Perceived Believability of Warning Label Information Presented in Cigarette Advertising

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A series of new warning labels presenting information on specific research on the hazards of smoking recently has been developed by policy makers. The overall objective of the new series is to generate a response of belief in the risks of smoking and, ultimately, to influence smoking behavior. This investigation explores the perceived believability of the warning label information among young adults and suggests a number of implications from the results.

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In 1965, mild warnings to protect consumers against the hazards of smoking were adopted for use on cigarette packaging and in advertising ("Caution: Cigarette Smoking May Be Hazardous to Your Health"). As consumption of cigarettes increased, and as research results on smoking's hazards continued to accumulate, a more stern warning was adopted in 1972 ("Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous to Your Health").

However, the Federal Trade Commission concluded that the warning labels used did little to inform the public of the hazards of smoking, having little or no effect on the public's attitude toward smoking (other than some shift to lower tar and nicotine brands). The Commission, therefore, determined that further protective action was necessary. In 1984, it developed a quarterly rotating series of four new warning labels which conveyed more specific information than the previous warnings (see Richards 1987 for a more complete discussion of the issues involved in this action).

Even though some have argued that the purpose of warning labels is to protect the tobacco industry from claims it failed to warn consumers adequately about the dangers of cigarettes, the general regulatory objective of the four new warning labels is to provide information on research results in an effort to influence consumer attitudes on the hazards of smoking (*Business Week*, October 15, 1984). Although most consumers have been exposed to the general dangers of smoking, policy makers felt that many were unaware of the specific risks involved. The policy makers particularly noted a lack of awareness among potential young adult smokers whose attitudes about smoking still are evolving.

Birch Bayh, former Democrat senator from Indiana, and David Neumeyer, associate director of the Coalition on Smoking and Health, noted recently that, "There is every reason to believe that a better informed public will smoke significantly less" (*New York Times*, September 10, 1984). Neumeyer later stated, "We have some evidence from Sweden that rotating warnings have a much more significant effect, especially among teenagers" (*New York Times*, October 28, 1984).

While the relationship between attitudes and behaviors has been debated (e.g., Fishbein 1967; Ajzen and Fishbein 1980), presenting young adults with specific warning information to assist them over time in their attitude formation about the dangers of smoking can be seen ultimately as one factor influencing smoking behavior. If this information is presented so consumers who acquire it also believe

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it, the protective influence intended more likely will result.

The introduction of the rotating series of warning labels has provoked a great deal of controversy, but little is known of the extent to which the warning labels are believed by current or potential young adult smokers. This investigation explores the perceived believability of cigarette warning label information among this target audience. Further, since the audience's attitudes toward smoking may be somewhat formative at this life stage, both their potential for attitude change and the amount they smoke (if any) will be measured to see if either factor has any impact on perceived believability.

Background

Warning Label Information. For some time, policy makers have encouraged marketers to present energy consumption information on appliances, unit pricing information on groceries, nutritional content information on packaged goods, and health warning information on drugs. In each case, the intended purpose has been to allow consumers to balance the risks and benefits of the product without entailing a punitive indictment of the product and causing negative side effects to the marketer (Morris, Ruffner and Klimberg 1985). Unfortunately, concerns arising from an increase in product liability suits have contributed to the manufacturers' provision of product warning label information without a thorough understanding of the statutory and common law requirements for safety warnings (Ursic 1985) or of consumers' responses.

Previous research on consumer response to product information provision has yielded mixed results. For example, Funkhouser (1984) measured consumer comprehension and understanding of three versions of affirmative disclosure messages and found a high level of sensitivity to "differences and even subtle nuances in messages," underscoring the need for empirical pretesting of such messages. Schucker *et al.* (1983) found that saccharin warning labels produced a variety of sales responses among specific demographic segments. In a study on prevention of accidental poisoning through package and label design, Schneider (1977) found that warning labels actually attracted more attention by children to these products. Russo (1977) found that consumers do use unit price information. McNeill and Wilkie (1979) found no significant behavioral differences generated by the inclusion of energy consumption labeling on appliances.

"Caution: Cigarette Smoking May Be Hazardous to Your Health"

While one might expect some inconsistency among such diverse areas of warning information presentation, equally mixed results may be found in the research on nutritional labeling, which represents the single most investigated area to date. Asam and Bucklin (1973), in a study of consumer response to nutrition labeling for canned goods, found that specific information affected perceptions and preferences of quality. Daly (1976) concluded that the benefits of nutrition labeling were attitudinal more than behavioral, because of low levels of comprehension of such labels. Jacoby, Chestnut and Silberman (1977) found that consumers do not want nor use nutrition information, and yet Lenahan *et al.* (1973) noted non-use benefits associated with open disclosure which contributed to an increase in general confidence in an industry.

Presentation Format. Past research convincingly demonstrates that consumer response to warning label information depends in large part on the presentation's format and that the mere availability of information is an insufficient condition for information processing (Biehal and Chakravarti 1982). In communicating specialized or technical information to a lay audience, Funkhouser and Maccoby (1971) noted the importance of readability, use of examples, and visual stimuli. Borgida and Nisbett (1977) found statistical summaries less informative than "vivid," or even abstract information; and Scammon (1977) similarly noted that adjectival copy formats (good, fair, poor) were more informative than actual numerical percentage formats. In contrast, Bush and Bush (1986) recommended the inclusion of number-based copy points in advertisements since readers found such copy more informative.

Other studies have shown that it is better to include (rather than avoid) technical wording in marketing communications (Anderson and Jolson 1980); pictures produce greater recall than words (Purdy and Luepnitz 1982); qualitatively-oriented information is more believable than quantitatively-oriented information (Beltramini and Evans 1985); summarized formats, such as case histories, result in better recall than statistical information (Dickson 1982); and numerical ratings are preferred in matrix format (Muller 1985). Bettman and Kakkar (1977) recommended that information be presented to consumers in formats which facilitate processing, since consumers employ the easiest information acquisition strategies available to the task at hand. Otherwise, as Nourse and Anderson (1973) noted, consumers encountering too much information are likely to ignore it.

Wright (1979) tested the effects of exposure to messages added to over-the-counter drug advertisements that urged that package warnings be read. He found that concrete, verbal action recommendations, combined with a visual enactment of the action sequence, produced greater compliance than less concrete messages. As he stated, "These results seem to imply that merely expanding the warning portion in regular TV brand advertisements will not have strong effects on buyers' package inspection tendencies unless, perhaps, the in-store warning information is made more obvious (Wright 1979, p. 268). Wright's recommendation that the presentation's

format employ concrete language and action demonstration was later supported by Winett and Kagel (1984), who advocated both specificity in demonstrating target behavior and the provision of a plan for instituting the practice. Bettman and Zins (1979) found that matrix presentation formats which allow comparisons take less time to process and contribute to greater accuracy, in line with Bettman and Jacoby's (1976) earlier notion of a "centralized summary display."

Taken together, the studies suggest that complex information can be communicated effectively to audiences, provided that marketers and regulatory agents have a sound understanding of the format variables needed in the presentation and have adequately pretested the messages.

Because consumers seem to acquire information from the easiest presentation format in task-specific adaptations, marketers and regulatory agents are faced with the task of employing formatted warnings which evoke the desired response with the minimum processing effort (Bettman, Payne, and Staelin 1986; Morris, Brinberg, and Plimpton 1984; Painton and Gentry 1985; Venkatesan, Lancaster and Kendall 1986). As noted by Bettman, Payne and Staelin (1986), designers of labels for presenting risk information must consider the processability of presentation format, or hazards-related information may be ignored or underutilized. Among other considerations, the audience must believe that their risk is real as conveyed in warning label information.

Believability and "Mushiness." Cigarette advertising over the years has reflected health concerns (Warner 1985), and has often employed fear appeals to warn consumers (e.g., Levanthal and Watts 1966; Sutton and Eiser 1984). Information provided in these messages has been found to influence significantly consumer attitudes concerning the hazards of smoking (Loken 1982; Kristiansen, Harding and Eiser 1983; Higgins, Whitley and Dunn 1984; Dawley, Fleischer and Dawley 1985).

However, the latest wave of research results linking smoking to specific health risks has moved policy makers to require a new series of rotating warning labels in an attempt to more strongly influence consumer attitudes than previous efforts. If consumers believe the warning label information presented, ultimately they are more likely to adjust their smoking behavior.

Attitudes in general have been found to exhibit variability/intensity (e.g., Ehrlich 1968; Harvey, Reich and Wyer 1968; Stimpson and D'Alo 1974; DuBois 1976; Ryan 1980; Presser and Schuman 1980; Shrigley and Koballa 1984). However, the measurement of this variability has attracted little attention, with the exception of Yankelovich, Skelly and White's studies (Keene and Sackett 1981; *Advertising Age*, March 30, 1981). Yankelovich, Skelly and White have developed a "mushiness index," designed to help determine the firmness of an attitude (see Table 1). While attitude intensity refers to how strongly a person feels about a specific issue, mushiness refers to the volatility or changeability of one's attitude. Similarly, while few investigations have addressed the conceptualization and measurement of perceived believability (Maloney 1962, 1963; Wells 1964a 1964b), a believability scale is available (Beltramini 1982; Beltramini and Evans 1985) for this purpose (see Table 2).

Therefore, it is quite possible to assess both the believability of warning label information presented and the mushiness of attitudes, using previously-validated measurement instruments. Given varied consumer responses to previous information

TABLE 1
Yankelovich, Skelly and White Mushiness Index

On a scale of 1 to 5, where 1 means that this issue affects you personally very little and 5 means that you feel deeply involved in this issue, where would you place yourself?

Involved very little	1	2	3	4	5	Deeply involved

On some issues people feel that they really have all the information that they need in order to form a strong opinion on that issue, while on other issues they would like to get additional information before solidifying their opinion. On a scale of 1 to 5, where 1 means that you feel you definitely need more information on the issue and 5 means that you do not feel you need information, where would you place yourself?

Definitely need more information	1	2	3	4	5	Do not need more information

On a scale of 1 to 5, where 1 means that you and your friends and family rarely, if ever, discuss this issue, and 5 means that you and your friends and family discuss it relatively often, where would you place yourself?

Discuss it rarely, if ever	1	2	3	4	5	Discuss it relatively often

People have told us that on some issues they come to a conclusion and they stick with that position, no matter what. On other issues, however, they may take a position but they know that they could change their minds pretty easily. On a scale of 1 to 5, where 1 means that you could change your mind very easily on this issue, and 5 means that you are likely to stick with your position no matter what, where would you place yourself?

Could change your mind very easily	1	2	3	4	5	Likely to stick with your position no matter what

Source: Keene and Sackett (1981).

presentation efforts and the importance of generating firm audience believability about smoking hazards, it appears particularly appropriate to investigate the believability of the recently introduced rotating series of warning labels among young adults.

Methodology

Questionnaire booklets were developed and pretested. The booklets first contained a benchmark of respondents' attitudes on the health hazards of cigarette smoking ("Cigarette smoking is hazardous to your health") measured with a five-interval agree/disagree Likert rating scale. Next, the four-item mushiness index was included (see Table 1) to assess the susceptibility to modification of respondents' positions on the issue (via the presentation of warning label information). The questionnaire booklets next included the four recently-mandated warnings. The labels were on separate pages, and were randomly rotated. Each label was followed by the ten-item believability scale. Last, demographic and smoking behavior variables were included.

The questionnaire booklets were administered to two large sections of a class of business students at a major American university. Given the recent increases in this group's smoking behavior and the potential for reaching a group whose attitudes on the smoking issue remain somewhat formative, this sample seemed to represent a logical beginning for the exploration of consumer responses toward government-mandated warning information. A total of 727 usable questionnaire booklets were returned. No significant differences were found between the data collected from each class section, so the data were aggregated for analysis. The average respondent was 23 years old; 55 percent were male and 45 percent were female. Approximately 58 percent were juniors, 38 percent seniors, and four percent other, with 86 percent business majors. While the sample in no way represents the consuming public in general, it does provide a meaningful population group for investigation.

Hypothesis. Based upon the literature reviewed, and the intended objective of providing warning label information to protect young adults, the following hypotheses were developed for testing:

H_1: No significant differences will be found in the perceived believability of any of the five warning labels (the traditional label and the four recently-introduced labels).

H_2: No significant differences will be found in the perceived believability of any of the five warning labels among the levels of mushiness identified (volatile, moderate, and firm).

H_3: No significant differences will be found in the perceived believability of any of the five warning labels among smokers versus non-smokers.

If the protection intended by the mandated provision of warning label information is to be effective, no significant differences in the perceived believability of any of these labels should be expected among young adult subgroups. On the other hand, inconsistent attitudinal responses among subgroups should provide diagnostic feedback about the extent to which objectives can be achieved by the presentation of warning label information.

Results

Questionnaire responses were tabulated to produce descriptive statistics on the overall perceived believability (the average of the 10 believability scale items) of the standard warning label and each of the four recently introduced rotational warning labels (see Table 3). There was a varied (yet predominantly believable) response to each of the labels when the 10 believability scale items were averaged for each measurement object. The previously-employed familiar warning label yielded the highest level of perceived believability and the least variability of response, followed in order by

TABLE 2
Advertising Believability Scale

Unbelievable	Believable
Untrustworthy	Trustworthy
Not convincing	Convincing
Not credible	Credible
Unreasonable	Reasonable
Dishonest	Honest
Questionable	Unquestionable
Inconclusive	Conclusive
Not authentic	Authentic
Unlikely	Likely

Source: Beltramini, R.F. (1982)

"Smoking causes lung cancer, heart disease, emphysema, and may complicate pregnancy," "Smoking by pregnant women may result in fetal injury, premature birth, and low birth weight," "Quitting smoking now greatly reduces serious risks to your health," and "Cigarette smoking contains carbon monoxide." Further, calculations of Cronbach's coefficient alpha among the ratings obtained from the ten believability scale items for each measurement object averaged .90, indicating an acceptable level of scale reliability consistent with previous research cited.

In rejecting the first null hypothesis (no significant differences will be found in the perceived believability of any of the five warning labels), it can be seen that the largest relative magnitude of difference ($p < .05$ via pairwise t-tests) was found between the two new warning labels noting specific risk outcomes (which, incidentally, deviated least from the traditional label), and the two new warning labels noting suggested remedial action (i.e., quitting smoking) or harmful contents (i.e., carbon monoxide). This might suggest that some warning messages may be inherently more believable than others, because of familiarity, personal relevance, specificity, and so forth.

To empirically test the second research hypothesis, attitudinal responses to the statement, "Smoking is hazardous to your health" were first assessed. If the results indicated near total consensus on the overall hazardousness of

smoking (mean = 4.75, standard deviation = 0.73, where 1 = strongly disagree and 5 = strongly agree), the volatility or "mushiness" of these attitudinal responses was then assessed.

Based upon the algorithm provided by Yankelovich, Skelly and White, respondents were classified as either volatile (four-item sum of one to six), moderate (four-item sum of seven to 14), or firm (four-item sum of 15 to 20). Next, individual analysis of variance calculations were performed on each of the five measurement objects (one standard warning label and four new warning labels) using the respondents' mushiness classification (volatile, moderate, or firm) as the independent variable and respondents' perceived believability of each warning label (average response across the 10-item believability scale) as the dependent variable. Table 4 illustrates the results of these analyses, demonstrating a significant mushiness effect for two warning labels ("Smoking causes cancer, heart disease, emphysema, and may complicate pregnancy" and "Quitting smoking now greatly reduces serious risks to your health") but not for the others.

Further, multiple classification analysis revealed that, in each case where respondents' level of mushiness had a significant effect upon their perceived believability of the warning label information, first the firm group, then the moderate group, and then the volatile group perceived the warning label information as most believable. Those who were most firm (or least mushy) in their perception of the hazards of smoking believed the warnings more than the other groups of respondents. In contrast, those who indicated a volatile level of mushiness in their perception of the hazards of smoking believed the warnings least. In partially rejecting the second research hypothesis (for two of the labels only), it seems that a different believability response can be identified among groups. This difference derives in part from the firmness of their initial attitude toward the hazards of smoking.

In testing the third research hypothesis, it was found that a respondent's smoking behavior had no significant effect on the perceived believability of warning label information. Further, in using the distribution of responses as a relative means of classifying those who did smoke—as "light" (less than one pack per week), "medium" (between one and five packs per week), or "heavy" (six or more packs per week), no significant effect was found on the respondents' perceived believability of warning label information.

The remaining demographic items were also examined for any potential impact on respondents' perceived believability of the five warning labels. No significant results were found. The only determinant found to elicit significantly

TABLE 3
Believability of Warning Label Information

Warning Label Information	*Mean*	*Standard Deviation*	*Coefficient Alpha*
Warning: The Surgeon General has Determined that Smoking is Dangerous to Your Health.	4.295	0.596	0.78
Surgeon General's Warning: Smoking Causes Lung Cancer, Heart Disease, Emphysema, and May Complicate Pregnancy.	4.225	0.719	0.91
Surgeon General's Warning: Smoking by Pregnant Women May Result in Fetal Injury, Premature Birth, and Low Birth Weight.	4.169	0.714	0.92
Surgeon General's Warning: Quitting Smoking Now Greatly Reduces Serious Risks to Your Health.	3.803	0.891	0.94
Surgeon General's Warning: Cigarette Smoke Contains Carbon Monoxide.	3.536	1.011	0.94

(Note: The reported mean is the mean over 10 believability scale items, each of which was rated on a five interval rating scale where 1 is unbelievable and 5 is believable.)

Table 4
Effect of Mushiness on Believability

Label	*df*	*MS*	*F*	*p*
Warning: The Surgeon General has Determined that Smoking is Dangerous to Your Health.	2	0.488	1.416	0.244
Surgeon General's Warning: Smoking Causes Lung Cancer, Heart Disease, Emphysema, and May Complicate Pregnancy.	2	1.607	3.593	0.028
Surgeon General's Warning: Smoking by Pregnant Women May Result in Fetal Injury, Premature Birth, and Low Birth Weight.	2	1.480	2.857	0.058
Surgeon General's Warning: Quitting Smoking Now Greatly Reduces Serious Risks to Your Health.	2	5.527	6.948	0.001
Surgeon General's Warning: Cigarette Smoke Contains Carbon Monoxide.	2	0.807	0.812	0.445

(Table summarizes *individual* analysis of variance calculations for *each* message.)

different perceived believability was individual-held mushiness on the perceived hazards of smoking.

Conclusions and Implications

Cigarette warning labels have recently been modified, presenting more specific health risk information in an attempt to generate a believable response in attitudes toward smoking. The assumption is that, over time, these attitudes should influence smoking behavior. In attempting to protect consumers in this manner, the challenge for policy makers has been to identify how to present technical, scientific results so consumers will perceive the information as believable while not restricting inappropriately the marketing of cigarettes.

The results of this exploratory investigation show that young adults generally believed that smoking is hazardous to their health, albeit in varying degrees of "mushiness," or potential changeability. Further, those who held more firmly that smoking is harmful were found to perceive the warning label information tested as significantly more believable (at least following a single "forced" exposure) than those who held less firmly that smoking is harmful. The latter group perceived the warning label information as significantly less believable. This finding suggests that, in this context, the firmness with which young adults' initial attitudes are held serves as an influence on a believable response from the presentation of warning label information.

Clearly a variety of additional influences (e.g., exposure to further information on the risks of smoking) may contribute over time to attitudes about smoking and ultimately to smoking behavior. However it is significant that, while classification variables (including current smoking consumption) did not significantly impact the perceived believability of warning label information, the potential exists to affect differential levels of believability over time by providing warning label information.

These results also show the need for additional research to improve warning label effectiveness. If future warning labels are intended to draw attention to scientific research results, the need exists to test potential modifications in the existing presentation formats (and/or to test additional presentation formats) and their impact on consumers' smoking attitudes. This need is suggested by the finding that specifying the consequences of smoking was found to affect relatively stronger perceived believability than suggesting risk reducing behaviors or noting contents.

. . . a respondent's smoking behavior had no significant effect on the perceived believability of warning information.

It seems that a significant challenge is to develop a warning label program which adequately informs the public on the specifics of research on the hazards of smoking. Nourse and Anderson (1973) noted that too much information will be ignored because not all information is relevant personally to all consumers. The logistics of selectively targeting beyond a rotational series seems inappropriately punitive to marketers. Perhaps suggesting that additional information now is available which shows that cigarette smoking is hazardous, and asking that smokers make an informed decision before smoking provides the essence of a warning, yet shifts the onus of acquiring additional information to the consumer.

Several studies reviewed indicated the potential for additional attention value to the label through the use of pictures, illustrations, and/or graphics (e.g., Funkhouser and Maccoby 1971; Purdy and Luepnitz 1982). Some dangerous products already employ icons (e.g., skull and crossbones) in their warning labels, and graphic representations (e.g., yellow triangular signs) are long-estabished warnings. Additionally, larger type, contrasting color, and standardized position represent familiar advertising design elements capable of enhancing attention. Clearly, the need exists to pretest alternative visual and verbal copy, and presentation format combinations, suggested by the research.

Finally, the need exists to test the results of exposure to warning labels over time to assess the potential wearout of such labels versus their ultimate impact on smoking behavior. If policy makers are to protect consumers effectively with warning label information, much remains to be learned about the process by which consumers acquire such information, come to believe it, and eventually enact behaviors influenced by it.

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