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The Discounting of Discounts and Promotion Thresholds

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This study examines consumers' response to retailers' price promotions. It shows that consumers *discount* the price discounts. It also suggests that the discounting of discounts and changes in purchase intention depend on the discount level, store image, and whether the product advertised is a name brand or a store brand. The study goes one step further to investigate the existence of promotion thresholds. We use experimental data and an econometric methodology to gather empirical evidence that consumers do not change their intentions to buy unless the promotional discount is above a threshold level. This threshold point differs for name brands and store brands. Specifically, we find that the threshold for a name brand is lower than that for a store brand. In other words, stores can attract consumers by offering a small discount on name brands while a larger discount is needed for a similar effect for a store brand. The study also indicates the existence of a promotion saturation point above which the effect of discounts on changes in consumers' purchase intention is minimal. These results confirm consumers' S-shaped response to promotions.

Stores frequently use price promotions to attract customers. It is not uncommon to find stores advertising 50, 60, or even 70 percent discounts on several products. But do consumers believe these advertised discounts? Previous studies suggest that they do not. It has been shown that consumers' perceptions of discounts are typically less than the advertised discounts (see, e.g., Blair and Landon 1981; Mobley, Bearden, and Teel 1988). In other words, consumers *discount* the price discounts. We extend this concept by suggesting that the discounting of discounts depends on the discount level, store image, and whether the advertised product is a name brand or a store brand. Since the discounting of discounts is likely to affect consumers' intentions to buy the product, the study also examines the effects of the discount level, store image, and product advertised on consumers' purchase intentions.

A better understanding of consumers' responses to price discounts for different stores and brands also helps us investigate the existence of promotion thresholds. A threshold is the minimum value of price promotion required to change consumers' purchase intentions. While many managers believe that price reductions of about 15 percent are needed to attract consumers to a sale (Della Bitta and Monroe 1980), very few studies have attempted to validate this managerial intuition. This study uses the experimental data and a simple econometric methodology to find promotion thresholds. We also investigate whether the thresholds are different for different stores and brands. These results provide a better understanding of consumers' response to price promotions.

Brand name and store image are important contextual variables affecting consumers' responses to price and promotion. While price and other *focal* cues are the stimuli to which consumers respond directly, the effects of price-cue information are moderated by other informational cues available to consumers (Olson 1977). These background or *contextual* cues are all other stimuli in the behavioral situation that provide the context within which the focal cues are operative (Monroe 1977). These include such cues as brand name, store image, and brand familiarity. While many studies have looked at the effect of focal cues and the influence of comparative prices (e.g., Lichtenstein and Bearden 1989), very few have examined the contextual influences of brand name and store image. In a study of comparison prices and coupon and brand effects, Bearden, Lichtenstein, and Teel (1984) suggested the need for research to understand better the brand and store effects

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at varying discount levels. This study takes a step in that direction.[1]

PERCEIVED DISCOUNT

Consumers evaluate and encode information provided to them, and it is their perception of the information and not the information itself that affects their behavior. Olson and Jacoby (1977) note, "External stimuli do not exert direct effects upon behavior but only indirect effects. Stimuli must first be perceived and interpreted before they can affect decision processes and overt behavior" (p. 73). Therefore, valuation or encoding of observed prices or price discounts (which are the external stimuli) is expected to be carried out. Theories such as information integration define valuation as the psychological processes that extract information from physical stimuli (Anderson 1981). In pricing literature, encoding refers to the subjective interpretation and assignment of meaning to objective prices and price discounts (Monroe 1984; Olson and Jacoby 1977; Zeithaml 1984). Further, the notion of reference price, which is consistent with adaptation-level theory (Helson 1964) and assimilation-contrast theory (Sherif 1963), suggests that consumers have internal reference prices against which current prices are compared (Kalwani et al. 1990; Lattin and Bucklin 1989; Urbany and Dickson 1991; Winer 1986). The perceived discount (PD) is therefore the expected savings from this internal reference price (Mobley et al. 1988; Monroe 1977; Winer 1986).

As the discount advertised (AD, defined in this study as the percentage off regular price) by retailers increases, consumers' perceptions of the discounts or savings are also likely to increase. This is clearly the underlying premise for most promotional offerings, and it has been supported by several studies (Berkowitz and Walton 1980; Della Bitta, Monroe, and McGinnis 1981; Mobley et al. 1988). Is the PD less than the AD? This question was addressed by several studies in relation to the issue raised by Federal Trade Commission cases dealing with the fairness of reference price advertising by retailers. Critics of advertised reference price argue that retailers commonly inflate these prices and distort consumer perceptions of the savings offered (Liefeld and Heslop 1985; Urbany, Bearden, and Weilbaker 1988). Defenders of reference price advertising claim that consumers learn to discount reference price claims, thus protecting themselves from deception (Blair and Landon 1981). Consumers' skepticism about advertised price offers has been demonstrated by many previous studies (Fry and McDougall 1974; Liefeld and Heslop 1985; Sewall and Goldstein 1979). For example, Liefeld and Heslop (1985) state, "Perhaps the sale context is so overused . . . that the intent of these practices is readily transparent to consumers leading them to distrust and greatly discount the claims implied by such advertising practices" (p. 874). Blair and Landon (1981) found that reference price claims were consistently discounted by about 25 percent. Even when reference prices are not explicitly mentioned, consumers seem to discount the perceived savings level. Mobley et al. (1988) found that 25 percent and 50 percent discount claims elicited 21 percent and 45 percent perceived price reductions, respectively. Therefore, we expect that the PD will be less than the AD; that is, we expect the discounting of discounts. Following Urbany et al. (1988), we suggest that discounting occurs when consumers doubt the credibility of the advertised savings, but instead of completely rejecting it they reduce it to a level deemed more reasonable.

Does the discounting of discounts increase with the increase in the AD level? The answer seems to be yes. Della Bitta et al. (1981) suggest that, if the price reduction is too large, consumers may perceive that the offer is not bona fide. Fry and McDougall (1974) found that higher claimed savings resulted in fewer respondents' believing the reference price. Urbany et al. (1988) proposed that discounting may be a natural response of consumers, particularly to advertisements making seemingly exaggerated savings claims. Della Bitta and Monroe's (1980) findings suggest that consumers' perceptions of savings do not significantly differ between 30 percent and 50 percent discount levels, hence indirectly suggesting a larger discounting of claimed savings at 50 percent than at 30 percent. Therefore,

H1: Consumers discount the discounts, and this discounting of discounts (i.e., the difference between AD and PD) increases with higher advertised savings.

Store Image

As indicated above, one of the key reasons for the discounting of discounts is the lack of credibility of advertised savings, particularly when the advertised savings level increases. This line of reasoning can be extended to the credibility of the store offering the discount. Barnes (1975) found that respondents gave higher-prestige department stores' advertisements consistently higher mean scores on believability than they gave to advertisements for low-prestige discount stores. Because of the high credibility of high-image stores, the credibility of discounts offered by them will also be higher. In a recent study, Biswas and Blair (1991) show that reference price claims of discount stores are discounted more than those of nondiscount stores.

Attribution and information-processing theories also shed some light on this issue. According to attribution theory, information that is "more of the same" is less likely to be elaborated by consumers (Kelley 1973). Similarly, information-processing literature suggests

[1]In this study we focus on consumer durable (or semidurable) products. Specifically, we use aerobic shoes as the product in our experiment.

that consumers are less likely to process and elaborate stimuli that are perceived in contexts they have encountered before. On the basis of these theoretical frameworks, Lichtenstein and Bearden (1989) proposed that the consistency and distinctiveness of pricing practices of a retailer are important contextual variables in the formation of consumers' internal price standards. Specifically, they suggest that consumers' internal price standards, perceived value of the deal, and source credibility perceptions are likely to be higher when they encounter an advertisement from a store that does not consistently make reference price claims and is highly distinctive in its price promotion behavior.[2] This implies that, if a store promotes its products very frequently, consumers are likely to make references such as, "this store always offers deals, so its regular price is really not a regular price." A claim of 50 percent off the regular price by a frequently promoting store is therefore likely to be discounted more because its regular price is perceived to be lower than claimed or implied by the store. Since store image and frequency of promotion are usually negatively correlated, we suggest that

H2: The discounting of discounts will be less for high-image stores than for low-image stores.[3]

Name Brand versus Store Brand

Like store image, brand name is also an important contextual variable that affects consumers' responses to price and price discounts. A well-established brand name conveys high image and high quality perceptions. Many studies on the price-quality relationship have found that brand name is an important moderating variable that helps control or stabilize the quality perceptions of a branded product even when its price is reduced. For example, Della Bitta et al. (1981) manipulated different discount levels for a Texas Instruments calculator and found that the perceived quality was not influenced by the size of the discount. They concluded that this attested to the influence of the brand name (Texas Instruments). Dickson and Sawyer (1984) echo this thought and suggest that, in the presence of a manufacturer's name, consumers are not going to use low price as an indication of low or unacceptable quality. In other words, instead of using discounted or sale price as a cue to infer the quality of a brand name product, the brand name is used to infer or maintain quality perceptions. Consumers should therefore be more likely to accept the regular price claims of a name brand. As a result, the claimed discount on a name brand will be more believable than that for a store brand. This argument is shared by Bearden et al. (1984) and Blair and Landon (1981), who suggest that consumers will do less discounting of claimed discounts for national or name brands than for private or lesser-known brands. Therefore,

H3: There will be less discounting of discounts for name brands than for store brands.[4]

CHANGE IN PURCHASE INTENTION

So far we have discussed the relationship between ADs and PDs. Presumably, retailers' key objective in offering price promotions is to influence consumers' buying behavior. Therefore, one of the key issues for retailers and consumer researchers is to find how promotions affect consumers' purchase intentions. Our discussion about the relationship between AD and PD helps in evaluating this issue since it is generally believed that AD affects PD, which in turn affects consumers' intentions to buy the product. For example, an increase in AD is likely to increase consumers' perception of the discount, which is then likely to increase consumers' intentions to buy (Berkowitz and Walton 1980). Since the discounting of discounts is likely to vary across stores (high vs. low image) and across brands (name brands vs. store brands), the changes in consumers' purchase intentions (CIs) are also likely to follow this pattern.[5]

According to Monroe (1990), consumers' purchase evaluations of a product are based on its perceived value, which is defined as the ratio of a product's perceived quality and its perceived price; that is, perceived value = perceived quality/perceived price. As indicated earlier, a brand name lends credibility to a product so that a promotional discount on a name brand does not affect its quality perception as much as a discount on a store brand. Therefore, when a store brand is promoted, its perceived price goes down but so does its perceived quality. A similar promotion for a name brand reduces its perceived price, but the decline in its perceived quality is likely to be less than that for the

[2]Several researchers have expanded on different interpretations of reference price. For example, Monroe (1990) defines reference price as the price that buyers use to compare the offered price of a product. This reference price may be a price in a buyer's memory (internal reference price), or it may be provided externally by, say, a retailer. Klein and Oglethorpe (1987) also discuss three types of reference prices: aspiration prices, market prices, and historical prices.

[3]Note there are two factors working together: the credibility of the store and the frequency of promotion. Typically, a store that frequently offers promotions loses credibility about its offerings, thereby hurting its overall image. An extreme example may be a frequent "going out of business" sale by a store. However, there are at least a few stores (e.g., Wal-Mart) for which image and promotion frequency may not be negatively correlated. In these cases the two factors mentioned above may work in opposite directions. Although our focus is on the majority of stores, for which this relationship is likely to be true (in our study we do find such a negative correlation), it will be interesting to contrast the synergistic and opposing effect of these two factors on consumer purchase behavior and retail patronage.

[4]The effect of a brand name may be mitigated if the frequency of its promotion is much greater than that of a store brand.

[5]We refer to CI as the difference in the intention to buy the product at the discounted price and the intention to buy it at the regular price.

store brand. The net result is that a promotion is likely to induce a greater change in the perceived value and hence a greater CI for a name brand than for a store brand. Similarly, less discounting of discounts is likely to occur for the high-image stores than for the low-image stores, which leads to higher perceived savings for the high-image stores. Therefore,

H4a: Change in purchase intention will be greater as the AD increases;

H4b: Change in purchase intention due to promotion will be greater for high-image stores than that for low-image stores;

H4c: Change in purchase intention due to promotion will be greater for a name brand than that for a store brand.

PROMOTION THRESHOLDS

A promotion threshold is the minimum value of price discount required to change consumers' intentions to buy. The concept of a threshold can be related to the psychological process of discrimination in which a consumer would not react to a stimuli unless the perceived change were above a *just noticeable difference* (Luce and Edwards 1958). The concept of a threshold is widely recognized and acknowledged by both researchers and practitioners. In the context of advertising effectiveness, Eastlack and Rao (1986) showed that a minimum level of advertising is needed before advertising has any significant impact on sales. The use of the well-known S-shaped response function also testifies to the acceptability of the threshold concept. On the basis of assimilation-contrast theory, Gurumurthy and Little (1989) argue for the existence of a price threshold. They suggest that consumers have a latitude of acceptance around their reference price. Therefore, small price differences within this range or latitude are less likely to be noticed than prices above or below this range. Recently, Kalwani and Yim (1992) found evidence in support of a region of relative price insensitivity around the reference price, such that only price changes outside this region had a significant impact on consumer brand choice. Many managers also believe that price reductions of about 15 percent are needed to attract consumers to a sale (Della Bitta and Monroe 1980). Therefore, we propose that promotion thresholds exist such that consumers do not change their intention to buy the product unless the price reduction is greater than some threshold value. One of the key objectives of this study is to propose a method for determining this threshold value.

Further, since the CI due to promotion is likely to be greater for a name brand than that for a store brand (Hypothesis 4c), retailers promoting a name brand should be able to change consumers' purchase intentions by advertising a lower discount than the discount needed for a store brand. Similarly, high-image stores should be able to attract consumers by offering a lower discount than that needed by low-image stores. In other words, we would expect that the promotion threshold for name brands and high-image stores is lower than that for the store brands and low-image stores. Specifically,

H5a: A promotion threshold exists such that below this threshold ADs have no impact on consumers' purchase intentions;

H5b: The threshold for a name brand will be lower than the threshold for a store brand;

H5c: The threshold for a high-image store will be lower than the threshold for a low-image store.

METHOD

Pretest

The objective of the pretest was to select the stores and the product for the main experiment. Two stores with different store images were to be selected. To minimize the effect of non-image-related variables, we wanted these stores to be similar on such variables as familiarity and average number of shopping trips. A list of 12 stores was compiled, and a convenience sample of 25 MBA students was asked to rate these stores on familiarity (very unfamiliar = 1, very familiar = 9), perceived store image (very low image = 1, very high image = 9), and approximate number of shopping trips to each of the stores in the past year. Based on this pretest and our own judgment, we selected Nordstrom as a relatively higher-image store (mean image score = 7.4) and May Company as a relatively lower-image store (mean image score = 5.3). The mean image scores of these stores were significantly different ($p < .01$). Stores' mean scores on familiarity and number of shopping trips in the past year were not significantly different from each other ($p > .10$).[6]

Seven products were pretested. A product category was to be selected that subjects rated high on familiarity, product knowledge, and involvement. On the basis of subjects' responses and our own judgment, we selected

[6]We deliberately avoided selecting a discount store such as K-Mart for two key reasons. First, although Nordstrom and K-Mart would be perceived very differently in their store images, they are also very different on many other dimensions, such as product assortment, stock-outs, sales assistance, etc. Clearly, some of these attributes make up the store image construct, but some do not. To minimize the effect of variables not related to store image, we wanted the stores to be as similar as possible on other dimensions. Hence the choice of two department stores. Second, the target audience for a discount store is typically very different from the target audience for a department store. In other words, the market structure is such that Nordstrom and May Company are likely to compete more heavily with each other than Nordstrom with K-Mart or May Company with K-Mart. Hence it is much more interesting and useful to find whether store image matters among department stores than to find its effects between department and discount stores.

sports shoes as the suitable product category. In particular, we focused our attention on aerobic shoes to minimize subjects' ambiguity about the regular prices. Further, Reebok aerobic shoes were used as the name brand, and Nordstrom or May Company aerobic shoes were used as the store brands.

Subjects and Design

Two hundred ninety graduate business students were randomly assigned to the cells in a $2 \times 2 \times 7$ between-subjects design. The factors in this design are stores (two levels, high and low image), brand (two levels, name brand and store brand), and advertised discount (seven levels, 10–70 percent in steps of 10 percent). Further, the brands are nested within the stores (e.g., May Company's aerobic shoes).

Procedure

We could obtain subjects' perceptions of the ADs by asking such questions as, "Nordstrom is advertising Reebok aerobic shoes at 50 percent off its regular price. What do you think is the true percent savings you are getting?" or "Nordstrom is advertising a sale on Reebok aerobic shoes: regular price \$50, now \$25. What do you think is the true regular price of these shoes at Nordstrom?" Such questions attempt to find subjects' perceptions of the AD directly. However, many researchers have criticized the use of such questions as potentially artifactual, as subjects may guess the true intent of the study and respond accordingly (Sawyer 1975). Feldman and Lynch (1988) also express concerns about self-generated validity and note, "Momentarily activated cognitions have disproportionate influence over judgment made about an object or on related behaviors performed shortly after their activation" (p. 421). In order to avoid such demand effects, several researchers have used alternative approaches. For example, Biswas and Blair (1991) first asked subjects to give their best estimates of the regular price of a product at a store, before providing them with the advertised regular price and sale price. Perceived savings were then calculated by subtracting the sale price from the consumers' estimates of the store's regular price. Mobley et al. (1988) collected data in two phases. In phase 1, subjects provided their estimates of the average retail price. In phase 2, subjects responded to advertised claims (such as 50 percent off) by giving their estimates of the sale price. The PD was then calculated from these two estimates. We follow the procedure used by Mobley et al. (1988). Further, the use of a product about which subjects have high prior knowledge and high involvement mitigates the framing, priming, and context effects of measurement (Feldman and Lynch 1988).

We collected data in two phases during regularly scheduled classes. In the first phase, each subject was randomly assigned to one of the four conditions (low- or high-image store, and name brand or store brand). Each respondent was asked to estimate the average retail price that he or she would expect to pay for the aerobic shoes in the store to which he or she was randomly assigned. Mobley et al. (1988) confirmed that the test-retest correlation of this regular price estimate across a two-day interval was as high as 0.97. Subjects rated the stores on familiarity, image, and number of shopping trips in the past year, and the product on involvement and knowledge. As a final step in the first phase of data collection, some demographic information was obtained. Subjects' regular price estimates were obtained in dollars. All other responses in phase 1 were obtained on a nine-point scale with 1 = low or poor and 9 = high or good.

The second phase of the study was conducted two days later (the two-day period was based on the Mobley et al. study). The store and brand were kept the same for a subject across the two phases. In the second phase, the subjects were told that their store was advertising x percent discount (x = 10–70 percent across cells in 10 percent steps) off the regular price on their assigned brand of aerobic shoes. They were asked to estimate the price (the sale price) they would expect to pay for that product at that store. Subjects were also asked whether, compared to the regular price, this discount changed their chances of actually buying that product at that store. A scale ranging from −9 (much less likely) to +9 (much more likely) was used to measure CIs. A negative scale was provided to allow for any decrease in purchase intentions, which could happen if subjects perceived a very high discount on a product as an indication of low product quality. Subjects also indicated on a nine-point scale whether they perceived the AD as a good deal. The second phase was then terminated, and subjects were debriefed and dismissed.

Since the two phases of the study were conducted on two separate days, we lost some subjects, and were left with a final sample of 208 responses. On the basis of the responses to the first phase, subjects who did not complete the second phase were almost identical to the rest of the subjects. Therefore, we do not expect any bias in our results due to the loss of these subjects.

Independent Measures

There are three independent factors in this study: AD (seven levels), store image (two levels), and brand (two levels). Advertised discounts (10–70 percent) and brands (Reebok or store brand) were clearly mentioned in the study and hence need no manipulation check. Subjects indicated high product knowledge ($\bar{X}$ = 6.31) and high involvement ($\bar{X}$ = 7.27) for the sports shoes product category. The stores were chosen so as to reflect different degrees of perceived image. As desired, the perceived image of the two stores were found to be significantly different ($p < .01$). Nordstrom was perceived as the higher-image store ($\bar{X}$ = 7.69), and May Company was perceived as the lower-image store ($\bar{X}$ = 4.70).

Dependent Measures

The two main dependent measures in this study are the PD and the CI. The PD was measured indirectly as follows. For each store and brand, phase 1 of the study gave us the perceived regular price for a subject assigned to that cell. Phase 2 gave us the discounted price the subject expected to pay at that store after x percent advertised discount (x = 10–70 percent for different cells). The perceived percentage discount was then computed as (perceived regular price − perceived discount price)/perceived regular price. A similar measure of perceived percentage discount was used by Mobley et al. (1988). The CI due to promotion was obtained by a direct measure on a −9 to +9 scale as discussed above. In addition, we also measured "how good a deal" a particular advertised discount was perceived to be.

ANALYSIS AND RESULTS

To assess whether any covariates should be included in the analysis of the key dependent measures, the following potential covariates were used in an ANCOVA: familiarity with the two stores, average annual number of shopping trips to the two stores, product knowledge, product involvement, price consciousness and deal proneness of consumers, and age (Compeau and Grewal 1990). None of these covariates were found to be significant. Further, a test for homogeneity of slopes indicated no significant interactions between the covariates and the independent factors.

Perceived Discount

ANOVA results show that AD has significant effect on PD ($F(6,12) = 111.06$, $p < .01$, $\eta^2 = .98$, power = .99), store image has no significant effect ($F(1,2) = .02$, $p > .80$, $\eta^2 = .01$, power = .05), and brand nested within store has significant effect ($F(2,180) = 5.83$, $p < .01$, $\eta^2 = .06$, power = .87). All interactions were insignificant.[7]

Hypothesis 1 states that consumers discount the discounts and their discounting of discounts increases with higher advertised savings. The cell means presented in Table 1 show that in many cases the PD is less than the AD; that is, consumers are discounting the discounts. The discounting of discounts is more obvious at higher discount levels. To corroborate this hypothesis further, we built a simple linear model for PD and AD as PD = $a + b \times$ AD. This simple model suggests that, if the intercept a is not significant and the slope parameter b is between 0 and 1, then (1) PD and AD are positively related ($b > 0$); (2) PD < AD; that is, consumers discount the discounts ($b < 1$); and (3) discounting of discounts, that is, the difference between PD and AD, increases as AD increases ($b < 1$ and $a \approx 0$). The regression results are given in Table 2. The results show that a is insignificant and b lies between 0 and 1. These results are significant at .05 level. The overall fit of the model is also very good. Therefore, these results support the first hypothesis.[8]

TABLE 1

CELL MEANS FOR PD[a]

	May Company				Nordstrom			
	Name brand		Store brand		Name brand		Store brand	
AD (%)	*n*	Mean PD	*n*	Mean PD	*n*	Mean PD	*n*	Mean PD
10	10	10.51	8	10.16	7	11.97	6	7.13
20	6	20.30	10	14.24[b]	7	19.47	10	18.64
30	7	27.88	10	19.57[b]	6	30.19	11	28.72
40	6	40.56	10	33.86[c]	5	38.43	8	32.96[c]
50	8	47.57[c]	7	46.94[c]	7	46.23[b]	8	48.27
60	4	58.35	8	49.65[b]	4	57.15[b]	6	47.63[b]
70	6	65.63[b]	8	52.68[b]	8	66.27[b]	7	53.16[b]
Mean		35.60		31.23		38.08		33.09

[a] PD = (perceived regular price − perceived sale price)/perceived regular price.
[b]Significantly different from the corresponding AD at .05 level.
[c]Significantly different from the corresponding AD at .10 level.

Hypothesis 2 suggests that the PD for high-image stores will be higher than that for low-image stores. This hypothesis was not supported, since we found no significant main effect of store image on PD. Although the two stores selected for this study have significantly different store images (mean image score for Nordstrom is 7.69, for May Company, 4.70), evidently this difference is not enough to obtain significant store effects. It seems that both stores are perceived as reasonably good department stores.

Hypothesis 3 indicates that there will be less discounting of discounts for name brands than for store brands. The regression results (Table 2) show that for both name brand and store brand of the two stores, a is insignificant and b lies in the 0–1 range, thereby confirming the discounting of discounts. The higher the b, the lower the discounting of discounts ($b = 1$ means there is no discounting of discounts). Table 2 shows that b for the name brand ($b_{\text{May}} = .93$, $b_{\text{Nordstrom}} = .91$) is significantly larger than b for the store brand ($b_{\text{May}} = .80$, $b_{\text{Nordstrom}} = .76$). These results confirm Hypothesis 3.

[7]The degrees of freedom reflect the use of a mixed nested and crossed design (see Winer 1971, p. 366, for details). Also, even though the main effect of the store is not significant, a separate analysis for each store reveals that the brand effects within each store are somewhat different ($\eta^2_{\text{May}} = .07$, $\eta^2_{\text{Nordstrom}} = .05$). Hence, we do not pool observations across the two stores.

[8]To see whether a constant percentage discounting explains most of the variance, we added a nonlinear term (AD^2) to the model. The new model, PD = $a + b \times$ AD + $c \times AD^2$, failed to show any incremental gain over the model without the nonlinear term. Further, the coefficient c was not significant.

TABLE 2

REGRESSION RESULTS: PD = $a + b \times$ AD

Store	Brand	Sample size	a[a]	b	R^2
May Company	Name brand	47	1.32 (.90)	.93 (26.70)	.94
May Company	Store brand	61	−.25 (−.06)	.80 (8.36)	.53
Nordstrom	Name brand	44	2.18 (1.62)	.91 (30.13)	.96
Nordstrom	Store brand	56	3.56 (.85)	.76 (7.87)	.51

NOTE.—Figures in parentheses are t-values.
[a]Not significant at .05 level.

Change in Purchase Intention

ANOVA results for CI show a significant effect of AD ($F(6,12) = 9.05$, $p < .01$, $\eta^2 = .21$, power = .99), no significant effect of store image ($F(1,2) = .01$, $p > .90$, $\eta^2 = .004$, power = .05), and significant effect of brand nested within store ($F(2,180) = 10.60$, $p < .01$, $\eta^2 = .11$, power = .99). All interactions were insignificant.

Hypothesis 4a suggests that CI will be greater for higher levels of advertised discounts. ANOVA results show a significant effect of AD on change in consumers' intentions to buy the product. Further, Table 3 indicates that the cell means are generally increasing with AD. These results therefore support Hypothesis 4a. However, as in the results for PD, no significant effect of store image on CI is found. Hypothesis 4c states that CIs due to promotion will be higher for a name brand than for the store brand. As indicated above, ANOVA results show a strong effect of brand nested within stores. Further, a contrast test shows very significant differences in the CIs between name brand and store brand shoes for both stores. The cell means (Table 3) confirm that the mean CI for name brand shoes is higher than that for store brand shoes. These results therefore confirm Hypothesis 4c.

Since consumers change their purchase intentions on the basis of the perceived value of the offer (Berkowitz and Walton 1980; Monroe 1990), the results discussed above were confirmed by doing the ANOVA on a measure of how good a deal a particular AD was perceived to be by the respondents. The results are similar to those for the CI measure. Specifically, brand and discount effects are significantly different in the hypothesized direction, but store effects are not significant.

Promotion Thresholds

We expect to find a promotion threshold such that consumers do not change their intentions to buy a product unless the discount offered on this product is above a threshold value (Hypothesis 5). We also expect this threshold to differ by store and by brand promoted. In order to test this hypothesis and also to estimate the value of a promotion threshold empirically, we evaluate

TABLE 3

CELL MEANS FOR CI

	May Company				Nordstrom			
	Name Brand		Store brand		Name Brand		Store brand	
AD (%)	n	Mean CI	n	Mean CI	n	Mean CI	n	Mean CI
10	10	1.80	8	.25[a]	7	2.29	6	.67[a]
20	6	4.17	10	.50[a]	7	4.43	10	.50[a]
30	7	4.00	10	4.00	6	4.83	11	4.27
40	6	4.17	10	1.90	5	5.60	8	3.25
50	8	5.13	7	2.71	7	5.86	8	3.50
60	4	7.50	8	4.63	4	4.50	6	4.83
70	6	6.00	8	5.88	8	6.63	7	3.14
Mean		4.32		2.77		4.91		2.88

[a]Not significantly different from zero at .05 level.

three things: (1) mean scores on CIs at different discount levels, (2) results from econometric analysis, and (3) results from bootstrap analysis. These analyses are done for each store-brand combination.

Mean CI. If k_1 is the promotion threshold for a product, then, by the definition of threshold, CI will not be significantly greater than zero unless the AD is above this threshold level k_1. Therefore, a simple and intuitive way to assess the promotion threshold for the name brand and the store brand is to find that level of AD at or below which CI is not significantly different from zero.[9]

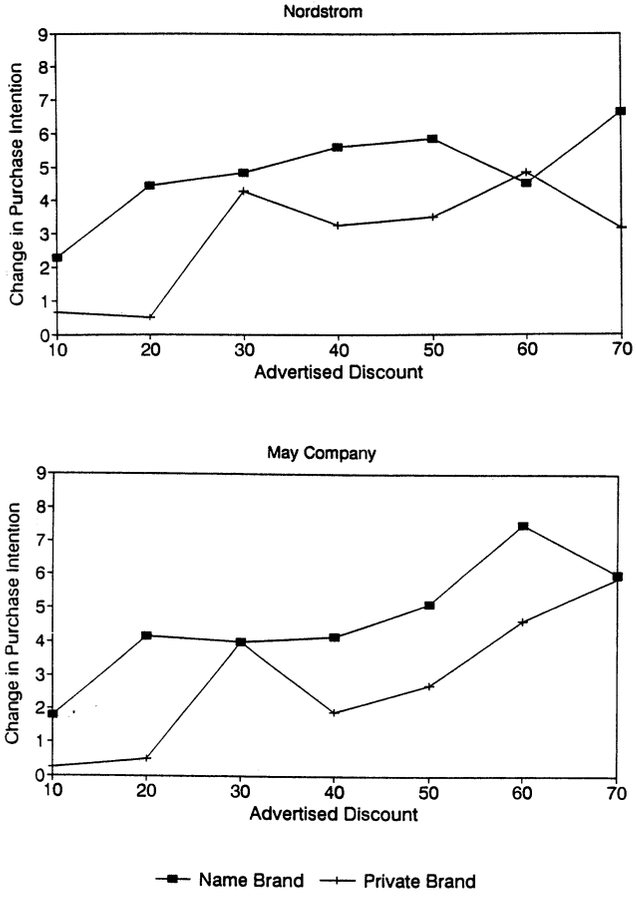
Figure 1 and Table 3 present the mean scores for CI for different stores and brands. These results show that, for both the stores, CI for name brand shoes is significantly greater than zero even at 10 percent AD. In other words, the promotion threshold for name brand shoes is at zero.[10] On the other hand, consumers do not change their intentions to buy store brand shoes unless the AD is more than 20 percent, indicating that the promotion threshold for store brand shoes is at 20 percent. Table 3 also suggests the existence of a *saturation* level (k_2). For example, the mean CI for store brand shoes is approximately 4.0 at AD of 30 percent or higher. Similarly, the CI for name brand shoes increases at a higher rate from 0 to 10 percent and from 10 percent to 20 percent discount levels than it does from 20 percent to 30 percent or 30 percent to 40 percent, and so on. This suggests an S-shaped response function that is consistent with earlier marketing studies on consumers' re-

[9]Please note that the CI variable is a self-reported measure (instead of a difference score) on a −9 to +9 scale. As one of the reviewers suggested, this is perhaps a measure of "intention to change" rather than a measure of "change of intention."

[10]Strictly speaking, the threshold could be anywhere between 0 and 10 percent. Since we have no AD data in the 0–10 percent range, we cannot determine the precise threshold point. For ease of exposition, we call this zero threshold.

FIGURE 1

MEANS FOR CI



sponse to advertising (Eastlack and Rao 1986). From these observations, we have (1) for name brand shoes of both stores, $k_1 = 0$ and $k_2 = 20$ percent, and (2) for store brand shoes of both stores, $k_1 = 20$ percent and $k_2 = 30$ percent.

Although these observations provide us a good intuitive feel for consumers' responses to ADs, clearly these are preliminary findings and they need to be confirmed by a more rigorous analysis.

Econometric Analysis. A rigorous way to determine k_1 and k_2 is to view the S-shaped response curve as a special case of switching regimes (Johnston 1984; Maddala 1977). According to the concept of switching regimes, data of Table 3 can be represented by three different regions: the first region below k_1, the second region between k_1 and k_2, and the third region above k_2. Further, the definition of a threshold implies that the value of dependent variable CI should be zero in the first region. In other words, consumers should not change their intentions to buy the product if the discount is below k_1. If errors are denoted by u, the three regions can be represented as

$$\text{CI} = 0 + u_1 \quad \text{if AD} \le k_1, \tag{1}$$

$$\text{CI} = a_1 + b_1\text{AD} + u_2 \quad \text{if } k_1 < \text{AD} \le k_2, \tag{2}$$

$$\text{CI} = a_2 + b_2\text{AD} + u_3 \quad \text{if AD} > k_2. \tag{3}$$

Although these equations or splines represent the three regions, there is no constraint to ensure that the first and second splines meet at k_1 and the second and third splines meet at k_2. To ensure this we need to impose some constraints on the three equations. An easy way to impose these constraints and also to simplify the three equations is to write them as a single equation as follows (Johnston 1984):

$$\text{CI} = \beta_1\text{AD}_1 + \beta_2\text{AD}_2 + \epsilon, \tag{4}$$

where $\text{AD}_1 = \text{AD} - k_1$ if $\text{AD} > k_1$, 0 otherwise; and $\text{AD}_2 = \text{AD} - k_2$ if $\text{AD} > k_2$, 0 otherwise.[11]

Equation (4) is easy to estimate if we know k_1 and k_2. However, we do not know these values. In fact, the whole purpose of this analysis is to determine the values of k_1 and k_2. This can be achieved as follows (Goldfeld and Quandt 1976; Johnston 1984). Let us start with the assumption that we know the values of k_1 and k_2. In this case the regions for the three equations or splines are well-defined by discount levels of 0 to k_1, k_1 to k_2, and k_2 to 70 percent. If the errors are assumed to be independent and normally distributed, then for given values of k_1 and k_2 we can find the joint log-likelihood value of the three splines. Since k_1 and k_2 can take only discrete values (0, 10 percent, 20 percent, etc.), the procedure calls for evaluating the log likelihood of Equation (4) for all combinations of k_1 and k_2. We finally choose that combination that maximizes the log likelihood. We further impose the obvious constraint that k_2 must be higher than k_1. Notice that a threshold of 0 and a saturation of 70 percent are equivalent to a linear relationship without any threshold or saturation effects.

This analysis is performed separately for the four store-brand combinations. The results show that the maximum value of log likelihood is obtained when (1) for the name brands of the two stores, $k_1 = 0$ and $k_2 = 20$ percent discount, (2) for the store brands of the two stores, $k_1 = 20$ percent and $k_2 = 30$ percent discount. These results are consistent with the preliminary results obtained from Table 3.

To confirm that the effect of promotional discount decreases (and does not increase) after the saturation point, we analyzed the regression coefficients b_1 and b_2 of Equations (2) and (3). Note that Equation (4) gives us the estimates of coefficients β_1 and β_2 and Equations

[11]It is easy to see that this formulation ensures that splines 1 and 2 meet at k_1 and splines 2 and 3 meet at k_2. The implicit relationship between the parameters of Eq. (4) and the parameters of Eqq. (1)–(3) are $a_1 = -\beta_1 k_1$, $a_2 = -\beta_1 k_1 - \beta_2 k_2$, $b_1 = \beta_1$, and $b_2 = \beta_1 + \beta_2$.

TABLE 4

IMPACT OF AD ON CI

Store	Brand	Threshold (k_1)	Saturation (k_2)	b_1[a]	b_2[b]
May Company	Name brand	0	20	.184 (.039)	.055 (.026)
May Company	Store brand	20	30	.263 (.064)	.061 (.028)
Nordstrom	Name brand	0	20	.226 (.036)	.035 (.024)
Nordstrom	Store brand	20	30	.400 (.079)	−.010 (.033)

NOTE.—Results of the three-spline regression as per Eq. (1)–(4) are shown. Figures in parentheses are SEs.
[a]Slope of the regression line between k_1 and k_2.
[b]Slope of the regression line between k_2 and 70 percent (the slope between the 0 discount and k_1 is zero).

(1)–(4) suggest $b_1 = \beta_1$ and $b_2 = \beta_1 + \beta_2$.[12] The results are given in Table 4.

The results show that for all the four regressions $b_1 > 0$ and $b_1 > b_2$. This implies that, between the threshold and the saturation point, promotions have a positive effect on consumers' purchase intentions ($b_1 > 0$), but this effect decreases after the saturation point ($b_2 < b_1$). These results confirm that consumers' responses to promotions is S-shaped.

Bootstrap Analysis. To obtain SEs for k_1 and k_2, and also to determine the robustness of our results, we perform a bootstrap analysis (Efron 1981). In this analysis a data set (called a bootstrap sample) is created from the original data by randomly selecting observations with replacement. The bootstrap sample has the same number of observations as the original data set. We use this bootstrap sample to get k_1's and k_2's points from the econometric analysis described earlier. This procedure is repeated 200 times. In other words, 200 samples are drawn from which 200 k_1 and k_2 estimates are obtained. Using these results we obtain the empirical mean and SE of k_1 and k_2. The results are given in Table 5.

The results show a remarkable similarity in the threshold and saturation estimates for the two stores. As expected, the threshold and saturation levels are significantly different for the name brand and store brand shoes. Specifically, the mean threshold levels for name brand shoes (May = 2.14 percent, Nordstrom = 0) are significantly lower than the mean threshold levels for store brand shoes (May = 14.4 percent, Nordstrom = 13.25 percent) at the .01 level. In other words, a promotional discount of even 10 percent will change consumers' intentions to buy name brand shoes. However, more than a 14–15 percent discount is needed by store brand shoes to achieve any significant CI. This result is very interesting and can be viewed as indirect evidence of "brand equity." In other words, name brands have a greater equity and hence are able to attract consumers by offering a smaller discount than that needed by store brands.

The results also provide us with estimates of saturation levels. Specifically, the saturation levels for name brand shoes (May = 25.8 percent, Nordstrom = 23 percent) are significantly lower than the saturation levels for store brand shoes (May = 30.2 percent, Nordstrom = 30.85 percent) at the .01 level. Although these results are specific to the product, stores, and subjects used in this study, it is interesting to note that this finding is consistent with some previous studies that found that consumers' perceptions of savings and hence their purchase intentions do not significantly differ between 30 percent and 50 percent discount levels (Della Bitta and Monroe 1980).

CONCLUSION

This study provides some interesting results about the effect of ADs on consumers' perceptions of these discounts and consequently on changes in their intentions to buy the product. We find that consumers discount the price discounts; that is, consumers' perceptions of discounts are typically less than the AD. The discounting of discounts increases with the increase in AD. These results are consistent with the results of many previous studies. For example, Fry and McDougall (1974), Liefeld and Heslop (1985), Sewall and Goldstein (1979), and Urbany et al. (1988) also found that consumers are skeptical about the advertised claims of retailers and therefore discount such claims.

Our results also indicate that the discounting of discounts is higher for store brands than for name brands. Corresponding effects on CIs are also found. For example, we found that, in general, offering a discount on a name brand has more impact on consumers' intentions to buy than a similar discount on a store brand. We expected to find similar differences between high-image and low-image stores. However, store effects were not found to be significant in this study. It is interesting to note that, in a slightly different context, Rao and Monroe (1989) conducted a meta-analysis of studies

[12]Knowing the variance-covariance matrix of β_1 and β_2 from the regression results of Eq. (4), we can easily find the variance-covariance matrix of b_1 and b_2 as follows: Var (b_1) = Var (β_1), Var (b_2) = Var (β_1) + Var (β_2) + Cov (β_1, β_2), and Cov (b_1, b_2) = Var (β_1) + Cov (β_1, β_2).

TABLE 5

BOOTSTRAP RESULTS

Store	Brand	Threshold (k_1)	Saturation (k_2)	b_1	b_2
May Company	Name brand	2.14 (.51)	25.79 (1.32)	.21 (.01)	.01 (.01)
May Company	Store brand	14.40 (.51)	30.20 (.93)	.26 (.01)	.09 (.01)
Nordstrom	Name brand	.00[a]	23.00 (.85)	.23 (.004)	.02 (.004)
Nordstrom	Store brand	13.25 (.45)	30.85 (1.13)	.33 (.01)	−.03 (.01)

NOTE.—Results are based on 200 bootstrap samples. Figures in parentheses are SEs.
[a]For all 200 samples, threshold of zero was obtained for Nordstrom-Name brand.

dealing with the effect of price, brand name, and store name on buyers' perceptions of product quality. They found that, while price and brand effects were strong and significant, the effect of store name on perceived quality of product was generally small and not statistically significant.

We also presented an approach to find promotion threshold and saturation points. The existence of a threshold confirms managerial intuition that price reductions of about 15 percent are needed to attract consumers to a sale (Della Bitta and Monroe 1980). The study refines this intuition by suggesting that the threshold levels vary by brand name. As expected, the threshold for the store brand was found to be significantly higher than that for the name brand. In other words, to attract consumers a store needs a lower level of discount on a name brand than on a store brand. We also found that promotions reach a saturation level so that their effect on consumers' purchase intentions is minimal beyond this discount level. For the stores and products used in this study the saturation levels were estimated at 20–30 percent discount level. Thus, it may not be useful to offer discounts below the threshold or above the saturation level.

Although the study provides a useful and general methodology, the empirical results are specific to this study. A large number of stores, products, and brands need to be studied before the results can be generalized. It should also be noted that our pool of respondents were MBA students, who form a special segment of the population. In practice, stores target different segments which may respond differently to price promotions. In other words, not only will the thresholds vary by brand, but they are also likely to vary by consumer segment. Finally, we should emphasize that we studied the effects of promotions on purchase intentions and not actual choice. Since changes in choice may occur only if changes in intentions exceed certain minimum level, it suggests that in general promotion thresholds for purchase intentions are likely to be lower than those for actual purchases. Finding promotion threshold and saturation effects in choice data (e.g., scanner data) will therefore be a useful next step.

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REFERENCES

Anderson, Norman H. (1981), *Foundations of Information Integration Theory,* New York: Academic Press.

Barnes, James G. (1975), "Factors Influencing Consumer Reaction to Retail Newspaper 'Sale' Advertising," in *1975 Combined Proceedings,* ed. Edward Mazze, Chicago: American Marketing Association, 471–477.

Bearden, William O., Donald R. Lichtenstein, and Jesse E. Teel (1984), "Comparison Price, Coupon, and Brand Effects on Consumer Reaction to Retail Newspaper Advertisements," *Journal of Retailing,* 60 (Summer), 11–34.

Berkowitz, Eric N. and John R. Walton (1980), "Contextual Influences on Consumer Price Responses: An Experimental Analysis," *Journal of Marketing Research,* 17 (August), 349–358.

Biswas, Abhijit and Edward A. Blair (1991), "Contextual Effects of Reference Prices in Retail Advertisements," *Journal of Marketing,* 55 (July), 1–12.

Blair, Edward A. and E. Laird Landon, Jr. (1981), "The Effects of Reference Prices in Retail Advertising," *Journal of Marketing,* 45 (Spring), 61–69.

Compeau, Larry D. and Dhruv Grewal (1990), "Comparative Price Advertising: A Methodological Review and Critique," *American Marketing Association Educators' Proceedings,* Chicago: American Marketing Association, 118.

Della Bitta, Albert J. and Kent B. Monroe (1980), "A Multivariate Analysis of the Perception of Value from Retail Price Advertisements," in *Advances in Consumer Research,* Vol. 8, ed. Kent B. Monroe, Ann Arbor, MI: Association for Consumer Research, 161–165.

———, Kent B. Monroe, and John M. McGinnis (1981), "Consumer Perceptions of Comparative Price Advertisements," *Journal of Marketing Research,* 18 (November), 416–427.

Dickson, Peter R. and Alan G. Sawyer (1984), "Entry/Exit Demand Analysis," in *Advances in Consumer Research,* Vol. 11, ed. Thomas C. Kinnear, Provo, UT: Association for Consumer Research, 617–622.

Eastlack, Joseph O. and Ambar G. Rao (1986), "Modeling Response to Advertising and Pricing Changes for 'V-8' Cocktail Vegetable Juice," *Marketing Science,* 5 (Summer), 245–259.

Efron, Bradley (1981), "Nonparametric Estimates of Standard Error: The Jackknife, the Bootstrap, and Other Resampling Methods," *Biometrika,* 68, 589–599.

Feldman, Jack M. and John G. Lynch, Jr. (1988), "Self-generated Validity and Other Effects of Measurement on Belief, Attitude, Intention, and Behavior," *Journal of Applied Psychology,* 73 (August), 421–435.

Fry, Joseph N. and Gordon H. McDougall (1974), "Consumer Appraisal of Retail Price Advertisements," *Journal of Marketing,* 38 (July), 64–74.

Goldfeld, Stephen M. and Richard E. Quandt (1976), *Studies in Nonlinear Estimation,* Cambridge, MA: Ballinger.

Gurumurthy, K. and John D. C. Little (1989), "A Pricing Model Based on Perception Theories and Its Testing on Scanner Panel Data," working paper, School of Management, Massachussetts Institute of Technology, Boston, MA 02139.

Helson, Harry (1964), *Adaptation-Level Theory,* New York: Harper & Row.

Johnston, John (1984), *Econometric Methods,* New York: McGraw-Hill.

Kalwani, Manohar U. and Chi Kin Yim (1992), "Consumer Price and Promotion Expectations: An Experimental Study," *Journal of Marketing Research,* 29 (February), 90–100.

———, Chi Kin Yim, Heikki J. Rinne, and Yoshi Sugita (1990), "A Price Expectations Model of Customer Brand Choice," *Journal of Marketing Research,* 27 (August), 251–262.

Kelley, Harold H. (1973), "The Process of Causal Attribution," *American Psychologist,* 28 (2), 107–128.

Klein, Noreen M. and Janet E. Oglethorpe (1987), "Cognitive Reference Points in Consumer Decision Making," in *Advances in Consumer Research,* Vol. 14, ed. Melanie Wallendorf and Paul Anderson, Provo, UT: Association for Consumer Research, 183–187.

Lattin, James M. and Randolph E. Bucklin (1989), "Reference Effects of Price and Promotion on Brand Choice Behavior," *Journal of Marketing Research,* 26 (August), 299–310.

Lichtenstein, Donald R. and William O. Bearden (1989), "Contextual Influences on Perceptions of Merchant-supplied Reference Prices," *Journal of Consumer Research,* 16 (June), 55–66.

Liefeld, John and Louise A. Heslop (1985), "Reference Prices and Deception in Newspaper Advertising," *Journal of Consumer Research,* 11 (March), 868–876.

Luce, R. D. and W. Edwards (1958), "The Derivation of Subjective Scales from Just Noticeable Differences," *Psychological Review,* 65, 222–237.

Maddala, G. S. (1977), *Econometrics,* New York: McGraw-Hill.

Mobley, Mary F., William O. Bearden, and Jesse E. Teel (1988), "An Investigation of Individual Responses to Tensile Price Claims," *Journal of Consumer Research,* 15 (September), 273–279.

Monroe, Kent B. (1977), "Objective and Subjective Contextual Influences on Price Perception," in *Consumer and Industrial Buyer Behavior,* ed. Arch G. Woodside et al., New York: North-Holland, 287–296.

——— (1984), "Theoretical and Methodological Developments in Pricing," in *Advances in Consumer Research,* Vol. 11, ed. Thomas C. Kinnear, Provo, UT: Association for Consumer Research, 636–637.

——— (1990), *Pricing: Making Profitable Decisions,* New York: McGraw-Hill.

Olson, Jerry C. (1977), "Price as an Informational Cue: Effects on Product Evaluation," in *Consumer and Industrial Buyer Behavior,* ed. Arch G. Woodside et al., New York: North-Holland, 267–286.

——— and Jacob Jacoby (1977), "Consumer Response to Price: An Attitudinal, Information Processing Perspective," in *Moving Ahead with Attitude Research,* ed. Yoram Wind and Marshall G. Greenberg, Chicago: American Marketing Association, 73–86.

Rao, Akshay R. and Kent B. Monroe (1989), "The Effect of Price, Brand Name, and Store Name on Buyers' Perceptions of Product Quality: An Integrative Review," *Journal of Marketing Research,* 26 (August), 351–357.

Sawyer, Alan G. (1975), "Demand Artifacts in Laboratory Experimentation," *Journal of Consumer Research,* 1 (March), 20–30.

Sewall, Murphy A. and Michael H. Goldstein (1979), "The Comparative Price Advertising Controversy: Consumer Perceptions of Catalog Showroom Reference Prices," *Journal of Marketing,* 43 (Summer), 85–92.

Sherif, Carolyn (1963), "Social Categorization as a Function of Latitude of Acceptance and Series Range," *Journal of Abnormal Social Psychology,* 67 (August), 148–156.

Urbany, Joel E., William O. Bearden, and Dan C. Weilbaker (1988), "The Effect of Plausible and Exaggerated Reference Prices on Consumer Perceptions and Price Search," *Journal of Consumer Research,* 15 (June), 95–110.

——— and Peter Dickson (1991), "Consumer Normal Price Estimation: Market versus Personal Standards," *Journal of Consumer Research,* 18 (June), 45–51.

Winer, B. J. (1971), *Statistical Principles in Experimental Design,* New York: McGraw-Hill.

Winer, Russell S. (1986), "A Reference Price Model of Brand Choice for Frequently Purchased Products," *Journal of Consumer Research,* 13 (September), 250–256.

Zeithaml, Valarie A. (1984), "Issues in Conceptualizing and Measuring Consumer Response to Price," in *Advances in Consumer Research,* Vol. 11, ed. Thomas C. Kinnear, Provo, UT: Association for Consumer Research, 612–616.