
Ad Size as an Indicator of Perceived Advertising Costs and Effort: The Effects on Memory and Perceptions

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In support of past research, ad size was found to lead to enhanced memory; but the existence of an "interference effect" (i.e., when increased attention aimed at the relatively large ad interferes with processing of surrounding ads) was not confirmed. Replicating Kirmani (1990), analyses suggest that consumers use ad size as an indicator of advertising costs and effort and that consumers make quality-related inferences based on their perceptions of advertising costs when quality-related information is not explicitly conveyed in an ad. Evidence of an inverted U-shaped relationship between perceived advertising costs and brand perceptions was found for quality perceptions. That is, perceptions are positively related to perceived advertising costs except at excessive levels when consumers may feel advertising is manipulative. The data also support the notion that perceived advertising effort mediated this relationship. The nature of these relationships between perceived advertising costs and consumer perceptions differed across the various perception measures.

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The author thanks Rajeev Batra for his comments on an earlier version and Victoria Blakely Harris for her assistance preparing the stimulus materials.

Examples of the Yellow Pages used in this study may be obtained from Pamela M. Homer at (310) 985-4173.

Introduction

Few would argue that a relatively large ad is a powerful attention-grabber. Perhaps more importantly, the size of a print advertisement may convey important brand-related information that consumers use to form purchase-relevant inferences. That is, people tend to evaluate the success or reputation of the business by the size of an ad based on the notion that the bigger an ad is, the more credible the business is (Moriarty 1986). The impact of ad size and its ability to communicate success or credibility is, in part, due to consumer inferences about the perceived cost of the advertisement. Using ad size to manipulate perceived ad cost, it has been shown that consumers use their impression of the amount of money spent on advertising as a cue to product quality when such information is not provided in the ad (Kirmani 1990). Expanding on this notion, the effects on competitive advertisers across two product/service categories are examined here in an advertising environment yet untested in this context, the Yellow Pages.

Kirmani (1990) purports that perceived advertising costs are used by consumers as a basis for quality-related inferences. Quality inferences may be evoked because (1) perceived costs act as a signal of advertising effort, (2) consumers perceive a correlation between advertising costs and product quality, or (3) perceived costs may reflect a firm's financial strength and ability to guarantee its goods and services (Kirmani 1990; Kirmani and Wright 1989). These types of inferences may be especially prevalent in certain situations. For example, Yellow Pages advertisements are often times suspect in nature, relatively uninformative, and lack quality-related information. Thus, consumers are left hungry for anything indicating quality. In such instances, ad size is more apt to be used as a basis for brand-relevant inferences. Recently, a number of studies have appeared in the literature that demonstrate the importance of such inferences in consumer choice processes (cf. Dick, Chakravarti, and Biehal 1990; Ford and Smith 1987; Ross and Creyer 1992).

Ad size acts as a cost cue and thus can communicate to consumers the amount of advertising effort expended by an advertiser. This is especially likely when other expensive ad campaign elements (e.g., identifiable celebrity sponsors, high frequency, and elaborate staging) that motivate consumers to use perceived advertising cost as an indicator of brand quality are missing (e.g., Yellow Pages Advertising). In the Yellow Pages environment, the major goals are to gain attention and to provide information that prompts a phone call versus the "enjoyment/entertainment" type motives that are more critical in the print (magazines) and broadcast (radio and television) media. Thus, the primary consideration for consumers is often the size of the ad (Moriarty 1986; Rouse 1991). The Yellow Pages medium also permits examination of the effects that ad size and consumers' resultant (quality-related) inferences/perceptions have on surrounding competitive advertisements. Therefore, this study explores the effects of ad size on ad-based memory, perceptions, and attitudinal evaluations across two product/service categories in a Yellow Pages context. Following Kirmani (1990), "brand perceptions" refers to overall quality as well as perceptions of physical or abstract quality-related product/service attributes such as product assortment. The terms "judgments" and "evaluations" are reserved for attitudes and behavioral intentions.

Hypotheses and Rationale

The Effects of Ad Size on Memory

Large ad size tends to be more effective than small advertising space in securing attention and enhancing memory (e.g., Hendon 1973) (see Burt 1938 for a review of earlier evidence). Past research has reported that the increase in attention (often measured as recognition or recall of ad content) is proportionate to the square root of the increase in ad area. For example, an advertiser must increase an ad's size by four times in order to double its attention value (Adams 1926; Burt 1938; Franken 1925; Hollingworth 1913). More recently, Trohdahl and Jones (1965) concluded that size determines forty percent of the variation in newspaper advertisement readership. The advertiser must ultimately decide if a large ad is worth the cost when doubling an ad's size often doubles the advertising budget, thus increasing the cost per inquiry (Burt 1938; Aaker, Batra, and Myers 1992).

In addition, large ads may be effective at reducing attention to smaller competitors' ads, i.e., they interfere (Adams 1926; Burt 1938). Keller (1987) and

Burke and Srull (1988) demonstrated that the amount of competitive advertising produced interference effects and reduced recall of brand claims when subjects were given brand name and product category cues. However, these studies produced inconclusive results regarding the effects of competitive advertising on consumer judgments/evaluations. In an effort to establish the magnitude of this interference while overcoming limitations associated with many of the earlier studies (e.g., lack of experimental controls), the following pair of hypotheses is tested:

- H1a: Recall of ad information and product/service perceptions and evaluations will be enhanced when an ad is large compared to competing surrounding ads.
- H1b: The presence of an ad that is larger than surrounding ads will interfere with consumers' ability to recall the smaller surrounding ads and will have an adverse effect on product/service perceptions and evaluations.

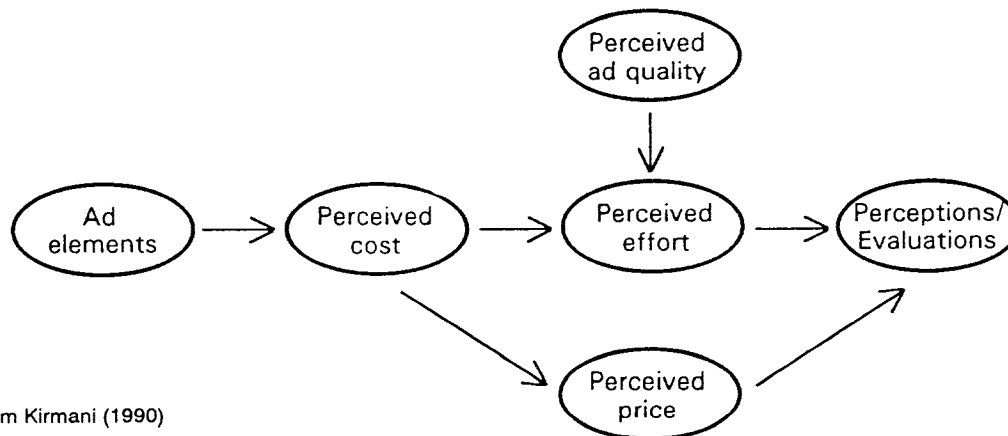
Ad Size As An Inference Generator

Following Kirmani (1990), this study also expands on prior research into the simple main effect of ad size by examining ad size's role as an indicator of advertising costs and effort. The variation in experimental design and stimulus materials in the current study approximates an *instrumental replication* which provides evidence of the generalizability of the relationships (Zinkhan, Jones, and Smith 1991). Additional dependent variables (e.g., overall attitudes and behavioral intent) further serve as an extension of Kirmani's (1990) research.

As evidenced by the studies discussed earlier (Kirmani 1990; Kirmani and Wright 1989), ad size is more than a gimmick to capture attention. The power of ad size expands beyond immediate recognition and recall to more brand-relevant processing including the formation of inferential beliefs about attributes not explicitly stated in an ad (Kirmani 1990). Consistent with attribution theory, consumers appear to behave as though higher effort on the part of the firm signals a belief in the product's quality and success (Kirmani 1990).

Kirmani (1990) proceeds to argue that people use perceived costs primarily when costs are more diagnostic than other ad-related quality cues which is more likely under peripheral versus central processing. (On the other hand, if the consumer regards advertising costs as a useful cue, costs would be a central cue.) However, analyses revealed that perceived

Figure 1
Model of Theoretical Relationships*



* Adopted from Kirmani (1990)

costs affected brand perceptions only when the ad content was uninformative about quality and quality-related attributes, regardless of the level of involvement.

Applying Petty and Cacioppo's (1986) Elaboration Likelihood Model (ELM) also suggests that ad size as a peripheral cue may evoke thoughts about the ad's attractiveness and less cluttered look that subsequently enhance or detract from a consumer's evaluation. In contrast, when ad size is processed as a central cue, it may promote inferences about brand-relevant features not directly discussed in the ad (e.g., brand quality, manufacturer prosperity, or credibility). This is consistent with Moriarty's (1986) position that ad size is considered specific brand-related information, imparting salient attributes about the product or service in much the same manner as a written argument.

Kirmani (1990) supported that brand perceptions are positively related to perceived advertising costs except when costs are perceived to be too high. At such excessive levels, consumers tend to feel that advertising is manipulative, rather than an attempt to convey product attributes. Furthermore, "high perceived advertising costs imply high perceived advertising effort, and people interpret this as a sign of high product quality" (Kirmani 1990, p. 162). Excessively high costs may indicate too much effort which motivates consumers to question the advertiser's motives. In an experiment involving athletic shoes, Kirmani (1990) was able to show support for advertising effort's mediative role for quality perceptions, but not for comfort (an unsupported assertion: i.e., an

attribute mentioned in the ad's text, but not verified by the visual). Therefore, in an effort to provide insight into the generalizability of these effects (illustrated in Figure 1), it is proposed that:

H2: Product/service perceptions and evaluations are positively related to perceived advertising expense, except when perceived advertising expense is excessive (i.e., an inverted U-shaped relationship between perceived advertising expense and perceptions).

H3: Perceived advertising effort mediates the relationship between perceived costs and product/service perceptions and evaluations.

Product/Service Category Effects

Consumers' prior knowledge and past experiences influence their ability to process incoming advertising information (Alba and Hutchinson 1987). When considering products/services in categories with well-established and heavily promoted brand names (e.g., computers, athletic shoes), consumers' perceptions of retailers will be largely affected by prior beliefs and attitudes towards those branded offerings. The accessibility of such product information influences the process by which inferences are formed (Dick et al. 1990), and in generic situations, consumers will have less information about product offerings "accessible" in memory. When choosing among retailers promoted in Yellow Pages ads, consumers may be uncertain about both the retailer and the products sold (e.g., in

generic categories). But when well-known, branded merchandise is marketed, uncertainty is more likely to be about the retailer only (e.g., services provided). Thus, ad size should have a greater impact in situations of increased uncertainty when no other quality cues are present. Therefore:

H4: Product/service perceptions and evaluations toward generic retail categories will be more affected by ad size than those product/service categories that offer well-known branded merchandise.

The Effect on Price Expectations

Consumers may perceive that expensive advertising elements (e.g., celebrity sponsors, costly production techniques, high frequency) result in prices being passed on to consumers or that such tactics are used to sell expensive items to affluent audiences. Kirmani (1990) supported earlier research evidence of advertising costs' direct relationship to perceived product prices (Farris and Reibstein 1979). In conclusion:

H5: Perceived advertising cost is positively related to expected price of the product/service, and is not mediated by perceived advertising effort.

Method

Overview

This 2 X 2 factorial design consisted of two levels of ad size and two product categories (computer stores and florists). To reduce potential demand artifacts, a between-subjects design was used. Each experimental manipulation was embedded within the stimulus materials (detailed below). Respondents first read a page of instructions informing them that "this study concerns the evaluation of ad concepts that are being considered for use in Yellow Pages advertisements." After viewing a page of eight ads, they completed a survey containing the dependent variables. All experimental treatments were administered at each session to prevent confounds and the research assistant was blind to the manipulations and guiding hypotheses.

Subjects

A total of 245 male and female business students at a Western university volunteered to participate in the study. Each was randomly assigned to one of the

levels of each experimental manipulation, ad size and product/service category (yielding approximately equal cell sizes).

Ad Size Manipulation

Eight ads were selected from each product category. Approximately half of the sample viewed one page of ads of identical size and configuration. The remaining subsample viewed materials equivalent in content, but upsized or downsized to fit each set of eight ads on a single page.

Product/Service Categories

Two product/service categories were chosen for the study in order to test the robustness of the hypotheses. Computer stores and florists were chosen because of (1) the respondents' probable familiarity, (2) the strong dissimilarity between the categories standards of advertising appearance, (3) the disparity in salient features between the two product categories (flowers tend to be a generic product category with little brand name influence in the decision process, whereas computer stores are highly differentiated by the brand names of their merchandise), and (4) consumer usage reports that indicate similar inquiry probabilities for these categories (florists=87.9% and computers=87.4%) (American Association of Yellow Pages Publishers 1987).

Stimulus Materials

In order to test the primary hypotheses, it was important to recreate an authentic competitive environment. Exposure to a single ad will not permit subjects to process the ads on a comparative basis and will prevent testing the impact of ad size on consumers' processing of surrounding ads. Therefore, segments from nonlocal Yellow Pages directories were used as the experimental medium (cf. Childers and Houston 1984). Specific ads were chosen based on the criteria that they (1) be unfamiliar to the subjects, (2) contain no artifact that would make the ad easily recallable (e.g., rhyming or alliteration), and (3) clearly display the service name and phone number. In total, 16 ads were selected.

The final ads were reproduced by a professional artist and only altered to create the ad size variations. All information and ad execution elements (layout, typeface, etc.) remained constant across ad size treatments. Typographical information was reduced or enlarged (depending on ad placement) to project a

professional appearance consistent with the original ads. To replicate the Yellow Pages environment, the 16 ads were dummied into mock yellow page formats (on two pages) along with the same running headers used in the original directories.

Pretest of Ad Size Manipulation

A previous study (Blakely 1991) that utilized the same stimulus materials provided evidence that the ad size manipulation would be effective. Test results for the three-item summated scale ($\alpha=.87$) created to assess the ad size manipulation (i.e., agreement with statements that the ads were of the same size and shape, the ads varied in size, and the target ad was larger than the other ads) behaved as expected (means=2.65 versus 7.94, $F(1,238)=839.04$, $p<.05$).

Measures

Immediately after viewing the page of ads, participants were asked to recall (unaided) the "products and ads" that they could remember. In separate questions, they were asked to recall (unaided) all that they could remember about the target ad and all other ads (e.g., layout, information provided, brand names, phone numbers). Following the unaided product and ad recall tasks, cognitive responses were collected through a verbal protocol using standard instructions (see Batra and Ray 1986). These thoughts and feelings were coded independently by at least two judges as either cost-related, quality-related, size-related, other product-related thoughts (positive, negative, or neutral); visual, verbal, or other ad-execution thoughts (positive, negative, or neutral); source bolsters or derogations; feelings (positive, negative, or neutral); or other thoughts. Coder agreement was 94% (Cohen's $\kappa=.92$; see Bakeman and Gottman 1986, pages 78-79) and all disagreements were resolved by discussion.

Perceptions of the target company's overall quality, pricing, and product assortment were primarily derived from Kirmani (1990). For example, the quality question asked, "Compared to other florists (computer stores), what are your perceptions of Loretta's (*Entre's*) overall quality?" The nine-point scale had endpoints of "much lower quality" and "much higher quality." These perception measures are essentially equivalent to what others refer to as (inferential) beliefs (e.g., Ford and Smith 1987), but Kirmani's (1990) terminology is used here to maintain consistency. Perceived advertising effort was assessed on a nine-

point scale similar to that just described (endpoints of "very little effort" and "a lot of effort").

Additional nine-point scalar items assessed overall attitudes toward the company (e.g., negative/positive, unfavorable/favorable, dislike/like, and unoriginal/original) and behavioral intentions (not at all likely/very likely, not at all probable/very probable, not at all possible/very possible). Attitudes were dimensionalized (via Principal Components analysis with Varimax rotation) into two underlying factors (80.9% variance explained): overall evaluation ($\alpha=.97$ for the 9-item scale) and originality ($\alpha=.91$ for the 3-item scale). Summing the three behavioral intent measures also yielded a highly reliable scale ($\alpha=.97$). (These and subsequent scales based on factor analyses were created by summing the raw data.)

Covariates and Manipulation Checks. Ad cognitions (believable, informative, interesting, well-designed, easy to follow, overstated, and attention-getting) and measures of attitude toward the ad (Aad) (e.g., unpleasant/pleasant, unfavorable/favorable, not unique/unique) were included to eliminate potential confounds. The ad cognitions represented two distinct factors (65.9% variance explained): "overstated" represented its own factor, whereas the remaining items loaded on a "design" factor ($\alpha=.89$). Factor analysis identified two underlying dimensions (84.7% variance explained) for Aad: an evaluation dimension ($\alpha=.98$ for the 9-item scale) and a uniqueness dimension ($\alpha=.95$ for the four-item scale). These ad-related constructs were used as covariates to account for any potential nonequivalence across experimental conditions. (The ratings of perceived advertising costs and effort were taken after the brand and ad perceptions so as not to contaminate them.)

Following Kirmani (1990), two dimensions of perceived costs were assessed: sheer magnitude relative to competing firms (endpoints of "way below average" and "way above average") and appropriateness (alternative responses of "the company's spending too little money"; "about the right amount of money"; "a lot of money"; and "a lot of money, it's a waste").

For the quality-related, size-related, and cost-related cognitive response codes (detailed above), indexes were created by subtracting the negative cognitive responses from the positive ones. For example, a quality-related cognitive response index was calculated as the number of positive quality-related responses minus the number of negative quality-related responses. This procedure was also applied to the cost-related and size-related cognitive responses, thus producing three cognitive response covariate indices.

So as not to “tip-off” subjects about the study’s purpose, a single item assessing the effectiveness of the ad size manipulation (i.e., level of agreement that the target ad was relatively larger than the other ads) was positioned after all key dependent measures. Finally, other nine-point scalar measures gauged the level of ad involvement (no attention at all/a lot of attention and not at all involving/very involving, $r=.79$), decision involvement (not at all important/very important and not at all involved/very involved, $r=.69$), and task involvement (not at all involved/very involved). At the conclusion, subjects completed items designed to determine whether they knew the purpose of the experiment. It was apparent that no participants were aware of the purpose or guiding hypotheses.

Results

Manipulation Checks

Ad Size and Perceived Costs. Consistent with the pilot study, respondents in the large ad condition (mean=8.77) agreed that the target ad was relatively larger than other ads when compared to the small ad condition (mean=3.02, $F(1,240)=718.02$, $p<.05$). A significant main effect emerged for perceived magnitude of costs ($F(1,240)=95.03$, $p<.05$), indicating that subjects perceived that the larger ads (mean=7.40) were more expensive than the smaller ads (mean=5.37). The ANOVA on perceived appropriateness of costs also revealed a size main effect ($F(1,240)=33.57$, $p<.05$) accompanied by a product main effect ($F(1,240)=6.45$, $p<.05$). The expenditures of the advertiser responsible for the large ad tended to be rated as more “wasteful” (mean=2.81 on the four-point scale), whereas the company advertised in the small ad was rated as less “wasteful” (mean=2.15). The florist (mean=2.63) was also perceived as spending more wastefully than the computer store (mean=2.33). Subjects likely perceive that floral shops are smaller operations with significantly lower profit margins, who shouldn’t be spending at the same level as computer retail establishments. In summary, these findings verify (1) that subjects perceived the ads to be of varying size and (2) that subjects were able to make cost-related inferences based on ad size.

Equivalence of Ads Across Conditions. The ad size manipulation had no impact on the ads’ overstatedness (mean = 3.52), or either dimension of Aad (mean = 5.88 and 4.92 for evaluation and uniqueness, respec-

tively). Respondents did rate the larger ad (mean=4.93) higher in terms of the “design” dimension of ad cognitions ($F(1,240)=8.81$, $p<.05$) compared to the smaller ad (mean=4.38), which is understandable due to the less cluttered appearance resulting from the additional white space (both means are in the middle range of the continuum, however). Kirmani (1990) varied only the white space and kept the size of the ad elements (i.e., picture and copy) constant to avoid informational differences, but this resulted in very unrealistic ads. Although this approach might have eliminated ad cognition differences, it would create a different type of biasing effect. Unlike Kirmani’s study which focused exclusively on perceived costs and effort (ad size did not affect perceptions), this research was also interested in the impact of ad size.

The computer ads were better liked (Aad) ($F(1,240)=11.59$, $p<.05$, means=6.11 versus 5.65), and slightly more well designed ($F(1,240)=9.13$, $p<.05$, means=4.94 versus 4.38) than the floral ads. These differences are largely inherent in the underlying characteristics associated with the product/service categories and the Yellow Pages advertising medium. The findings may be explained by *Loretta’s* use of multiple typefaces and an unconventional typestyle for the store name. Their goal of creating an “artistic” ad may have sacrificed readability for aesthetics. These differences may also reflect the disproportionate marketing/advertising budgets of *Loretta’s Floral Designs* and the *Entre Computer Center*. (Actual Yellow Pages ads were used for enhanced realism so some variation is to be expected across product/service categories.)

Consistent with the memory effects associated with increased ad size (discussed earlier), respondents acknowledged that they devoted more attention and involvement towards the large ad (mean=5.39) than the small ad (mean=4.54, $F(1,240)=9.46$, $p<.05$). It was no surprise that subjects rated the decision to purchase computer products/services (mean=6.72) as more involving than floral-related purchases (mean=5.11, $F(1,240)=37.50$, $p<.05$). However, when incorporated as a covariate, the impact (of decision involvement) was insignificant and is therefore not discussed further. It could be argued that the experimental conditions might have induced varying levels of task involvement. Tests showed that there were no significant main or interaction effects across the four treatments, thus eliminating task involvement as a potential confound.

Tests of Hypotheses

Memory. To test the first hypothesis, 2 X 2 MANOVAs were performed on each of the recall measures: unaided recall of the content of the target ad, unaided recall of the content of the other ads, the ratio of recall of the target ad divided by recall of all the ads (i.e., indicating the target ad's contribution to total ad content recall; cf. Costley and Brucks 1992), and recall for the content of the target ad minus recall of all other ads (i.e., comparing how much ad-based memory pertained to the target ad versus the surrounding competitive ads).

As hypothesized in H1a, subjects exposed to the large target ad (mean=4.50) did recall more of its content than those who viewed the small ad (mean=3.22, $F(1,241)=15.42$, $p<.05$). Product/service category did not moderate this relationship. H1a was also supported for the quotient recall measure ($F(1,237)=8.01$, $p<.05$) with large ads (mean=.55) dominating total ad content memory compared to Yellow Pages comprised entirely of (equally) small ads (mean=.46). The differences are due wholly to increases in the quotient numerator, i.e., target ad recall. Similarly, the difference measure computed as target ad recall minus recall of the content of the other ads indicated a relatively greater presence of target ad-related content in memory for the large ad condition. Although total recall of the seven other ads exceeded memory of the large target ad (mean=-.17), when all ads were of comparable size, memory of the other ads relative to memory of the target ad increased (mean=-1.36, $F(1,241)=4.75$, $p<.05$). However, this should not be interpreted as conclusive support of an "interference effect" (H1b). The small magnitude of this reduction and the minimal effect that ad size had on recall of the other ads ($F<1$, means=4.98 versus 5.07) suggests that the presence of a dominantly large ad did more to enhance its own power than it did to detract from the surrounding ads. No other effects emerged for these recall measures. When the covariates identified above were accounted for, the effects remained unchanged. (The degrees of freedom in these tests and some subsequent analyses differ as a result of missing data.)

Perceptions and Evaluations. The first set of analyses performed a 2 X 2 MANOVA for the three indicators of perceptions (i.e., quality, price expectations, and product assortment) and attitudinal judgments/evaluations (i.e., overall attitudes and purchase intentions). This overall MANOVA yielded main effects for ad size (Wilks' lambda=.948, $F(5,234)=2.57$, $p<.05$)

and product/service category (Wilks' lambda=.923, $F(5,234)=3.90$, $p<.05$). As expected, relative to the small target ad, the large target ad increased perceptions of quality ($F(1,238)=5.61$, $p<.05$, means=5.59 versus 6.16), price expectations ($F(1,238)=3.62$, $p<.05$, means=5.66 versus 6.09), and product assortment ($F(1,238)=11.31$, $p<.05$, means=5.66 versus 6.46). Furthermore, similar effects on overall attitudes ($F(1,238)=3.32$, $p<.10$, means=5.70 versus 6.11) and purchase intentions ($F(1,238)=6.27$, $p<.05$, means=5.43 versus 6.14) were identified. The computer store ads also generated more favorable quality-related perceptions ($F(1,238)=5.38$, $p<.05$, means=5.60 versus 6.16), overall attitudes ($F(1,238)=11.89$, $p<.05$, means=5.52 versus 6.29), and purchase intentions ($F(1,238)=9.71$, $p<.05$, means=5.34 versus 6.23) than the floral messages. Evidence of the size x product/service category interaction proposed in H2 was not apparent (Wilks' lambda=.990, $F(5,234)=0.48$, ns; univariate $F(1,238)=0.90$, 1.66, 0.51, 0.78, and 0.13 for quality, pricing, product assortment, overall attitudes, and behavioral intent, respectively).

Inclusion of quality-related, cost-related, and size-related cognitive response covariates had no impact on the nature or magnitude of these effects. When ad design, ad involvement, and Aad were included as covariates to account for the differences reported previously, the overall ad size (Wilks' lambda=.965, $F(5,229)=1.68$, ns) and product/service category (Wilks' lambda=.960, $F(5,229)=1.91$, $p<.10$) main effects were reduced. Examination of the univariate ANOVAs for perceived quality, perceived prices, overall attitudes, and behavioral intentions indicated that the increased size of the large ad accounted for relatively little of the differences in perceptions after adjusting for the enhanced levels of Aad and ad involvement. This suggests that the covariates mediated these effects: i.e., consumers claimed to get more involved with the large ad which they perceived to be better designed and these factors in turn enhanced perceptions of quality and attitudinal judgments. However, the ad size and product/service category main effects for product assortment, an attribute about which the ad was informative (i.e., mentioned in the copy), were unaffected by the covariates. (The mediative role of perceived ad cost and perceived advertising effort (H2 and H3) are discussed in detail later.)

The Effect of Perceived Costs on Perceptions. Hypotheses 2, 3, and 5 are modeled after Kirmani (1990). Therefore, perceived magnitude of costs (which is nonevaluative) is used in subsequent analyses (ver-

Table 1
Summary of Regression Analyses for Perceptions, Overall Attitudes, and Behavior Intentions

<i>Dependent variable</i>	COST	COST ²	EFFORT	EFFORT ²	F	R ²	n
<i>Quality</i>							
	.44 ^a	—	—	—	61.09	.20	243
	.38 ^a	-.04 ^b	—	—	32.39	.21	243
	—	—	.51 ^a	—	212.54	.47	243
	—	—	.46 ^a	-.03 ^b	109.17	.48	243
	.08	-.02	.41 ^a	-.03 ^b	56.09	.49	243
	.08	—	.48 ^a	—	107.58	.47	243
<i>Product Assortment</i>							
	.38 ^a	—	—	—	41.35	.15	243
	.33 ^a	-.04	—	—	21.69	.15	243
	—	—	.46 ^a	—	140.57	.37	243
	—	—	.44 ^a	-.01	70.13	.37	243
	.02	-.02	.42 ^a	-.01	35.36	.37	243
	.04	—	.44 ^a	—	70.40	.37	243
<i>Overall Attitudes</i>							
	.28 ^a	—	—	—	24.73	.09	243
	.25 ^a	-.02	—	—	12.78	.10	243
	—	—	.41 ^a	—	126.35	.34	243
	—	—	.39 ^a	-.01	63.38	.35	243
	-.05	-.01	.41 ^a	-.01	31.65	.35	243
	-.05	—	.43 ^a	—	63.45	.35	243
<i>Behavior Intentions</i>							
	.42 ^a	—	—	—	35.41	.13	242
	.34 ^a	-.06 ^a	—	—	19.90	.14	242
	—	—	.58 ^a	—	170.67	.42	242
	—	—	.54 ^a	-.02	85.87	.42	242
	-.07	-.04	.56 ^a	-.01	43.58	.42	242
	-.03	—	.59 ^a	—	85.13	.42	242

^a p<.05

^b p<.10

sus perceived appropriateness of costs). In order to insure "equivalent" testing procedures and "fair" comparisons with Kirmani's findings, similar statistical tests and significance levels (p<.10) were used here. While significance levels of .05 are more common in marketing research, significance levels of .10 appear frequently in the literature, (at least) partly to avoid the possibility of a Type II error (e.g., Roth 1992).

To test the hypothesis of an inverted-U relationship between perceived costs and store perceptions,

separate regressions were run for each of the perception measures (see Table 1 for a summary of the regression statistics). The regression equation was specified as:

$$P = \beta_0 + \beta_1 \text{PCOST} + \beta_2 \text{PCOST}^2 + \epsilon,$$

where P=perception of quality, product assortment, or price; and PCOST= perceived magnitude of cost. The procedure was repeated for overall attitudes and behavioral intentions. To reduce problems of

multicollinearity, the independent variables were expressed as deviations from their means (Cohen and Cohen 1983; Yi 1989). This mean-centering procedure yields the same R^2 's, while producing desirable properties including scale independence, low multicollinearity, and a clear interpretation of the estimates (Yi 1989).

The data indicate partial support for the inverted-U relationship between perceived advertising expense and perceptions hypothesized in H2 and the mediation predicted in H3. Specifically, for perceptions of quality and behavioral intentions, the equations and coefficients were significant, and the signs of the coefficients were in the direction predictive of an inverted-U relationship (i.e., $\beta_1 > 0$ and $\beta_2 < 0$). An inverted-U curve is not visible for perceptions of product assortment, nor for overall attitudes, however. The direct relationship found for price perceptions was hypothesized (H5), but it was also the only significant coefficient for overall attitudes.

Although the nonsignificant β_2 coefficient for product assortment (an attribute mentioned in the ad copy) appears to partially support Kirmani's (1990) findings, the significant β_1 coefficient indicates a direct relationship between perceived costs and product assortment perceptions. This conflicts with Kirmani's (1990) finding that the equation and all coefficients were nonsignificant for perceptions of an attribute for which the ad content was informative (i.e., style). It should be noted that Kirmani (1990) applied a slightly different definition of "informative": i.e., that the attribute is mentioned in the ad copy and substantiated by the visual. This suggests that her comfort measure was more like the product assortment measure used here (i.e., mentioned in the ad copy, but not verified by the visual). Applying that analogy, the lack of an inverted-U relationship and presence of a direct relationship between perceived advertising costs and product assortment conflicts with Kirmani's findings for both comfort (uninformative) and style (informative). For comfort, Kirmani (1990) reported that β_1 and β_2 were both significant and in the predicted direction.

Mediation of Advertising Effort. The final set of analyses tested the predicted mediating role of advertising effort. Based on Baron and Kenny (1986), Kirmani (1990) developed a procedure to demonstrate the existence of mediation that accommodates the multicollinearity of these two related concepts and their squared terms. Accordingly, mediation is supported if (1) perceived costs and perceived effort are positively related, (2) perceived effort and percep-

tions are related in an inverted-U fashion, and (3) perceived costs and perceived effort account for the same variance in perceptions. (The third condition proposed by Baron and Kenny (1986) is that the two perceived cost variables should be nonsignificant in the full model containing perceived costs, perceived effort, and their quadratic terms.) Use of the mean-centering procedure in this study diminished at least some of the multicollinearity problems faced by Kirmani (1990).

In congruence with Kirmani (1990), perceived advertising costs and perceived advertising effort were found here to be positively related ($F(1,239)=119.52$, $p<.05$; $\beta_{\text{PCOST}}=.76$, $SE=.07$, $p<.05$). An inverted-U relationship between perceived advertising effort and perceptions was noted for perceptions of quality alone ($F(2,240)=109.17$, $p<.05$; $\beta_1=.46$, $SE=.05$, $p<.05$; $\beta_2=-.03$, $SE=.01$, $p<.10$). For the remaining dependent variables, the regression equations were significant, β_1 was significant, and the coefficients were in the predicted direction. However, the quadratic term was nonsignificant in each instance. Furthermore, the amount of variance explained by the full and reduced models are essentially equivalent for these variables (i.e., the addition of the quadratic term did not make a significant contribution to the full models' R^2 's). In summary, these data indicate a linear relationship between perceived advertising effort and perceptions of product assortment ($F(2,240)=70.13$, $p<.05$; $\beta_1=.44$, $SE=.05$, $p<.05$; $\beta_2=-.01$, $SE=.02$, ns), overall attitudes ($F(2,240)=63.38$, $p<.05$; $\beta_1=.39$, $SE=.05$, $p<.05$; $\beta_2=-.01$, $SE=.02$, ns), and behavioral intentions ($F(2,239)=85.87$, $p<.05$; $\beta_1=.54$, $SE=.06$, $p<.05$; $\beta_2=-.02$, $SE=.02$, ns). Excessive levels of perceived effort did not result in lower perceived product assortment, overall attitudes, or behavioral intent.

The regression statistics in Table 1 suggest that effort mediated at least the linear portion of the effect for behavioral intentions. Both perceived cost terms were rendered nonsignificant once the linear and quadratic perceived effort terms were added to the model. It is readily evident that perceived effort mediated the linear effect of perceived cost on perceptions of product assortment and overall attitudes (i.e., the presence of the EFFORT term rendered the COST coefficient nonsignificant). In Kirmani's (1990) study, effort also mediated the linear portion of the relationship for perceptions of quality and comfort.

For quality perceptions, the full model explained significantly more variance than the cost-only model ($F_{\text{ADD}}=63.38$, $p<.05$), but not more than the effort-only model ($F_{\text{ADD}}=2.10$, ns). Furthermore, both cost-related

terms were reduced to nonsignificance in the full model, thus indicating that perceived effort acted as a mediator (according to the criteria devised by both Baron and Kenny (1986) and Kirmani (1990)). Comparisons of the variance explained by the remaining full models and their associated cost-only and effort-only models yielded similar patterns of results. In each instance, the full and effort-only models possessed equivalent levels of explanatory power (all $F_{ADD} < 1.9$, ns), and both explained significantly more variance than the cost-only models ($F_{ADD} = 41.90, 46.15, 57.69$, $p < .05$; for product assortment, overall attitudes, and behavioral intentions, respectively). The findings for quality replicate those reported by Kirmani (1990), but Kirmani found that the full model explained more variance than both of the restricted models for perceptions of comfort (an attribute mentioned in the ad copy, but not verified by the visual). In conclusion, the data are only partially supportive of the hypothesized inverted-U relationship between perceived advertising expense and perceptions (H2) and the mediation predicted in H3.

The Effect of Perceived Advertising Costs on Perceived Prices. The linear relationship between perceived advertising costs and perceptions of price predicted in H5 was supported ($F(1,240) = 30.70$, $p < .05$; $\beta_1 = .30$, $SE = .05$, $p < .05$). Perceived prices were also positively related to perceived advertising effort ($F(1,240) = 35.36$, $p < .05$; $\beta_1 = .24$, $SE = .04$, $p < .05$); and both coefficients retained their significance in the full model ($F(2,239) = 21.65$, $p < .05$; $\beta_1 = .17$, $SE = .07$, $p < .05$ and $\beta_2 = .17$, $SE = .06$, $p < .05$; for costs and effort, respectively). Therefore, as predicted, perceived advertising effort did not mediate the relationship between perceived advertising costs and perceived prices. These findings replicate Kirmani (1990).

Discussion

Consistent with past research, ad size was found to lead to enhanced memory. Memory of the target ad also dominated total memory when the target ad was relatively large compared to the surrounding ads. The data do not conclusively support that this occurs at the expense of surrounding ads, as reported by earlier studies (cf. Adams 1926; Burt 1938; Keller 1987). But before discarding an "interference" explanation, it should be noted that this finding may be more a measurement artifact than a theoretical anomaly. Because recall of the surrounding ads was not a primary interest when the study was designed, those measures followed and were allotted less writ-

ing area than the recall assessments of the target ad. Subject's likely devoted reduced effort to each successive ad recall assessment, thus accounting for the relatively low recall scores for the "other" ads. A "recency effect" is also possible, especially if subjects did not have sufficient time to process all the ads within the allotted time period. Summarizing the recall findings, consumers' memory is encouraged when an ad is relatively large and competing ads are at a disadvantage when positioned near such dominant ads. However, this recall power occurs at a cost: i.e., memory increases are not proportionate to increases in size. For example, when the target ad was enlarged four times, recall of the ad's content increased only 39.8%; and a rather meager 9% enhancement in memory for the target ad relative to total ad recall required a 400% enlargement in the ad's size. As a result, advertisers must carefully consider if such benefits are worth the financial cost.

This study extends past memory-dominant research into the effect of ad size by measuring perceptions and attitudinal evaluations. The MANOVA results for perceptions and attitudinal judgments paralleled those reported above, but subsequent MANCOVAs rendered most of the direct ad size effects insignificant. Although the large and small target ads were equivalent in terms of content, design, etc., consumers felt the large-sized ad was better designed and devoted more attention to it. This may be an almost natural response that is unavoidable when an advertiser merely enlarges an ad. The heightened design perceptions and attention, in turn, led to enhanced perceptions of quality, overall attitudes, and behavioral intent. The large size, however, seems to have indicated that the advertised store had the resources to provide better product assortment (i.e., ad size had a direct impact on these perceptions). Overall, the findings discussed to this point suggest that those advertisers with limited budgets should attempt to position their ads with comparatively similar-sized ads. The presence of a visibly large ad will almost guarantee that it dominates attention, and perhaps worse, that consumers draw more favorable beliefs about the advertised claims in the large ad.

Consistent with past research (Kirmani 1990), support was found for the notion that consumers (can assess and) rely on their perceptions of advertising costs as an indicator of quality when quality-related information is not explicitly conveyed in an ad. Yet, at excessive levels, consumers may feel advertising is manipulative, rather than informative about product attributes which results in less favorable perceptions (Kirmani 1990).

However, evidence of this inverted U-shaped relationship between perceived advertising costs and product/service perceptions/evaluations was found only for quality and behavioral intentions, not for overall attitudes or product assortment perceptions. Unlike Kirmani (1990), who suggested that ad informativeness was the critical factor that accounted for differing patterns of results across the perception measures, the conflicting results reported here are not as easily explained. Product assortment, an attribute conveyed in the ad copy, exhibited a direct relationship with perceived costs (similar to that hypothesized and supported for price perceptions). Kirmani (1990) found no evidence that perceived costs affected consumers perceptions of style, an attribute promoted and substantiated in the ad. In contrast, she identified an inverted-U relationship between perceived advertising costs and comfort, an attribute only mentioned in the ad copy, not verified in the visual. Thus, it appears that ad informativeness is too simplistic an explanation. Product assortment is an attribute that is likely dependent most on perceptions of store size, retail success, and financial security. When consumers see a relatively large ad, they most naturally infer that it is expensive and that only a large, financially sound store with a successful sales record can afford such an ad (or to maintain a well-stocked, diverse inventory). Furthermore, quality is a relatively "abstract" attribute that consumers may define in a variety of ways, unlike the "specific" nature of product assortment and price that are more apt to be defined similarly by consumers. In any event, research is needed to identify critical distinguishing factors to address the conflict more accurately.

Perceived advertising effort did act as a mediator of the linear and/or quadratic effects for each of the dependent variables other than price. The predicted effects of perceived costs and advertising effort on price perceptions replicate past research (Kirmani 1990), and are interesting for two reasons noted by Kirmani (1990). "First, the positive relationship between perceived costs and expected price indicates that people may draw price inferences from their impression of advertising costs." (p. 170) Consumers may perceive that expensive advertising tactics are used to sell expensive items to affluent audiences or that such costs are passed on to consumers. Second, this is one of the few reportings of this phenomenon in the marketing literature.

Although the study reported here overcomes many design weaknesses associated with earlier investigations of ad size (e.g., failure to control for ad content),

it is necessary to acknowledge factors that limit the generalizability of the findings presented above. From an experimental design standpoint, two product/service categories were used and tested on a single student population. Understandably, attempts to create "realistic" ads for two product/service categories did result in design evaluation differences. Although efforts were made to provide a "natural" ad environment, the authentic Yellow Pages ads were viewed in isolation in a laboratory-like setting. In addition, there were only two levels of the ad size manipulation. Finally, it is possible that "excessive" levels of perceived advertising costs and perceived advertising effort were not achieved, but despite this, the predicted inverted U-shaped relationship did emerge for two dependent variables (i.e., quality and behavioral intentions). More work is needed to determine at what point advertising is perceived as excessive for various product/service categories. In spite of these limitations, however, the differences from past research (e.g., media used) do by themselves serve to enhance the generalizability of the replicated findings.

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