Priming Price: Prior Knowledge and Context Effects

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Category priming has recently stirred the interest of judgment researchers. By unobtrusively presenting exemplars of a category, that category becomes temporarily more accessible from memory and more likely to be used subsequently in processing new information. This research extends work in cognitive and social psychology to consumer judgments. The two studies presented here examine conditions under which cognitive categories of price may be primed and the resulting effects on product judgment. The results also suggest that these effects are influenced by individual differences in consumer knowledge.

Recent work in cognitive and social psychology has demonstrated that some judgments may be very sensitive to the cognitive context in which the judgment is made. Researchers using the priming paradigm (Higgins, Rholes, and Jones 1977; Srull and Wyer 1979) have found that *unobtrusive* exposure to exemplars of a cognitive category can increase the accessibility (likelihood of retrieval from memory and subsequent use; Higgins and King 1981) of that category.[1] This increased accessibility is reflected in two general judgmental effects.

First, ambiguous stimuli (e.g., novel persons or objects) are likely to be categorized as instances of the accessible category (Higgins et al. 1977; Srull and Wyer 1979, 1980). That is, when a target object "can be categorized in alternate ways with approximately equal likelihood" (Higgins et al. 1977, p. 143), the primed category captures the target object. For example, Higgins et al. (1977) unobtrusively exposed subjects to either positive or negative trait adjectives, with both sets being relevant to an ambiguous description of a target person's behavior. Then, in an ostensibly unrelated experiment investigating reading comprehension, the subjects who had been primed with the positive traits formed a significantly more favorable impression of the target person than did the subjects who had been primed with the negative traits.

Second, Herr, Sherman, and Fazio (1983) and Herr (1986) noted some limiting conditions of priming-induced categorization. In their extensions of this type of research, ambiguous stimuli were judged as instances of the primed category only when that category was moderately extreme. When primed with exemplars of extreme categories, stimuli were judged in the opposite direction from the primed category. For example, following priming with exemplars of either extremely hostile persons, extremely ferocious animals, or extremely large animals, subjects subsequently judged stimuli as either relatively nonhostile, unferocious, or small, respectively. Herr et al. also manipulated the ambiguity of the stimuli to be judged following priming. Again, judgments in the opposite direction from the primed category occurred when the judged stimulus was unambiguous (i.e., was well known to the subject prior to the experiment). Only when moderate categories were primed (e.g., exemplars of moderately small animals presented) and ambiguous stimuli (fictitious animals) judged were judgments made in the direction of the primed category (in this case, the fictitious animals were judged relatively small). Herr et al. noted that the primed category seemed to serve as a standard of comparison for judgments, producing the classic judgment effects noted by social judgment theorists (cf. Sherif and Hovland 1961). The judgments in the opposite direction from the primed category were considered contrast effects. Judgments of the person/object as an instance of the primed category were considered assimilation effects. Assimilation to the primed category seems to occur only when moderate categories are primed and ambiguous stimuli judged. Contrast from the primed category occurs for the other conditions.

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[1] The term "category" throughout this article refers to a memorial structure consisting of "information about a class of objects, events, or properties" (Higgins and King 1981, p. 71).

These judgmental effects of priming influence overt behavior as well. Herr (1986) demonstrated that judgments made from priming stimuli presented only briefly—thereby activating the category only briefly—had lasting implications. In his study, judgments of a target person's hostility mediated the judge's overt behavior toward the target person. Additionally, Higgins and Chaires (1980) demonstrated a direct link to problem-solving behavior.

Although priming can produce these judgmental and behavioral effects, what interests many is its often passive nature (see especially Higgins, Bargh, and Lombardi 1985). Subjects do not necessarily consciously compare the stimulus to the primed category. On the contrary, they may be unaware that a category has even been activated (see Bargh and Pietromonaco 1982; Herr et al. 1983; Higgins et al. 1977). Subjects may simply use the activated category as a standard of comparison without concomitant awareness. As a consequence, subjects may be less likely to display resistance to the category's influence, because it is difficult to resist an influence of which one is unaware. In fact, Higgins, Bargh, and Lombardi (1985) noted priming effects only when subjects were unaware of the activated category.[2]

The purpose of the present research is twofold. In Experiment 1, an attempt is made to replicate the priming effects on an applied level in a consumer domain (automobile price judgments). A successful replication will be informative about the nature of cognitive categories held by consumers. That is, if priming effects are obtained for automobile price judgments, then consumers hold and can use that category. A successful replication will also provide evidence about the relation of the primed category to other categories. In the present case, it would tell us that representations of automobile prices indeed exist in consumers' memories in much the same manner as representations of nonmarketed objects, such as animal size/ferocity and social categories.

Subjects in Experiment 1 were primed with one of four distinct levels of automobile price, ranging from extremely inexpensive to extremely expensive. Subjects, when asked to evaluate real and hypothetical cars' prices, were expected to demonstrate the judgment effects shown in Table 1. These predictions were developed from a feature-matching model of categorization and judgment described in Herr et al. 1983. Assimilation effects (judgments of price consistent with the primed category) should be obtained only when moderate categories are primed and hypothetical (ambiguous) automobiles judged. In all other conditions, contrast effects should be obtained.

TABLE 1

PREDICTIONS OF JUDGMENT EFFECTS AS A FUNCTION OF PRIMED CATEGORY, EXTREMITY OF PRIMED CATEGORY, AND AMBIGUITY OF STIMULUS OBJECT

	Ambiguous stimulus		Unambiguous stimulus	
Category	Moderate	Extreme	Moderate	Extreme
Low price	a_{11} (− − A)	b_{12} (++ C)	b_{13} (++ C)	b_{14} (++ C)
High price	b_{21} (++ A)	a_{22} (− − C)	a_{23} (− − C)	a_{24} (− − C)

NOTE: Pluses indicate judgments that the target has more of the primed characteristic. Minuses indicate judgments of less of the primed characteristic. A = predicted assimilation to the primed category, and C = predicted contrast away from the primed category.

The following simple effects tests are used to determine assimilation or contrast: $t[(a_{11} + a_{22}) - (b_{21} + b_{22})] - [(b_{13} + b_{14}) - (a_{23} + a_{24})]$ = assimilation for ambiguous targets following priming with moderate categories and contrast for all other judgments; $t(a_{11} - a_{22}) - (b_{21} + b_{22})$ = assimilation and contrast for judgments of ambiguous targets; $t(b_{13} + b_{14}) - (a_{23} + a_{24})$ = contrast for judgments of unambiguous targets; $t(a_{11} - b_{21})$ = assimilation; $t(b_{12} - a_{22})$ = contrast; $t(b_{13} - a_{23})$ = contrast; $t(b_{14} - a_{24})$ = contrast.

Experiment 2 addresses theoretical issues important to consumer research and to understanding the priming process itself; the possible impact of individual knowledge differences on priming effects is examined here. Prior knowledge has been shown to influence a variety of consumer information processing phenomena (e.g., Bettman and Sujan 1987; Johnson and Russo 1984; Srull 1983; Sujan 1985). Markus (1977) demonstrated individual differences in processing self-relevant information as a function of whether the subject was self-schematic. It seems reasonable then that consumer judgments might also be differentially influenced by priming as a function of an individual's prior knowledge about the primed product category. After all, priming effects should depend ultimately upon the existence of a category stored within memory. Although this is a simple assumption, its truth has never been documented in the priming literature. Rather, priming researchers have always assumed that if priming effects were demonstrated, subjects must have held and used relevant stored representations.

One purpose of Experiment 2 was to examine systematically the role of prior category knowledge in priming and judgment. This was done by measuring subjects' knowledge about automobile prices and the automobile market two months prior to the priming experiment. The priming task was identical to that in Experiment 1, but following priming, subjects were exposed to print ads for a real, moderately priced car and a prototype (unreal) car. With this manipulation, we examined possible effects of pre-existing knowledge differences on priming as well as priming's effect on ad perception. Priming-induced judgment effects

[2]This is not to say that every priming effect is obtained with subjective unawareness. For example, Srull and Wyer (1979, 1980) have obtained reliable priming effects without claiming subjective unawareness. No data exist regarding the relative merits of unobtrusive or obtrusive priming outside of Higgins et al. (1985).

TABLE 2

EXPERIMENT 1: MEAN RATINGS OF EXEMPLARS OF AUTOMOBILE PRICE

	Price categories				
	Extremely inexpensive	Moderately inexpensive	Moderate	Moderately expensive	Extremely expensive
Ratings	Chevette V.W. Beetle Ford Pinto Ford Fiesta	Citation Tercel Ford Escort Plymouth Horizon	Ford Grenada Buick Skyhawk Ford Mustang Honda Accord	Pontiac Gran Prix Mazda RX-7 Olds Cutlass Thunderbird	Mercedes Benz Rolls Royce Ferrari Porsche
Mean[a]	2.87	4.19	5.22	6.80	9.69
S.D.[b]	1.30	1.41	1.29	1.08	0.54

[a] Higher scores indicate greater perceived expense on a 0–10 scale.
[b] Averaged standard deviations in each grouping.

were expected to be much more pronounced for subjects characterized by relatively high category knowledge (who should be much more likely to have relevant, stored, accessible categories that would serve as primed standards of comparison) than for those with low category knowledge (whose judgments should not be influenced by priming).

EXPERIMENT 1

Method

Subjects. One hundred twenty-nine student subjects participated in the first experiment. Fifty-seven were used to pretest the priming exemplars, and 72 were used in the main experiment. All subjects were upper level undergraduates who either owned a car or anticipated purchasing one in the near future.

Pretesting. To obtain representative exemplars of different categories of automobile prices, 57 subjects evaluated the prices of a list of 66 automobiles on an 11-point scale with endpoints labeled "extremely inexpensive" and "extremely expensive." Subjects were instructed not to rate automobiles with which they were unfamiliar. From these ratings, four groups of four cars each were selected as priming exemplars. Each group represented a single, distinct price category. Four other exemplars, which subjects rated at the midpoint of the scale, were selected as the unambiguous targets to be judged following priming. The exemplars in each group were selected for minimal within-group variance according to the number of missing evaluations (which indicated unfamiliarity with the car) on subjects' pretests. The selected exemplars are presented in Table 2.

Procedure. Upon arrival at the lab, subjects were given a booklet containing five simple puzzles. The final puzzle in each booklet represented the priming manipulation—a 20 × 20 matrix of letters. Embedded in each matrix was one of the four groups of priming exemplars from Table 2. Subjects were instructed to circle each automobile name as it appeared in the puzzle. To ensure solution of the puzzle, the respective list was printed below the matrix. All subjects correctly solved the puzzle.

After completion of the priming manipulation, subjects were thanked for their participation in the "puzzle pretesting" and dismissed. As they were leaving, a second experimenter stopped subjects and asked them if they would participate in an additional experiment that would take only a few more minutes. All subjects complied with this request. The second experimenter then led each subject to a different room, where she told the subjects that she was conducting a survey investigating persons' perceptions of automobiles. A separate room, experimenter, and cover story were used to minimize any perception of a relation between the priming manipulation and the judgment task.

Each subject was then given a booklet containing (on separate pages) the names of six automobiles (the four real, moderately priced automobiles from Table 2 and two hypothetical autos, the Jabo and Lemphor, representing unambiguous and ambiguous target stimuli, respectively). Below each automobile name was a series of four 11-point rating scales upon which subjects were instructed to evaluate the respective automobile's price, quality, prestige, and reliability. The scales were labeled with endpoints "extremely inexpensive" and "extremely expensive," "extremely low quality" and "extremely high quality," "extremely low prestige" and "extremely high prestige," and "extremely unreliable" and "extremely reliable," respectively. Subjects were warned that they might encounter automobiles with which they were unfamiliar, as some were not yet available. In those cases, subjects were instructed to use their best judg-

TABLE 3

EXPERIMENT 1: MEAN JUDGMENTS OF REAL AND HYPOTHETICAL AUTOMOBILES' PRICES

Category primed	Type of automobile judged			
	Hypothetical		Real	
	Moderate	Extreme	Moderate	Extreme
Inexpensive	5.11	6.03	5.28	5.65
Expensive	5.92	6.55	4.93	5.17

NOTE: Means based on 18 observations per cell.

ment as to the qualities of the car. The position of the cars in the booklet was counterbalanced, so that real cars were evaluated first by half of the subjects and unreal cars were evaluated first by the other half. Within this constraint, presentation order of the cars was random.

Following collection of these data, subjects were quizzed for awareness of a relationship between the first and second phases of the experiment, debriefed, thanked for their participation, and released. No subject expressed any awareness of a relation, and when told the true nature of the study, most expressed open disbelief that the priming manipulation had any impact on their ratings. Only one subject inquired about the status of the fictitious cars, and that was to ask when they would be available.

Results. The evaluations subjects made of the cars' prices were averaged across type of car. The resulting average ratings for real cars and hypothetical cars were then subjected to a 2 (*category primed:* expensive versus inexpensive) × 2 (*extremity of category primed:* moderate versus extreme) × 2 (*ambiguity of automobile judged:* real versus hypothetical) × 2 (*order of judgment:* real cars judged first versus hypothetical cars judged first) analysis of variance, with ambiguity a within-subjects factor and order a control factor. This yielded nine observations per cell in the analysis.

Although seven of the eight means comprising the predicted three-way interaction between category primed, extremity, and ambiguity were in the expected direction, the interaction itself did not reach significance. These means are presented in Table 3. Those effects that did attain significance were a main effect for extremity, $F(1,64) = 5.28$ $p < 0.05$ (in which, overall, priming with exemplars of extreme categories led to higher price judgments, $M = 5.80$, than did priming with exemplars of moderate categories, $M = 5.29$); a main effect for ambiguity of automobile judged, $F(1,64) = 12.90, p < 0.001$ (hypothetical cars judged more expensive than real cars, Ms = 5.88 and 5.22, respectively); and a two-way interaction between category and ambiguity, $F(1,64) = 7.42$, $p < 0.01$. This interaction revealed limited assimilation and contrast effects for judgments of hypothetical and real cars, respectively. Hypothetical cars were judged more expensive following priming with relatively expensive cars than following priming with relatively inexpensive cars (Ms = 6.24 and 5.57, respectively). When real cars were judged, this pattern reversed, and priming with expensive cars led to lower judged prices than priming with inexpensive cars (Ms = 5.05 and 5.47, respectively).

Although both assimilation and contrast did occur, the moderating impact of extremity of primed category was not detected. Because earlier published findings implicated extremity in producing contrast effects (cf. Herr 1986; Herr et al. 1983), this finding was perplexing. Perhaps the most obvious explanation for the lack of effect was that subjects simply did not have well-established cognitive categories representing price of cars (or their categories were inconsistent with those of the raters in pretesting). Hence, nothing may have been primed. There is already convincing evidence that expertise can affect categorizations (Sujan 1985). Subjects may have not known what the experimenter thought was obvious, that the exemplars were in fact representative of different categories, spanning the range of automobile prices. Subjects knew something about price, as evidenced by the interaction between ambiguity and category primed, but their level of knowledge apparently did not include the range of prices that cars may assume. If this conjecture is accurate, persons with better developed knowledge structures (categories) about automobiles should demonstrate the priming effects exhibited in earlier studies.

This hypothesis can be investigated several ways. One way is to examine the present data with regard to knowledge differences. This approach is admittedly post hoc, since the pre-existing automobile knowledge was not measured for the experimental subjects. A number of researchers (e.g., Tesser and his colleagues; cf. Tesser and Leone 1977) have, however, found gender differences in judgments mediated by prior knowledge. That is, they identified certain domains (e.g., football) in which men on average know more than women and others (e.g., fashion) in which women on average know more than men. If we may cautiously use gender as a surrogate for a measure of knowledge in the present experiment, and if differences are detected, we have some (albeit weak) evidence that knowledge may mediate priming effects. A second experiment, in which knowledge differences are measured and controlled a priori may then be conducted.

Essentially, the post hoc analysis consisted of repeating the analysis of variance already described with gender a between-subjects factor. Owing to sample size considerations and the lack of order effects in

TABLE 4

EXPERIMENT 2: MEAN JUDGMENTS OF REAL AND HYPOTHETICAL AUTOMOBILES' PRICES AS A FUNCTION OF JUDGE'S GENDER

	Type of automobile judged			
	Hypothetical		Real	
Category primed	Moderate	Extreme	Moderate	Extreme
Males' ratings				
Inexpensive	5.05 (10)	6.00 (13)	5.55 (10)	5.67 (13)
Expensive	6.08 (11)	5.22 (8)	4.81 (11)	4.72 (8)
Females' ratings				
Inexpensive	5.19 (8)	6.10 (5)	4.94 (8)	5.60 (5)
Expensive	5.67 (7)	7.61 (10)	5.13 (7)	5.53 (10)

NOTE: Higher scores indicate greater perceived price on a 0–10 scale. Sample size/cell is in parentheses.

the initial ANOVA, order of judgment was dropped from the analysis. The resultant $2 \times 2 \times 2 \times 2$ ANOVA conducted on mean judgments of price showed seven effects reaching statistical significance, five of which involved gender. The most important effect to obtain for the hypothesized knowledge differences was the four-way interaction between category primed, extremity of category primed, ambiguity of car judged, and gender of rater, $F(3,64) = 3.76$, $p < 0.05$. The means for this interaction are presented in Table 4.

Analyses of the simple effects (see Table 1) constituting this interaction revealed that, as anticipated, the predicted priming effects were obtained for men, but not for women. That is, men's ratings of unambiguous targets (real cars) always displayed contrast effects. Their judgments of ambiguous targets (hypothetical cars) displayed assimilation effects following priming with exemplars of moderate categories and contrast effects following priming with exemplars of extreme categories, $t(64) = 5.50$, $p < 0.01$. (All other simple effects tests listed in Table 1 are significant beyond $p < 0.05$.) However, women showed means in the direction of assimilation to the primed category irrespective of the extremity of that category or the ambiguity of the target to be judged. We cannot be certain about the source of these effects. The female subjects may have had well-defined categories of automobile price, yet did not recognize the exemplars as instances of those categories. A second possibility is that the women in this sample simply did not hold categories relevant to automobile prices that could be primed.

Separate analyses of variance were conducted on the supplementary ratings of reliability, quality, and prestige. These analyses revealed no effects. This is consistent with earlier findings by Herr (1986) in which the effect of priming seems to be highly specific to the category primed. Although future research is needed to indicate the reason for this specificity, there is evidence to suggest that the cognitive categories relevant to those supplementary ratings may be independent of or unrelated to the price category (or at least may be stored and retrieved differently). Priming price was insufficient to activate categories relevant to prestige, reliability, and quality.

EXPERIMENT 2

Because of the post hoc nature of the analysis just described, a second experiment was conducted. In addition to examining the impact of pre-existing knowledge differences, the judgment task following priming was designed to be more typical of one a consumer might face.

Method

Subjects. Ninety-six student car owners, enrolled in a marketing management class at a large Midwestern university, were the subjects.

Design. To measure the presence and examine the effects of individual differences in knowledge about cars, a pretest was conducted approximately two months prior to the priming experiment. At that time, subjects were asked to list three manufacturers (not models) of American cars, Japanese cars, and German cars. In addition, they were asked to name three models of Oldsmobiles, the CEO of Chrysler, and the largest manufacturer of American cars. At the same time, all subjects evaluated a list of 68 cars on an 11-point scale labeled with endpoints "extremely inexpensive" and "extremely expensive." Their evaluations provided the priming exemplars for the priming manipulation and the type of real cars for the judgment task evaluation. Thus, unlike other priming studies, the same sample that selected the priming exemplars took part in the priming task, thereby making the exemplars better representatives of the given categories and subsequent activation of the category more likely.

In addition to these changes, the judgment task following priming was modified to resemble more closely a typical consumer judgment. Rather than presenting simply the name of an automobile to be rated, subjects were asked to examine two print ads and answer several questions about those ads. The print ads represented a real, moderately priced car (either a Chevrolet Celebrity or a Buick Skyhawk) and a prototype car; this represented the manipulation of ambiguity. The ads were constructed using material from dealers' promotional brochures. This material resembled a typical print ad (a glossy picture of the car and accompanying information beneath the picture), yet had not been seen by the subject. Thus, con-

cern with exposure effects was reduced. The ad for the prototype car was constructed by modifying the ad for the real car. Hence, all subjects either rated a Celebrity for the real car and a modified Skyhawk ad for the prototype, or a Skyhawk for the real car and a modified Celebrity ad for the prototype. The modifications to the real ads to make them prototype ads consisted of eliminating any reference to the maker and model of the automobile. The model name was replaced with a five-digit number, and subjects were told that the car was not yet available, but a mock promotion campaign was being conducted to test consumer reactions to the car. Use of a modified real car ad as an unreal car permits a control for any idiosyncratic response to the ad itself. As in the first experiment, order of judgment of cars (real first versus unreal first) was counterbalanced.

The design for Experiment 2 was a 2 (*category primed:* inexpensive car versus expensive car) × 2 (*extremity of category primed:* moderate versus extreme) × 2 (*ad type:* real Celebrity/prototype Skyhawk versus real Skyhawk/prototype Celebrity) × 2 (*order of judgment:* real car first versus prototype car first) × 2 (*ambiguity:* real car versus prototype car judged) full factorial design. The final factor is within subjects. Both the order and ad type factors represent control factors.

Procedure. Upon arrival at the testing site, subjects were told they would be participating in a puzzle-testing experiment. Subjects were given the same booklet of filler puzzles as in Experiment 1. Again, the last puzzle represented the priming manipulation, and each puzzle chosen for insertion here was identical to the puzzles used in Experiment 1. Each subject was given one of four lists of car names, which the pretesting had indicated were examples of the four distinct price levels.[3] Following completion of the final puzzle, a second experimenter asked the subjects if they would participate in a second, short study examining print ads. All subjects consented.

Each subject then received a booklet consisting of instructions on the first page, the first print ad on the second page, the same 11-point scales assessing the advertised car's price, quality, prestige, and reliability used in Experiment 1 on the third page, the second print ad on the fourth page, and the same dependent measure scales on the final page. Subjects were instructed to work through the booklet in the order given without turning back to an earlier page. Following completion of the booklet, subjects were quizzed for awareness of the experimental hypothesis, debriefed, and released.

Results. To rule out an effect of order of judgment or any idiosyncratic response to differences between the ads themselves, a 2 (category primed) × 2 (extremity of category) × 2 (ad type) × 2 (order of judgment) × 2 (ambiguity of car) analysis of variance, with the last factor within subjects, was conducted on subjects' mean price judgments. Because neither ad type nor order reached significance, either as a main effect or as a member of a higher order interaction, a second ANOVA was conducted, collapsing over these factors and incorporating the results of the knowledge pretest. In other words, any judgment of the cars represented in the ads was due to their relative ambiguity, so the two factors were collapsed to examine the impact of prior knowledge on priming effects.

Recall that each subject had completed a car knowledge pretest two months prior to this experiment.[4] Subjects' scores ranged from two to 14 correct answers (out of 14 possible), with a median of 11. A median split was performed on the distribution of scores, and each subject was assigned to a low or high knowledge condition. This created factor was added to the second ANOVA on mean judgments of price. This 2 (category primed) × 2 (extremity of category primed) × 2 (ambiguity of car judged) × 2 (prior knowledge) ANOVA provided striking results.

If the post hoc analyses of Experiment 1 and the resultant speculation about the mediation of priming effects by knowledge differences are correct, priming effects should be detected only in the judgments made by high knowledge subjects in Experiment 2. This would be reflected in a significant four-way interaction. The means for this interaction are presented in Table 5. The predicted interaction was highly significant, $F(1,80) = 19.88$, $p < 0.001$. High knowledge subjects judged the automobiles exactly as predicted by the feature-matching model described by Herr et al. (1983). Tests of simple effects revealed that only when moderate categories were primed and unreal cars judged did assimilation effects occur, $t(80) = 4.12$, $p < 0.001$. In all other cases, contrast effects were obtained (moderate categories primed/real cars judged, $t(80) = 4.95$, $p < 0.001$; extreme categories primed/real cars judged, $t(80) = 2.97$, $p < 0.001$; extreme categories primed/unreal cars judged $t(80) = 3.62$, $p < 0.001$). All other relevant planned comparisons were significant.

Subjects with relatively low levels of measured automobile knowledge displayed a similar pattern of results, but lack of knowledge resulted in no priming effects. The same tests of simple effects described previously revealed no significant differences between conditions (all ts < 1). That is, none of the priming-induced judgment effects occurred for persons with

[3]Several exemplars in the first experiment were no longer good representatives of their respective categories. A list of the exemplars used in Experiment 2 are available from the author upon request.

[4]Seven subjects (distributed nearly equally across conditions) were not present for the knowledge pretest. Consequently, they were dropped from the following analyses.

TABLE 5

EXPERIMENT 2: AUTOMOBILE PRICE JUDGMENTS AS A FUNCTION OF CATEGORY PRIMED, EXTREMITY OF CATEGORY PRIMED, AMBIGUITY OF AUTOMOBILE, AND PRIOR AUTOMOBILE KNOWLEDGE

	Ambiguity of Automobile Judged			
	Prototype		Real	
Category primed	Moderate	Extreme	Moderate	Extreme
High knowledge[a]				
Inexpensive	4.55	6.67	7.27	6.58
Expensive	7.27	4.28	4.00	4.62
Low knowledge[b]				
Inexpensive	6.18	5.82	5.73	6.09
Expensive	6.90	5.20	6.00	5.50

[a] All appropriate tests of simple effects were significant at $p < 0.001$.
[b] All appropriate tests of simple effects were nonsignificant (all $ts < 1$).
NOTE: Higher scores indicate greater perceived price as judged on a 0–10 scale. Means are based on 11 observations per cell, except for the high knowledge primed with exemplars of extremely expensive cars cells, which are based on 12 observations.

low prior knowledge on the priming relevant dimensions. These results provide very strong support for the interpretation of priming effects set out by Herr et al., and provide a documentation of the impact of consumer knowledge differences on information processing.

As in Experiment 1, the supplementary measures regarding quality, prestige, and reliability were unaffected by the priming manipulation.

Given the speculation surrounding the results of Experiment 1, it is important to consider the possibility of gender differences. As prior knowledge has been implicated so strongly in priming effects, it may be interesting to examine easily identifiable correlates of knowledge. Such an analysis is not to say that all men know more than all women about cars. Rather, as is the case with all classification schemes, some errors will be made. In the present case, we can simply compare the average scores on the prior knowledge pretests of men and women. The average scores on the pretest were significantly different, males' $M = 11.58$, females' $M = 9.81$, $t = 3.52$, $p < 0.001$. Interestingly, the mean for females fell below the median of 11, while the mean for males fell above it.[5]

[5]Additional analyses were performed to examine further the possibility that knowledge mediated gender effects. The ANOVA reported above was repeated with gender substituted for knowledge. The four-way interaction was only marginally significant ($F(1,87) = 3.15$, $p < 0.10$). This ANOVA was repeated with knowledge as a covariate. Presumably, if knowledge mediated the marginal gender effect, the four-way interaction should become less significant. The interaction was nonsignificant at $p = 0.10$. The weakness of these results and the marginal replication of the gender difference found in Experiment 1 may be due to a number of factors, including small, unequal sample sizes ($n = 9$ to 14) as well as methodological differences. Since the experimental subjects in Experiment 2 also selected the primes, and since the relative proportion of females selecting primes was greater in Experiment 1 (82 percent) than in Experiment 2 (50 percent), any gender differences are likely to be reduced. To the extent that gender is not a perfect surrogate for a measure of knowledge (i.e., some women are highly knowledgeable about cars and some men are not), the impact of knowledge differences should likely increase, since knowledge was controlled for in Experiment 2 (via the pretest and resulting median split) rather than inferred as in Experiment 1.

DISCUSSION

The present experiments demonstrate that priming affects both categorization and judgment in a consumer domain. Moreover, these priming effects were shown to be a function of the level of prior knowledge held by an individual. Also, subject's gender effectively identified a portion of the sample for whom the priming effects were most likely to occur in this domain.

These results suggest some interesting relations between memory and consumer judgments in general. First, the existence and activation of a cognitive category facilitates the categorization of novel products. In the present experiments, the novel automobiles were categorized in the most accessible moderate price category. Second, the content of consumer memory may provide a context for product judgments, producing assimilation to the activated category or contrast away from it. Which judgment effect occurs can be predicted by the ambiguity of the target being judged and the extremity of the primed cognitive category. Third, priming with category exemplars seems to activate only the specific part of the category embodied by the exemplars. In the present experiments, only judgments of price were influenced by priming, while quality, reliability, and prestige judgments were not influenced by either the activated price category or the judgments of price. Finally, all of these consequences of priming emphasize a fundamental relation between knowledge structures in memory and judgment. Given the existence and activation of consumer knowledge (i.e., of a category), we may accurately predict consumer judgments of both novel and familiar products in that domain.

The present results relate to a number of specific consumer domains as well. For example, these results may be compared with the reference price literature, which suggests that consumers maintain an internal representation of price for a product category. (Gabor and Granger 1961, 1970; Helgeson and Beatty 1987; Monroe and Petroshius 1981; Urbany, Bearden, and Weilbaker 1988). Consumers compare current market prices (e.g., sale prices, manufacturer's suggested list price) with their internal standard and make judgments of the market price's acceptability/accuracy. Predictions of assimilation and contrast very similar

to those presented here have been made by Monroe (1979; based on Helson's 1964 adaptation level theory); that is, the greater the distance between the internal standard and the observed market price, the more likely an individual is to contrast (disbelieve or judge as inaccurate) the observed market price.

The contribution of the present research to the reference price literature is threefold. First, the present research identifies ambiguity of the product itself as an important variable in reference price effects. Second, accessibility of an internal representation of price should also be considered when appraising reference price effects. Finally, these effects are probably a function of consumer expertise. Not all consumers can be expected to have a well-established and accessible internal price standard for a given product category. Hence, expertise may also enter into the public policy issues raised by Urbany et al. (1988) regarding the impact of exaggerated reference prices. In addition, knowledge differences may be responsible for the apparent discrepant results of Monroe and Chapman (1987) and Thaler (1985), who found a strong impact of "comparison prices" on consumer perceptions, and Liefeld and Heslop (1985) and Sewall and Goldstein (1979), who found no such relation. However, the present research does support the view that, for some consumers, an internal price standard does exist and is readily accessible by situational cues for comparison with market prices.

Although this study examined only price categories, the impact of priming on consumer decision making also is relevant, given that priming in this study had an effect only for high knowledge subjects. Bettman and Sujan (1987) demonstrated that priming different decision criteria influenced product evaluations of both expert and novice consumers when choice alternatives were noncomparable. When the alternatives were comparable, priming influenced only novices' evaluations. Presumably, experts had stored previously constructed, domain-specific decision criteria for evaluating the comparable alternatives, thereby allowing them to make decisions independently of the priming; novices had no such decision criteria to retrieve from memory and thus relied upon the primed choice criteria. When a noncomparable choice set was encountered, no stored, domain-specific decision criteria existed for novices or experts, so priming effects were obtained irrespective of expertise.

Bettman and Sujan's results are quite interesting when considered in relation to the present sudy. However, two important distinctions between them should be noted. Bettman and Sujan's priming manipulation was supposed to influence judgment and choice, while the present study examined only judgment (for an interesting discussion of the differences between judgment and choice, see Tversky, Sattath, and Slovic 1988). Also, the locus of the expertise effect differed. Expertise in the Bettman and Sujan study surfaced at the target stimulus level but surfaced at the category exemplar level in the present study. There is no doubt in Bettman and Sujan's study that the category "reliable" was activated in all subjects primed with the exemplars "secure," "lasting," and "durable." The difference between experts and novices rested in whether that category was relevant for judging the choice alternatives, or if a more relevant, domain-specific decision criterion existed. In the present study, the Mazda RX-7 and Thunderbird exemplars primed the category "moderately expensive cars" only for experts. The Buick Skyhawk may not have been perceived by novices as a moderately priced car at the target stimulus level. Thus, the locus of the expertise effect is quite different in the present study than in Bettman and Sujan's, and it ought to be considered when making general statements about priming and expertise effects. To the extent that different cognitive processes are involved in various consumer behaviors, it should not be surprising that expertise effects may appear to moderate priming effects differently. At a basic level, however, the same processes seem to occur: a category is activated via a priming task or through a strong association with the experimental stimuli (as in Bettman and Sujan's comparable alternative choice set cell), which in turn influences judgment and/or choice. The expert/novice distinction serves to identify individuals who are likely to have a relevant accessible category.

SUMMARY

Considered with other demonstrations of the influence of prior knowledge on consumer information processing (e.g., Johnson and Russo 1984; Sujan 1985), the present research provides still more evidence that there is something unique about low and high knowledge individuals. Stored information may have a profound influence on a host of information processing phenomena. Perhaps the simplest consideration of priming is as its being a means of increasing the likelihood of use of any cognitive concept, be it a category, decision rule, or any stored information. Clearly, the concept must exist in memory. Equally clearly, there must be no other competing concept that is chronically more accessible (Higgins, King, and Mavin 1982). Finally, the concept must be relevant to the cognitive task at hand. Priming may indeed have a significant impact on consumer perceptions and behavior when these conditions are met. Even when no priming effects are obtained, we may still be in a position to learn something about consumers' cognitive structures.

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