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The authors report a study of the effects of price, brand, and store information on buyers' perceptions of product quality and value, as well as their willingness to buy. Hypotheses are derived from a conceptual model positing the effects of extrinsic cues (price, brand name, and store name) on buyers' perceptions and purchase intentions. Moreover, the design of the experiment allows additional analyses on the relative differential effects of price, brand name, and store name on the three dependent variables. Results indicate that price had a positive effect on perceived quality, but a negative effect on perceived value and willingness to buy. Favorable brand and store information positively influenced perceptions of quality and value, and subjects' willingness to buy. The major findings are discussed and directions for future research are suggested.

Effects of Price, Brand, and Store Information on Buyers' Product Evaluations

Until recently, little formal conceptual effort has been directed toward isolating theoretical reasons for the price-perceived quality relationship, or how such a relationship influences buyers' perceptions of value or their purchase intentions or choices (Monroe and Krishnan 1985; Monroe and Rao 1987; Zeithaml 1988). Though marketing managers are interested in what influences consumers' perceptions of value, researchers rarely have investigated or measured the concept of perceived value. One reason for this deficiency is that value is an abstract concept that is highly interrelated and frequently confused with the concepts of quality, benefits, and price (Rockefeller 1986; Zeithaml 1988).

Moreover, as is evident from recent assessments of the price-perceived quality research domain and the recommendations for additional research, very little is known about the relationship between price and buyers' assessments of product quality (Monroe and Dodds 1988; Zei-

thaml 1988). Until recently, empirical research on the price-perceived quality relationship could be characterized as haphazard, with little accumulation of results, leading Peterson and Wilson (1985, p. 246) to conclude that "the price-perceived quality relationship is neither particularly general nor robust." Despite the number of studies that directly or indirectly examine the price-perceived quality relationship, it is unclear whether we have determined the boundaries of when, and under what conditions, buyers impute quality on the basis of price and other information (Monroe and Dodds 1988; Peterson and Wilson 1985). Moreover, the quality-price relationship remains an enigma for economic theorists and "results in a profound alteration of many of the basic conclusions of the standard paradigm" (Stiglitz 1987, p. 41).

We extend a basic conceptualization of the price-product evaluation relationship (Dodds and Monroe 1985) to include the extrinsic cues of brand and store name, and report an empirical test of the effects of those three cues on perceptions of quality, value, and consumers' willingness to buy. An intricate experimental design and test are reported that replicate previous research and contribute new information on the effects of price, brand, and store information on buyers' product evaluations.

A CONCEPTUAL MODEL FOR PRODUCT EVALUATIONS

Scitovszky (1945) observed that the use of price as an indicator of product quality is not irrational, but repre-

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sents a belief that price in the marketplace is determined by the interplay of the forces of competitive supply and demand. Such forces would lead to a "natural" ordering of competing products on a price scale, resulting in a strong *actual* positive relationship between price and product quality. Thus, given the belief that price and quality are positively related, it is natural that consumers would use price as an indicator of quality. Subsequently, other economic and marketing theorists expanded the argument to include other signals of product quality such as brand and store names and advertising expenditures.

Perceptions of Price, Quality, and Value

Monroe and Krishnan (1985), using Monroe's (1979) conceptualization of perceived value, provided a model relating price, perceived quality, perceived sacrifice, perceived value, and willingness to buy (Figure 1A). In that model, actual price is an objective external characteristic of a product that consumers perceive as a stimulus. Therefore, price has both objective external properties and subjective internal representations that are derived from the perceptions of price, thus resulting in some meaning to consumers (Jacoby and Olson 1977). This dichotomy of information suggests that a \$39.00 price for a business-use calculator may be coded cognitively as "expensive" for some consumers and "cheap" for others, in addition to \$39.00. Clearly, perceptions of

the same price stimulus may vary across consumers and, for one consumer, across products, purchase situations, and time (Cooper 1969b).

Price can be both an indicator of the amount of sacrifice needed to purchase a product and an indicator of the level of quality. Higher prices lead to higher perceived quality and consequently to a greater willingness to buy. At the same time, the higher price represents a monetary measure of what must be sacrificed to purchase the good, leading to a reduced willingness to buy. The cognitive tradeoff between perceptions of quality and sacrifice results in perceptions of value (Figure 1). That tradeoff was observed by Scitovszky (1945) as a paradoxical situation in which a commodity offered at a lower price than competing commodities would be both more attractive to the consumer because it is cheaper and less attractive because of its suspected inferior quality. Stiglitz (1987) extends this paradox to other markets, such as labor and capital, with similar observations.

Perceived Value and Choice

The link between perceived quality, evaluation, and choice can be explained in part by the acceptable price range concept. Buyers generally have a set of prices that are acceptable to pay for a considered purchase, rather than a single price (Monroe 1979; Monroe and Petroschius 1981). Therefore, people not only may refrain from purchasing a product when they consider the price too high, but also may be suspicious of the quality of a product if its price is too much below what they consider acceptable (Cooper 1969a). Finally, if a price is unacceptable to pay, the inference is that the offer must have little or no net perceived value.

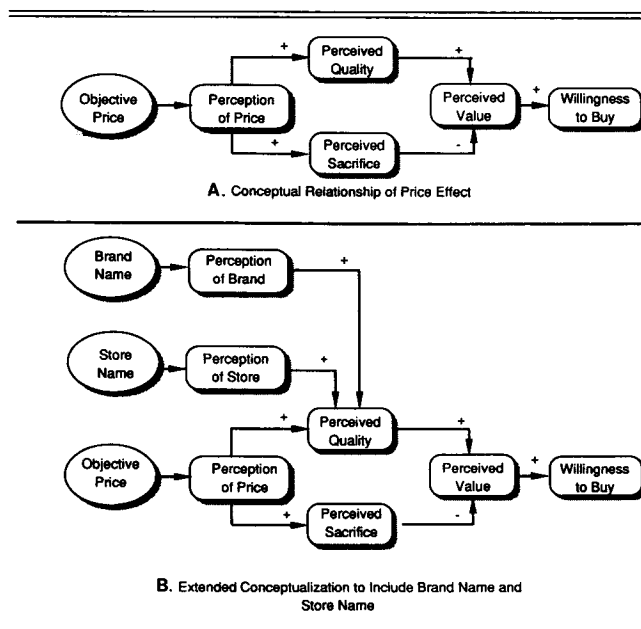
The perception of value in turn directly influences willingness to buy. Szybillo and Jacoby (1974) suggested such a relationship when hypothesizing that value for the money would have a stronger relationship to perceived likelihood of purchase than would perceived quality. Hence, perceptions of value would increase as price increases from below the buyers' lower acceptable price limit to some acceptable price within their acceptable price range. However, as price increases beyond the acceptable range, perceptions of value would decline. Thus, the relationship between price and perceived value should also be curvilinear.

Price, Brand, and Store Effects on Product Evaluations

If price, as an external cue, is perceived differently than its "objective" characteristic, buyers are likely to use similar perceptual processes for both brand and store names. Therefore, we suggest that the external cues of price, brand name, and store name are three cues that influence perceptions of product quality and value, and hence willingness to buy (Zeithaml 1988; Figure 1B).

The effects of the three cues have been studied with inconsistent statistical results, but with convergence on some relationships. Both price and brand name have been

Figure 1
CONCEPTUAL MODEL OF THE EFFECT OF PRICE, BRAND NAME, AND STORE NAME ON PRODUCT EVALUATION



shown to have a significant but moderate effect on buyers' perceptions of quality, whereas store name has had a small and nonsignificant effect (Rao and Monroe 1989b). However, the effects of price, brand, and store information on perceptions of value or willingness to buy have rarely been studied. No studies on the brand-perceived value or store-perceived value relationships have been published.

The primary effect of the additional cues of brand and store name is seemingly to enhance the effect of price on buyers' quality perceptions. Monroe and Krishnan's (1985) meta-analysis found a more positive effect for price when brand information is present than when it is absent. The implication of their finding is not that brand name dominates the influence of price, but rather that brand name enhances the influence of price on quality perceptions. Rao and Monroe (1989b) found that multicue studies generate larger price-perceived quality effects than single-cue studies, though the difference was statistically nonsignificant.

One might expect that, with additional extrinsic information, buyers would rely less on price information for their quality judgments. The extent of such an effect depends on the degree to which buyers are familiar with or knowledgeable of the product category (Rao and Monroe 1988) and the degree to which the extrinsic cues provide similar or dissimilar information about the product (Monroe and Rao 1987).

Much research has examined the price-perceived quality relationship, but little research has addressed the price-perceived value and price-willingness to buy relationships when additional extrinsic information is available. Dodds and Monroe (1985) found stronger price effects on perceived value when only price was present ($\eta^2 = .39$ and $.35$) than when brand name was also present with price information ($\eta^2 = .27$ and $.27$). The effect of brand name on willingness to buy was not conclusive; the effect sizes were $.17$ and $.02$ in price-only situations, and were $.07$ and $.13$ when brand name was included with price.

Three studies have specifically examined the individual and combined effects of price, brand name, and store name on quality perceptions (Andrews and Valenzi 1971; Gardner 1974; Render and O'Connor 1976). As shown in Table 1, two of the studies suggest that price produced a stronger effect than either brand or store information. However, the third study (Gardner 1974) showed a relatively moderate effect for both price and brand name. Given the diversity of products and prices examined, the importance of price in relation to other extrinsic cues such as brand and store name may depend on the nature of the products, their price ranges, and the research methods used.

Following Hedges and Olkin's (1985) procedures, we combined the results of the three studies and obtained a weighted average effect (η^2) for each cue: $.16$ for price, $.11$ for brand name, and $.06$ for store name. By Cohen's (1977) criteria for the behavioral sciences, the effects

were large for price, moderate for brand name, and small for store name.

Besides the obvious limitation of having only three independent studies, our research has limitations due to certain aspects of those studies. First, without descriptive data, the significant three-way interaction in Andrews and Valenzi's study cannot be completely interpreted. Second, a *post hoc* calculation of power for the Render and O'Connor study reveals that there was only a 30% chance of finding statistical significance, implying a low power research design. Finally, as Gardner used single indicators of perceived quality and willingness to buy, we cannot assess the reliability of the measures used and therefore the attenuation of effects due to measurement error. Because of the relatively low effect sizes observed in his study, attenuation of effects may be a plausible explanation for his results. The research limitations (three studies, significant interactions, low power, and single-item measures) preclude definitive conclusions. Moreover, the degree to which brand name and store name combine with price in influencing not only buyers' perceptions of quality, but also their perceptions of value and willingness to buy, remains unclear.

Summary

The basic conceptualization of the price-perceived quality relationship in terms of its effect on buyers' perceptions of value and willingness to buy is extended to include the effects of the extrinsic cues of brand and store names on perceptions of quality, value, and willingness to buy. A review of the empirical evidence on the individual and combined effects of those extrinsic cues indicates that multiple, and consistent, extrinsic cues may have a stronger effect on perceived quality than single cues. However, the individual and combined effects of the cues on perceptions of value and willingness to buy have yet to be examined empirically. Moreover, hypotheses from current price-quality-value conceptualizations remain untested. We develop and test eight hypotheses stemming from the conceptual arguments and limited empirical evidence.

HYPOTHESES

The preceding conceptualization, as well as the limited empirical evidence, suggests several direct relationships between price, brand name, and store name and buyers' perceptions of product quality. We also posit some indirect, but important, relationships between those cues and perceptions of value and willingness to buy (H_1-H_3). Furthermore, the conceptualization suggests certain interrelationships between perceived quality, perceived value, and willingness to buy (H_4-H_5). Finally, for the effect of an information cue on product evaluations and willingness to buy, we compare the results from a single-cue design with those from a multiple-cue design (H_6-H_8).

Table 1
SUMMARY OF PRICE, BRAND, AND STORE EFFECTS ON PRODUCT EVALUATIONS

Researchers	Dependent variables	Products	Results ^a							
			Price η^2	Brand η^2	Store η^2	$P \times B \times S$ P^b	Price (\$)	Brand	Store	
Andrews and Valenzi (1971)	Perceived quality (n = 50)	Sweaters, shoes	.87	.60	.43	.01	7, 15, 30	Unknown, moderately known, very well known	Discount, department luxury	
Gardner (1974)	Quality, willingness to buy (n = 324)	1) Men's socks 2) Electric toothbrush 3) Tape recorder 4) Men's dress suit	For quality			Below price range, lower limit, upper limit, above price range (actual prices used)			Desirable, undesirable (actual brands used)	Desirable, undesirable (actual stores used)
			1) .21 2) .01 3) .08 4) .14	.05 .10 .11 .14	.07 .04 .02 .06	>.10 >.10 >.10 >.10				
			For willingness to buy							
			1) .03 2) .05 3) .01 4) .15	.03 .04 .01 .02	.02 .01 .00 .03	>.10 >.10 >.10 >.10				
Render and O'Connor (1976)	Perceived product quality (n = 60)	Shirts Desk radio Aftershave lotion	.55 .26 .25	.05 .03 .07	.08 .02 .08	ns ns ns	18.40, 7.65, 2.59; 61.00, 19.50, 5.59; 9.09, 3.19, .75	Van Heusen, Mac; Admiral, Realtone; English Leather, Mennen	H&S Pogue, Zayre	

^aThe η^2 effect sizes are as reported by Rao and Monroe (1989a).
^bThe results for the three-way interaction are reported as probability of statistical significance.

- H₁: As price increases from a low priced model to a higher priced model, *ceteris paribus*,
- (a) the relationship between price and perceived quality will be positive,
 - (b) the relationship between price and perceived value will be quadratic (inverted U), and
 - (c) the relationship between price and willingness to buy will be quadratic (inverted U).
- H₂: When perceptions of brand name are more favorable (vs. less favorable), *ceteris paribus*,
- (a) buyers' perceptions of quality are higher,
 - (b) buyers' perceptions of value are greater, and
 - (c) buyers' willingness to buy is greater.
- H₃: When perceptions of store name are more favorable (vs. less favorable), *ceteris paribus*,
- (a) buyers' perceptions of quality are higher,
 - (b) buyers' perceptions of value are greater, and
 - (c) buyers' willingness to buy is greater.
- H₄: The relationship between buyers' perceptions of quality and their perceptions of value is positive.
- H₅: The relationship between buyers' perceptions of value and their willingness to buy is positive.
- H₆: When other information is included with price information (i.e., multiple cues: price-brand, price-store, price-brand-store), *ceteris paribus*, the price effect is stronger than in a price-only condition (i.e., single cue: price) on:
- (a) buyers' perceptions of quality,
 - (b) buyers' perceptions of value, and
 - (c) buyers' willingness to buy.
- H₇: When other information is included with brand information (i.e., multiple cues: brand-price, brand-store, brand-price-store), *ceteris paribus*, the brand effect on buyers' perceptions of quality is stronger than in a brand-only condition (i.e., single cue: brand).
- H₈: When other information is included with store information (i.e., multiple cues: store-price, store-brand, store-price-brand), *ceteris paribus*, the store effect on buyers' perceptions of quality is stronger than in a store-only condition (i.e., single cue: store).

RESEARCH METHOD

Research Design

We tested the hypotheses by using a 5 × 3 × 3 between-subjects factorial design (Figure 2) with five price levels (low, medium, high, too high, and absent), three brand levels (low, high, and absent), and three store levels (low, high, and absent). This design made possible a partial replication of previous price-perceived quality studies and a test of the hypotheses. Also, the research design could address two issues:

1. The design (Figure 2) could be partitioned into subdesigns to replicate the results of previous studies of price (design D), price-brand (B), price-store (C), and price-brand-store (A), but in a situation where product, sample population, and independent treatments were the same. Additionally, the design enabled us to examine the relative influence of brand and store information (E), brand only (F), and store only (G), in the absence of price information, on subjects' perceptions of product quality.
2. We were able to examine price, brand name, and store name effects in the presence of all possible combinations

Figure 2
RESEARCH DESIGN^a

Brand name	Price				No price	Store name
	Too high	High	Medium	Low		
	A. Price, brand, and store design				E. Brand and store design	
High	1	2	3	4	5	High
High	6	7	8	9	10	Low
Low	11	12	13	14	15	High
Low	16	17	18	19	20	Low
	B. Price and brand design				F. Brand-only design	
High	21	22	23	24	25	No
Low	26	27	28	29	30	No
	C. Price and store design				G. Store-only design	
No	31	32	33	34	35	High
No	36	37	38	39	40	Low
	D. Price-only design				H. No information	
No	41	42	43	44	45	No

^aThe number in each cell represents a cell number.

of brand and store cues. No previous single study has examined all combinations of the price, brand, and store name cues.

From five pretests, we determined a population of products, brand names, and store names recognizable to the subjects and distinguishable on the basis of perceived quality, and subjects' acceptable price ranges. The pretests also enabled us to refine and purify the measurement scales. The pretests led to the selection of two products (calculators and stereo headset players),¹ four brand names (Hewlett Packard and Royal for calculators and Sony and Grand Prix for stereo headset players), and four store names (Campus Bookstore and Roses for calculators and Best and K-Mart for stereo headset players).² On the basis of the pretests, three prices deter-

¹The selection of the two products was guided by the criteria that (1) subjects be potential purchasers, (2) the products represent different price ranges to test the replicability of the findings across product categories, and (3) the products be used by both men and women.

²Brand name and store name were operationalized according to whether subjects' perceptions of the cues were favorable or not. Actual brand names were chosen from a population of familiar brand names for each product category. On the basis of the pretests, the brand names were selected such that the subjects viewed them as being significantly different in terms of their perceptions of quality, as well as their familiarity and knowledge. This manipulation allowed the two brand names to be compared in the analysis as low and high perceived quality brands. Similarly, actual store names were chosen from a population of store names known to the subjects. The store names met the criteria of being significantly different in the pretest on perceived quality of the products carried, overall store quality, and subjects' satisfaction with the store. This manipulation allowed the two store names to be compared in the analysis as low and high perceived quality stores.

mined to be perceptively different, yet within the subjects' acceptable price ranges, were positioned as a high price, a medium price, and a low price for each product. Additionally, one price treatment (too high) was above subjects' acceptable price ranges to test whether perceptions of value and willingness to buy would show nonlinear tendencies. The price levels selected for the calculator were \$17.00, \$28.00, \$39.00, and \$50.00 and for the stereo headset player were \$34.00, \$61.00, \$88.00, and \$115.00. They represented the low, medium, high, and too high price levels, respectively.³

Research Procedure

In the $5 \times 3 \times 3$ factorial design, we used 585 undergraduate students (13 subjects per cell) enrolled in marketing courses at a large state university. Each subject was exposed to two products (calculator in experiment 1 and stereo headset player in experiment 2). Two separate studies (each a $5 \times 3 \times 3$ design) were conducted at the same time. Subjects were assigned randomly to one of 45 treatment cells for the first product, then assigned randomly to a cell for the second product containing the same type of information (i.e., a subject assigned randomly to a cell containing price and store information would be assigned randomly to a treatment cell for the second product containing only price and store information, but not necessarily to the same treatment cell). This procedure avoided the potential introduction of an artifact whereby the subject might assume, for example, that the store name in the first product treatment is implied for the second when in fact no store information is intended. The second study ($5 \times 3 \times 3$ design for stereo headset player) was conducted to replicate the first study ($5 \times 3 \times 3$ design for calculator), thus enhancing the generalizability of the results.

Dependent Variables

Subjects evaluated product quality, value, and willingness to buy on multi-item 7-point scales that were developed from previous research and purified during the pretests. As shown in the Appendix, perceived value was operationalized in relation to monetary exchange, not in terms of desirability, importance, or intrinsic worth. Thus, when brand and/or store information was given in the absence of price, subjects were asked to evaluate only the quality of the product.

Following the procedures suggested by Churchill (1979), we developed the indicators and assessed them for internal and external consistency by using correlation analysis, factor analysis, and Cronbach's alpha. The results of an exploratory factor analysis with varimax rotation produced three factors consistent with the three

³In a pretest, subjects were asked to indicate acceptable prices (in terms of whether they would consider paying them). After marking acceptable prices on a continuum, subjects categorized those prices as low but acceptable, high but acceptable, neither too high nor too low, and unacceptably high.

dependent variables, accounting for more than 80% of the variance for both product experiments. The values of coefficient alpha were .95 for perceived quality (average interitem correlations .78 and .80), .93 for perceived value for both products (average interitem correlations .73 and .72), and .97 and .96 for willingness to buy (average interitem correlations .85 and .83).

RESULTS AND ANALYSES

Manipulation Checks

At the end of the experiment, subjects evaluated the price (very high to very low), brand name (very high quality to very poor quality), and store name (very high quality to very poor quality) on 7-point rating scales. Analysis of the manipulation check mean scores suggested that the manipulations of the three independent variables were perceived as intended. A one-way ANOVA was used to assess the impact of the four price levels on the price manipulation check (calculator: $F_{3,454} = 24.88, p < .001$; stereo headset player: $F_{3,430} = 48.43, p < .001$). For both products, the contrast estimates between each pair of means for the four price levels were all significant ($p < .05$). A one-way ANOVA for the brand quality manipulation indicated that the high level brand was perceived as being of higher quality than the low level brand (calculator: $F_{1,376} = 230.13, p < .001$; stereo headset player: $F_{1,358} = 465.57, p < .001$). Similarly, a one-way ANOVA for the store quality manipulation indicated that the high level store was perceived as being of higher quality than the low level store (calculator: $F_{1,380} = 71.47, p < .001$; stereo headset player: $F_{1,356} = 116.70, p < .001$).

Hypothesis Tests

The multivariate analysis of variance and the univariate results ($4 \times 3 \times 3$ design) from testing the hypotheses are reported in Table 2 and the mean scores are reported in Tables 3 and 4. The results of the MANOVA indicate significant main effects for price, brand, and store for the calculator and the stereo headset player. The results for the $5 \times 3 \times 3$ design for perceived quality are similar to the results for the $4 \times 3 \times 3$ design and are reported in Table 2. To provide for and to interpret the various individual and combined effects (H_6 - H_8), a series of specific subdesign analyses were conducted (Table 5).

Price effects (H_1). Trend analyses (Hays 1973; Rosenthal and Rosnow 1984) were conducted to determine whether linear and quadratic trends were present between price and perceived quality, perceived value, and willingness to buy. For the calculator, the results support a positive linear trend of price on buyers' perceptions of quality (H_{1a} : $F_{1,432} = 25.65, p < .001$). The results do not support a quadratic trend of price on buyers' perceptions of value or willingness to buy, but do support a negative linear trend of price on buyers' perceptions of value (H_{1b} : $F_{1,432} = 89.51, p < .001$) and willingness to buy (H_{1c} : $F_{1,432} = 25.21, p < .001$).

Table 2
ANALYSIS OF VARIANCE RESULTS

Effects	MANOVA (4 × 3 × 3 design)			ANOVA (4 × 3 × 3 design) ^a				ANOVA (5 × 3 × 3 design) ^a	
	Wilks	d.f.	F-value	d.f.	Quality	Value	Willingness to buy	d.f.	Quality
Calculator									
Price (P)	.71	9,1046.66	17.29 ^c	3	9.68 ^c	29.95 ^c	9.01 ^c	4	9.54 ^c
Brand (B)	.79	6,860	17.49 ^b	2	49.56 ^c	20.19 ^c	24.66 ^c	2	62.92 ^c
Store (S)	.93	6,860	5.28 ^c	2	7.89 ^c	5.29 ^c	7.66 ^c	2	9.77 ^c
P × B	.98	18,1216.71	.55	6	.26	.23	.26	8	.32
P × S	.97	18,1216.71	.78	6	.16	1.42	.88	8	.14
B × S	.96	12,1137.96	1.51	4	2.23	.87	2.54 ^b	4	2.38 ^b
P × B × S	.93	36,1271.21	.93	12	.82	1.06	.67	16	.81
Residual				432				540	
Stereo headset player									
Price (P)	.75	9,1046.66	14.28 ^c	3	5.42 ^c	34.26 ^c	16.02 ^c	4	4.36 ^c
Brand (B)	.75	6,860	22.18 ^c	2	65.42 ^c	11.57 ^c	22.02 ^c	2	88.81 ^c
Store (S)	.96	6,860	2.78 ^b	2	5.68 ^c	2.21	5.14 ^c	2	7.99 ^c
P × B	.94	18,1216.71	1.53	6	2.51 ^b	.97	1.18	8	2.00 ^b
P × S	.98	18,1216.71	.50	6	.66	.55	.51	8	.55
B × S	.96	12,1137.96	1.65	4	3.05 ^b	1.93	1.08	4	3.46 ^b
P × B × S	.94	36,1271.21	.72	12	.66	.87	.98	16	.65
Residual				432				540	

^aTable entries reflect ANOVA *F*-values.

^bSignificant at $p < .05$.

^cSignificant at $p < .01$.

Table 3

CELL MEANS^a AND STANDARD DEVIATIONS FOR PERCEIVED QUALITY, PERCEIVED VALUE, AND WILLINGNESS TO BUY (PRODUCT: CALCULATOR)

Brand name	Price										Store name
	Too high		High		Medium		Low		No price		
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	
High	1.80	.50 ^b	1.71	.58	1.88	.65	2.46	1.41	1.78	.92	High
	3.32	1.20	2.69	1.36	2.34	1.21	1.71	.63	—	—	
	3.85	1.39	3.38	1.60	3.32	1.74	2.51	1.43	—	—	
High	1.88	.65	2.02	.62	2.29	.96	2.63	.78	1.80	.70	Low
	2.94	1.25	2.51	1.12	2.34	.90	1.95	1.44	—	—	
	3.18	1.67	2.68	1.27	2.94	1.68	2.28	1.55	—	—	
Low	2.85	.78	2.85	.70	3.29	1.70	3.31	1.53	2.52	.57	High
	3.85	1.21	3.60	1.74	2.89	1.48	2.22	1.01	—	—	
	4.82	1.52	4.03	1.88	3.83	2.14	3.97	1.98	—	—	
Low	3.18	.95	3.06	.76	3.09	1.08	3.66	.97	3.08	1.11	Low
	4.28	1.10	3.77	1.27	3.43	1.70	2.38	.55	—	—	
	4.97	1.10	4.77	1.45	4.62	1.95	3.54	.80	—	—	
High	1.86	.71	2.14	.75	1.66	.67	2.14	1.03	1.89	.84	No
	3.23	.84	2.49	1.01	1.69	.62	1.83	1.15	—	—	
	3.63	1.12	2.82	1.39	1.98	1.11	2.32	1.34	—	—	
Low	2.62	.87	2.58	1.05	2.91	1.00	3.37	1.40	2.42	.85	No
	3.40	1.49	2.85	1.06	2.71	1.14	2.55	.90	—	—	
	3.52	1.63	3.26	1.40	3.35	1.52	3.60	1.55	—	—	
No	2.40	.90	2.42	.69	2.22	.74	2.77	.92	2.48	.83	High
	3.77	1.26	3.14	.95	2.97	1.52	2.25	.89	—	—	
	4.34	1.11	3.69	1.11	3.62	1.95	3.03	1.25	—	—	
No	2.91	.74	3.17	.79	3.43	1.19	3.54	1.16	2.92	.65	Low
	3.35	1.06	3.89	.90	3.23	1.17	3.12	.51	—	—	
	4.38	1.54	4.37	1.35	4.57	1.22	3.77	.91	—	—	
No	2.32	.67	2.63	.97	3.08	1.04	3.58	1.39	2.66	.74	No
	4.11	1.23	2.86	1.16	2.28	.80	2.17	.78	—	—	
	4.40	1.31	3.20	1.63	3.40	1.53	3.02	1.49	—	—	

^aMeans are on a 7-point scale, 1 being high and 7 being low.

^bFirst row values for perceived quality, second row values for perceived value, and third row values for willingness to buy.

Table 4
CELL MEANS^a AND STANDARD DEVIATIONS FOR PERCEIVED QUALITY, PERCEIVED VALUE, AND WILLINGNESS TO BUY
(PRODUCT: STEREO HEADSET PLAYER)

Brand name	Price										Store name
	Too high		High		Medium		Low		No price		
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	
High	2.00	.66 ^b	1.69	.51	2.06	.61	2.34	.70	1.71	.66	High
	3.91	1.20	3.17	1.08	3.25	1.20	2.52	1.19	—		
	4.09	1.67	3.62	1.62	3.51	1.23	2.78	1.32	—		
High	1.88	.88	2.12	.78	1.74	.59	1.92	.80	1.94	.72	Low
	4.06	1.43	3.40	1.21	2.54	1.18	2.34	.91	—		
	4.78	1.78	3.83	1.66	3.02	1.32	2.75	1.23	—		
Low	2.91	1.28	3.08	.92	2.85	1.15	2.88	.84	3.17	1.12	High
	4.08	1.30	4.14	1.27	2.91	1.20	2.48	.90	—		
	4.85	1.55	4.80	1.42	3.95	1.99	3.03	1.37	—		
Low	3.51	1.12	3.55	1.15	3.88	1.05	3.48	1.49	3.49	1.24	Low
	4.78	1.24	4.65	1.08	4.06	1.18	3.17	1.85	—		
	5.51	1.21	5.42	1.11	5.42	.90	4.03	2.11	—		
High	2.02	.52	2.09	.76	2.11	.80	2.26	.65	2.09	.79	No
	3.82	1.20	3.62	1.22	2.77	.89	2.29	.94	—		
	4.43	1.70	3.83	1.82	3.28	1.48	2.43	1.05	—		
Low	3.15	1.35	2.91	.98	2.85	.78	3.43	.99	2.97	.50	No
	4.71	1.17	4.20	1.41	3.18	1.11	3.14	1.20	—		
	5.32	1.60	4.98	1.45	4.11	1.55	4.48	1.73	—		
No	2.31	.72	2.49	.65	2.37	.72	3.28	.88	2.51	.68	High
	3.68	1.24	3.69	1.04	3.15	1.52	2.97	.89	—		
	3.77	1.23	4.08	1.04	3.46	1.82	3.82	1.38	—		
No	2.55	.73	2.83	1.14	3.42	1.22	3.65	1.35	3.18	.83	Low
	3.63	1.06	4.09	1.25	3.95	1.17	2.63	1.31	—		
	4.28	1.34	4.98	1.55	4.63	1.18	3.63	1.71	—		
No	2.29	.76	2.68	.74	2.68	.79	3.57	1.41	2.62	.54	No
	4.49	.85	3.95	1.51	3.46	1.22	2.58	1.03	—		
	4.85	1.10	4.11	1.71	4.03	1.52	3.58	1.66	—		

^aMeans are on a 7-point scale, 1 being high and 7 being low.

^bFirst row values for perceived quality, second row values for perceived value, and third row values for willingness to buy.

For the stereo headset player, the results of the price effect on buyers' perceptions of quality (H_{1a}) were interpreted within brand levels (significant price-brand interaction). The price effect is not significant in the high brand name level ($F_{1,432} = .88$) or low brand name level ($F_{1,432} = .11$), but is significant in the brand absent level ($F_{1,432} = 27.30$, $p < .001$). A quadratic trend of price on buyers' perceptions of value or willingness to buy is not supported, but there is support for a negative linear trend of price on buyers' perceptions of value (H_{1b} : $F_{1,432} = 100.06$, $p < .001$) and willingness to buy (H_{1c} : $F_{1,432} = 46.97$, $p < .001$).

Brand effects (H_2). For the calculator, the results support a significant brand name effect on buyers' perceptions of quality (H_{2a} : $F_{1,432} = 86.33$, $p < .001$) and value (H_{2b} : $F_{1,432} = 32.86$, $p < .001$). The results for brand name effect on buyers' willingness to buy (H_{2c}) were interpreted within store levels (significant brand-store interaction). The brand effect is significant within all three store levels (H_{2c} : store high: $F_{1,432} = 9.24$, $p < .005$; store low: $F_{1,432} = 33.70$, $p < .001$; store absent: $F_{1,432} = 6.38$, $p < .03$).

For the stereo headset player, the results for the brand

name effect on buyers' perceptions of quality (H_{2a}) were interpreted within price levels and store levels (significant price-brand and brand-store interactions). The brand effect is significant within all four price levels (price too high: $F_{1,432} = 33.52$, $p < .001$; price high: $F_{1,432} = 32.44$, $p < .001$; price medium: $F_{1,432} = 32.98$, $p < .001$; price low: $F_{1,432} = 26.33$, $p < .001$) and all three store levels (store high: $F_{1,432} = 24.47$, $p < .001$; store low: $F_{1,432} = 83.39$, $p < .001$; store absent: $F_{1,432} = 27.23$, $p < .001$). The results also support the brand effect on buyers' perceptions of value (H_{2b} : $F_{1,432} = 22.73$, $p < .001$) and willingness to buy (H_{2c} : $F_{1,432} = 44.07$, $p < .001$).

Store effects (H_3). For the calculator, the results support a significant store name effect on buyers' perceptions of quality (H_{3a} : $F_{1,432} = 14.64$, $p < .001$), but not on their perceptions of value (H_{3b} : $F_{1,432} = 2.65$, $p < .20$). The results for the store name effect on buyers' willingness to buy (H_{3c}) were interpreted within brand levels (significant brand-store interaction). The store effect is supported only in the brand absent level (H_{3c} : store high: $F_{1,432} = 2.91$, means in reverse direction; store low: $F_{1,432} = 1.12$, $p > .20$; store absent: $F_{1,432} = 4.20$, $p < .05$).

Table 5
SUMMARY OF PRICE, BRAND, AND STORE EFFECTS FOR MULTIPLE DESIGNS

Design	d.f.	Perceived quality				Perceived value				Willingness to buy			
		Calculator		Stereo		Calculator		Stereo		Calculator		Stereo	
		F	η^2	F	η^2	F	η^2	F	η^2	F	η^2	F	η^2
<i>Price effects (main effect)</i>													
A (P × B × S)	3,192	4.34 ^c	.06	.07	.00	14.26 ^c	.18	16.78 ^c	.21	4.32 ^c	.06	11.67 ^c	.15
B (P × B)	3,96	1.55	.05	.95	.03	6.60 ^c	.17	10.59 ^c	.25	1.92	.06	4.54 ^c	.12
C (P × S)	3,96	1.41	.04	5.51 ^c	.15	3.83 ^c	.11	4.03 ^c	.11	2.40 ^a	.07	1.42	.04
D (P)	3,48	3.57 ^b	.18	4.08 ^c	.20	10.05 ^c	.39	6.14 ^c	.28	2.22 ^a	.12	1.55	.09
<i>Price effects (linear trend)</i>													
A (P × B × S)	1,192	10.91 ^c	.05	.20	.001	42.22 ^c	.18	49.74 ^c	.21	11.86 ^c	.06	33.74 ^c	.15
B (P × B)	1,96	3.05 ^a	.03	.96	.01	17.25 ^c	.15	30.09 ^c	.24	3.29 ^a	.03	13.18 ^c	.12
C (P × S)	1,96	3.67 ^a	.04	15.61 ^c	.14	10.58 ^c	.10	7.59 ^c	.07	5.76 ^c	.06	1.22	.01
D (P)	1,48	10.59 ^c	.18	10.21 ^c	.18	26.00 ^c	.35	18.05 ^c	.27	4.55 ^c	.09	4.22 ^b	.08
<i>Brand effects (main effect)</i>													
A (P × B × S)	1,192	63.45 ^c	.25	97.52 ^c	.34	23.18 ^c	.11	13.79 ^{c*}	.07	34.04 ^{c*}	.15	26.74 ^{c*}	.12
B (P × B)	1,96	23.77 ^c	.20	31.04 ^c	.24	7.51 ^c	.07	9.13 ^c	.09	7.46 ^c	.07	16.09 ^c	.14
E (B × S)	1,48	18.23 ^c	.28	31.75 ^c	.40	—	—	—	—	—	—	—	—
F (B)	1,24	2.50	.09	11.49 ^c	.32	—	—	—	—	—	—	—	—
<i>Store effects (main effect)</i>													
A (P × B × S)	1,192	2.40	.01	4.70 ^b	.02	.51	.003	3.49 ^{**}	.02	.17 [*]	.001	6.12 ^{**b}	.03
C (P × S)	1,96	20.66 ^c	.18	7.05 ^c	.07	3.10 ^a	.03	.75	.01	5.28 ^b	.05	4.59 ^b	.05
E (B × S)	1,48	1.45	.03	1.07	.02	—	—	—	—	—	—	—	—
G (S)	1,24	2.31	.09	5.19 ^b	.18	—	—	—	—	—	—	—	—

^aSignificant at $p < .10$.

^bSignificant at $p < .05$.

^cSignificant at $p < .01$.

*Significant brand name-store name interaction.

For the stereo headset player, the results for the store name effect on buyers' perceptions of quality (H_{3a}) were interpreted within brand levels (significant brand-store interaction). The store effect is supported in the brand low and absent conditions (H_{3a} : brand high: $F_{1,432} = .30$, means in reverse direction; brand low: $F_{1,432} = 13.26$, $p < .001$; brand absent: $F_{1,432} = 7.39$, $p < .01$). The results also support the store effect on buyers' perceptions of value (H_{3b} : $F_{1,432} = 4.22$, $p < .05$) and willingness to buy (H_{3c} : $F_{1,432} = 10.44$, $p < .005$).

Perceived quality and perceived value (H_4). Regression results support a positive relationship between buyers' perceptions of quality and value (calculator: $r = .28$, $F_{1,466} = 38.71$, $p < .001$; stereo headset player: $r = .20$, $F_{1,466} = 20.39$, $p < .001$).

Perceived value and willingness to buy (H_5). A positive relationship between buyers' perceptions of value and their willingness to buy is supported by the regression results (calculator: $r = .76$, $F_{1,466} = 631.50$, $p < .001$; stereo headset player: $r = .82$, $F_{1,466} = 939.13$, $p < .001$).

Price effects in single-cue versus multiple-cue designs (H_6). The hypothesized price effects on perceptions of quality, value, and willingness to buy were analyzed by ANOVA for each of the four price designs (subdesigns A, B, C, and D). Contrary to the hypotheses, the results (Table 4, linear trends) suggest that the effect of price

on perceived quality and perceived value is greater in a single-cue (SC) design than in a multiple-cue (MC) design (for perceived quality: calculator SC $\eta^2 = .18 > MC$ weighted average $\eta^2 = .04$, stereo headset player SC $\eta^2 = .18 > MC$ weighted average $\eta^2 = .04$; for perceived value: calculator SC $\eta^2 = .35 > MC$ weighted average $\eta^2 = .15$, stereo headset player SC $\eta^2 = .27 > MC$ weighted average $\eta^2 = .18$). The effect of price on buyers' willingness to buy the product receives mixed support (calculator SC $\eta^2 = .09 > MC$ weighted average $\eta^2 = .05$, stereo headset player SC $\eta^2 = .08 < MC$ weighted average $\eta^2 = .11$).

Brand effects in single-cue versus multiple-cue designs (H_7). The hypothesized brand effect on perceived quality was analyzed for each of the four brand designs (subdesigns A, B, E, and F). The effect of brand name on perceived quality is greater in a multiple-cue design than in a single-cue design for the calculator (SC $\eta^2 = .09 < MC$ weighted average $\eta^2 = .24$), but not for the stereo headset player (SC $\eta^2 = .32 = MC$ weighted average $\eta^2 = .32$).

Store effects in single-cue versus multiple-cue designs (H_8). Similarly, the hypothesized store effect on perceived quality was analyzed for the four store designs (subdesigns A, C, E, and G). Contrary to the hypothesis, the results suggest that the effect of store name on perceived quality is greater in a single-cue design than in a

multiple-cue design (calculator SC $\eta^2 = .09 > MC$ weighted average $\eta^2 = .06$; stereo headset player SC $\eta^2 = .18 > MC$ weighted average $\eta^2 = .03$).

DISCUSSION

We tested direct and indirect relationships between three extrinsic product cues (price, brand name, and store name) and two evaluative variables (perceived quality and perceived product value), as well as buyers' willingness to buy. The design of the experiment also allowed analysis of the relative differential impacts of price, brand name, and store name on the three dependent variables. In this section we discuss the results.

Price and Perceived Quality

Overall, when price was the only extrinsic cue available, the subjects clearly perceived quality to be related positively to price. When other extrinsic information was present, the results were less persuasive. For the calculator, the hypothesized positive relationship is supported in all four designs (Table 5, price linear trend results). For the stereo headset player, the price effect is significant in the absence of brand information (i.e., price-alone and price-store designs). The pretest analysis indicated that the Sony stereo headset player was overwhelmingly favorable on all attributes measured. Though the Hewlett Packard calculator was the favored product, it was not so universally perceived on all attributes. The difference in brand favorability likely accounts for the differences in the findings across the two products.

Price, Perceived Value, and Willingness to Buy

Perceived value, conceptualized as a cognitive trade-off between perceived quality and sacrifice, decreased when price increased, suggesting that the perceived sac-

rifice component became stronger in relation to perceived quality at higher prices. The conceptual argument suggests that, as price increases from a low priced model to a higher priced model, buyers' perceptions of value will increase and then decrease. In all the design situations, a negative price-perceived value trend is statistically significant. Similarly, the results support a negative price-willingness to buy relationship.

Influence of Brand Name and Store Name

Brand and store names, as hypothesized, had a positive effect on perceptions of quality, value, and willingness to buy. The strength of these effects in relation to price are discussed next.

Effect Sizes (Single-Cue vs. Multiple-Cue Designs)

Monroe and Krishnan (1985) indicated that the relative effect of price on perceived quality was larger in the presence of brand information than when alone. However, in our study, the combined price-alone effect is larger than any other combined price cue effect (Table 6). Though there is a large price-alone/perceived quality effect, the effect of price with brand or with brand and store name is small, and the price effect with store name information is moderate. The effect of brand name information on quality perceptions is large in all conditions. Indeed, the brand name effect is larger in the presence of price and store information than it is by itself. Hence, price and store information appears to have been consistent with the brand image and augmented perceptions of product quality. This result provides strategic implications for brand management. However, store name has a moderate effect on quality perceptions when presented alone, and diminishes in effect as price and brand information are provided.

Table 6
AVERAGE MAIN EFFECTS OF INDEPENDENT VARIABLES

Independent variables	Treatment condition	Combined effect size (η^2)		
		Perceived quality	Perceived value	Willingness to buy
Price	Alone	.190	.335	.105
	With brand	.040	.210	.090
	With store	.095	.110	.055
	With brand and store	.030	.195	.105
	Weighted average	.064	.195	.091
Brand	Alone	.205	—	—
	With price	.220	.080	.105
	With store	.340	—	—
	With price and store	.295	.090	.135
	Weighted average	.275	.087	.125
Store	Alone	.135	—	—
	With price	.125	.020	.050
	With brand	.025	—	—
	With price and brand	.015	.010	.015
	Weighted average	.054	.013	.027

The negative effect of price on perceptions of value was reduced as either brand or store name information was provided. Nevertheless, the combined impact of price on perceptions of value is large, whereas the positive impact of brand and store name is moderate and weak, respectively. This result is consistent with positive brand equity brands competing effectively while charging a premium price. As expected, given these effects on perceptions of value, the relationships between the three independent variables and willingness to buy are similar in that brand and store information combine with price to provide small to moderate positive effects on buying intentions.

CONCLUSIONS

Zeithaml (1988) argued that research on how consumers evaluate product alternatives should be expanded beyond the price-perceived quality relationship. Our research is the first empirical effort to examine the effects of the extrinsic cues of price, brand, and store on perceptions of quality and value as well as purchase intentions. Consequently, the results reported here represent an important step forward in unraveling the intricate price, quality, and value relationships. Based on a simple model of the linkages between the constructs, the overall research results support the conceptual model.

The Product Evaluation Model

Though perceptions of monetary sacrifice were not measured explicitly and the functional form of perceptions of value is not as hypothesized, the model as originally diagrammed by Dodds and Monroe (1985), and as extended here and by Monroe and Chapman (1987) and Zeithaml (1988), holds promise as a conceptual framework for studying the relationships. Such a conceptual framework lays the basis for (1) isolating the theoretical reasons for when buyers use price, brand, store, or intrinsic product information as indicators of quality, (2) determining how quality perceptions influence value perceptions, purchase intentions, and product choice, and (3) how monetary and nonmonetary perceived sacrifices influence value perceptions, purchase intentions, and choice.

An immediate concern with the model is that the study did not detect the curvilinear price-perceived value relationship as hypothesized. Possibly the manipulations in the experiment were not set wide enough to demonstrate conclusively whether there is a positive relationship between perception of value and prices perceived to be relatively low. Analysis of the price manipulation check confirmed this limitation. The too-high price manipulation was perceived to be slightly high and the low price manipulation was perceived to be slightly low. Specifically, a price point below the subjects' acceptable price range was not tested because of sample size constraints. The addition of more price points at both ends of the price continuum would provide a stronger test for the predicted curvilinear price-perceived value relationship (Monroe and Dodds 1988).

Combined Effects of Price, Brand Name, and Store Name

Methodologically, we used an intricate experimental design to isolate the individual and combined effects of price, brand, and store name on the dependent variables. Within the design, we were able to replicate analytically previous single-cue and multiple-cue price-perceived quality research using common measures, samples, and products. That approach eliminated some potential methodological reasons for inconsistent results across previous studies. We developed and tested the dependent measures for their internal consistency and convergent validity, thus overcoming an important flaw in previous price-perceived quality research (Zeithaml 1988).

The hypotheses that brand and store name enhance the price effect were derived from the findings of Rao and Monroe (1989b) and Monroe and Krishnan (1985) in their meta-analyses. Their results provide an estimate of the "average" effect size across a distribution of results. The distribution of effects comprises studies involving different experimental designs (within vs. between), different numbers of cues (single vs. multiple), varying strengths of price manipulations (some above, within, and below the subjects' acceptable price range, others all within the subjects' acceptable price range), and different price levels (from very expensive to inexpensive products). We were able to compare the relative effects of combining price, brand name, and store name by using relatively higher price and infrequently purchased products. As argued subsequently, the findings reported here do provide evidence of some boundary conditions for when brand and store name do not enhance price effects.

Monroe and Rao (1987) suggested that as price level increases, the risk of an incorrect assessment increases because buyers are less familiar with a product that is infrequently purchased. Our findings suggest that consumers are less likely to rely on the presence of a price-quality relationship for a particular product class in order to rely more on the familiar information cues of brand and store name to assess the product's worth. Hence, we can expect that for higher priced products that are purchased infrequently, the strength of the price cue may be diminished in the presence of other, more well-known cues. For example, a consumer who has never bought a stereo headset player or who bought a calculator five years ago may use price to categorize the product as very high quality, average quality, or poor quality if only price information is available. However, a consumer who lacks knowledge about the product may use store and brand name information, if available, to make the quality assessment, relying less on the price cue. This observation is consistent with Monroe's (1976) finding about the strength of brand familiarity when buyers are not equally familiar with alternative product choices, and with inferences stemming from emerging price-signaling literature.

Thus, our study shows that the price-perceived qual-

ity relationship was not enhanced, but rather was diminished, by the cues of brand and store name. This result is not necessarily a refutation of the meta-analyses. Our findings suggest that for infrequently purchased, higher priced consumer products, relationships may be different from those found in the meta-analyses.

In the conduct of our study, subjects were not given specific model or attribute/feature information. For instance, Sony produces a wide assortment of models that cover several different price levels. Whether our operationalization of brand name was a limitation is debatable. To give specific model information may direct the study to be more a test of familiarity (persons who are familiar with a particular model and those who are not) than of the quality information inherent in the brand perception. Obtaining a sample that is homogeneous in familiarity with a particular model would be more difficult than obtaining a sample that is homogeneous in familiarity with a brand name in general. Not having model information, subjects may use different reference prices related to their own experiences. However, the manipulation checks support the choice not to include particular models in the study.

Future Research

Future research must meet the objectives of integrating knowledge from previous research efforts to establish the generalizability of the conceptual model. Brinberg and McGrath's (1985) validity network schema, as applied to the price, perceived quality, and perceived value relationships by Monroe and Dodds (1988), suggests needed directions for such research.

Replication. Research is needed to replicate the original findings as well as to extend the range of the findings. Rosenthal and Rosnow (1984) suggested that a minimum of 15 studies are necessary to demonstrate that a single statistically significant result was tolerant of unpublished null results on the same relationship. It remains important to replicate previous research within the realm of pioneering research.

Robustness and boundary search. Because price-perceived quality studies generally have focused on low priced products, future studies must explore how the underlying conceptual model works for a wider range of products, prices, situations, settings, and populations (Rao and Monroe 1989b). A finding's failure to replicate is evidence of a limit to the generalizability of the relation. However, when a finding does replicate, the scope of the relation is extended. In any event, uncertainty about the relation is extended or the relation is shown to be limited.

In conclusion, it is apparent that both price and brand name are important determinants of product quality perceptions, and that the effect of store name, though positive, is small. The relative effect of these three variables on perceptions of value and purchase intentions clearly warrants additional research, as does their effect on actual choice.

APPENDIX DESCRIPTION OF MULTI-ITEM INDICATORS

Perceived Quality Indicators

1. The likelihood that the product would be reliable is: (very high to very low)
2. The workmanship of product would be: (very high to very low)
3. This product should be of: (very good quality to very poor quality)
4. The likelihood that this product is dependable is: (very high to very low)
5. This product would seem to be durable (strongly agree to strongly disagree)

Perceived Value Indicators

1. This product is a: (very good value for the money to very poor value for the money)
2. At the price shown the product is: (very economical to very uneconomical)
3. The product is considered to be a good buy (strongly agree to strongly disagree)
4. The price shown for the product is: (very acceptable to very unacceptable)
5. This product appears to be a bargain (strongly agree to strongly disagree)

Willingness to Buy Indicators

1. The likelihood of purchasing this product is: (very high to very low)
2. If I were going to buy this product, I would consider buying this model at the price shown (strongly agree to strongly disagree)
3. At the price shown, I would consider buying the product (strongly agree to strongly disagree)
4. The probability that I would consider buying the product is: (very high to very low)
5. My willingness to buy the product is: (very high to very low)

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