A′B conditions because participants were exposed to both pricing tactics and their relative impact on brand image is confounded.

tion, participants averaged 5.07 for the SDD store and 4.13 for the hi–lo store ($t_{44} = 3.34$, $p < .01$; d = 1.03). Thus, participants were significantly more likely to visit a store using the SDD tactic than one using the hi–lo pricing tactic. For the A′B condition, participants averaged 5.10 for the SDD store and 4.05 for the hi–lo store ($t_{43} = 3.47$, $p < .01$; d = 1.06), again showing significant differences in likelihood to visit in favor of the SDD store. Thus, the SDD tactic appears to increase the potential traffic a store experiences relative to the hi–lo pricing tactic. Moreover, store traffic for the hi–lo tactic was similar for the AB and A′B conditions. Importantly, these results occur when consumers are made aware of prices. Recall that in Study 1, we assumed that store traffic was constant across SDD and hi–lo. As such, the Study 2 results suggest that the Study 1 results are conservative given that SDD may lead to an increase in store traffic if promotions are also advertised.

Price uncertainty. To examine the level of price uncertainty generated by the two pricing tactics, we first asked participants to estimate the price of the PDA a week after they went away for the break. Then, we asked participants to state their certainty with their price estimates (see the Appendix). A potential alternative to SDD generating higher future price expectations is that SDD may generate less uncertainty than hi–lo in consumer price estimates. However, the study results indicate that SDD (B) generated the same level of certainty as both hi–lo versions (A and A′) (84% versus 80% versus 77%, $F_{2, 119} = 1.49$, $p > .10$). As such, price uncertainty does not appear to be driving differences between SDD and hi–lo pricing.[9]

Store and brand image. We included store image and brand image measures in the single-store conditions (A, B, and A′), but we included only store image measures in the two-store conditions (AB and A′B).[10] Compared with the SDD (B) condition's average store image (4.62), the hi–lo (A) condition averaged 4.27, and the hi–lo (A′) condition averaged 4.47 ($t_{94} = 1.93$, $p < .10$; d = .40, and $t_{88} = .69$, $p > .10$). Thus, there were no significant differences in store image across stores A′ and B. However, the SDD store (B) had a slightly higher store image level than the hi–lo store (A). Store image did not vary between the two hi–lo conditions (A and A′). Similarly, compared with the SDD (B) condition's average brand image (5.53), the hi–lo (A) condition averaged 5.39, and the hi–lo (A′) condition averaged 5.60 ($t_{90} = .77$, $p > .10$, and $t_{90} = –.36$, $p > .10$, respectively). Thus, we observed no significant differences in brand image across tactics. In addition, brand image was similar for the two hi–lo conditions (A and A′).

In the two-store condition (AB), in which the hi–lo tactic has four promotions and SDD has six promotions (this replicates Study 1), store image averaged 4.94 for the hi–lo store and 4.92 for the SDD store ($t_{44} = .20$, $p > .10$). Thus, we observed no significant differences in store image across tactics. Importantly, these results suggest that the SDD tactic yields no additional negative long-term impact on store image. However, it is possible that SDD benefits in the AB condition by having more sales (i.e., six versus four) than the hi–lo tactic. For the A′B condition, store image averaged 4.99 in the hi–lo store and 4.92 in the SDD store ($t_{41} = .54$, $p > .10$). Again, we observed no significant differences in store image across tactics. Store image appears to be similar for the two tactics when we used the longer 20-week time frame as well as when an equal number of promotions were employed. Moreover, the store image values were similar for the AB and A′B hi–lo conditions.

In summary, across Studies 1 and 2, we provided participants with past price information and asked them to indicate their future price expectations and anticipated inaction regret to assess the relative likelihood to buy and willingness to pay for a product when using the SDD versus hi–lo pricing tactic. Collectively, these two studies revealed that SDD generates greater revenue and profit than hi–lo pricing and EDLP and has no deleterious effects associated with negative assessments of brand or store image. Moreover, we established that SDD appears to be effective for both short and long patterns of price promotion and that future price expectations and anticipated inaction regret are the underlying mechanisms driving these effects. Note that Studies 1 and 2 used different dependent variables, and we did not measure anticipated inaction regret in Study 2, precluding a further assessment of the underlying mechanism proposed. In addition, although Study 1 provided some evidence against price volatility as a possible explanation for the improved performance of SDD, note that though SDD had less price volatility than hi–lo (52.3 versus 61.6 standard deviations, respectively), this was not the case compared with hi–lo (47.0). This finding offers further evidence that price volatility may not be a feasible alternative explanation for the results.

Next, in Study 3, to further test the generalizability of the SDD tactic, we assess the relative effectiveness of SDD versus hi–lo pricing by adapting existing industry examples of the SDD tactic. We provide consumers with the product's regular price and a series of upcoming prices to assess SDD in a field setting. Study 3 improves on Studies 1 and 2 by testing the effectiveness of SDD in an actual consumption setting with greater external validity and by using a different presentation of the price promotions in an attempt to demonstrate another condition in which SDD may be more effective than the hi–lo pricing tactic.

Study 3: Field Study

The site for this study was an upscale kitchen appliance store that is located in a small and wealthy suburb of a large metropolitan area in the United States (population: >30,000; median age: 34 years; median household income: ~$66,000; education level: >80% high school, >40% with a

[9]Consistent with our predictions and the results of Study 1, the expected price for hi–lo (A) was $462.12; under hi–lo (A′), it was $458.11; and under SDD, it was $489.31. In other words, SDD led to significantly higher future price expectations than both versions of hi–lo ($F_{2, 119} = 4.03$, $p < .05$, $\chi^2 = .12$). In addition, SDD led to a higher future price expectation in the A′B condition (469.88 versus 444.59; $t_{66} = 2.01$, $p < .05$; d = .52) but not in the AB condition (471.03 versus 452.85; $t_{59} = 1.16$, $p > .10$; d = .30).

[10]We did not include brand image measures in the AB and A′B conditions because participants were exposed to both pricing tactics, and their relative impact on brand image is confounded.

bachelor's degree or better, and >16% with a master's degree or better, according to the 2000 census). The product category selected was wine bottle stoppers, which are sold in the store in different styles for a regular price of $24.95. We selected this product because of several characteristics, such as the store was allowed to offer promotions by the manufacturer, the product was fairly popular, and the price was not too high, which made the study financially manageable. There had been no other promotions in the focal category all year. In addition, during the promotion periods, all other activity in the store (e.g., number of salespeople) remained constant.

Design and Procedure

The store used two separate pricing tactics (hi–lo and SDD) during the test period. These pricing tactics were alternated every week for a period of 30 weeks. The average price of the product was kept constant between the promotion tactics. In addition, after discussing the procedure with the store owner, we determined that customers do not visit the store weekly, and thus we decided to run the promotions on a weekly basis and to alternate the two tactics.

To be consistent with the similar instances of the companies mentioned in the introduction (New York & Company, Boden Clothing, and Time Warner) and to use discount sizes consistent with prior research (Grewal et al. 1996), SDD was run at 30% off the first day, 20% off the second day, and 10% off the third day. Hi–lo was run in two versions (at the same frequency as SDD): three days at 20% off and at lower frequency but similar depth as SDD and two days at 30% off. More specifically, the wine stopper, which was regularly priced at $24.95, was discounted under the SDD tactic at $17.45, $19.95, and $22.45 before returning to the regular price. Under same-frequency hi–lo, the product was discounted at $19.95 for all three days, and under same-depth hi–lo, the product was discounted at $17.45 for two days and returned to the original price of $24.95 on the third day.[11] The SDD and hi–lo pricing tactic stimuli used in Study 3 appear in the Appendix.

Similar to the previous study, by allowing hi–lo to have two versions, we can test both the effect of frequency of promotion and the depth of promotion. All three conditions were run for the same number of weeks (10) and had the same average price ($19.95) across the three days. As such, each tactic was run for 30 days, and sale signs were removed during the nonpromotion periods. The total store sales volume during the 30 promotional periods was similar across conditions.

Results

On average, under no promotion, the store sells 8 wine stoppers during a 30-day period (the length of time that each tactic was run). During the same-frequency hi–lo promotion period, the store sold 14 wine stoppers at $19.95; during the same-depth hi–lo promotion period, the store sold 13 wine stoppers (10 at $17.45 and 3 at $24.95); and during the SDD promotion period, the store sold 24 wine stoppers (14 at $17.45, 6 at $19.95, and 4 at $22.45). The product costs the store $12.475 and has a 100% profit margin. Compared with when no promotion is offered, same-frequency hi–lo increased sales by 75%, same-depth hi–lo increased sales by 63%, and SDD increased sales by 200%. Importantly, the increase in sales associated with SDD relative to same-frequency and same-depth hi–lo is statistically significant ($t_{58} = 2.18$, $p < .05$; d = .57, and $t_{58} = 2.41$, $p < .05$; d = .63, respectively). Thus, H_1 is supported. In addition to the sales results, compared with when no promotion tactic was offered, same-frequency hi–lo led to a 5% increase in profit, same depth hi–lo led to a 12% decrease in profit, and SDD led to a 55% increase in profit. Thus, SDD performs better than the more established hi–lo pricing tactic. In the next study, using available scanner panel data, we provide anecdotal evidence that SDD can be an effective pricing tactic even in grocery store settings.

Study 4: Dominick's Finer Foods Data

We performed a final test for SDD by examining the Dominick's Finer Foods data sets, which have been widely used in marketing (Mace and Neslin 2004). These data sets include weekly sales volume, price, and profit data at the stockkeeping unit (SKU) level from several product categories (e.g., soft drinks, cereal, analgesics, beer) across 399 weeks (1989–1997) from Dominick's stores in the Chicago metropolitan area. We begin by examining colas, which represent 34 SKUs from the soft drink category. To avoid aggregation of the data, which could lead to erroneous conclusions about the pricing tactic of each store, we focus our analysis in the most popular store.

An examination of the data set shows that on some (albeit rare) occasions, the store manager was already using an SDD pricing tactic.[12] For example, examining the prices for two-liter bottles of Pepsi, we observe 14 occasions when the price was brought back to the regular level in two or more steps. For the six-pack of Pepsi 12-ounce cans, we observe 12 occasions of SDD. These represent approximately 14% of the weeks. In each of these occasions, no major holiday was included in any of the weeks for SDD or hi–lo pricing.

The next step was to find patterns that would enable us to compare the revenues of the store when using SDD instead of hi–lo pricing patterns. For example, for two-liter bottles of Pepsi, there was only one such case in which the patterns were comparable: Both patterns begin with the same regular price of $1.59, lower the price to the same level of $1.09, and eventually return it to the regular level. Note that we were unable to control for other important variables (e.g., depth and frequency of sales before the examined period). Thus, the results we present here are not

[11]Note that the same-depth hi–lo was offered for two-thirds of the time; the price was $17.45 for two days, and on the third day, it was set to the regular price ($24.95) to maintain the same average price across all three conditions ($19.95).

[12]However, note that it is not clear from observing the data that the store policy is to use SDD. We are not able to deduce whether this pricing pattern is due to a conscious choice by the store manager or to other factors (e.g., trade deals).

meant to provide a definitive test of the two tactics. Instead, these results demonstrate an occasion when SDD was evidenced in the marketplace, thus providing a rough assessment of its effectiveness.

On this occasion, the price of Diet Pepsi increased from its low point of $1.09 in two intermediate steps ($1.29, $1.49). We compared this trend of price increases with prices from a couple of weeks later, when the price of Diet Pepsi increased from its low point of $1.09 directly to $1.59. The average purchase price across the hi–lo promotion period was $1.42, and the average purchase price across the SDD promotion period was $1.41. Consistent with prior results, consumption of soft drinks is positively related to atmospheric temperature (Bello and Al-Hammad 2006; Hays 1999). To make the comparisons as accurate and fair as possible, we contacted the National Oceanic and Atmospheric Association to obtain daily temperature data for the period and location involved in these tests. Because SDD actually occurred in late April and hi–lo occurred in the mid-May, the average temperature was higher during the hi–lo promotion than during the SDD promotion (69°F versus 53°F, $p < .01$). Thus, the actual test is a conservative estimate of the effectiveness of SDD. The revenue generated from SDD during the four-week period was $14,846.80, and from hi–lo, it was $12,471.00. This represents a 19.1% increase in revenue and a 25% increase in profit from using SDD versus hi–lo. Another example was for a six-pack of Pepsi 12-ounce cans. The price started at $2.79 and dropped to $1.99. The SDD series brought the price back up to $2.79 with one intermediate step ($2.33), while the hi–lo practice brought the price back to $2.79 directly. The revenue generated from SDD was $303.08, and from hi–lo, it was $149.76. This represents a 102% increase in revenue from using SDD versus hi–lo during the three-week period. In addition, SDD generated 43% more profit than hi–lo. There were no significant differences in temperature between the two tactics. Thus, we were able to find examples of SDD pricing, and it appeared to be effective. Keeping in mind the limitations we mentioned previously, this is consistent with the results from the experimental studies and the field study we presented.

To get a more reliable measure of the effectiveness of the different tactics, we examined all occurrences of the same pricing tactic throughout the available data set. We observed two more occasions of hi–lo with the same previously described constraints (same regular price, same low price, return to the same regular price, and no prices above or below those extremes for a few weeks before the focal period of the tactic).[13] When we compare the SDD promotion period with the average hi–lo promotion period (average of four promotion periods of the same hi–lo pattern), the revenue generated from SDD was 29% higher than the revenue generated from average hi–lo. In addition, SDD generated 44% higher profit than average hi–lo. Finally, the average temperature was higher during the average hi–lo promotion than during the SDD promotion (57°F versus 53°F; $p < .05$), making these tests conservative.

To assess whether this evidence of SDD was only a single-store phenomenon or whether there were other stores employing SDD pricing, we assessed the same four SKUs for the next three largest stores in the soft drink category. We found that each of these stores was also practicing SDD at some limited level (approximately 10% of the time) with similar results. We also investigated data from other categories (i.e., analgesics, beer, canned soup, cereal, and crackers) for the largest store (in terms of sales volume) in each category. For categories with a few instances (i.e., canned soup, cereal, and crackers), SDD yielded a significant increase in profit over hi–lo (SunBelt Berry Basic cereal showed an 80% increase). These results indicate that the SDD pricing tactic may not be category specific. Instead, it appears that there is some use of this tactic within grocery store chains, across stores, and across product categories, and it appears to be effective.

Discussion

Summary of Results

In this research, we set out to determine whether SDD is an effective tactic because of its impact on consumers' purchase likelihood based on higher future price expectations and increased anticipated inaction regret. To assess the effectiveness of SDD empirically, we conducted four studies. The results from these studies suggest that SDD is an effective alternative to both hi–lo pricing and EDLP. Study 1 found SDD to yield higher revenue than both hi–lo pricing and EDLP. It also provided support for the proposed framework in which SDD leads to higher future price expectations and anticipated inaction regret, which in turn lead to greater likelihood to buy. It appears that the "steadily decreasing" part of the discount is fundamental in providing consumers with a signal for higher future prices, which encourages them to buy now. Study 2 showed that SDD leads to higher willingness to pay than hi–lo pricing, even when we control the number of promotions. Thus, we ruled out a frequency-of-promotions explanation (Alba et al. 1999). Study 2 also provided participants with multiple past price points and allowed for a simultaneous comparison between the hi–lo and the SDD tactics. In addition, we observed no deleterious effects on store or brand image across both lab experiments. Next, the field study showed that SDD yields higher revenue than hi–lo pricing. Finally, an examination of grocery store scanner panel data revealed that SDD may be a more profitable tactic than hi–lo pricing. The overall results confirm our prediction and indicate that SDD generates greater revenue than hi–lo pricing.

In addition, Study 2 tested participants' likelihood to visit a store on the basis of its pricing tactic. The findings show that the SDD tactic generated a greater likelihood of visiting the store than hi–lo pricing. Thus, SDD may benefit the retailer by yielding greater revenues and increased store traffic. Because store traffic was constant in the field experiment (Study 3) and was assumed to be constant in Study 1,

[13]Note that the regular price and the low price of soft drinks changed several times during the span of the seven years included in the data set. Although the hi–lo tactic was used several times, the changes in the band of price points limited the number of testable occasions.

the results represent a conservative estimate of SDD's effectiveness over hi–lo pricing. Finally, Study 4 provides some anecdotal illustration from the field regarding grocery products using a pricing tactic that resembles SDD and shows that it is profitable.

Managerial Implications

The practices of hi–lo pricing and EDLP are ubiquitous in today's retail landscape. Managers often discount a product for a period and then return the price to its original level all at once (hi–lo pricing). For example, managers might regularly charge $999 for a television, put it on sale for $799 for a week, and then raise the price back to $999 after a week. Alternatively, some retail managers choose to employ an EDLP tactic and price the television at $919 every week. Our research supports the use of an SDD tactic, in which the television described is discounted to $799, and then instead of returning it to its original price all at once, the retailer offers at least one additional sale, such as $899. Higher future price expectations and greater anticipation of inaction regret appear to be the underlying mechanisms that lead to the effectiveness of the SDD tactic.

The SDD tactic is especially relevant given the current economic downturn. Many marketers have reduced prices in an effort to encourage consumers to buy. How these marketers return the prices to their original level as the economic landscape improves can have a great impact on their bottom line. The research presented here suggests that managers should highly consider bringing the prices of their products back up to their original levels in steps instead of all at once to take advantage of higher future price expectations and greater anticipated inaction regret.

Limitations and Future Research Directions

This research has a some limitations. First, further research could evaluate the effectiveness of SDD in choice sets involving multiple brands to examine its effect on brand switching (Zeelenberg and Van Putten 2005). Second, although the results from the field study are encouraging, the study included only one product category and was conducted in one store for a period of 30 weeks. Third, studying the longer-term impact of SDD on store image and brand image when using less known or store-branded products is also warranted. Fourth, we tested our theoretical rationale only in Study 1. More evidence regarding the underlying mechanisms of future price expectations and anticipated inaction regret is warranted. Fifth, although we assessed price uncertainty in Study 2, our measure captured participants' level of certainty (i.e., confidence) about their price estimates and not the level of certainty about the store's future prices from each of the pricing tactics.

Further research is also warranted to determine whether SDD can be effective for grocery store products, for products purchased frequently, for products with low price and profit margin, or for products varying in their level of necessity. The examination of the Dominick's scanner panel data provides some initial evidence that SDD may prove to be effective for grocery store products.

Prior research by Alba and colleagues (1999) demonstrates that for dichotomous price distributions, promotions with greater depth result in lower price estimates than promotions offered more frequently but at lower depths. Moreover, their results indicate that for nondichotomous price distributions, greater frequency of promotions results in lower price estimates than deeper depth. However, in the research presented here, we do not directly compare different depths and frequency of promotions for dichotomous or nondichotomous distributions. Instead, we compare hi–lo pricing, which has a dichotomous price distribution, with SDD, which has a nondichotomous price distribution. Importantly, because of the nature of the SDD tactic, its price distribution cannot be dichotomous. Future researchers are encouraged to examine the condition in which hi–lo pricing is nondichotomous to compare it with SDD. From the work of Alba and colleagues, SDD may be preferred in this instance because it has more frequent promotions, which lead to lower price estimates.

Lalwani and Monroe (2005) replicate and extend Alba and colleagues' (1999) results and suggest that it is not only the dichotomous versus nondichotomous nature of the price distribution that affects the depth and frequency effects but also the salience of depth and frequency. Future researchers are encouraged to examine the relative effectiveness of hi–lo pricing versus SDD when the depth of the discount is larger (e.g., reduced from $499 to $299 instead of to $349, as in our first two studies). Lalwani and Monroe's results suggest that the magnitude of promotions should be more salient for a higher-priced product, such as the PDA used in Studies 1 and 2, and should result in a depth effect favoring hi–lo pricing. However, with this larger depth of discount, the marketer has the ability to offer additional discounts before returning the product to its regular price. These additional discounts should enhance the frequency effect and favor the SDD tactic. Further research needs to disentangle these competing effects. An evaluation of the depth of the discounts and the number of steps may uncover additional boundary conditions associated with the effectiveness of SDD versus hi–lo pricing.

Moreover, future researchers need to consider the role of consumer stockpiling behavior on the relative effectiveness of hi–lo pricing versus SDD. Mela, Jedidi, and Bowman (1998) show that consumers wait for deep discounts, and Ailawadi and colleagues (2007) suggest that consumer stockpiling does not necessarily hurt sales. We note that in Study 3, no consumer purchased more than one wine stopper. Future researchers are encouraged to explore these stockpiling-related issues regarding the relative effectiveness of the hi–lo and SDD pricing tactics.

In addition, this research was restricted to SDD. Additional research is needed to explore the effectiveness of using random or uneven decreasing discounts before returning the product to its original price. Our initial attempt to investigate random discounting patterns in Study 1 seems to suggest that they are less effective than SDD and not significantly different from hi–lo. Research also needs to consider the impact of perceptions of deal frequency and perceptions of average deal price when determining the relative effectiveness of SDD versus hi–lo pricing (Krishna and

Johar 1996). In particular, Krishna and Johar (1996) find that the greater the perception of deal frequency and the greater the perceived average deal price, the greater is consumers' willingness to pay. The importance of these two factors on the relative effectiveness of SDD versus hi–lo pricing warrants additional research. Research related to the impacts of the depth of the discount, the duration of the discount, the number of steps in SDD, and the duration of each step is also warranted. Further research could also assess the effectiveness of the SDD strategy for categories in which capacity management (e.g., services) or inventory management (e.g., perishables) is critical. Because we studied volume herein, further research might also be conducted to evaluate the relative impact of hi–lo pricing and SDD on the speed with which products are sold.

From a theoretical perspective, this research focused on the roles of future price expectations and anticipated inaction regret in predicting purchase likelihood. Both of these constructs are forward looking in nature. Future researchers are encouraged to evaluate the roles of experienced regret (Inman and Zeelenberg 2002; Tsiros and Mittal 2000) and past prices serving as historical reference prices (Briesch et al. 1997) as additional predictors of purchase likelihood. In particular, it is possible that experienced regret (from missing a prior larger sale) influences consumer behavior by reducing purchase likelihood (Tsiros 2009). We expect that experienced regret will be lower on average under SDD than under hi–lo, especially as the number of steps in returning the price to the original level increases as the difference between the two consecutive promotions decreases.

Future researchers might also consider the role of past prices serving as external reference prices on the relative effectiveness of SDD versus hi–lo pricing. For example, for a particular set of prices, such as those displayed in Table 1, a reference price could be calculated by exponentially smoothing a brand's own shelf prices on previous purchase occasions (Kalyanaram and Little 1994; Lattin and Bucklin 1989). Briesch and colleagues (1997) find this reference-pricing model to be predictive. This brand-specific reference-pricing model could be used to determine the break-even smoothing constant (representing the degree to which past prices are incorporated into current reference price estimates) in which SDD and hi–lo pricing are equally effective. This type of research might uncover boundary conditions associated with when hi–lo is preferred versus when SDD is more effective, assuming that consumers employ past prices to form their reference price estimates. Finally, another potential boundary condition might be consumer expectations for the product price to increase above the regular price. As we mentioned previously, an assumption we made in building and testing our conceptual framework was that there are well-known and advertised regular prices that are steady, and consumers do not expect future prices to exceed those levels. If this assumption does not hold, SDD may not enjoy any benefit over hi–lo, and indeed the rapid and large price increment may serve as a strong signal for potential price spikes, which may lead to higher purchase behavior. Note that in both Studies 1 and 2, participants did not forecast the price of the PDA to go above its regular price ($499).

In conclusion, SDD may be an effective pricing tactic for sellers to employ. Evidence from the lab and from the field corroborated this assessment. We presented and empirically validated a conceptual framework that provides the theoretical underpinnings for SDD's effectiveness, and we provided some potential boundary conditions that might limit its application and success. We encourage future researchers to investigate the effectiveness of SDD and its variations in diverse settings.

Appendix

Study 1 Scenario Example: Week 3 of SDD ($499, $379, $409)

Page 1

Recently you realized that you were having trouble keeping track of your schedule and decided to purchase a PDA.

You find a store where you like one of the PDAs available. It has the features that you desire to better keep track of your schedule. A week ago, the store had advertised a *one-week sale* and the PDA that normally sells for $499 was offered at *$379*. At that time, you were not looking to buy one but you remember the sale. On page two of this packet is the store's advertisement for the PDA.

Please take a couple of minutes to look at the PDA in the ad on page two before continuing.

Page 2

Regularly $499
Today $379

HP iPAQ 4155 PDA

- The pacesetting iPAQ showcasing Microsoft® Pocket PC Software 2003
- 3.5″ TFT transreflective color display for easy viewing, both indoors and outdoors
- 400MHz Intel® Xscale processor
- iPAQ File Store protects critical data in nonvolatile storage
- Integrated Bluetooth, MP3 Stereo
- 64 MB of RAM for applications, files, music and more

Last Sunday while out shopping you stopped by the store and saw that the store was selling the product at *$409*. On page three of this packet is the store's advertisement for the PDA.

Please take a couple of minutes to look at the PDA in the ad on page three before continuing.

Page 3

Regularly $499
Today $409

HP iPAQ 4155 PDA

- The pacesetting iPAQ showcasing Microsoft® Pocket PC Software 2003
- 3.5″ TFT transreflective color display for easy viewing, both indoors and outdoors
- 400MHz Intel® Xscale processor
- iPAQ File Store protects critical data in nonvolatile storage
- Integrated Bluetooth, MP3 Stereo
- 64 MB of RAM for applications, files, music and more

At this time you realize that you have to make a decision to either purchase the PDA at the new price or wait for another sale or visit another store.

Study 1 Measures

Purchase likelihood at a given price

I am _____ the PDA for $409?
____ likely to buy
____ neither likely or unlikely to buy
____ unlikely to buy

Thought listing

In the space below, please describe your thoughts that led to this decision.

_____
_____

Future price expectations

What is your best estimate of what the price of the PDA will be 1 week from now? $ _____

Anticipated inaction regret

1. If I don't buy the PDA now, I will regret it later.

Strongly Agree						*Strongly Disagree*
7	6	5	4	3	2	1

Store image

1. My image of the store is positive.

Strongly Agree						*Strongly Disagree*
7	6	5	4	3	2	1

2. The store carries high quality merchandise.

Strongly Agree						*Strongly Disagree*
7	6	5	4	3	2	1

Brand image

1. My image of the HP IPAQ is positive

Strongly Agree						*Strongly Disagree*
7	6	5	4	3	2	1

2. This HP IPAQ appears to be of quality

Strongly Agree						*Strongly Disagree*
7	6	5	4	3	2	1

Study 2 Additional Measures

Willingness to pay

If you were to buy this HP iPAQ, what is the highest price you would pay? $_____

Likelihood to Visit Store

How likely are you to visit Store A?

Very Likely						*Very Unlikely*
7	6	5	4	3	2	1

How likely are you to visit Store B?

Very Likely						*Very Unlikely*
7	6	5	4	3	2	1

Future price expectation

What was the most likely price during the week after you went away? $_____

Uncertainty of price expectation

How certain are you about your price estimate? ___% (include a number from 0 to 100)

Study 3 Stimuli

SDD

Hi–Lo (same frequency)

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