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## RESEARCH IN BRIEF

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# Image Communicated by the Use of 99 Endings in Advertised Prices

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*In a controlled experiment, use of the 99 rather than the 00 price ending (e.g., using \$49.99 rather than \$50.00) affects the impression created by a price advertisement. The 99 ending increases the likelihood that viewers judge an advertised price as relatively low and as representing a discount. However, in addition to these price-image effects, the 99 ending has negative effects on quality image in the ads sponsored by higher quality retailers. These results suggest that the choice of rightmost digits is an important executional variable in price advertising.*

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Systematic surveys of the prices appearing in retail advertisements have confirmed the familiar observation that advertisers tend to favor prices that fall just below a round number (Friedman 1967; Kreul 1982; Rudolph 1954; Schindler and Kirby 1997; Twedt 1965). This results in the common use of the digit 9 among the rightmost (or ending) digits of a price, as in 99-ending prices such as \$17.99.

Although it has been shown that the use of the 99 price ending (as opposed to the 00 ending) can substantially increase sales (Kalyanam and Shively 1998; Schindler and Kibarian 1996), it is not clear how such an effect occurs. One possible source of a sales effect is the image, or impression, that the 99 price ending may communicate to consumers. If the 99 ending communicates a favorable price image that is not counteracted by also communicating an unfavorable quality image, then an enhancement of sales might result. In this article, we present the findings of a controlled study that tests for the existence of both these types of 99-ending image effects.

### ***Price-Image Effects***

A price image favorable to the seller involves the impression that the price is relatively low. It has been proposed that the 99 ending communicates such a low-price image (Bliss 1952; Harper 1966, p. 282; Kotler 2000, p. 470; Morris and Morris 1992, p. 68). A 99 price ending may communicate a low-price image because 99-ending prices might actually be perceived as lower prices. Consumers may tend to drop off, or give less attention to, a price's rightmost digits and thus perceptually underestimate the level of a 99-ending price (Schindler and Kibarian 1993). Alternatively, consumers may learn price-ending meanings from how price endings are used in the marketplace. Nine-ending prices appear to be used more often for discount prices than for regular prices (Huston and Kamdar 1996) and seem to be used more often by lower- as opposed to higher-priced retailers (Stiving 2000).

There is a small amount of published evidence that supports the ability of the 99 ending to communicate a low-price image. Quigley and Notarantonio (1992) compare the responses of undergraduate subjects to product advertise-

ments that displayed a 00 ending, a 99 ending, or a 98 ending. They report that subjects who saw ads with 99- or 98-ending prices were significantly more likely to judge the advertised product as "probably on sale" than were those who saw the ads with 00 endings. Schindler (1984) examines the effects of price endings on the ability of a subject to recognize whether a price had increased over a one-week period. He finds that undergraduate subjects were generally more likely to judge that a price had not increased when that price was expressed with a 99 or 98 ending than if it was expressed with a 00 ending. This bias suggests that the 99 and/or 98 endings communicate the image of a price that has not recently been increased.

### **Quality-Image Effects**

The 99 ending also may communicate an unfavorable impression relating to quality (Alpert 1971, p. 112; Kreul 1982; Nagle and Holden 1995, p. 302). One possibility is that a negative impression of store and/or product quality might occur as a consequence of the 99 ending's low-price image. Because it appears that consumers, at least sometimes, use price as a cue for judging quality (Rao and Monroe 1989), an impression of a lower price might in itself lead to an impression of lower quality.

Another possibility involves the price-ending meanings that consumers may learn from the pattern of price-ending use in the marketplace. For example, in his study of price endings used by various retail outlets, Stiving (2000) finds that retailers with a relatively classy image, such as Neiman-Marcus, Nordstrom, and Macy's, were among the most likely to use prices that end in the digit 0 and avoid use of the digit 9. Retailers that usually are not regarded as having a classy image, such as Wal-Mart, Kmart, and Target, were among the least likely to use such round-number prices.

### **Research Hypotheses**

In this study, we investigate the image communicated by the 99 price ending by testing components of both a favorable price image and an unfavorable quality image. The study consists of an experiment in which the dependent variables are the reactions of subjects to a set of advertisements that prominently display a price. Two versions of each ad were created, one in which the price was expressed with a 99 ending (e.g., \$49.99) and the other in which the price was expressed with a 00 ending (e.g., \$50.00). Each subject saw only one of these two versions of each ad and responded to a set of questions pertaining to the price and quality images communicated by the ad.

Our specific hypotheses are based on the previous research already reviewed. Regarding a favorable price image, we hypothesize that

H1: When an advertised price is expressed with a 99 ending rather than a 00 ending, it is more likely to give the impression that the price (a) is low relative to competitors' prices, (b) is a discount or sale price, and (c) has not recently been increased.

Regarding an unfavorable quality image, we hypothesize that

H2: When an advertised price is expressed with a 99 ending rather than a 00 ending, it is more likely to give the impression that (a) the advertised item is of low quality, (b) the sponsor's merchandise is generally of low quality, and (c) the sponsor is not a classy retailer.

## **Method**

### **Experimental Design**

Newspaper advertisements from eight different stores were used in this study. Each subject saw each of the eight ads. To preserve a realistic experimental environment, each subject received some of the ads in their 00-ending forms and others in their 99-ending forms. The ad presentation was balanced so that, for every subject who saw a particular ad in its 99-ending form, there was another subject who saw the same ad in its 00-ending form.

As a result of this design, when the subjects' responses are averaged over advertisements, price ending becomes a two-level, within-subjects variable. The subjects answered six image questions about each of the eight advertisements. These six responses constitute the dependent variables of the experiment.

### **Preparation of the Advertisements**

The eight advertisements were modified versions of actual newspaper ads that featured products of relevance to middle-class women and prominently displayed a price. Included were two ads for women's shoes, three for women's clothes, one for men's clothes, and two for furniture. The price levels of these items ranged from \$12 to \$500. So that the subjects could not draw on image information gained from previous experience with the advertisers, the ads were selected from out-of-town newspapers and chosen so that both the stores and the advertised brands (if identified) lacked national reputations.

We modified these ads by removing any text that communicated information about the price (such as the words "sale price" or "special value") and created two versions of each ad. In one version, the price appeared with a 00 ending; in the other version, the price appeared with a 99 ending. Thus, for example, in one version of a dress ad, the price was \$50.00; in the other version, the price was \$49.99. To prevent the possibility that the price in one version might appear more realistic than in the other, the price was redrawn in both versions of each ad.

### **Dependent Measures**

The specific wording of the six image questions was developed from pretest interviews with consumers who were drawn from the same population as were the subjects of the experiment. The three price-image questions were worded as follows:

Do you think you could find this *particular* [advertised item] at a price lower than this advertised price?

Do you think this [advertised item] is on sale?

Stores sometimes increase prices. Do you think that this advertised price is one which has been increased recently?

The subjects responded to these questions using a four-point scale with points labeled "definitely yes," "probably yes," "probably no," and "definitely no."

The three quality-image questions were worded as follows:

How would you rate the quality of this [advertised item]?

What would you guess would be the quality of most of the items in this store?

Would you say that this store is [not at all classy; a bit classy; rather classy; very classy]?

The subjects responded to the first and second quality-image questions using a four-point scale with points labeled "clearly below average," "slightly below average," "slightly above average," and "clearly above average." This scale was reversed for the first question. They responded to the third question using a four-point scale with points labeled from "not at all classy" to "very classy," as shown in brackets.

### **Sample and Instructions**

The participants in this study were 405 female members of church groups and parent-teacher associations from middle-income suburbs of a large Midwestern city. Thirteen percent of the respondents

were between 18 and 34 years old, 31% were between 35 and 54 years old, and 56% were 55 years or older. Sixty-five percent of the respondents worked outside of the home on either a full- or part-time basis.

The group members were given the cover story that the study pertained to "how a store that is entering a new area should advertise." They were instructed to "look at each ad as you would if you saw it in your local newspaper" and, on the basis of the ad, answer each of the questions printed next to the ad on the page. It should be noted that, even without a cover story, the respondents had no basis for guessing the purpose of the study. Postexperimental inquiry of the subjects' perceptions of the study's purposes failed to indicate any subjects who had guessed that price ending was the variable of interest.

## **Results**

### **Price Image**

For each of the three price-image questions, a subject's responses were averaged over advertisements to produce one mean response for the ads the subject had seen in their 99-ending form and another mean response for the ads the subject had seen in their 00-ending form. Aggregating these mean responses over all subjects indicates that two of the three price-image questions showed the hypothesized effects (see the top portion of Table 1). When an advertised price was expressed with the 99 ending, the subjects were more likely to judge that they would not be able to find the item at a lower price ( $t[402]=2.30, p=.02$ ) and that the advertised price was a sale price ( $t[402]=5.38, p<.001$ ). There was a tendency for respondents to judge that a price expressed with a 99 ending was more likely to not have recently been increased, but this tendency was not statistically significant ( $t[402]=1.31, p<.20$ ). Thus, the data support Hypotheses 1a and 1b but not Hypothesis 1c.

### **Quality Image**

For each of the three quality-image questions, each subject's responses were averaged over advertisements, as was done for the price-image questions. Aggregating these responses over all subjects indicates that each of the three quality-image questions showed pronounced trends in the hypothesized direction. However, none of these price-ending differences was statistically significant (quality of advertised item below average:  $t[402]=1.51, p<.15$ ; quality of store's items below average:  $t[403]=1.24, p<.25$ ; store is not

Table 1  
Mean Responses to Price and Quality Image Questions

| Image Question  | Price Ending |       | 99-00<br>Difference | t-Value           |
|---|--------------|-------|---------------------|-------------------|
|   | 99           | 00    |                     |                   |
| <i>Favorable price image (all 8 ads):</i>                                       |              |       |                     |                   |
| Cannot find this item at lower price  | 2.300        | 2.247 | .053                | 2.30 <sup>b</sup> |
| Item on sale  | 2.333        | 2.212 | .121                | 5.38 <sup>a</sup> |
| Price has not been recently increased   | 2.605        | 2.579 | .026                | 1.31              |
| <i>Unfavorable quality image (4 ads of higher perceived quality retailers):</i> |              |       |                     |                   |
| Quality of this item is below average   | 2.275        | 2.167 | .108                | 2.17 <sup>c</sup> |
| Quality of most of the items in this store is below average                     | 2.176        | 2.012 | .164                | 3.22 <sup>a</sup> |
| Store is not classy   | 2.830        | 2.696 | .134                | 2.31 <sup>b</sup> |

Note: A higher mean response indicates greater agreement with the statement shown.

<sup>a</sup> $p < .001$ .

<sup>b</sup> $p < .025$ .

<sup>c</sup> $p < .05$ .

classy:  $t[403]=1.29, p < .20$ ).

Because this consistent but nonsignificant trend in the data makes it difficult to draw conclusions regarding quality-image effects, we examined whether these effects might be present for some ads but not for others. Although not initially hypothesized, it is plausible that the perceived quality of a retailer might moderate the effect of price ending on quality image. Consumers can use a variety of cues in an advertisement, such as the elaborateness of the illustrations and the stylishness of the layout, to assess the quality of a retailer, as they are likely to do when they see an ad for a retailer that is new to their area. It may be that the 99 price ending impairs quality perceptions only when there is a sufficient amount of retailer quality that is communicated by such advertisement-design cues.

To explore this possibility, we ranked the ads on the mean response (aggregated over the entire sample) to the two questions that best reflect the subjects' perceptions of retailer quality: the quality of the store's items and store classiness. Using this measure, we split the set of eight ads in half. The four ads ranking highest on this measure are considered to be sponsored by the higher perceived quality retailers (mean=2.67), and the other four ads were considered to be sponsored by the lower perceived quality retailers (mean=2.12). The two groups were similar in terms of product type and average price levels.

We then averaged each subject's responses separately for the high and low perceived quality advertisements. For the lower perceived quality retailers, the 99-00 ending differences for the quality-image

questions showed inconsistent trends that did not approach statistical significance (all  $ps > .25$ ).

In contrast, for the higher quality retailers, the use of the 99 as opposed to the 00 price ending resulted in a less favorable quality image. As shown in the bottom portion of Table 1, this negative 99-ending image effect for the higher quality retailers occurred for all three quality-image questions. The 99 ending resulted in the advertised item being judged as lower quality ( $t[404]=2.17, p=.03$ ), it led the store's items in general to be judged as lower quality ( $t[404]=3.22, p=.001$ ), and it increased the likelihood that the store was seen as not classy ( $t[404]=2.31, p=.02$ ). Therefore, the data provide limited support for Hypotheses 2a, 2b, and 2c.

## Discussion

This study has provided clear evidence that the 99 price ending can communicate price-image information that is favorable to the advertiser. When the price in an advertisement is expressed with a 99 ending rather than a 00 ending, subjects are more likely to regard it as the lowest price around and consider it a discount price. This finding regarding the ability of the 99 price ending to communicate a discount impression agrees well with Quigley and Notarantonio's (1992) study. We confirm their result with a much larger sample of more typical consumers, extend it from their durable and convenience products to more fashion-related products, and show that the 99 ending alone (as opposed to a mixture of 99 and 98 endings) can cause this image effect. However, we fail to

confirm Schindler's (1984) finding that a 99 price ending communicates that an advertised price has not recently been increased. Although this could be due to any of the many procedural differences between the two studies, it suggests that any influence of price ending on this component of price image is likely to be a weaker effect.

This study also provides evidence that the 99 price ending can communicate image information that is unfavorable to the advertiser. For those ads in the study that were sponsored by retailers of higher perceived quality, the 99 price ending decreased the viewer's perception of the quality of the advertised item, as well as of the general merchandise quality and the retailer's classiness. The finding that these negative quality-image effects of the 99 ending occur only for the retailers of higher perceived quality suggests that these effects depend on the retailer having a sufficiently high level of perceived quality. Without a high-quality image, there may be little room for the 99 price ending to do quality-image damage.

This pattern of both favorable and unfavorable 99-ending image effects suggests that a retailer without a particularly high-quality image could expect the use of the 99 ending to have positive results. It would communicate the impression that the price is low and has been discounted, without a counteracting unfavorable effect on quality impressions. However, for a retailer with a high-quality image, the positive price-image effects of the 99 ending are likely to be neutralized, or even be exceeded, by a negative effect on the quality impression communicated by the ad.

The present results pertain to the impressions of a particular segment of consumers: women from a middle-class, suburban environment. The reactions of men, urban consumers, and upscale shoppers could differ substantially and should be a focus of further research. In addition, in this study we examined only the 99 and 00 price endings. Other common pairs of ending digits, such as 95 or 49, might communicate different impressions and would be a useful topic of additional research.

Despite its limitations, this study contributes to the evidence that the way in which an advertiser expresses a price is capable of communicating image information. It is particularly interesting that the use of the 99 ending rather than the 00 ending in a price advertisement can communicate unfavorable as well as favorable impressions. This result indicates that the use of the 99 ending should not be casual or indiscriminate. Rather, like any other important aspect

of an ad's execution, the choice of the rightmost digits in a price advertisement should be made on the basis of a careful consideration of the marketing context.

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