

## Alcohol Beverage Warnings in Print Advertisements

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### ABSTRACT

This experiment investigated the impact of warnings in alcoholic beverage advertising by embedding warnings in print (magazine) advertisements. Warning conspicuity (size and contrast) and shape (plain rectangle, rectangle with signal icon, and circle/arrow) were manipulated. Under the assumption that the research was a marketing study concerned with print media, participants paged through a simulated magazine and evaluated each page on its visual appeal. Later they were given an unexpected memory test on the content, location, and configuration of the warnings. The results showed that information in highly conspicuous (larger, higher contrast) warnings was remembered better than in less conspicuous warnings, and that warning advertisements can communicate information about the hazards of alcohol consumption. Implications of the results are discussed, including their applicability to warnings for other kinds of consumer products advertised in the print medium.

### INTRODUCTION

The cost of alcohol abuse and alcoholism in the United States is estimated to be approximately 136 billion dollars annually (National Institute on Alcohol Abuse and Alcoholism, 1989). Almost 18 million Americans experience medical, social, or personal problems directly related to the consumption of alcoholic beverages. The staggering cost to society due to alcohol-related problems and the rising rate of alcohol-related fatalities suggest that either people are not aware of the risks associated with alcohol consumption, or public awareness campaigns have not had the intended effect on people's knowledge, attitudes, beliefs, and behavior. The magnitude of the problem associated with alcohol consumption resulted in legislation passed in the United States Congress mandating that a warning appear on the labels of all containers of alcoholic beverages after November 18, 1989 (Federal Register, 1989).

Since the enactment of this law, additional legislative measures have been proposed that would require warnings in alcoholic beverage advertisements (e.g., Kennedy, 1990). Although these bills specify certain aspects of the warnings, there is virtually no empirical basis for most of the proposed design features. In addition, the bills do not specify other aspects of the warnings, leaving their characteristics to the discretion of manufacturers. Failure to stipulate the critical features might allow methods of presenting warnings that diminish their potential effectiveness. The purpose of the present research is to identify the factors that might influence the utility of warnings in alcoholic beverage advertisements and their ability to communicate alcohol-related hazards.

In the context of magazine advertisements, warnings must compete with other images for attention. Inconspicuous warnings would seem to stand little chance of capturing a reader's attention. Young and Wogalter (1990) found that conspicuous print warnings in an owners manual were remembered better than plain print warnings. Viscusi, Magat, and Huber (1986) found that subjects reported that they would take greater precautionary behavior as the size of a warning on labels for liquid bleach and liquid drain opener increased. In the current study, warning conspicuity of the alcohol beverage warnings in magazine advertisement was manipulated. Highly conspicuous warnings were defined as larger, bolder print warnings with high foreground-background contrast relative to the less conspicuous

warnings. It was expected that highly conspicuous warnings would be noticed more often, and therefore, the messages that they contain would be more likely read and remembered compared to less conspicuous warnings.

The shape of the warning may also affect noticeability (Bhalla & Lastovicka, 1984; Myers, Iscoe, Jennings, Lenox, Minsky, & Sacks, 1981; Riley, Cochran, & Ballard, 1982). For example, Myers et al. (1981) found that, of nine shapes tested, an octagon and an arrow pointing into a circle were more likely to be noticed and were most appropriate for warnings. Bhalla and Lastovicka (1984) found that when used as the shapes for the Surgeon General's warning in cigarette advertisements, both an elongated rectangle and the arrow pointing into a circle increased memory for the warning. Though warning shape appears to be important in these studies, as well as in an earlier study by Riley, Cochran, and Ballard (1982), not all research has shown an effect. A recent study by Jaynes and Boles (1990) found no influence of shape on warning compliance. In the current study two basic shapes enclosing the warning were compared (a rectangle and an arrow pointing into a circle).

In addition, because many guidelines on warning design (e.g., American National Standards Institute, 1988; FMC Corporation, 1985; Westinghouse Printing Division, 1981) suggest that a signal icon be included in warnings to help gain attention and communicate the existence of a hazard, a third shape condition, a rectangle with a signal icon, was included in the study. It was expected that the circle/arrow shape and the rectangle with signal icon would be noticed, read and remembered more often than the plain rectangle.

Thus, in the current study, the effects of warning conspicuity and shape were investigated in the context of print advertising for alcoholic beverages. Their effects were examined with respect to memory and knowledge of the warnings' content, their location in the advertisements, and awareness of the warning configuration (the combination of conspicuity and shape).

### METHOD

#### *Design*

The experimental design was a 2 (conspicuity) x 3 (shape) between-groups design. The highly conspicuous

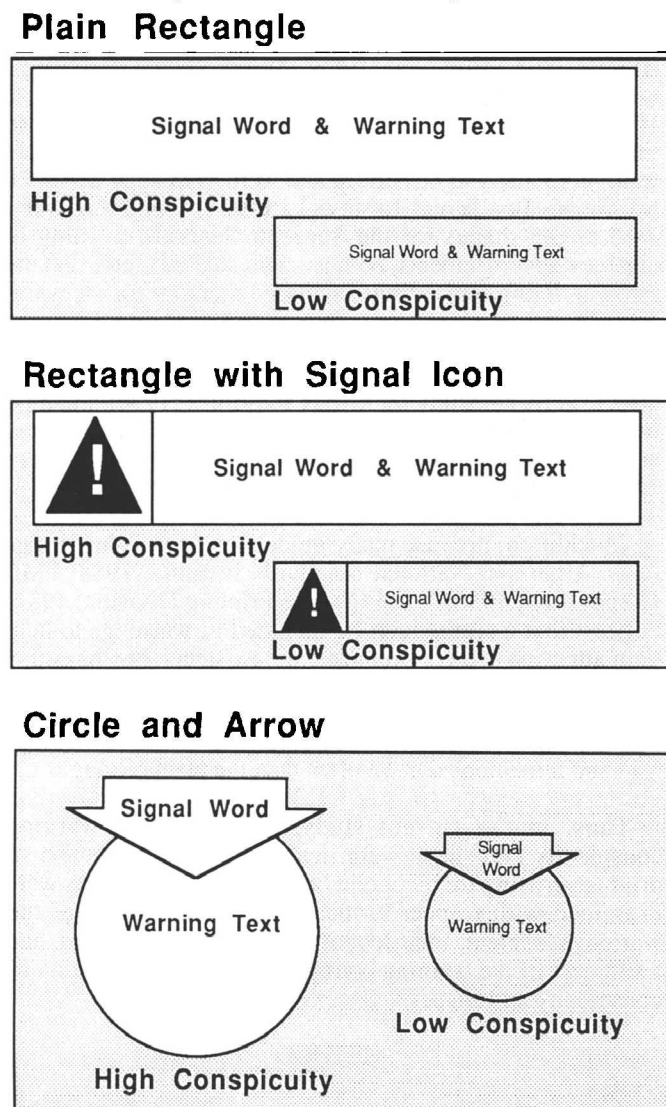
warnings were defined as 11-point bold black (sans serif) print on a white background with a total warning surface area of 23 cm<sup>2</sup>. The less conspicuous warnings were defined as plain black print on the advertisement background with a surface area that was 60% of the highly conspicuous warnings.

The text for the warnings was contained in: (a) a plain rectangle, (b) an identical rectangle with a triangle/exclamation point signal icon within its borders to the left of the text, or (c) an arrow pointing into a circle. Within each conspicuity level, the three warning shapes were constructed to displace the same surface area and contained the same size print. Examples of the combinations of conspicuity and shape are shown in Figure 1. A seventh condition, in which no warnings appeared, served as a control.

### Participants

One-hundred-five undergraduate students from the introductory psychology courses at the University of Houston,

FIGURE 1. Warning Configurations examples. The gray areas represent the advertisement background.



Rice University, and Rensselaer Polytechnic Institute were assigned randomly to one of the seven conditions in equal proportions by school. Fifty-five percent of the participants were male.

### Materials and stimuli

Alcoholic beverage advertisements were presented in a simulated, realistic-appearing magazine format which also included articles and advertisements for other (nonalcoholic) products and services. All pages were high quality color photocopies in a double-sided format that were held in laminate enclosures inside a hard-cover three-ring binder.

A preliminary study, involving participants from Rensselaer Polytechnic Institute, assessed common knowledge of alcohol facts and hazard. Based on the results of this study, 10 warnings were constructed containing two to four lesser-known facts related to the hazards of alcohol consumption. The reason for using less well known information was to maximize differences in knowledge between participants who did or did not read the warnings in the advertisements. The warnings are shown in Table 1.

In another preliminary study, 12 participants from Rensselaer Polytechnic Institute rated 65 full-page, color, alcoholic beverage advertisements on attractiveness, appeal, and the relative amount of text and pictures. Each dimension was based on a 9-point Likert-type scale. The scales were

TABLE 1

### Warnings in the Alcohol Beverage Advertisements

WARNING: Drinking alcohol during pregnancy may cause the baby to have behavior problems, mental retardation, or deformities.

WARNING: Daily drinking of alcohol increases the risk of throat, stomach, and prostate cancer and diseases of the liver and heart.

WARNING: Beverage alcohol (also called ethyl alcohol or ethanol) is an addictive drug. Children of alcoholics have 4 times the risk of being alcoholics.

WARNING: Drinking alcohol and taking sleeping pills or pain killers can be deadly. Antibiotics, when combined with alcohol, may not work.

WARNING: Drinking coffee, taking a cold shower or vigorous activity does NOT help to sober up. The body needs 2 hours to get rid of the alcohol from 1 drink.

WARNING: Carbonated alcohol is absorbed faster than noncarbonated alcohol. Within 2 minutes alcohol is absorbed by the stomach and carried by the blood to the brain.

WARNING: Acts of violence are more likely after drinking alcohol, including sexual abuse, rape, child beatings, and murders.

WARNING: In many states, the minimum penalty for driving legally drunk is 6 months suspension of driver's license, 15 days in jail, and a \$1500 fine.

WARNING: 55% of traffic deaths are alcohol related. With alcohol, people are overconfident and have slower responses.

WARNING: Drunk driving is the number-one killer of children and young adults. There is an alcohol-related death every 22 minutes.

anchored by 0 and 8 at the low and high ends, respectively. In addition, the location of the focal point, as defined as the most "eye-grabbing" or "attention-getting" part of each advertisement, was assessed by asking the participants to point to the area that attracted their attention the most. Focal point data were recorded using a coordinate system that was superimposed on the advertisement.

From the original set of 65 advertisements, ten were chosen according to the following criteria.

- (1) Advertisements with predominantly black or white backgrounds were eliminated because: (a) with a black background, it would be impossible to see the warnings in the low conspicuity conditions, and (b) with the white background, the conspicuity manipulation would be confounded with advertisement background.
- (2) Advertisements with the highest appeal ratings were included (mean ratings of 4.0 or less were eliminated).
- (3) Advertisements with the highest attention-gettingness ratings were included (mean ratings of 4.0 or less were eliminated).
- (4) Of the remaining advertisements, advertisements with the least variable focal points were included (i.e., the ads that showed the least agreement were eliminated).
- (5) Finally, multiple advertisements for the same brand were eliminated.

The purpose of the second and third criteria was to increase the probability that participants would look at the advertisement. The purpose of the fourth criterion was to informally examine the relationship between memory of the warning and the distance of the warning from the focal point. It was expected that warnings more distant from the focal point would less likely be noticed and remembered.

The 10 warnings were randomly assigned to each of the remaining advertisements. Warnings were placed in the largest uncluttered area of the advertisement.

Advertisements for nonalcoholic products and services were selected based on an analysis by Jacoby and Hoyer (1987) of the most frequently advertised products in the top 18 nationally published magazines. The nonalcoholic beverage advertisements were from categories represented by 2% or greater in the analysis. Forty-three advertisements for apparel, business, cosmetics, food, cigarettes, retail, furniture, building materials, and automobiles were included in the magazine.

Article content was taken from *Capital* magazine, a monthly publication about people and events in the Albany, NY area. Two major articles were chosen for their probable interest to participants. One article described 50 different entertainment activities available in the surrounding area. The other article was about a local woman convicted of killing seven of her eight children. Article content accounted for ten pages of the magazine.

#### Procedure

Participants were told that *Capital* magazine was a very successful magazine and that a local publishing company

would like to know whether the graphic layout of the magazine is responsible for its success. The purpose of the cover story was to prevent subjects from determining the true nature of the study and to allow a test of incidental memory of the warnings. Participants were given the magazine and response sheets and asked to rate each page on the question: "If you were turning through the magazine, how willing would you be to stop and look at the page?" Participants responded on a 9-point Likert-type scale with the following verbal labels on the odd-numbered anchors: (1) not at all willing to stop and look, (3) somewhat willing to stop and look, (5) moderately willing to stop and look, (7) willing to stop and look, and (9) very willing to stop and look. As practice, participants first rated the magazine's cover page, and the experimenter answered any questions. For the remainder of the magazine, they were given 30 s to rate each two-page spread. These intervals were signaled by a tone, and upon hearing each tone, the participants turned the page and rated each of the next two pages. After the participants rated all of the pages, the magazine was removed and three memory tests were administered.

The first test was a 24-item questionnaire assessing recall and recognition of the warning content (seven open-ended, four multiple choice, and 13 true/false). The second test assessed memory of the warning's location. In this test, three areas of each alcoholic beverage advertisement (the location of the warning, the focal point, and one other object) were covered by a large opaque oval. Participants were asked to write what appeared in the hidden area. The third test assessed recognition of the warning's configuration. Representations of all six warning configurations (i.e., combinations of the two sizes and three shapes) and the option of a "no warning" response were presented and the participant chose which, if any, he/she saw in the magazine. After the third test, participants were debriefed and thanked for their participation.

## RESULTS

Data were analyzed using a series of 2 (conspicuity) x 3 (shape) between-subjects analyses of variance (ANOVAs). For all tests, each correct answer was given one-point. Then the data were converted to proportions by dividing the participants' scores by the total possible points. For all tests, contrasts were also made between the warning conditions and the no warning control condition.

#### Warning content

The first test on warning content was analyzed in two parts. The first analysis examined cued-recall memory using the responses from the open-ended questions. The second analysis examined recognition memory using the responses from the multiple-choice and true-false questions.

*Cued-recall of warning content.* The cued-recall responses were scored using both a strict and a liberal criterion. With the strict criterion, responses were scored as correct if they matched the warning content exactly. With the liberal criterion, responses were scored as correct if they were similar in meaning to the warning content. Analysis of the strict scores showed a main effect of conspicuity,  $F(1,84) = 8.28$ ,  $MSe = .008$ ,  $p < .01$ . Participants in the highly conspicuous warning conditions ( $M = .23$ ) recalled more warning content than participants in the less conspicuous warning conditions ( $M = .17$ ). There was no significant

main effect of shape or interaction ( $ps > .05$ ). Contrasts between the warning conditions and the no warning condition were not significant ( $ps > .05$ ). No significant effects were found using the liberal scores ( $ps > .05$ ).

**Recognition of warning content.** Analysis of the content recognition scores showed a significant main effect of conspicuity,  $F(1, 84) = 6.07$ ,  $MSe = .012$ ,  $p < .05$ . Exposure to the highly conspicuous warnings increased recognition of warning content ( $M = .56$ ) compared to the less conspicuous warnings ( $M = .50$ ). There was no significant main effect of shape or interaction ( $ps > .05$ ). The contrast between the condition with the highly conspicuous-signal icon/rectangle warning ( $M = .58$ ) and the no warning condition ( $M = .49$ ) was significant ( $p < .05$ ). No other contrasts were significant ( $ps > .05$ ).

#### Warning location

Participants were asked to recall the content of three areas in the advertisement, one of which was the warning's location. The answers were scored as correct in two ways: (1) an indication that a warning was present under any one of the ovals in the advertisement (liberal), and (2) an indication that a warning appeared at the correct location (strict). Analysis of the liberal data showed a significant main effect of conspicuity,  $F(1, 84) = 77.37$ ,  $MSe = .103$ ,  $p < .0001$ . Participants in the highly conspicuous warning conditions ( $M = .75$ ) recalled that a warning appeared in the advertisements more often than participants in the less conspicuous warning conditions ( $M = .15$ ). There was no significant main effect of shape or interaction ( $ps > .05$ ). Contrasts showed that participants in all of the warning conditions more often recalled that warnings appeared in the alcoholic beverage advertisements than participants in the no warning control condition ( $M = .00$ ),  $ps < .05$ . However, there were two exceptions. The less conspicuous-plain rectangle ( $M = .13$ ) and the less conspicuous circle/arrow ( $M = .10$ ) conditions did not differ from the control condition ( $ps > .05$ ).

Analysis of the strict data showed a significant main effect of conspicuity,  $F(1, 84) = 77.54$ ,  $MSe = .064$ ,  $p < .0001$ . Participants in the highly conspicuous warning conditions ( $M = .58$ ) were more accurate in recalling the location of the warnings than participants in the less conspicuous warning conditions ( $M = .11$ ). There was no significant main effect of shape or interaction ( $ps > .05$ ). Contrasts showed that participants in all three highly conspicuous warning conditions correctly recalled the warning locations more often than participants in the no warning control condition ( $M = .00$ ),  $ps < .05$ . None of the less conspicuous warning conditions differed from the control ( $ps > .05$ ).

#### Configuration recognition

Analysis of the configuration recognition scores showed a significant main effect of conspicuity,  $F(1, 84) = 26.84$ ,  $MSe = .183$ ,  $p < .0001$ . Participants in the highly conspicuous warning conditions ( $M = .82$ ) recognized the appropriate configuration more often than participants in the less conspicuous warning conditions ( $M = .36$ ). There was no significant main effect of shape or interaction ( $ps > .05$ ). Contrasts showed that participants in the less conspicuous rectangle with signal icon ( $M = .20$ ) and the less conspicuous circle/arrow shape ( $M = .33$ ) had significantly lower

configuration recognition than the control participants whose correct answer was that no warning was present ( $M = .67$ ),  $ps < .05$ . The control participants had significantly lower configuration recognition than participants in the highly conspicuous circle/arrow warning condition ( $M = 1.00$ ),  $p < .05$ . No other contrasts were significant ( $ps > .05$ ).

#### Reliability

The reliability of the cued-recall data of the first test was examined by having 20% of the data scored by another judge. This judge was unaware of the participant's experimental condition. The Pearson product-moment correlation coefficient between the two scorers was  $r = .83$  ( $p < .0001$ ).

#### Focal point-warning location

To determine if the distance of the warning from the focal point was related to noticing the warning, two analyses were performed. First, Pearson product-moment correlations were calculated between the warning location test scores and the distance of the warning from the focal point for each of the six warning conditions. The only significant correlation was a positive relation involving the conspicuous plain rectangle ( $p < .05$ ). Second, the correlations for each participant were transformed into Fisher's  $z$ -prime scores and these data were analyzed using a 2 (conspicuity)  $\times$  3 (shape) ANOVA. No significant effects were found ( $ps > .05$ ).

### DISCUSSION

Conspicuity and shape of warnings in magazine alcoholic beverage advertisements were examined to determine their effects on knowledge and memory. Several measures showed a significant increase in performance for the warning conditions compared to the no warning control condition. This indicates that the warnings in alcoholic beverage advertisements in the print medium have the potential to communicate information on the hazards related to alcohol.

In addition, for virtually every measure, participants viewing highly conspicuous warnings knew more about the warnings than participants viewing the less conspicuous warnings. Highly conspicuous warnings present the warning in a way that makes them more salient and isolates the information from visual noise. These warnings do not blend in with surrounding pictures and text, and are more likely to attract and hold the reader's attention. The results concur with the findings of Young and Wogalter (1990) that participants noticed and retained more information from the highly conspicuous warnings compared to the less conspicuous warnings.

Although it was expected that the presence of a signal icon in the rectangle and the novel shape of the circle/arrow would produce positive effects on knowledge and memory, no effect for warning shape was found. These results fail to support several earlier studies showing shape to be an important factor for warnings (Bhalla & Lastovicka, 1984; Myers et al., 1981; Riley et al., 1982). However, the failure to find an effect of shape concurs with Jaynes and Boles (1990) who also found no effect for this variable. While no shape effect was found, these results should not be used to rule out the possibility that shape influences exist. In the present experiment, it is clear that conspicuity was the more important of the two independent variables. Perhaps the

large effect of conspicuity obscured any possible differences attributable to shape. The results suggest that participants did not see (or at least did not often see) the warnings in the low conspicuity conditions, but did see them in the high conspicuity conditions—regardless of shape. Once noticed, the warnings, due to their uniqueness, were looked at and remembered (Hunt & Smith, 1989; Pezdek, Whetstone, Reynolds, Askari, & Dougherty, 1989). Possibly, at intermediate levels of conspicuity, shape might be a more important factor.

An informal analysis of warning recall and distance between the warning and advertisement focal point was performed. It was expected that the greater the distance, the less likely the warning would be noticed and remembered. Support for this expectation was not found as only one significant relationship was noted and it was in the opposite direction. However, this assessment should be considered tentative because (1) these data are correlational (focal-point distance was not manipulated), and (2) only ten distance-recall pairs were analyzed. Further research specifically designed to test the effect of focal point distance could provide more conclusive statements on the noticeability of warnings placed far from the most attention-getting aspects of a printed advertisement.

In addition, further research should address other means of increasing salience, for example, the use of color and alternative configurations. It might be expected that regardless of a warning's salience (conspicuity or shape), a constant warning format will no longer attract and hold a person's attention. Several formats may be necessary (e.g., via intermittent rotation) to prevent people from, over time, habituating to the warning (cf. Bhalla & Lastovicka, 1984; Wogalter & Silver, 1990).

Though alcoholic beverage advertisements were used in the present study as the vehicle to present warnings in print advertisements, these results may be applicable to warnings in print advertisements for other kinds of consumer products (e.g., drugs and recreational vehicles). The relative lack of empirical literature on this topic suggests that additional research is needed to determine the important variables that influence the communication of product hazards. For a warning to be useful in advertisements, it must be designed to compete with other visual stimuli that are purposely made to be attention-getting and appealing, making the development of effective warnings in this context a challenge.

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