

16 CFR Part 307

**Submission to the Federal Trade Commission:
Comments Concerning Smokeless Tobacco Warning Labels**

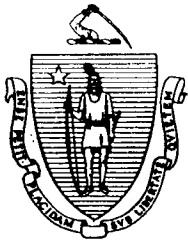
July 20, 2000

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HOWARD K. KOH, MD, MPH
Commissioner

July 19, 2000

Secretary
Federal Trade Commission
Room H-159
600 Pennsylvania Avenue, NW
Washington, D.C. 20580

Dear Secretary,

In 1985, Massachusetts became the first state to require warning labels on smokeless tobacco products. Nine months later, a federal law was passed which preempted the state warnings, and the Federal Trade Commission (FTC) adopted regulations shortly thereafter mandating the size and contrast of print on the national label. At that time we conducted preliminary research on warnings on print ads and found that the warnings required by the proposed and final regulations did not adequately inform consumers of risk.

We are taking this opportunity to comment on proposed amendments to the current FTC warning requirements. We have conducted in depth research on the efficacy of existing and proposed warnings on packs and in advertisements, as well as review of the scientific literature addressing tobacco product warnings. This research is summarized below.

Section 1: Smokeless Package Study

The Massachusetts Department of Public Health has just completed a study on smokeless tobacco package warnings. This study tested U.S. as well as current Canadian package warnings. Present U.S. warnings take up less than 8% of the principle display panel and have a shaded background. Canadian warnings take up 25% of the principle display panel and are in black and white. The study found that 34% of subjects recalled (unaided) the U.S. smokeless tobacco package warnings, while 59% recalled the same message from Canadian warnings. Total recall (unaided and prompted) for the current

U.S. warnings were only 49% versus 74% for the Canadian package warnings. The differences were significant.

**Table I.
Oral Snuff Package Warning Recognition**

| | United States | Canada |
|----------------------------|---------------|--------|
| Unaided Recall of Warning | 34% | 59% |
| Prompted Recall of Warning | 15% | 15% |
| Total Recall | 49% | 74% |
| Aided Recall of Text | 33% | 54% |

**Table II.
Chewing Tobacco Package Warning Recognition**

| | United States | Canada |
|----------------------------|---------------|--------|
| Unaided Recall of Warning | 38% | 70% |
| Prompted Recall of Warning | 18% | 22% |
| Total Recall | 55% | 91% |
| Aided Recall of Text | 39% | 66% |

Section 2: Smokeless Advertising Study

The Department conducted a second study on the efficacy of the current U.S. smokeless tobacco print warnings. The study found that proven aided recall for the present warnings was 63%. Overall, recall of the brand name in the print ad was 84%.

Using brand recognition as a standard, the Department determined that using a black and white warning in 24 point type (approximately twice the size of the current warning) had a proven aided recall of 78% almost equal to the recall of the brand name. A 30 point type using shaded background had similar 78% recall.

**Table III.
Smokeless Tobacco Print Ads Recognition**

| | Warning %Size of Ad | % Positive Recall |
|----------------------------|---------------------|-------------------|
| Brand Name | NA | 84% |
| <u>Current Warning</u> | | |
| 10 point black and white | 2.2% | 63% |
| 12 point shaded background | 3.2% | 62% |
| <u>Proposed Warning</u> | | |
| 24 point black and white | 13% | 78% |
| 30 point shaded background | 20% | 78% |

Section 3: Review of Scientific Literature

A review of the scientific literature addressing tobacco product warnings was conducted which strongly supports the use of health risk messages similar to those implemented in Australia and Canada. These warnings have been well researched and demonstrated to be effective in target populations—namely, adolescents and those who want to stop smoking or have attempted to quit. The warnings occupy 25% of the principal display surfaces of the smokeless tobacco package, and are printed in black and white. This renders the warnings more legible, more noticeable, and less appealing to adolescents, and has resulted in heightened awareness particularly among smokers.

Recommendations

Based on these studies, the Massachusetts Department of Public Health is recommending the following:

- **At a minimum, the Federal Trade Commission should adopt the present Canadian smokeless tobacco warnings on smokeless tobacco packages. This would be equal to what was proposed in the McCain Bill in 1998.**
- **At a minimum, the current requirement for smokeless tobacco warnings on advertisements should be doubled to a 24 point type with a black and white background (approximately 13% of the surface area of the ads) and a 30 point type for the shaded background (approximately 20% of the surface of the ad).**

The labels employed in Canada have been based on thorough research that has shown them to be effective. U.S. warning labels should also be based on efficacy testing.

Appended to this letter are reports of the studies summarized above:

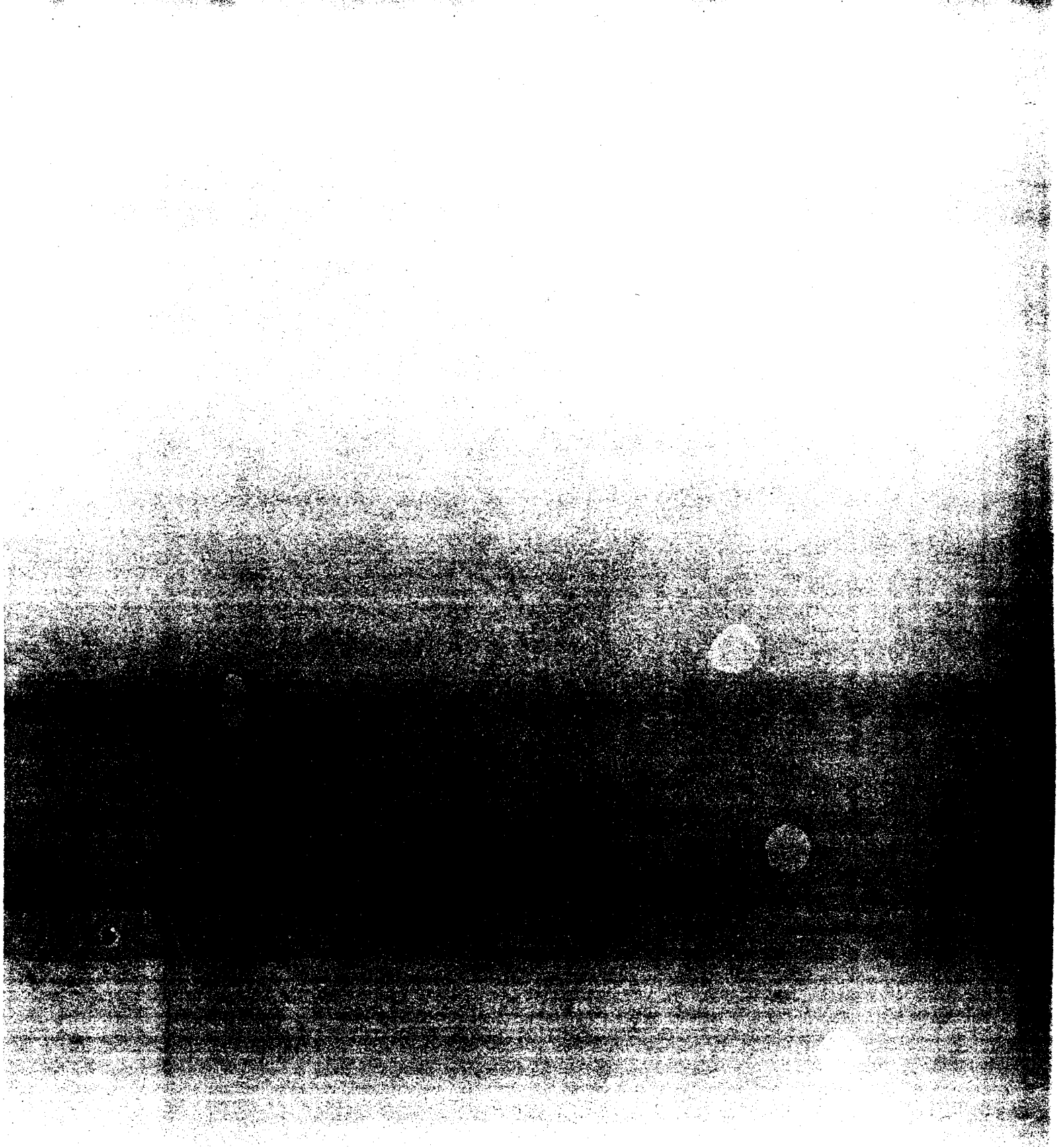
1. *Summary of Research Findings: Smokeless Tobacco Packaging Label Research.* Prepared by Critical Insights and Arnold Communications, July 2000.
2. *Recall of Health Warning Messages in Smokeless Tobacco Print Ads.* Prepared by Abt Associates, Inc., July 2000.
3. *How US Tobacco Product Warning Labels Can Be Improved.* Prepared by Massachusetts Department of Public Health, July 2000.

We hope the enclosed is useful to you in your deliberations.

Sincerely,



Howard Koh, M.D., M.P.H.
Commissioner



Summary of Research Findings

Smokeless Tobacco Packaging Label Research

Prepared by:
Critical Insights
Arnold Communications

Prepared for:
Massachusetts Tobacco Control Program

July 2000

INTRODUCTION

Background

Following the FTC ruling concerning health warning labels for cigar packaging, the Massachusetts Tobacco Control Program (MTCP) is currently exploring potential regulations that would impact the packaging for smokeless tobacco products, including tins of snuff and pouches of chewing tobacco

As part of this process, the MTCP expressed interest in conducting a research study in order to gauge the effect of different warning labels on actual smokeless tobacco product packages.

Working with Arnold Communications of Boston, MA, the marketing research firm of Critical Insights Inc. of Portland, ME was contracted to conduct the study.

This report summarizes the findings from this research effort.

Objectives

The proposed research sought to provide the MTCP with an assessment of the relative impact of two distinct warning label treatments (the currently mandated labeling treatment for products sold in the United States vs. labeling similar to that currently used on smokeless tobacco products in Canada) on smokeless tobacco product packaging.

Method

The method of data collection was a one-on-one personal interview.

Respondents were recruited via random mall intercept at seven shopping mall locations geographically distributed across Massachusetts:

- Arsenal Mall, Watertown
Silver City Galleria, Taunton
Holyoke Mall at Ingleside, Holyoke
Fairfield Mall, Chicopee
Westgate Mall, Brockton
Meadow Glen Mall, Medford
Faneuil Hall Marketplace, Boston

Potential respondents at each location were screened at random and met the following criteria for participation in the research:

- Males
Aged 18 to 24 years
Fluent in English
Massachusetts resident or student attending school in Massachusetts
No participation in past month in mall intercept market research study concerning either tobacco, advertising, or product packaging

A relatively equal number of interviews (between 75 and 100 per location) were conducted with respondents at each of the above locations to achieve an appropriate distribution of respondents across Massachusetts.

Interviews were conducted from June 24 through June 30, 2000.

Procedures

Potential respondents were intercepted at random and screened for eligibility using the aforementioned criteria. Qualified respondents were asked to visit the interviewing facility in each mall to take part in a 10-minute research study. Following a re-screening, respondents participated in an interview session led by a trained employee of the research facility. Critical Insights employed supervisory personnel assigned to monitor each location in order to assure the methodological considerations were appropriately met.

Following a standard introduction, respondents were exposed to various stimuli; in this case, some form of packaging for smokeless tobacco products featuring one of two different warning label treatments (current U.S. label or Canadian label) as well as two "dummy" packages for other non-tobacco products (a tin of mints and a package of bubble gum).

All respondents saw one form of the tobacco warning label, as well as the two dummy product packages. A total of four versions were rotated throughout the research so that a relatively equal number of respondents of each age range and in each location were exposed to each of the label treatments. The versions were as follows:

- Version 1: Skoal package with Canadian warning label
- Version 2: Skoal package with current U.S. warning label integrated into packaging
- Version 3: Red Man package with Canadian warning label
- Version 4: Red Man package with current U.S. warning label integrated into packaging

Respondents were given the three product packages (one tobacco and two “dummy” packages) and instructed to look at and handle them for sixty seconds. Following the sixty second period of exposure, the products were hidden from the respondents and the interview began. Respondents were asked a battery of items approximating the following line of questioning:

- Unaided product and specific brand recall;
- Unaided recall of specific packaging elements;
- Aided recall of presence of product warning label and label design;
- Identification of correct warning label messaging;
- Smokeless tobacco and cigarette usage; and
- Demographics.

The interviewer recorded all respondent answers on a questionnaire. All four versions of this questionnaire are attached to this document as an appendix.

Respondents were paid a cash honorarium of \$10 in exchange for their participation.

Sample

A total of n=410 respondents took part in the research, with a relatively equal number of respondents seeing each of the four product rotations: Version 1 (n=104), Version 2 (n=102), Version 3 (n=102), and Version 4 (n=102).

Analysis

Upon completion, all questionnaires were returned to the offices of Critical Insights Inc. for analysis.

All returned questionnaires were first reviewed by Critical Insights personnel for accuracy and completeness. Subsequently, each questionnaire was keypunched twice for data verification.

The final data set was analyzed using SPSS statistical software.

RESEARCH RESULTS

Skoal

Two different packaging versions of Skoal Long Cut smokeless tobacco were included in the research. The first packaging version (shown below as “Version 1”) featured a tin of smokeless tobacco with a product warning label similar to that used in Canada superimposed onto the product packaging; the second version (“Version 2”) featured the currently mandated U.S. warning label integrated into the product packaging.

Unaided Product and Brand Recall

Following exposure to the product set, respondents were asked to name the type of product and specific brand names of each product.

The table below presents the percentage of respondents for each version who recalled the specific type of product (smokeless tobacco, chewing tobacco, spit tobacco) and the specific brand name (Skoal).

Table 1

| | Version 1 <u>Canadian</u> | Version 2 <u>Current U.S.</u> |
|----------------|------------------------------|----------------------------------|
| Product Recall | 71% | 62% |
| Brand Recall | 65% | 76% |

Interestingly, product recall was directionally higher for the packaging version featuring the Canadian label; conversely, specific brand recall was directionally lower for that version. Neither of these differences, however, was statistically significant at the 95% confidence level.

Unaided Recall of Skoal Packaging Details

All respondents were then reminded that one of the products shown was Skoal smokeless tobacco. Each was asked to cite any and all details they could recall about the Skoal package.

The table below presents the percentage of respondents for each version who cited packaging elements in one of three categories:

- elements of or pertaining to the warning label
- elements pertaining to the Skoal name or brand
- elements pertaining to the packaging itself, such as the color or shape

Table 2

| | Version 1 <u>Canadian</u> | Version 2 <u>Current U.S.</u> |
|------------------------------|------------------------------|----------------------------------|
| Recall of Packaging Elements | | |
| Warning label/message | 59% | |
| 34% | | |
| Name/brand description | 66% | |
| 77% | | |
| Package description | 71% | 69% |

As shown above in shaded text, nearly six in ten respondents (59%) who were exposed to Version 1 played back elements of the warning label, compared to roughly one-in-three (34%) who saw Version 2. This difference is significant at the 95% confidence level.

Aided Recall of Label

Those respondents who did not cite the presence of a warning label or the content of the warning label were asked, on an aided basis, if a warning label was present on the tin of Skoal.

They were also asked to specify, from a prompted list, the stylistic treatment of the warning label, either:

- White type on black background (actual treatment for Version 1);
- Gold type on maroon background (actual treatment for Version 2); or
- White type on maroon background.

The results of these aided exercises are shown in shown in Table 3 below.

Table 3

| | Version 1 <u>Canadian</u> | Version 2 <u>Current U.S.</u> |
|--------------------------------------|------------------------------|----------------------------------|
| Aided Warning Label Recall * | 36% | 21% |
| Aided Recall of Label Design/Style * | 29% | 18% |

* Asked only of those who did not offer warning label playback during unaided recall of packaging elements.

When asked on an aided basis if the Skoal package they saw contained a warning label, close to four-in-ten (36%) of respondents who saw Version 1 recalled a label; conversely, less than one-quarter (21%) of those who saw Version 2 claimed to recall a label. This difference, however, was directional only and not statistically significant at the 95% confidence level.

These same respondents were asked whether the package they saw contained any of three different label styles. As noted above, roughly three-in-ten of these respondents (29%) who saw Version 1 correctly identified the stylistic treatment of white type on black background; conversely, fewer than two-in-ten who saw Version 2 (18%) were able to correctly name the stylistic treatment (gold on maroon).

Total Recall of Warning Label

The table below presents the total level of recall for warning labels on the tested Skoal packaging. This figure is derived from (a) the percentage of total respondents who recalled the warning label on an unaided basis, combined with (b) the percentage who claimed to recall a label when prompted for a response.

Table 4

| | Version 1 <u>Canadian</u> | Version 2 <u>Current U.S.</u> |
|--|------------------------------|----------------------------------|
| (a) Unaided recall of warning label/message | 59% | 34% |
| (a) Prompted recall of warning label/message | 15% | 15% |
| Total Warning Label Recall | 74% | 49% |

As shown above in shaded type, roughly three-quarters of respondents (74%) who saw Version 1 (similar to the label currently used in Canada) recalled the warning label. By comparison, only half of respondents (49%) who saw a Skoal package with the current U.S. label could recall the warning. This difference is statistically significant at the 95% confidence level.

Prompted Recall of Warning Label Message

All respondents were read the text of four different warning label messages. After the messages were read, respondents were asked what (if any) message was present on the package of Skoal they saw.

Table 5 presents the results of this exercise.

Table 5

| | Version 1 <u>Canadian</u> | Version 2 <u>Current U.S.</u> |
|-----------------------------------|------------------------------|----------------------------------|
| Aided Recall of Label Text | 54% | 33% |

As shown above in shaded text, more than half of those respondents who saw Version 1 (54%) identified the correct text of the warning label (*This product may cause gum disease and tooth loss*). Comparatively, only one-third of those who saw Version 2

(33%) were able to correctly identify the specific warning message.

Demographics

Respondents were also asked a series of demographic and tobacco usage questions so that their responses could be categorized appropriately. Tables 6 through xx below present this data according to the version to which the respondents were exposed.

Of particular relevance were the items dealing with experience with either smokeless tobacco and/or cigarettes. Those who had used the product before could be more attuned to the warning label and thus skew the results; importantly, levels of lifetime experience with smokeless tobacco and cigarettes was similar across respondents exposed to each of the two versions.

Table 6

| | <u>Version 1 Canadian</u> | <u>Version 2 Current U.S.</u> |
|--------------------------------|-------------------------------|-----------------------------------|
| Tobacco Usage | | |
| - Ever used smokeless tobacco? | 15% | 18% |
| - Ever smoked? | 42% | 49% |
| - Smoked 100 cigarettes? * | 77% | 69% |

* Asked only of those who have smoked a cigarette.

Table 6

| | <u>Version 1 Canadian</u> | <u>Version 2 Current U.S.</u> |
|----------------------------------|-------------------------------|-----------------------------------|
| Age | | |
| - 18 to 20 | 45% | 53% |
| - 21 to 24 | 55% | 47% |
| Ethnicity | | |
| - White | 76% | 76% |
| - Other | 24% | 24% |
| Current Education Level Attained | | |
| - High school diploma or less | 50% | 58% |
| - Some college/trade/tech | 33% | 30% |
| - College degree or more | 17% | 12% |
| Marital Status | | |
| - Single | 89% | 88% |
| - Other | 11% | 12% |
| Employment Status | | |
| - Working full-time | 54% | 60% |
| - Other | 46% | 40% |

Red Man

Similarly, two different packaging versions of Red Man smokeless tobacco were included in the research. The first packaging version (shown below as “Version 3”) featured a pouch of smokeless tobacco with a Canadian label superimposed onto the product packaging; the second version (“Version 4”) featured the currently mandated U.S. label.

Unaided Product and Brand Recall

Following exposure to the product set, respondents were asked to name the type of product and specific brand names of each product.

Table 7

| | Version 3 <u>Canadian</u> | Version 4 <u>Current U.S.</u> |
|----------------|------------------------------|----------------------------------|
| Product Recall | 76% | 82% |
| Brand Recall | 55% | 59% |

Levels of product and brand recall were very similar across the two packaging versions.

Unaided Recall of Red Man Packaging Details

All respondents were then reminded that one of the products shown was a pouch of Red Man smokeless tobacco. Each respondent was then asked to cite any and all details he could recall about the Red Man package.

Table 8 below presents the percentage of respondents for version 3 or 4 who cited packaging elements in one of three categories:

- elements of or pertaining to the warning label
- elements pertaining to the name or brand of Red Man
- elements pertaining to the packaging itself, such as the color, shape, or design of the pouch
- textual elements, such as promotional offers (e.g. 25 cents off), descriptions of packaging features (e.g. ‘Fresh Trak’ moisture lock), or taglines (e.g. *America’s Best Chew*)

Table 8

| | Version 3 <u>Canadian</u> | Version 4 <u>Current U.S.</u> |
|--|------------------------------|----------------------------------|
|--|------------------------------|----------------------------------|

Recall of Packaging Elements

Name/brand description

60%

| | | | |
|---------------------|-----|-----|-----|
| Package description | 68% | 60% | 63% |
| Text description | 6% | 15% | |

As shown above in shaded text, seven in ten respondents (70%) who were exposed to the label similar to that used in Canada played back elements of the warning label, compared to roughly four-in-ten (34%) who saw the currently mandated U.S. label. This difference is significant at the 95% confidence level.

Aided Recall of Label

Those respondents who did cite the presence of a warning label or the content of the warning label were asked, on an aided basis, if a warning label was present on the Red Man pouch.

These respondents were also asked to select, from a prompted list, the specific stylistic treatment of the warning label, either:

- White type on black background (actual treatment for Version 3);
- White type on green background (actual treatment for Version 4); or
- White type on red background.

Table 9 below presents the results of these aided exercises.

Table 9

| | Version 3 Canadian | Version 4 Current U.S. |
|---|-----------------------|---------------------------|
| Aided Recall of Label Design/Style * | 39% | 11% |

* Asked only of those who did not offer warning label playback during unaided recall of packaging elements.

When asked on an aided basis if the Red Man pouch they saw contained a warning label, roughly two-thirds (67%) of respondents who saw Version 3 recalled a label; conversely, less than three-in-ten (29%) of those who saw Version 4 claimed to recall a label. This difference is statistically significant at the 95% confidence level.

These same respondents were asked whether the package they saw contained any of three different label styles. As noted above, roughly four-in-ten of these respondents (39%) who saw the Canadian version correctly identified the stylistic treatment of white type on black background; conversely, only one-in-ten who saw the U.S. version (11%) were able to correctly name the stylistic treatment (white on green).

Total Recall of Warning Label

Table 10 below presents the total level of recall for warning labels on the tested Red Man pouches. This figure is derived from combining (a) the percentage of total respondents who recalled the warning label on an unaided basis, with (b) the percentage who claimed to recall a label when prompted for a response.

Table 10

| | Version 3 <u>Canadian</u> | Version 4 <u>Current U.S.</u> |
|--|------------------------------|----------------------------------|
| (a) Unaided recall of warning label/message | 70% | 38% |
| (a) Prompted recall of warning label/message | 22% | 18% |

As shown above in shaded type, roughly nine-in-ten respondents (91%) who saw Version 3 of the Red Man packaging recalled the warning label. By comparison, only slightly more than half of respondents (55%) who saw a Red Man package with the current U.S. warning label could recall the label. This difference is statistically significant at the 95% confidence level.

Prompted Recall of Warning Label Message

All respondents were read the text of four different warning label messages. After the messages were read, respondents were asked what (if any) message was present on the pouch of Red Man to which they were exposed.

Table 11 below presents the results of this exercise.

Table 11

| | Version 3 <u>Canadian</u> | Version 4 <u>Current U.S.</u> |
|--|------------------------------|----------------------------------|
| (a) Correctly identified warning label message | 62% | 33% |

As shown above in shaded text, more than six-in-ten of those respondents who saw the Canadian version (62%) correctly identified the proper text used on the warning label (*This product may cause gum disease and tooth loss*). Comparatively, only only four-in-ten of those who saw Version 4 – the current U.S. label -- (33%) were able to correctly identify the text of the warning message.

Demographics

Respondents were also asked a series of demographic and tobacco usage questions so that their responses could be categorized appropriately. The tables below present this data according to the version to which the respondents were exposed.

Of particular salience were those items dealing with experience with either smokeless tobacco and/or cigarettes. It could be argued that those respondents who had used these product before could be more attuned to the warning labels and thus skew the results; importantly, levels of lifetime experience with smokeless tobacco and cigarettes was similar across respondents exposed to each of the two versions.

Table 12

| | <u>Version 3 Canadian</u> | <u>Version 4 Current U.S.</u> |
|--------------------------------|-------------------------------|-----------------------------------|
| Tobacco Usage | | |
| - Ever used smokeless tobacco? | 15% | 18% |
| - Ever smoked a cigarette? | 54% | 54% |
| - Smoked 100 cigarettes? * | 82% | 75% |

* Asked only of those who have smoked a cigarette.

Table 13

| | <u>Version 3 Canadian</u> | <u>Version 4 Current U.S.</u> |
|---|-------------------------------|-----------------------------------|
| Age | | |
| - 18 to 20 | 53% | 56% |
| - 21 to 24 | 47% | 44% |
| Ethnicity | | |
| - White | 70% | 66% |
| - Other | 30% | 34% |
| Current Education Level Attained | | |
| - High school diploma or less | 58% | 57% |
| - Some college/trade/tech | 30% | 28% |
| - College degree or more | 12% | 15% |
| Marital Status | | |
| - Single | 92% | 95% |
| - Other | 8% | 5% |
| Employment Status | | |
| - Working full-time | 61% | 59% |
| - Other | 39% | 41% |

SUMMARY CONCLUSIONS

This research effort sought to provide the MTCP with an assessment of the relative impact and effectiveness of two distinct warning label treatments for smokeless tobacco product packaging, as measured by various levels of recall of the warning label and its messaging. The two tested labels were a label similar to that currently used in Canada and a labeling option presently used on smokeless tobacco products in the United States.

As tested on the Skoal tin and Red Man pouch, it can be concluded from this research that the labeling treatment that would garner the greatest level of recall is the tested label which currently in use in Canada. Across both testing situations (tin and pouch packaging), this style of label resulted in:

- Significantly greater unaided recall
- Significantly greater total recall (unaided as well as aided recall)
- Significantly greater recall of the actual messaging of the warning label

The significantly greater recall level for the label itself, coupled with the greater awareness of the message contained in the label, suggests that the tested Canadian label would be the more effective labeling option for dispensing product warning information on smokeless tobacco products.

Appendix: Sample Questionnaires

MITGP 2000 INTERVIEW – VERSION A

First, I would like to ask you some questions about the products.

1. What were the type of products and brand names for each of the three packages?

[DO NOT READ RESPONSE CATEGORIES. CHECK YES IF MENTIONED, NO IF NOT.]

| | <u>No</u> | <u>Yes</u> |
|--|-----------|------------|
| a. Smokeless tobacco (chewing or spit tobacco) | 0 | 1 |
| b. Skoal | 0 | 1 |
| c. Mints/candy | 0 | 1 |
| d. Los Vosgienne, Cinnamon | 0 | 1 |
| e. Chewing gum | 0 | 1 |
| f. Big League Chew | 0 | 1 |

1. One of the products was Skoal smokeless tobacco. Tell me what you remember about that package.

[DO NOT READ RESPONSE CATEGORIES. CHECK YES IF MENTIONED, NO IF NOT.]

| | <u>No</u> | <u>Yes</u> |
|---|-----------|------------|
| a. Warning message [IF WARNING TEXT MENTIONED, SKIP TO QUESTION 4] | 0 | 1 |
| b. Name/description (Skoal, Skoal Long Cut Straight) | 0 | 1 |
| c. Package/description (color, shape, details, etc.) | 0 | 1 |
| d. OTHER (SPECIFY): _____ | 0 | 1 |
| e. DON'T KNOW | 0 | 1 |

3. Did the Skoal package have a warning message of any kind?

| | |
|------------|---|
| No | 0 |
| Yes | 1 |
| DON'T KNOW | 8 |

3a. Was there a warning message with:

[READ RESPONSES 1-3]

White type on black background with white border,

1

Gold type on maroon background, or

2

White type on maroon background

3

OTHER (SPECIFY): _____

4

DON'T KNOW

8

4. I'm going to read you some messages that might be in a warning for smokeless tobacco. Were any of the following messages on the package?

READ RESPONSES [5] CHECK ONLY ONE.

- Warning: this product may cause mouth cancer, 1
- Warning: this product may cause gum disease and tooth loss, 2
- Warning: this product is not a safe alternative to cigarettes, 3
- Warning: this product may cause nicotine addiction, or 4
- Was there no warning message? 5
- DON'T KNOW 8

Now I would like to ask you some questions about the other products.

4. Now I'd like you to think about the chewing gum product. Did it have a warning message of any kind?

- No 0
- Yes 1
- DON'T KNOW 8

4. Now think about the other product, the cinnamon mints. Did it have a warning message of any kind?

- No 0
- Yes 1
- DON'T KNOW 8

These next questions are about your tobacco use.

4. Have you ever used smokeless tobacco (including snuff and chewing tobacco)?

- No [SKIP TO QUESTION 8] 0
- Yes 1
- REFUSED TO ANSWER 7
- DON'T KNOW 8

7a. Have you used smokeless tobacco in the past month?

- No 0

Yes
REFUSED TO ANSWER
DON'T KNOW

1
7
8

8. Have you ever experimented with cigarette smoking, even a few puffs?

| | |
|-------------------------|---|
| No [SKIP TO QUESTION 9] | 0 |
| Yes | 1 |
| REFUSED TO ANSWER | 7 |
| DON'T KNOW | 8 |

**8a. Have you smoked at least 100 cigarettes in your life?
(That would be 5 packs.)**

| | |
|-------------------------|---|
| No [SKIP TO QUESTION 9] | 0 |
| Yes | 1 |
| REFUSED TO ANSWER | 7 |
| DON'T KNOW | 8 |

8b. Think about the last 30 days. On how many of those days did you smoke?



[IF ZERO OR NO DAYS, SKIP TO QUESTION 9]

Days

8c. What brand do you usually smoke?

| | | | | | |
|-----------------|----|------------|----|----------------|----|
| Aspire | 01 | Malibu | 11 | Salem | 21 |
| Benson & Hedges | 02 | Marlboro | 12 | Vantage | 22 |
| Bucks | 03 | Merit | 13 | Viceroy | 23 |
| Best Buy | 04 | Montclair | 14 | Virginia Slims | 24 |
| Cambridge | 05 | More | 15 | Winston | 25 |
| Camel | 06 | Newport | 16 | Other | 96 |
| Carlton | 07 | Pall Mall | 17 | SPECIFY: _____ | |
| Generic | 08 | Parliament | 18 | REFUSED | 97 |
| Kent | 09 | Pyramid | 19 | DON'T KNOW | 98 |
| Kool | 10 | Richland | 20 | | |

Finally, I would like to ask you a few questions about yourself.

9. How old are you now? Years

10. What is the highest grade or year of school that you have completed?
[DO NOT READ RESPONSE CATEGORIES. CHECK ONLY ONE.]

| | |
|--|----|
| No formal education | 00 |
| 1 st grade | 01 |
| 2 nd grade | 02 |
| 3 rd grade | 03 |
| 4 th grade | 04 |
| 5 th grade | 05 |
| 6 th grade | 06 |
| 7 th grade | 07 |
| 8 th grade | 08 |
| 9 th grade | 09 |
| 10 th grade | 10 |
| 11 th grade | 11 |
| High School Diploma or GED | 12 |
| Vocational or Trade School | 13 |
| Some College or 2 year Associates Degree | 14 |
| 4 Year College Degree or higher | 15 |
| Other | 96 |
| REFUSED TO ANSWER | 97 |
| DON'T KNOW | 98 |

11. Are you currently enrolled in:

[READ RESPONSES 1-6]

| | |
|--------------------------------------|----|
| High School, | 1 |
| Vocational or Trade School, | 2 |
| 2 Year College, | 3 |
| 4 Year College, | 4 |
| Masters or other graduate school, or | 5 |
| Are you not a student? | 6 |
| REFUSED TO ANSWER | -7 |

12. What is your marital status: [READ RESPONSES 1-5. CHECK ONLY ONE]

| | |
|-----------------------------|---|
| Single- never been married, | 1 |
| Married, | 2 |
| Widowed, | 3 |
| Legally separated, or | 4 |
| Divorced? | 5 |

REFUSED TO ANSWER 7

13. What is your current employment status:
[READ RESPONSES 1-7. CHECK ONLY ONE]

| | |
|--|----|
| Working Full-time (35 or more hours per week), | 01 |
| Working Part-time, | 02 |
| Student or in training only, | 03 |
| Armed services, | 04 |
| Disabled for work, | 05 |
| Employed but out due to illness/leave/furlough, or | 06 |
| Unemployed? | 07 |
| OTHER (SPECIFY): _____ | 96 |
| REFUSED TO ANSWER | 97 |
| DON'T KNOW | 98 |

14. Are you of Hispanic or Latino origin or background?

| | |
|-------------------|---|
| No..... | 0 |
| Yes | 1 |
| REFUSED TO ANSWER | 7 |
| DON'T KNOW | 8 |

15. How would you describe your racial background, that is, which group describes you best: [READ RESPONSES 1-6. CHECK ONLY ONE]

| | |
|---|----|
| Black or African American [including Caribbean Islander, Haitian, Cape Verdean], | 01 |
| White or Caucasian, | 02 |
| Arab, North African, or Middle Eastern, | 03 |
| American Indian or Alaskan Native, | 04 |
| Pakistani or Indian, or | 05 |
| Asian? | 06 |
| OTHER (SPECIFY/MULTIPLE): _____ | 96 |
| REFUSED TO ANSWER | 97 |
| DON'T KNOW | 98 |

Instructions

[READ ALOUD]

Thank you for participating in this study. The purpose of this research is to improve health warning messages for tobacco products. Please go to the front desk for your \$10.

MTCP 2000 INTERVIEW - VERSION B

First, I would like to ask you some questions about the products.

1. What were the type of products and brand names for each of the three packages?

[DO NOT READ RESPONSE CATEGORIES. CHECK YES IF MENTIONED, NO IF NOT.]

| | <u>No</u> | <u>Yes</u> |
|--|-----------|------------|
| a. Smokeless tobacco (chewing or spit tobacco) | 0 | 1 |
| b. Skoal | 0 | 1 |
| c. Mints/candy | 0 | 1 |
| d. Los Vosgienne, Cinnamon | 0 | 1 |
| e. Chewing gum | 0 | 1 |
| f. Big League Chew | 0 | 1 |

1. One of the products was Skoal smokeless tobacco. Tell me what you remember about that package.

[DO NOT READ RESPONSE CATEGORIES. CHECK YES IF MENTIONED, NO IF NOT.]

| | <u>No</u> | <u>Yes</u> |
|---|-----------|------------|
| a. Warning message [IF WARNING TEXT MENTIONED, SKIP TO QUESTION 4] | 0 | 1 |
| b. Name/description (Skoal, Skoal Long Cut Straight) | 0 | 1 |
| c. Package/description (color, shape, details, etc.) | 0 | 1 |
| d. OTHER (SPECIFY) _____ | 0 | 1 |
| e. DON'T KNOW | 0 | 1 |

3. Did the Skoal package have a warning message of any kind?

| | |
|------------|---|
| No | 0 |
| Yes | 1 |
| DON'T KNOW | 8 |

3a. Was there a warning message with:

[READ RESPONSES 1-3]

White type on black background with white border,

1

Gold type on maroon background, or

2

White type on maroon background

3

OTHER (SPECIFY) _____

4

DON'T KNOW

8

4. I'm going to read you some messages that might be in a warning for smokeless tobacco. Were any of the following messages on the package?
 [READ RESPONSES [5] CHECK ONLY ONE]

| | | |
|--|---|---|
| Warning: this product may cause mouth cancer, | 1 | |
| Warning: this product may cause gum disease and tooth loss, | 2 | |
| Warning: this product is not a safe alternative to cigarettes, | 3 | |
| Warning: this product may cause nicotine addiction, or | 4 | |
| Was there no warning message? | 5 | |
| DON'T KNOW | | 8 |

Now I would like to ask you some questions about the other products.

4. Now I'd like you to think about the chewing gum product.
 Did it have a warning message of any kind?

| | |
|------------|---|
| No | 0 |
| Yes | 1 |
| DON'T KNOW | 8 |

4. Now think about the other product, the cinnamon mints.
 Did it have a warning message of any kind?

| | |
|------------|---|
| No | 0 |
| Yes | 1 |
| DON'T KNOW | 8 |

These next questions are about your tobacco use.

4. Have you ever used smokeless tobacco (including snuff and chewing tobacco)?

| | |
|-------------------------|---|
| No [SKIP TO QUESTION 8] | 0 |
| Yes | 1 |
| REFUSED TO ANSWER | 7 |
| DON'T KNOW | 8 |

7a. Have you used smokeless tobacco in the past month?

| | |
|----|---|
| No | 0 |
|----|---|

Yes
REFUSED TO ANSWER
DONT KNOW

1
7
8

8. Have you ever experimented with cigarette smoking, even a few puffs?

No. [SKIP TO QUESTION 9] 0
 Yes 1
 REFUSED TO ANSWER 7
 DON'T KNOW 8

**8a. Have you smoked at least 100 cigarettes in your life?
 (That would be 5 packs.)**

No. [SKIP TO QUESTION 9] 0
 Yes 1
 REFUSED TO ANSWER 7
 DON'T KNOW 8

8b. Think about the last 30 days. On how many of those days did you smoke?

[IF ZERO OR NO DAYS, SKIP TO QUESTION 9] Days

8c. What brand do you usually smoke?

| | | | | | |
|-----------------|----|------------|----|----------------|----|
| Aspire | 01 | Malibu | 11 | Salem | 21 |
| Benson & Hedges | 02 | Marlboro | 12 | Vantage | 22 |
| Bucks | 03 | Merit | 13 | Viceroy | 23 |
| Best Buy | 04 | Montclair | 14 | Virginia Slims | 24 |
| Cambridge | 05 | More | 15 | Winston | 25 |
| Camel | 06 | Newport | 16 | Other | 96 |
| Carlton | 07 | Pall Mall | 17 | SPECIFY: | |
| Generic | 08 | Parliament | 18 | REFUSED | 97 |
| Kent | 09 | Pyramid | 19 | DON'T KNOW | 98 |
| Kool | 10 | Richland | 20 | | |

Finally, I would like to ask you a few questions about yourself.

9. How old are you now?

Years

10. What is the highest grade or year of school that you have completed?

[DO NOT READ RESPONSE CATEGORIES. CHECK ONLY ONE.]

| | |
|--|----|
| No formal education | 00 |
| 1 st grade | 01 |
| 2 nd grade | 02 |
| 3 rd grade | 03 |
| 4 th grade | 04 |
| 5 th grade | 05 |
| 6 th grade | 06 |
| 7 th grade | 07 |
| 8 th grade | 08 |
| 9 th grade | 09 |
| 10 th grade | 10 |
| 11 th grade | 11 |
| High School Diploma or GED | 12 |
| Vocational or Trade School | 13 |
| Some College or 2 year Associates Degree | 14 |
| 4 Year College Degree or higher | 15 |
| Other | 96 |
| REFUSED TO ANSWER | 97 |
| DON'T KNOW | 98 |

11. Are you currently enrolled in:

[READ RESPONSES 1-6]

| | |
|--------------------------------------|---|
| High School | 1 |
| Vocational or Trade School | 2 |
| 2 Year College | 3 |
| 4 Year College | 4 |
| Masters or other graduate school, or | 5 |
| Are you not a student? | 6 |
| REFUSED TO ANSWER | 7 |

12. What is your marital status? [READ RESPONSES 1-5. CHECK ONLY ONE]

| | |
|----------------------------|---|
| Single- never been married | 1 |
| Married | 2 |
| Widowed | 3 |
| Legally separated, or | 4 |
| Divorced? | 5 |

REFUSED TO ANSWER

7

13. What is your current employment status?

[READ RESPONSES (7. CHECK ONLY ONE)]

| | |
|--|----|
| Working Full-time (35 or more hours per week), | 01 |
| Working Part-time, | 02 |
| Student or in training only | 03 |
| Armed services | 04 |
| Disabled for work, | 05 |
| Employed but out due to illness/leave/furlough, or | 06 |
| Unemployed? | 07 |
| OTHER (SPECIFY) | 96 |
| REFUSED TO ANSWER | 97 |
| DON'T KNOW | 98 |

14. Are you of Hispanic or Latino origin or background?

| | |
|-------------------|---|
| No. | 0 |
| Yes | 1 |
| REFUSED TO ANSWER | 7 |
| DON'T KNOW | 8 |

15. How would you describe your racial background, that is, which group describes you best: [READ RESPONSES (6. CHECK ONLY ONE)]

| | |
|---|----|
| Black or African American [including Caribbean Islander, Haitian, Cape Verdean], | 01 |
| White or Caucasian, | 02 |
| Arab, North African, or Middle-Eastern, | 03 |
| American Indian or Alaskan Native, | 04 |
| Pakistani or Indian, or | 05 |
| Asian? | 06 |
| OTHER (SPECIFY MULTIPLE) | 96 |
| REFUSED TO ANSWER | 97 |
| DON'T KNOW | 98 |

Instructions

[READ ALOUD]

Thank you for participating in this study. The purpose of this research is to improve health warning messages for tobacco products. Please go to the front desk for your \$10.

MTGP 2000 INTERVIEW - VERSION C

First, I would like to ask you some questions about the products.

1. What were the type of products and brand names for each of the three packages?

[DO NOT READ RESPONSE CATEGORIES. CHECK YES IF MENTIONED, NO IF NOT.]

| | <u>No</u> | <u>Yes</u> |
|--|-----------|------------|
| a. Smokeless tobacco (chewing or spit tobacco) | 0 | 1 |
| b. Red Man | 0 | 1 |
| c. Mints/candy | 0 | 1 |
| d. Los Vosgienne, Cinnamon | 0 | 1 |
| e. Chewing gum | 0 | 1 |
| f. Big League Chew | 0 | 1 |

1. One of the products was Red Man smokeless tobacco. Tell me what you remember about that package.

[DO NOT READ RESPONSE CATEGORIES. CHECK YES IF MENTIONED, NO IF NOT.]

| | <u>No</u> | <u>Yes</u> |
|--|-----------|------------|
| a. Warning message [IF WARNING TEXT MENTIONED, SKIP TO QUESTION 4] | 0 | 1 |
| b. Name/description (Red Man, America's Best Chew) | 0 | 1 |
| c. Package/description (color, shape, stylistic detail, etc.) | 0 | 1 |
| d. Text/description (25 cents off, Proof of Purchase, Moisture Lock, etc.) | 0 | 1 |
| e. OTHER (SPECIFY): _____ | 0 | 1 |
| f. DON'T KNOW | 0 | 1 |

3. Did the Red Man package have a warning message of any kind?

| | |
|------------|---|
| No | 0 |
| Yes | 1 |
| DON'T KNOW | 8 |

3a. Was there a warning message with:

[READ RESPONSES 1-3]

| | |
|---|---|
| White type on black background with white border, | 1 |
| White type on green background, or | 2 |
| White type on red background | 3 |
| OTHER (SPECIFY): _____ | 4 |

DON'T KNOW

8

4. I'm going to read you some messages that might be in a warning for smokeless tobacco. Were any of the following messages on the package?

[READ RESPONSES 1-5. CHECK ONLY ONE.]

| | | |
|--|---|---|
| Warning: this product may cause mouth cancer, | 1 | |
| Warning: this product may cause gum disease and tooth loss, | 2 | |
| Warning: this product is not a safe alternative to cigarettes, | 3 | |
| Warning: this product may cause nicotine addiction, or | 4 | |
| Was there no warning message? | 5 | |
| DON'T KNOW | | 8 |

Now I would like to ask you some questions about the other products.

4. Now I'd like you to think about the chewing gum product. Did it have a warning message of any kind?

| | |
|------------|---|
| No | 0 |
| Yes | 1 |
| DON'T KNOW | 8 |

4. Now think about the other product, the cinnamon mints. Did it have a warning message of any kind?

| | |
|------------|---|
| No | 0 |
| Yes | 1 |
| DON'T KNOW | 8 |

These next questions are about your tobacco use.

4. Have you ever used smokeless tobacco (including snuff and chewing tobacco)?

| | |
|-------------------------|---|
| No [SKIP TO QUESTION 8] | 0 |
| Yes | 1 |
| REFUSED TO ANSWER | 7 |
| DON'T KNOW | 8 |

7a. Have you used smokeless tobacco in the past month?

| | |
|----|---|
| No | 0 |
|----|---|

Yes
REFUSED TO ANSWER
DON'T KNOW

1
7
8

8. Have you ever experimented with cigarette smoking, even a few puffs?

| | |
|-------------------------|---|
| No [SKIP TO QUESTION 9] | 0 |
| Yes | 1 |
| REFUSED TO ANSWER | 7 |
| DON'T KNOW | 8 |

**8a. Have you smoked at least 100 cigarettes in your life?
(That would be 5 packs.)**

| | |
|-------------------------|---|
| No [SKIP TO QUESTION 9] | 0 |
| Yes | 1 |
| REFUSED TO ANSWER | 7 |
| DON'T KNOW | 8 |

8b. Think about the last 30 days. On how many of those days did you smoke?



[IF ZERO OR NO DAYS, SKIP TO QUESTION 9]

Days

8c. What brand do you usually smoke?

| | | | | | |
|-----------------|----|------------|----|----------------|----|
| Aspire | 01 | Malibu | 11 | Salem | 21 |
| Benson & Hedges | 02 | Marlboro | 12 | Vantage | 22 |
| Bucks | 03 | Merit | 13 | Viceroy | 23 |
| Best Buy | 04 | Montclair | 14 | Virginia Slims | 24 |
| Cambridge | 05 | More | 15 | Winston | 25 |
| Camel | 06 | Newport | 16 | Other | 96 |
| Carlton | 07 | Pall Mall | 17 | SPECIFY: _____ | |
| Generic | 08 | Parliament | 18 | REFUSED | 97 |
| Kent | 09 | Pyramid | 19 | DON'T KNOW | 98 |
| Kool | 10 | Richland | 20 | | |

Finally, I would like to ask you a few questions about yourself.

9. How old are you now? Years

10. What is the highest grade or year of school that you have completed?
[DO NOT READ RESPONSE CATEGORIES. CHECK ONLY ONE.]

| | |
|--|----|
| No formal education | 00 |
| 1 st grade | 01 |
| 2 nd grade | 02 |
| 3 rd grade | 03 |
| 4 th grade | 04 |
| 5 th grade | 05 |
| 6 th grade | 06 |
| 7 th grade | 07 |
| 8 th grade | 08 |
| 9 th grade | 09 |
| 10 th grade | 10 |
| 11 th grade | 11 |
| High School Diploma or GED | 12 |
| Vocational or Trade School | 13 |
| Some College or 2 year Associates Degree | 14 |
| 4 Year College Degree or higher | 15 |
| Other | 96 |
| REFUSED TO ANSWER | 97 |
| DON'T KNOW | 98 |

11. Are you currently enrolled in:

[READ RESPONSES 1-6]

| | |
|--------------------------------------|----|
| High School, | 1 |
| Vocational or Trade School, | 2 |
| 2 Year College, | 3 |
| 4 Year College, | 4 |
| Masters or other graduate school, or | 5 |
| Are you not a student? | 6 |
| REFUSED TO ANSWER | -7 |

12. What is your marital status: [READ RESPONSES 1-5. CHECK ONLY ONE]

| | |
|-----------------------------|---|
| Single- never been married, | 1 |
| Married, | 2 |
| Widowed, | 3 |
| Legally separated, or | 4 |
| Divorced? | 5 |

REFUSED TO ANSWER

7

13. What is your current employment status:

[READ RESPONSES 1-7. CHECK ONLY ONE]

| | |
|--|----|
| Working Full-time (35 or more hours per week), | 01 |
| Working Part-time, | 02 |
| Student or in training only, | 03 |
| Armed services, | 04 |
| Disabled for work, | 05 |
| Employed but out due to illness/leave/furlough, or | 06 |
| Unemployed? | 07 |
| OTHER (SPECIFY): _____ | 96 |
| REFUSED TO ANSWER | 97 |
| DON'T KNOW | 98 |

14. Are you of Hispanic or Latino origin or background?

| | |
|-------------------|---|
| No..... | 0 |
| Yes | 1 |
| REFUSED TO ANSWER | 7 |
| DON'T KNOW | 8 |

15. How would you describe your racial background, that is, which group describes you best: [READ RESPONSES 1-6. CHECK ONLY ONE]

| | |
|---|----|
| Black or African American [including Caribbean Islander, Haitian, Cape Verdean], | 01 |
| White or Caucasian | 02 |
| Arab, North African, or Middle Eastern | 03 |
| American Indian or Alaskan Native | 04 |
| Pakistani or Indian, or | 05 |
| Asian? | 06 |
| OTHER (SPECIFY MULTIPLE) _____ | 96 |
| REFUSED TO ANSWER | 97 |
| DON'T KNOW | 98 |

Instructions

[READ ALOUD]

Thank you for participating in this study. The purpose of this research is to improve health warning messages for tobacco products. Please go to the front desk for your \$10.

MTGP 2000 INTERVIEW - VERSION D

First, I would like to ask you some questions about the products.

1. What were the type of products and brand names for each of the three packages?

[DO NOT READ RESPONSE CATEGORIES. CHECK YES IF MENTIONED, NO IF NOT.]

| | <u>No</u> | <u>Yes</u> |
|--|-----------|------------|
| a. Smokeless tobacco (chewing or spit tobacco) | 0 | 1 |
| b. Red Man | 0 | 1 |
| c. Mints/candy | 0 | 1 |
| d. Los Vosgienne, Cinnamon | 0 | 1 |
| e. Chewing gum | 0 | 1 |
| f. Big League Chew | 0 | 1 |

1. One of the products was Red Man smokeless tobacco. Tell me what you remember about that package.

[DO NOT READ RESPONSE CATEGORIES. CHECK YES IF MENTIONED, NO IF NOT.]

| | <u>No</u> | <u>Yes</u> |
|--|-----------|------------|
| a. Warning message [IF WARNING TEXT MENTIONED, SKIP TO QUESTION 4] | 0 | 1 |
| b. Name/description (Red Man, America's Best Chew) | 0 | 1 |
| c. Package/description (color, shape, stylistic detail, etc.) | 0 | 1 |
| d. Text/description (25 cents off, Proof of Purchase, Moisture Lock, etc.) | 0 | 1 |
| e. OTHER (SPECIFY) _____ | 0 | 1 |
| f. DON'T KNOW | 0 | 1 |

3. Did the Red Man package have a warning message of any kind?

| | |
|------------|---|
| No | 0 |
| Yes | 1 |
| DON'T KNOW | 8 |

3a. Was there a warning message with:

[READ RESPONSES 1-3]

| | |
|---|---|
| White type on black background with white border. | 1 |
| White type on green background | 2 |
| White type on red background | 3 |
| OTHER (SPECIFY): _____ | 4 |

DON'T KNOW

8

4. I'm going to read you some messages that might be on a warning for smokeless tobacco. Were any of the following messages on the package?

READ RESPONSES (i.e. CHECK ONE) (0-8)

| | |
|--|---|
| Warning: this product may cause mouth cancer. | 1 |
| Warning: this product may cause gum disease and tooth loss. | 2 |
| Warning: this product is not a safe alternative to cigarettes. | 3 |
| Warning: this product may cause nicotine addiction or | 4 |
| Was there no warning message | 5 |
| DON'T KNOW | 8 |

Now I would like to ask you some questions about the other products.

4. Now I'd like you to think about the chewing gum product. Did it have a warning message of any kind?

| | |
|------------|---|
| No | 0 |
| Yes | 1 |
| DON'T KNOW | 8 |

4. Now think about the other product, the cinnamon mints. Did it have a warning message of any kind?

| | |
|------------|---|
| No | 0 |
| Yes | 1 |
| DON'T KNOW | 8 |

These next questions are about your tobacco use.

4. Have you ever used smokeless tobacco (including snuff and chewing tobacco)?

| | |
|-------------------------|---|
| No (SKIP TO QUESTION 7) | 0 |
| Yes | 1 |
| REFUSED TO ANSWER | 7 |
| DON'T KNOW | 8 |

7a. Have you used smokeless tobacco in the past month?

| | |
|----|---|
| No | 0 |
|----|---|

Yes
REFUSED TO ANSWER
DIDN'T KNOW

1
7
8

8. Have you ever experimented with cigarette smoking, even a few puffs?

No (SKIP TO QUESTION 9) 0
 Yes 11
 REFUSED TO ANSWER 7
 DON'T KNOW 8

8a. Have you smoked at least one cigarette in your life?
 (That would be a pack)

No (SKIP TO QUESTION 9) 0
 Yes 11
 REFUSED TO ANSWER 7
 DON'T KNOW 8

8b. Think about the first 10 days you have smoked. On how many of those days did you smoke?

(IF ZERO OR NO DAYS, SKIP TO QUESTION 9) Days

8c. What brand do you usually smoke?

| | | | | | |
|-----------------|----|------------|----|----------------|----|
| Aspire | 01 | Marlboro | 11 | Salem | 21 |
| Benson & Hedges | 02 | Newmans | 12 | Vantage | 22 |
| Bucks | 03 | Onyx | 13 | Viceroy | 23 |
| Best Buy | 04 | Oldemark | 14 | Virginia Slims | 24 |
| Cambridge | 05 | Oldes | 15 | Winston | 25 |
| Camel | 06 | Oldemore | 16 | Other | 96 |
| Carlton | 07 | Oldgold | 17 | SPECIFY | |
| Chateau | 08 | Oldlambert | 18 | REFUSED | 97 |
| Kent | 09 | Oldman | 19 | DON'T KNOW | 98 |
| Kool | 10 | Oldmiami | 20 | | |

Finally, I would like to ask you a few questions about yourself.

Q: How old are you now? _____ Years

10. What is the highest grade in school that you have completed?

(DO NOT READ RESPONSES TO THIS QUESTION UNTIL YOU CHECK ONLY ONE.)

| | |
|---|----|
| No formal education | 00 |
| 1 st grade | 01 |
| 2 nd grade | 02 |
| 3 rd grade | 03 |
| 4 th grade | 04 |
| 5 th grade | 05 |
| 6 th grade | 06 |
| 7 th grade | 07 |
| 8 th grade | 08 |
| 9 th grade | 09 |
| 10 th grade | 10 |
| 11 th grade | 11 |
| High School Diploma or GED | 12 |
| Vocational or Trade School | 13 |
| Some College or 2 year Associate Degree | 14 |
| 4 Year College Degree or higher | 15 |
| Other | 96 |
| REFUSED TO ANSWER | 97 |
| DO NOT KNOW | 98 |

11. Are you currently enrolled in

READ RESPONSES TO

| | |
|----------------------------------|----|
| High School | 01 |
| Vocational or Trade School | 02 |
| 2 Year College | 03 |
| 4 Year College | 04 |
| Masters or other graduate school | 05 |
| Are you not a student? | 06 |
| REFUSED TO ANSWER | 07 |

12. What is your marital status? (CHECK ONLY ONE.)

| | |
|-----------------------------|----|
| Single - never been married | 11 |
| Married | 2 |
| Widowed | 3 |
| Legally separated or | 4 |
| Divorced? | 5 |

REFUSED TO ANSWER

97

13. **What is your current employment status?**
[READ RESPONSES TO QUESTIONS 13-14]

| | |
|--|----|
| Working fulltime (35 or more hours per week) | 01 |
| Working parttime | 02 |
| Student or in training only | 03 |
| Armed services | 04 |
| Disabled for work | 05 |
| Employed but out of work because of illness/injury, or | 06 |
| Unemployed? | 07 |
| OTHER (SPECIFY) | 96 |
| REFUSED TO ANSWER | 97 |
| DON'T KNOW | 98 |

14. **Are you of Hispanic or Latino origin or background?**

| | |
|-------------------|---|
| No | 0 |
| Yes | 1 |
| REFUSED TO ANSWER | 7 |
| DON'T KNOW | 8 |

15. **How would you describe your racial background, that is, which group describes you best?** [READ RESPONSES TO QUESTIONS 15-16]

| | |
|--|----|
| Black or African American [including Caribbean, Islander, or other non-Caribbean] | 01 |
| White or Caucasian | 02 |
| Arab, North African, or Middle Eastern | 03 |
| American Indian or Alaskan Native | 04 |
| Pakistani or Indian, or | 05 |
| Asian? | 06 |
| OTHER (SPECIFY) | 96 |
| REFUSED TO ANSWER | 97 |
| DON'T KNOW | 98 |

Instructions

[READ ALOUD]

Thank you for participating in this survey. The purpose of this research is to improve health warning messages to make them more effective. Please go to the front desk for your \$10.

FOIL POUCH-FLAVOR FRESH TOBACCO

AMERICA'S BEST CHEW®



**RED
MAN**

CHEWING TOBACCO

L2101X

**WARNING: THIS PRODUCT MAY CAUSE
GUM DISEASE AND TOOTH LOSS**

AMERICA'S BEST CHEW®



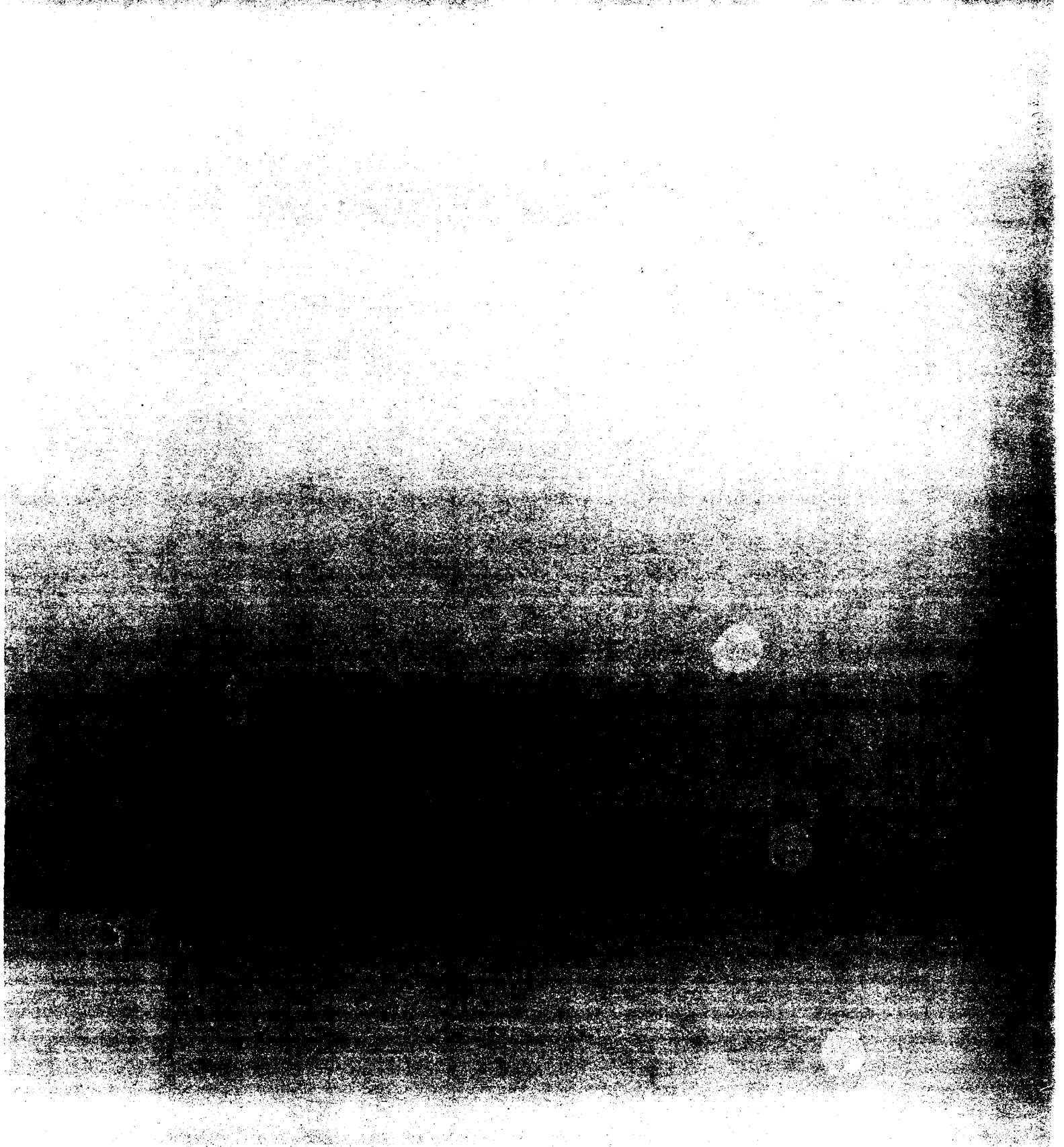
**RED
MAN**

CHEWING TOBACCO

LARGE SIZE

WARNING: THIS PRODUCT MAY
CAUSE GUM DISEASE AND TOOTH LOSS

NET WT. 3 OZ.





Abt Associates Inc.

July 18, 2000

Gregory N. Connolly, DMD, MPH
Director
Massachusetts Tobacco Control Program
Massachusetts Department of Public Health
250 Washington Street, Fourth Floor
Boston, MA 02108

Dear Dr. Connolly

I am pleased to enclose Abt Associates' report entitled "Recall of Health Warning Messages in Smokeless Tobacco Print Ads."

The purpose of this study was to determine how the size and text/background contrast of the health warning messages currently required on print advertisements for smokeless tobacco affect readers' recollection of the health warning message. This responds to the Federal Trade Commission's request for comments on the effectiveness of regulations implementing the Comprehensive Smokeless Tobacco Health Education Act of 1986 (16 CFR Part 307, Section 307.7).

To examine this issue, 895 Massachusetts males aged 16-24 were shown a smokeless tobacco advertisement. Each subject saw an ad that included one of nine size/contrast variations of the warning message, including one variation that had no warning at all. Subjects were also shown two distracter ads for unrelated products. After a 60-second viewing period, interviewers asked questions designed to determine whether the subject recalled the presence of the warning and its message, as well as questions about the subject's background characteristics.

At the minimum size/contrast combinations required by current regulations, 63 percent of subjects remembered the presence of the warning and correctly identified its message. Analysis shows that the positive recall rate increases as the warning becomes larger in size and is probably greater with high contrast than low contrast designs. Thus there would be a positive consumer benefit to a regulatory change increasing the size of the required warning. For example, increasing the warning size by a factor of about 2.5 (from 10 point font to 24 point for high contrast, and from 12 point font to 30 point for low contrast) yields a predicted correct recall rate of 78 percent. This is still less than the percent of study subjects who correctly recalled the name of the smokeless tobacco brand in the test ad (84 percent). It would, however, represent a

Gregory N. Connolly, DMD, MPH

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substantial improvement in the total number of consumers reached by the health warning and would approach the level of effectiveness of the advertisement itself.

We hope this material is useful to you and to the Federal Trade Commission in its deliberations.

Sincerely,

A handwritten signature in cursive script, appearing to read "W. L. Hamilton".

William L. Hamilton, PhD

Principal Investigator

**RECALL OF HEALTH WARNING MESSAGES
IN SMOKELESS TOBACCO PRINT ADS**

William Hamilton, Linda Truitt, Patrick Johnston,
Cassie Bacani, Stephen Crawford, and Lynne Hozik

Abt Associates Inc.

July 2000

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RECALL OF HEALTH WARNING MESSAGES IN SMOKELESS TOBACCO PRINT ADS

Introduction

Effective February 1987, the Comprehensive Smokeless Tobacco Health Education Act of 1986 (15 U.S.C. §§ 4401-4408), hereinafter referred to as the Smokeless Tobacco Act, banned all radio and television ads for smokeless tobacco products. It also directed the U.S. Federal Trade Commission (FTC) to regulate the format and display of statutory health warnings on packaging and advertising (U.S. FTC 1999b). The FTC now determines the size, color, typeface, placement, and rotation of these warnings (15 Fed. Reg. 40,005 [1986]), and seeks public comment on the adequacy of smokeless tobacco regulations as part of their periodic review of rules and guides (FTC 16 CFR Part 307). Abt Associates Inc. was asked by the Massachusetts Tobacco Control Program¹ to provide data bearing on the effectiveness of the warning requirements as measured by message recall of a health warning in a smokeless tobacco magazine print ad.

Smokeless Tobacco Use

Smokeless tobacco includes various ground or cut tobacco products, such as moist oral snuff, dry oral and nasal snuff, or chewing tobacco. On average, considerably more nicotine is absorbed from smokeless tobacco (3.6 mg for snuff, 4.6 mg for chewing tobacco) than from cigarettes (1.8 mg) (U.S. DHHS 1998). One adverse effect of smokeless tobacco use is nicotine addiction, or a loss of control over drug-taking behavior, whereby tobacco is used to reinforce psychoactive effects or to relieve withdrawal symptoms. The health consequences of smokeless tobacco use include oral cancer, precancerous oral lesions, gum recession, elevated blood pressure, and increased risk for cardiovascular disease (U.S. DHHS 1998).

According to the 1998 National Household Survey on Drug Abuse² (SAMHSA 1999b), over 37,000 Americans (about 17% of the U.S. population) have used smokeless tobacco in their lifetimes. The proportion of Americans reporting smokeless tobacco use in the past year has remained stable since

¹ MTCP is a Statewide government program created in 1992 to address health risks associated with tobacco use by funding programs, conducting research, supporting media campaigns, and monitoring tobacco industry activities.

1991 (between 4% and 5%),³ but sales revenues and expenditures on advertising and promotions reached all time highs in 1997 (U.S. FTC 1999b). For males, smokeless tobacco use is most prevalent among American Indians, Alaska Natives, and Whites; for females, it is most prevalent among American Indians, Alaska Natives, and African-Americans (CDC 1993). High at risk are young males—non-Hispanic White males, aged 18 to 25 years—who rank first in smokeless tobacco use (16%) during the past year (SAMHSA 1999a).

Smokeless tobacco use begins as early as elementary school. Bruerd's (1990) review of smokeless tobacco use among schoolchildren in Western States found rates of experimentation and regular use ranged from 29% and 18% (respectively) among students through grade six, to 82% and 56% among ninth and tenth grade students. Based on National household data from the 1989 Teenage Attitudes and Practices Study and its 1993 followup (Tomar and Giovino 1998), cumulative incidence of experimentation and regular use of smokeless tobacco was significantly higher for White male adolescents (26.4% and 10.4% respectively) than for other racial/ethnic groups (e.g., 15.8% and 4% of Hispanic males) or for females (6.7% and 0.3%). Predictors of experimental use among White males were nonmetropolitan residence, use by peers, and current cigarette use. Regular use was predicted by these and additional variables, including age (esp. 15 to 17 years), participation in organized sports, and use by family members; regular use is least likely in the Northeast region of the U.S.

In Massachusetts, smokeless tobacco use among high school students was 4.9% in 1999, about half the national rate of 10.4% measured in the Youth Risk Behavior Survey (Kann *et al.*, 2000). This figure has declined significantly in Massachusetts since 1993, when the prevalence among high school youth was 9.4% (Goodenow, 1999). Smokeless tobacco use is concentrated among males in Massachusetts as in the nation (8.1% of high school males in Massachusetts in 1999, compared to 1.4% of females). Prevalence is higher among White than Black or Hispanic youth (5.2%, 3.4%, and 2.8% respectively). However, the highest smokeless use rates for Massachusetts high schoolers were found among Asian and Other/Mixed races, although these groups were small in the YRBS sample (Goodenow, 1999; see also Weicha, 1996).

Health Warning Literature

As set forth in the Smokeless Tobacco Act, manufacturers, packagers, and importers of smokeless tobacco must display one of three rotating health warning labels on packages and advertising regarding cancer, gum disease, or cigarette substitution (U.S. FTC 1986). Per FTC regulations, the word

² NHSDA is an annual prevalence study of drug, alcohol, and tobacco use in the U.S. household population aged 12 and older.

“WARNING” must appear in a wide arrow that points to the warning message displayed in capital letters inside a circle. Advertisers can choose to print the warning in colors that are clearly visible against the ad background (e.g., black print inside a white symbol against a colored background), or use larger and bolder type for the text and symbol regardless of background color. Warning text size is related to ad size and symbol color (U.S. FTC 1986). The minimum required size of the warning for a display area of 65 to 110 square inches (i.e., a typical full-page magazine ad) is specified as 10 point font in a Univers 57 typeface, with the diameter of the circle in the warning symbol set at 1.25 inches (16 CFR §307.7). This size requirement applies with high contrast. The minimum with lower contrast⁴ is a font size of 12 points, Univers 67 typeface, and a circle diameter of 1.625 inches. The required diameter of the circle increases proportionally with font size.

One purpose of warnings is to inform the public about health risks associated with product use, so warnings should be conspicuous and prominent. Nonetheless, their impact is limited by the viewer’s exposure, attention, attitude, and individual differences (e.g., tobacco use). Cognitive psychology suggests that attention and the like are guided by schema or subjective knowledge structures developed to manage information processing (Petty and Cacioppo, 1981). Minimal time is spent on information that is already known, thus selective adding, reinterpreting, and ignoring of information regularly occurs. Time-saving devices include processing simpler physical aspects before moving on to substantive details; thus messages that are structurally novel will provoke more thoughtful processing than messages that are merely semantically different (Langer and Abelson, 1972). In the case of health warnings, “knowledge of message structure yields inference of message content” (Bhalla and Lastovicka, 1984, 305).

Most of the research available on tobacco products is related to cigarette advertising, which has included health warnings established by the Surgeon General since 1972. In 1981, the FTC determined that the effectiveness of the health warning had diminished; it was: overexposed and worn out; no longer novel; abstract and difficult to remember; and unlikely to be perceived as personally relevant (Fischer, Krugman, Fletcher, et al. 1993). This led to the Comprehensive Smoking Education Act of 1984, that mandated rotation of four health warnings, and to the Smokeless Tobacco Act. According to a review of health warning literature (Kaiser 1993), changing content, location, size, or color will initially attract attention. At issue is whether current information disclosures have any impact, which has implications for risk prevention among adolescents and youth adults who are targeted by tobacco marketing (Fischer, Richards, Berman, and Krugman 1989).

³ To contrast, about 152,000 or about 70% of the population have ever smoked cigarettes, and cigarette use in the past year has declined somewhat (i.e., 40% in 1991 to 31% in 1998).

⁴ Low contrast is generally a shaded background inside the symbol with either black or white lettering. If the ad background is white, black text on a white background is subject to the low contrast rather than high contrast requirement.

Kaiser (1993) noted that the interaction of multiple warning specification changes may have more impact on message recall than any single change. Bhalla and Lastovicka (1984) randomly assigned seven psychology undergraduates to each of 12 groups that viewed news stories and print ads, including cigarette ads that varied in health warning symbol (current, mild change, and severe change), textual/pictorial ad design, and message (general and specific health risks). They assessed non-specific unaided recall (what do you recall?), specific aided recall (describe what the warning statement said), recognition (select the correct statement from two choices), and belief (likelihood of presence/absence of warning message statements). Bhalla and Lastovicka (1984) concluded that warning content changes were ineffective without format change, especially if the format change is substantial and the ad is less textual.⁵

Fischer, et al. (1993) developed new warnings through marketing approaches, including: targeting adolescent audiences; employing a graphic design team; and conducting focus groups on decisionmaking regarding cigarette use, health risk beliefs, and reactions to the warnings. A sample of n=220 high school students in Georgia⁶ viewed slides of two distracter ads and a cigarette ad in a series of nine increasing exposure times. The students were randomly assigned to four groups, wherein each group viewed one of the three new warnings or the currently mandated warning. Although students needed fewer exposures to recognize the mandatory health warning as a health advisory, generally, masked recall⁷ demonstrated that far fewer students (15%) actually comprehended the health warning concept. In comparison, 60% to 70% of the students shown new warnings showed concept comprehension. Further, 19% of the students recognized the mandatory warning among distracter items, whereas correct recognition of the new warnings ranged from 70% to 88%. Fischer, et al. (1993) concluded that mandated warnings fail to communicate health risk as well as novel, targeted, new warnings.

Another consideration is warning context, especially in print ads where warning messages are usually placed in a corner away from ad text or pictures that draw attention (Kaiser 1993). Fischer, et al. (1989) examined eye tracking among adolescents to assess reading and recall of warning messages. With parental consent, n=61 paid volunteers aged 13 to 17 years who were recruited from the YMCA viewed four cigarette and one smokeless tobacco magazine ads. Subjects⁸ wore lightweight optical equipment that recorded viewing field information, including frequency and duration of rapid eye motions versus

⁵ Recognition among the groups shown pictorial ads with a specific warning statement was 28.6% for the current symbol, 42.9% for a symbol mildly changed, and 57.1% for a symbol severely changed (i.e., the circle and arrow symbol used for smokeless tobacco warnings).

⁶ 69.4% were White, and 56.0% had never smoked.

visual fixations that indicate attention and reading. Masked recall was tested in order of individual viewing patterns,⁹ and subjects were asked to identify the correct warnings from a list of 10 (i.e., five distracter warnings plus five actual warnings).

Fischer, et al. (1989) found that 43.6% did not view the warning, 19.8% looked at but did not read the warning, and 36.7% read at least part of the warning; subjects spent roughly 8% of ad viewing time on the warning. Differences in viewing times between the five ads were not statistically significant, but masked recall showed high product recall for Marlboro cigarettes and Red Man smokeless tobacco, high heading recall for Marlboro, and “extremely low recall” (Fischer, et al. 1989, 87) for the warning in the Red Man ad. Masked recall of the warning was significantly associated with warning viewing time. Smoking status was also associated with masked recall, whereby regular smokers scored highest on brand and heading recall, but differences in warning recall were not statistically significant. Finally, aided recognition scores were associated with viewing time, negatively associated with age, and smoking status (nonsmokers and regular smokers had better recognition than experimenters). As message recall and recognition reflect information processing and retention, Fischer, et al. (1989) suggest that warning effectiveness be measured within the context of the ad’s colors, images, and text with which it competes for attention. Experimentation with smoking may induce cognitive dissonance and therefore lower warning recognition.

Finally, while physical changes in health warnings may influence message recall, impact may depend upon demographic or predisposing factors such as tobacco use that would cause us to issue caveats to the results. For example, Marin (1994) studied self-reported awareness of warning messages on several products among Hispanics, the majority (77%) of whom reported being born outside the U.S. “[A]wareness of the presence of warning messages on cigarettes (which are printed in English as well as Spanish) was affected by the acculturation level¹⁰ of the respondents...” (Marin, 1994, 278-279). Subjects who reported smoking cigarettes consistently also reported awareness of warning messages on cigarette packages in greater proportions than nonsmokers. Generalizability to a larger population may be limited by individual, cultural, or environmental factors (e.g., exposure to health warnings) that would sensitize subjects. Second, Marin (1994) found that unacculturated Hispanics were more likely to agree that they recalled a health warning on products where one did not appear. This may be attributable to a relationship between low acculturation and social desirability.

⁷ Masked recall entails exposing the ad, then covering part of the ad and testing recall of what is in the masked area.

⁸ Students completed a self-administered survey on demographics, cigarette use, and one recognition item that asked the subject to identify the warning that is closest to the ad’s warning among three distracter items also about cigarettes and health.

⁸ Eye tracking and masked recall results are available for n=45 subjects.

⁹ The brand, the principal ad heading, and the warning were revealed in the same sequence they were viewed.

Few studies are available on health warnings and smokeless tobacco. Brubaker and Mitby (1990) investigated the impact of smokeless tobacco product warning labels on adolescents. A sample of $n=192$ public high school students in a rural community viewed illustrations of five products marketed to adolescents. Included were illustrations of oral snuff and chewing tobacco that varied by warning label; three versions used the mandated warning messages, and the fourth carried no warning. For each illustration, subjects were asked whether they would ever use the product, whether most peers would use it, and whether they had previously seen the product. After handing in the illustrations, subjects were asked whether any products carried warning labels, and if so, to recall the message. Brubaker and Mitby (1990) found that 43.4% correctly remembered whether they saw warning labels¹¹; of these, 11.9% recalled the message meaning but not its words, and 20.3% correctly recalled the message. That is, less than half of the sample noticed the warnings, and fewer accurately recalled the warning messages. Analyses demonstrated no statistically significant relationships between either intentions to use or message recall. Males had better recall of message content, yet they were more likely to indicate they would use the smokeless tobacco products. Although males and females did not differ in having previously seen these products, 64.1% of the 86 males in the sample had previously tried smokeless tobacco.

MacKinnon and Fenaughty (1993) tested whether cigarette and smokeless tobacco health warnings available in the public domain were remembered more or less with substance use, which may be a proxy for repeated warning label exposure. The sample comprised $n=288$ undergraduates from Arizona State University.¹² Of these, 78% had smoked, and 48% had used smokeless tobacco, in their lifetime; 40% had smoked at least one cigarette, and 15% had used smokeless tobacco, in the last month. Self-administered recognition tests asked them to select all correct messages among: four correct and four distracter cigarette package warning labels, and three correct and three distracter smokeless tobacco warning labels. Lifetime cigarette users scored higher on cigarette warning label recognition ($r[288]=.30$, $p<.001$), and lifetime smokeless tobacco users scored higher on smokeless tobacco warning label recognition ($r[288]=.23$, $p<.001$); however, use of one tobacco product did not improve memory of the other product's warning label.

Popper and Murray (1989) tested communication theory, which suggests that type size and background contrast are relevant in message communication. They randomly assigned 270 undergraduates to four treatment groups created by varying message size (the FTC regulated 10 point font versus a 14 point font size) and high versus low contrast (black type on white background, versus white

¹⁰ Acculturation was measured by language preference and use at home, work, and with friends.

¹¹ The incidence of false recall, or memory of a warning message when there was none, is not reported.

¹² The sample was: 62% male, 85% White, 5% Hispanic, 4% Asian/Pacific Islander, and 3% Native American.

type on gray background). A fifth control group had no warning message. All groups viewed one print ad for smokeless tobacco and two distracter print ads, and then completed a self-administered interview. The interview gauged the impact of warning size and contrast on recall and recognition outcomes, including “proven recall” or the ability to recall the health warning and to substantiate recall by identifying the correct message or symbol among several distracter responses. Popper and Murray (1989) found that recall and recognition increased with enhanced size or contrast, but the differences in impact failed tests of statistical significance. For instance, 51.4% of the students shown 10 point font ads could prove aided recall,¹³ whereas 54.8% of the students shown 14 point ads could do so. It is important to note that 5.0% of the control group shown no warning also supplied answers that suggested proven recall. This phenomenon of false positives may indicate a baseline of “dubious” responses also present in the treatment groups.

Hypotheses

The goal of this research is to provide data bearing on the effectiveness of the warning requirements as measured by message recall of a health warning in a smokeless tobacco magazine print ad. The study will attempt to extend Popper and Murray’s (1989) research concerning proven aided recall to a functional form model, to a wider population of young males who vary in education, employment, and school enrollment status, and using interviewers rather than self-administration. Specifically, the hypotheses are framed as three research questions.

1. Does the size of the health warning affect viewers’ recall of the message? If so, do increases in size over the currently mandated 10 point font, within reason given the ad design, generate significant increases in recall?
2. Does the degree of contrast (low versus high) between the health warning and print ad background have a significant effect on message recall?
3. Is message recall produced by the mandated 10 point font size significantly different from false recall produced by an ad with no health warning?

Three assumptions influenced the design and analysis strategy. The first is that the print ad with no health warning represents a control group that assesses the phenomenon of false recall. False recall may be caused by any number of motivations typically present in an interview situation (e.g., lying or social desirability); more likely it is a measure of message expectations present in the subject that is caused by previous exposure to tobacco product advertising. We assume that the false recall phenomenon is randomly distributed across all groups; therefore, one can correct for this by deducting a measure of

¹³ Aided recall refers to message recall with a prompting question that asks whether a warning was present. Unaided

false message recall from observed message recall produced by the health warnings placed in the treatment group print ads (Marin 1994).

The second assumption is that there exists some minimum font size threshold for a true perception of a visual health warning. It is probably safe to assume that this minimum threshold is some font size greater than zero and less than the 8 point font. For this reason, the smallest font tested was 8 point and the function that models the relationship between message recall and health warning size does not have a zero intercept, but instead, begins at some point greater than zero.

The third assumption is that the size and visual character of the required warning will be taken into account by the designer of an advertisement. That is, ad designers faced with a required warning that will occupy 20% of the page will craft different ads from the ads that they would use with a warning occupying 2% of the page. The ad designer's objective will be to maximize recall of the product, not the warning. For this reason, the smokeless tobacco ad chosen for testing was one with a relatively large uncluttered space that could be consistent with a fairly wide range of warning sizes. Advertising professionals were consulted to determine the largest size of warning that would be consistent with the chosen ad, and that was the largest size tested (18 point font). By estimating the model across a wide but realistic range of warning sizes, we can project rates of warning recall at larger warning sizes than those actually tested, i.e., at sizes that would have been inconsistent with the ad design used in the test.

Research Design

Participants

During May 2000, a convenience sample of $n=895$ males were intercepted at seven malls geographically dispersed throughout Massachusetts. Identification was required to show that they either resided or attended school in Massachusetts, and that they were between 16 and 24 years old. The median age was 19 years. Of the 27.8% who were under 18 years old, 96.3% were in high school or trade school. Among those aged 18 years or older, 38.7% were enrolled in college, and 55.8% were employed full-time. Over two-thirds (69.6%) of the sample were non-Hispanic Whites, 13.9% were African-American, 11.0% were Hispanics, and the rest were Middle Eastern (2.8%), Asian (1.7%), or of another background (1.1%).¹⁴ Nearly the entire sample (93.5%) had never married.

Current tobacco use rates in the sample were 36.4% for cigarettes and 3.8% for smokeless tobacco. Nearly a third (31.6%) reported having noticed a magazine advertisement for smokeless tobacco within the past 30 days.

recall occurs when the subject claims there was a warning message was present without prompting.

Print Ads

Three professionally prepared color prints of actual magazine ads were printed on 8.5 by 11 inch paper. The two distracter prints included one automobile ad with minimal text (no health warnings) against a dark background, and one protein drink ad with detailed text concerning product use (a health warning) against a light background. The smokeless tobacco ad, an actual advertisement for the Skoal brand, contained minimal text against the image of a man at the beach at sunset (see appendix A). Given the youthful target population, we selected the mandated warning text with specific short-term consequences: "WARNING: THIS PRODUCT MAY CAUSE GUM DISEASE AND TOOTH LOSS."

Subjects were randomly assigned to 9 groups. Group 1 was shown a smokeless tobacco ad with no warning message (to gauge false recall). The remaining groups were shown print ads that varied in both contrast and font size. The contrast was either a warning in black type within a white circle and arrow symbol (high contrast), or a warning in white type within a pink circle and arrow symbol (low contrast). Each contrast set was used with four groups, each with the warning symbol sized to fit a particular font size for the warning message: 8 point, 10 point, 14 point, or 18 point. These warning sizes and contrasts allow replication of Popper and Murray's (1989) tests, which used in 10 point and 14 point fonts plus a no-warning group. Adding the 8 point and 18 point fonts allowed estimation of a fuller statistical function. The 18 point font was judged to be the maximum that would be compatible with the particular ad that was used in the tests. A larger size would have interfered with other design elements, drawing extra attention to the warning and exaggerating the true effect of the warning size.

Interview

To reduce problems associated with differences in literacy, surveys were administered by interviewers. All interviews were conducted in English. First, the subject was asked to recall the products and brands names shown in the three ads to gauge attention. Next, he was asked a series of questions about the smokeless tobacco ad that were designed to examine recall and recognition outcomes: unaided recall, aided recall, symbol recognition, and message recognition. Beginning with an open-ended question, "Tell me what you remember in that ad," the interviewer recorded whether the subject recalled the health warning by its symbol and/or message. This represents unaided recall because it is without prompting. The second question was designed to solicit aided recall: "Did the Skoal ad have a warning message of any kind?"

The third and fourth questions assessed recognition of the symbol and the message. The subject was asked whether the warning message appeared in the shape of the regulation circle and arrow, a

¹⁴ This sample had few American Indians and Alaska Natives (0.6%) compared to CDC (1993) and other samples.

rectangle, or an octagon (Stop sign). Then, he had to select the correct warning message regarding gum disease among three distracter messages (the other two mandated rotating warnings, plus a warning about nicotine addiction). Both recognition questions permitted the subject to answer that there was no warning message in the print ad. This would be the correct response for subjects shown ads with no warning message, or it would indicate a false negative for subjects shown ads with a warning message. The message recognition question could then be used to verify unaided or aided recall of the health warning. For example, proven aided recall occurs when the subject recalls a warning message with prompting and correctly identifies the warning message among distracter messages.

The interview ended with questions about previous exposure to smokeless tobacco advertising, tobacco use, and demographic characteristics. Specifically, subjects indicated whether they had noticed smokeless tobacco advertising in magazines, store windows and displays, or on billboards—ever and in the past 30 days. Smokeless tobacco and cigarette use was measured in terms of lifetime (including experimental) use, number of days used in the past 30 days, and whether subjects had smoked at least 100 cigarettes (5 packs) in their lifetime. Given the focus on undergraduate samples, extant literature provides few suggestions for measuring demographic variables. We followed Federal OMB standards for measuring Hispanic/Latino and racial background, education, marital, and employment status, which allows crosswalks to National surveys (e.g., NHSDA).

Procedure

Mall intercept service providers recruited males within the target age range of 16 to 24 years old by offering a \$10 incentive. Age and Massachusetts residency (or school location) were verified by personal identification, but no identifying information (e.g., name) was recorded on interview materials. Recruiters screened for fluency in English. They avoided volunteers who might already be familiar with the study by word-of-mouth, and screened out repeat participants by excluding males who self-identified as participating in a mall study about magazine ads or tobacco. Each mall location was given a box of interview packets presorted in repeating series of treatment groups 1 through 9, and interviewers drew interview packets from the top of the stack for each new subject. The final sample comprised $n=895$ males in nine treatment groups—each group had $n=98$ to $n=100$ subjects.¹⁵

The interview packet contained the interview form, three print ads and debriefing materials. Reading from the interview face sheet, the interviewer explained the procedure, and informed the subject that participation was voluntary and that the information would remain confidential and anonymous. Once the subject provided verbal consent, the interviewer gave him the three print ads to examine for 60

seconds. The interviewer recorded all responses using closed-ended codes (e.g., 1 = yes if recalled) or wrote in specified other responses (e.g., multiple racial backgrounds). At the end of the interview, which lasted between five and ten minutes, the interviewer explained the purpose of the study. To counter any potential effect of this exposure to smokeless tobacco advertising, a pamphlet and printed materials about smokeless tobacco and its effects were given to the subject. Quality assurance was performed by on-site editors who verified information with interviewers, and later by central data processing staff who provided feedback.

Statistical Methods

The 2-Variable Model

The minimal model of interest was an overdispersed logistic model with a dummy variable for contrast (black-on-white = 1, white-on-pink = 0) and a variable for the logarithm (base 2) of font, $\log_{2}(\text{font})$, fit to the $i = 1 \dots 8$ combinations of contrast and (nonzero) font. For this model, the mean and variance functions for the probability of recall for the i th group were:

$$E(p_i) = \exp(\text{contrast}_i + \log_{2}(\text{font}_i)) / (1 + \exp(\text{contrast}_i + \log_{2}(\text{font}_i)))$$

$$V(p_i) = \phi E(p_i)(1 - E(p_i)) / n_i$$

Here, $E(p_i)$ is the probability of recalling for the i th group, and n_i is the number of individuals in the i th group. The dispersion parameter allowed for the possibility that $n_i p_i$ has more, or less, variation than a binomial distribution: if $\phi > 1$ the distribution of $n_i p_i$ is overdispersed relative to a binomial, while if $\phi < 1$ then $n_i p_i$ is underdispersed relative to a binomial. Based on a grouping by contrast, font size, and education (see below), the Pearson chi-square estimate of the dispersion parameter was 1.19.

The logit link function and logarithmic transformation for font were chosen primarily for reasons of interpretability. If β is the parameter associated with $\log_{2}(\text{font})$, then doubling font size (i.e. increasing $\log_{2}(\text{font})$ by one unit) increases the odds of recall by $\exp(\beta)$. In addition, there was a small degree of statistical evidence favoring these choices. Firstly, deviances for logistic models with $\log_{2}(\text{font})$ and font were 1034.38 and 1036.35 respectively. Secondly, deviances for models containing contrast and $\log_{2}(\text{font})$ with logit, probit and complementary log-log link functions were 1034.38, 1034.52, and 1034.98 respectively (Agresti 1990).

¹⁵ The goal was a sample of $n=900$ evenly divided among treatment groups, but five completed interviews were rejected as inappropriate or incomplete.

Overdispersion

In order to estimate the dispersion parameter in the variance function above, it was necessary to group the binary observations by levels of the predictors in such a way that the data were not too sparse (Collett 1991; Morgan 1992). This was achieved by grouping according to contrast (2 levels), font size (4 levels), and education (9 levels), giving 72 binomial outcomes with an average cell size of eleven. When the 72 observed proportions were fit to the 3-variable logistic model with mean and variance functions

$$E(p_i) = \exp(\text{contrast}_i + \text{font}_i + \text{educ}_i) / (1 + \exp(\text{contrast}_i + \text{font}_i + \text{educ}_i))$$

$$V(p_i) = \phi E(p_i)(1 - E(p_i)) / n_i$$

the Pearson chi-square estimate of the dispersion parameter was 1.06, which we took to be 1. In other words, for this model, the distribution of $n_i p_i$ has about the same dispersion as a binomial distribution.

For other models, we adopted the following procedure. For more general models we set ϕ to 1 on the grounds that additional important predictors should decrease dispersion (so $\phi = 1$ would be conservative) and additional unimportant predictors should have little effect on dispersion. For less general models we estimated ϕ from the particular model under consideration based on the above 72 observed proportions. In particular, for the 2-variable minimal model containing only contrast and logfont, the dispersion parameter was estimated to be 1.19.

The 5-Variable Model

Because individuals were randomized to the primary variables of interest, contrast and font, a model containing only these two variables does form a valid basis for frequentist inference. However, for various reasons, we considered including additional covariates. Firstly, group imbalances may occur by chance. Secondly, if a covariate accounts for a sufficiently large proportion of the variation in the outcome data, the effect of this covariate is likely to be of interest, and its inclusion may increase the precision of the variables of primary interest. Thirdly, the effect of font or contrast may be different at different levels of the covariate; in other words, there may be covariate-by-font or covariate-by-contrast interactions.

We used a combination of stepwise methods and all-subset-model methods to identify additional factors from a list of 31 candidates comprising 10 covariates, 10 covariate-by-font interactions, 10 covariate-by-contrast interactions, and a contrast-by-font interaction term. Consistent with the study objectives, the stepwise method always included *contrast* and *logfont*, and additional factors were permitted to enter if $p < 0.05$ and obliged to exit if $p > 0.05$. The procedure unfolded as follows:

- Given *contrast* and *logfont*, all 10 main effects were added to the candidate list, and *education*, *work*, and *hispanic* were selected. (*Work* was defined as being either employed or a student.) This provided a tentative 5-variable model.
- Given the tentative 5-variable model, all 21 interaction terms were added to the candidate list, and only the *hispanic-by-logfont* term was selected. When the *hispanic-by-logfont* term was excluded from the candidate list (see below), no factors were selected.
- To avoid dropping individuals with missing data on unimportant covariates, the stepwise procedure was repeated with only the shortlist of three promising candidate covariates. In this way, the number of missing observations was reduced from 24 to 5 (4 for *education* and 1 for *hispanic*). The same 5-variable model was selected. That is, given *contrast* and *logfont*, and a candidate list of *education*, *work*, and *hispanic*, all three candidates were selected.

In summary, the final 5-variable model expressed in terms of the odds of recall (i.e. $p/(1-p)$ where p is the probability of recall) for an individual with covariate values *contrast_i*, *logfont_i*, *education_i*, *work_i*, and *hispanic_i*, was:

$$\log\{E(p_i)/(1 - E(p_i))\} = \textit{contrast}_i + \textit{font}_i + \textit{education}_i + \textit{work}_i + \textit{hispanic}_i$$

The *hispanic-by-logfont* term was excluded after examining additional information provided by the zero font (no warning) group. The recall proportions for the 9 Hispanics and 90 non-Hispanics were 0.0 and 0.11, respectively. When a model containing *logfont*, *education*, *work*, *hispanic*, and *hispanic-by-logfont* was fit to *all* the data – including the 99 individuals randomized to the zero font size – the *hispanic-by-logfont* term was no longer significant ($p = 0.168$). Note that in order to obtain a value for *logfont* when the font size was 0, we temporarily set the font size to 1. This adjustment seemed reasonable since neither font size would be readable.

Results

Models were estimated for the four measures of recall defined earlier: unaided recall, proven unaided recall, aided recall, and proven aided recall. The discussion below focuses principally on the results for proven aided recall, which we consider most realistic measure of the viewer's likelihood of being reached by the health warning in a magazine advertisement. Because the warning is not the principal element or purpose of the ad, a subject asked for a general description of the ad may not mention the warning; unaided recall thus seems an unduly stringent test of the warning's effect. At the same time, the aided recall question ("Did the Skoal ad have a warning message of any kind?") is susceptible to

guessing. Proven aided recall requires both a positive aided recall of the warning and a correct identification of the warning message. The sample size and the proportion of each treatment group who recalled the health warning according to the four outcome measures is shown in Table 1.

Table 1. Recall of Health Warning by Contrast and Font Size

| Measure/ Contrast | No Warning | | 8 point | | 10 point | | 14 point | | 18 point | |
|------------------------------|----------------|----------------------------------|----------------|----------------------------------|----------------|----------------------------------|----------------|----------------------------------|----------------|----------------------------------|
| | Sample size | Positive Recall Proportion | Sample size | Positive Recall Proportion | Sample size | Positive Recall Proportion | Sample size | Positive Recall Proportion | Sample size | Positive Recall Proportion |
| Unaided Recall | | | | | | | | | | |
| No Warning | 99 | 0.09 | - | - | - | - | - | - | - | - |
| Low Contrast | - | - | 100 | 0.37 | 100 | 0.54 | 100 | 0.55 | 98 | 0.64 |
| High Contrast | - | - | 99 | 0.49 | 99 | 0.46 | 100 | 0.68 | 100 | 0.66 |
| Aided Recall | | | | | | | | | | |
| No Warning | 99 | 0.24 | - | - | - | - | - | - | - | - |
| Low Contrast k | - | - | 100 | 0.65 | 100 | 0.82 | 100 | 0.88 | 98 | 0.86 |
| High Contrast | - | - | 99 | 0.81 | 99 | 0.88 | 100 | 0.94 | 100 | 0.93 |
| Proven Unaided Recall | | | | | | | | | | |
| No Warning | 99 | 0.04 | - | - | - | - | - | - | - | - |
| Low Contrast | - | - | 100 | 0.29 | 100 | 0.46 | 100 | 0.43 | 98 | 0.55 |
| High Contrast | - | - | 99 | 0.42 | 99 | 0.37 | 100 | 0.54 | 100 | 0.49 |
| Proven Aided Recall | | | | | | | | | | |
| No Warning | 99 | 0.10 | - | - | - | - | - | - | - | - |
| Low Contrast | - | - | 100 | 0.44 | 100 | 0.66 | 100 | 0.67 | 98 | 0.69 |
| High Contrast | - | - | 99 | 0.59 | 99 | 0.66 | 100 | 0.75 | 100 | 0.62 |

Proven Aided Recall

All models were analyzed by the logistic procedure of SAS/STAT (SAS 1997). Parameter estimates for the 5-variable model described above (with $\phi = 1$) are given in Table 2.

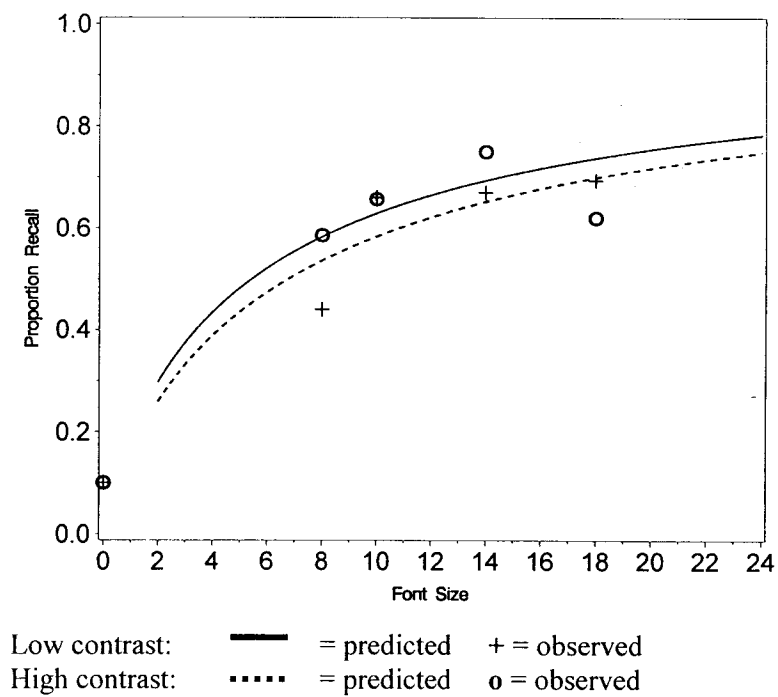
Table 2: Logistic Regression: 5-Variable Model of Proven Aided Recall

| | Parameter | Standard | P-Value | Odds Ratio | Confidence Limits | |
|-----------|-----------|----------|---------|------------|-------------------|------|
| | Estimate | Error | | | | |
| intercept | -3.78 | 0.92 | 0.0001 | - | - | - |
| contrast | 0.19 | 0.15 | 0.2144 | 1.21 | 0.90 | 1.63 |
| logfont | 0.60 | 0.17 | 0.0005 | 1.82 | 1.30 | 2.54 |
| education | 0.09 | 0.04 | 0.0366 | 1.10 | 1.01 | 1.19 |
| work | 1.16 | 0.40 | 0.0035 | 3.19 | 1.47 | 6.95 |
| hispanic | -0.62 | 0.23 | 0.0077 | 0.54 | 0.34 | 0.85 |

Recall increased significantly with font size: doubling the font size increased the odds of recall by 82% ($p = 0.0005$). For example, the odds of recall for the black-on-white contrast increased from 1.70 to 3.08 as font size increased from 10 to 20. Recall for the black-on-white contrast was slightly higher than for the white-on-pink, but the difference was not statistically significant ($p = 0.214$). The odds of recall for an employed person (working or studying) was over three times the odds for an unemployed person ($p = 0.004$), and a one unit increase in education level (roughly an increase in one grade level) increased the odds of recall by 10% ($p = 0.037$). The odds of recall for a Hispanic were 46% less than the odds for a non-Hispanic ($p=0.008$).

The effect of contrast and font on the probability (rather than odds) of recall is shown in Figure 1 below. The two lines in this figure were obtained by evaluating the two 4-dimensional surfaces at the sample average values for education (11.95), work (0.96), and hispanic (0.11). For example, the probability of recall for the black-on-white contrast increased from 0.63 to 0.76 (an increase of 21%) as font size increased from 10 to 20. Averaging over the contrasts, the predicted probability of recall at font sizes 7.5, 10, 12.5, 15, and 20 was 0.55, 0.61, 0.65, 0.69, and 0.74, respectively. Interpolations and extrapolations of this sort are reasonable provided the font sizes under consideration do not stray too far from those observed in the experiment. In particular, predicted probabilities for very small font sizes are likely to be too high because in this case the message would be difficult even to read, much less to remember.

Figure 1. Proven Aided Recall by Contrast and Font Size



It is instructive to compare the results of the 5-variable model with those of the 2-variable model, particularly because, as noted previously, the latter model could provide a valid basis for inference by itself. The results for the 2-variable model (with $\phi = 1.19$) are shown in Table 3.

Table 3. Logistic Regression: 2-Variable Model of Proven Aided Recall

| | Parameter Estimate | Standard Error | P-Value | Odds Ratio | Confidence Limits | |
|-----------|-----------------------|-------------------|---------|------------|-------------------|------|
| intercept | -1.36 | 0.66 | 0.0380 | - | - | - |
| contrast | 0.16 | 0.16 | 0.3172 | 1.18 | 0.86 | 1.62 |
| logfont | 0.51 | 0.18 | 0.0047 | 1.67 | 1.17 | 2.39 |

As before, recall increased with font size ($p = 0.005$). The fact that the point estimate for the odds ratio changed from 1.82 (5-variable model) to 1.67 (2-variable model) is of no consequence, as indicated by the size of the corresponding confidence intervals. The effect of contrast was again in favor of black-on-white, with the difference was not statistically significant ($p=0.317$). Thus parameter estimates for the two models were similar in magnitude but more precision was obtained by the 5-variable model. This indicates the success of both the randomization procedure (there was no serious covariate imbalance across the eight contrast-by-font groups) and the search for additional covariates (education, work, and hispanic were able to reduce the residual variation in the recall data).

In passing, we note that we have not explicitly compared the fit of the above models, although the fact that the 5-variable model was selected over the 2-variable model suggests the former is a better model. A direct comparison can be obtained via the likelihood ratio test statistic which, with a value of 31.85 on three degrees of freedom, corresponds to a p -value well below 0.0001, thus confirming our preference for the 5-variable model.

False Recall

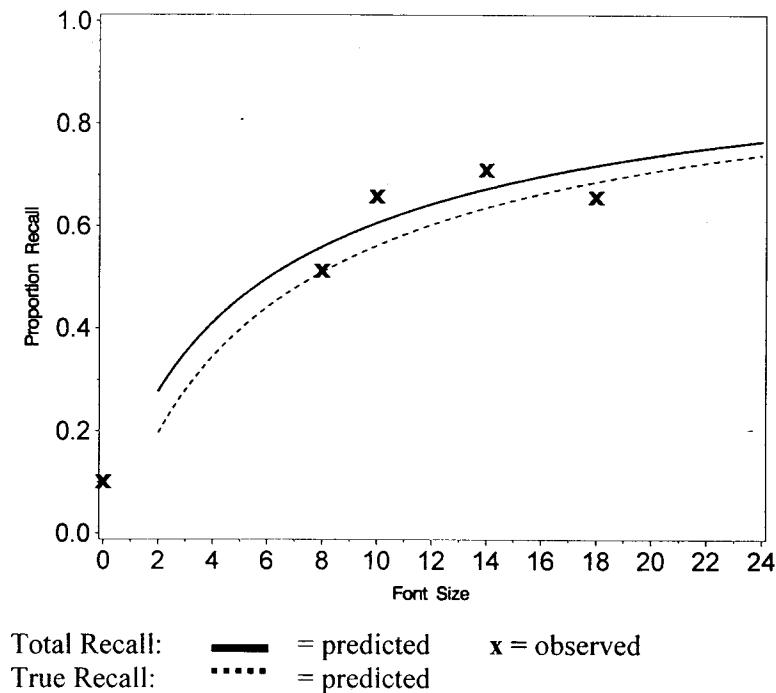
Ten% of individuals randomized to the no-warning group gave answers indicating that they “correctly” recalled the warning message. All of these recollections must have been false since we know there was no message. The phenomenon of false recall was not restricted to the zero font, but also presumably contributed to recall observed at other font sizes. A question of immediate interest is whether the recall proportions we observed at font sizes 8, 10, 14, and 18 point were distinguishable from false recall. Since the observed proportions were 0.51, 0.66, 0.71, and 0.66, respectively, the answer is affirmative ($p < 0.0001$ for all four tests), and we conclude that at least *some* of the recall at font sizes 8 through 18 point was true recall.

We now wish to calculate how much is *some*. At nonzero fonts, false recall presumably operates in an attenuated form. For example, if true recall was 0.95, false recall could not possibly be 0.1 (the level at the zero font), because that would make the total recall proportion an impossible 1.05. Instead, if the true recall proportion is high, the proportion who cannot truly recall must be low, and the false recall proportion should, as a fraction of the latter group, be very low.

A model embodying this idea is as follows. If the *true recall* proportion is q , then we suppose that the *total recall* proportion is $p = q + \delta(1 - q)$, where $\delta(1 - q)$ is the *false recall* proportion, and δ is the false recall rate for the proportion who cannot truly recall. Since we observe total recall, we can estimate p via a logistic model and subsequently derive $q = (p - \delta)/(1 - \delta)$. A reasonable estimate for δ is the proportion recalling at the zero font, since in this case $q = 0$ and $p = \delta$. In our case, we estimate $\delta = 0.1$, and therefore $p = q + 0.1(1 - q)$ and $q = (p - 0.1)/0.9$.

Averaging over contrasts, our estimate of the recall at font size 10 was 0.6. Thus the total recall proportion was $p = 0.6$, the true recall proportion was $q = (p - 0.1)/0.9 = 0.5/0.9 = 0.5555$, and the proportion of false recalls was $0.1(1 - q) = 0.0444$. Similar calculations over a range of font sizes produced a *true recall curve* from the *total recall curve* estimated previously. These are shown in Figure 2, as the lower and upper curves respectively.

Figure 2. Total Proven Aided Recall and True Proven Aided Recall by Font Size



We are now in a position to answer the question that motivated this portion of the analysis. The estimated total and true recall for font sizes (8, 10, 14, 18 point) was (0.56, 0.61, 0.67, 0.72) and (0.51, 0.56, 0.64, 0.69), respectively. Between 91 to 96% of total recall was true recall.

Alternative Measures of Recall

Up until this point, the results have focused exclusively on proven aided recall. However, it is instructive to compare the effects of contrast and font for alternative definitions of recall. This comparison, based on the 5-variable model (with $\phi = 1$), is displayed in Table 4.

In all cases, the effect of logfont was highly statistically significant. The effect of contrast was statistically significant for aided recall, but not for other measures. However, recall was consistently higher for the black-on-white contrast for all definitions of recall, and this suggests that a larger sample size may have been able to detect a statistically significant contrast effect.

Table 4. Logistic Regression Results for Alternative Recall Measures

| | Parameter Estimate | Standard Error | P-Value | Odds Ratio |
|------------------------------|--------------------|----------------|---------|------------|
| Proven Aided Recall | | | | |
| contrast | 0.19 | 0.15 | 0.2144 | 1.21 |
| logfont | 0.60 | 0.17 | 0.0005 | 1.82 |
| Aided Recall | | | | |
| contrast | 0.71 | 0.21 | 0.0006 | 2.04 |
| logfont | 1.18 | 0.24 | 0.0001 | 3.24 |
| Proven Unaided Recall | | | | |
| contrast | 0.13 | 0.15 | 0.3920 | 1.13 |
| logfont | 0.67 | 0.17 | 0.0001 | 1.95 |
| Unaided Recall | | | | |
| contrast | 0.23 | 0.15 | 0.1263 | 1.26 |
| logfont | 0.89 | 0.17 | 0.0001 | 2.44 |

It is sensible to compare proven aided recall with (unproven) aided recall, and proven unaided recall with (unproven) unaided recall. In both cases, the proven variant is the more stringent test of recall, and the additional stringency appeared to have two effects. First, as expected, it decreased the false recall rate (recall among the no-warning group) from 0.24 to 0.10 for aided recall, and from 0.10 to 0.04 for unaided recall (see Table 1). Second, the additional stringency reduced the effect of both contrast and font. For aided recall, the odds ratio for contrast decreased from 2.0 to 1.2, and the odds ratio for logfont decreased from 3.2 to 1.8. Similarly for unaided recall, the odds ratio for contrast decreased from 1.3 to

1.1, and the odds ratio for logfont decreased from 2.4 to 2.0. In other words, warning messages with higher contrasts and larger fonts are much more likely to be *noticed* but only somewhat more likely to cause the message to be *recalled*.

Discussion

To provide data bearing on the effectiveness of health warning requirements in smokeless tobacco print ads, we tested recall among a convenience sample of young males who were randomly assigned to view ads that varied in health warning presence, contrast, and font size. The four recall outcomes were: unaided recall, prompted or aided recall, unaided recall proven by message recognition, and proven aided recall.

Policy Implications

All of the ad versions that included a warning message, regardless of the warning's font size or contrast, generated significantly and substantially greater message recall than the ad with no warning. This indicates that the warning's effectiveness has not been negated by the fact that it has been required in all print advertisements for smokeless tobacco for more than a decade. False recall rates were relatively low (10% for proven aided recall), and not much larger than those observed in Popper and Murray (1989) at the time the warnings were being introduced (5% for proven aided recall). Even though the warnings have been required for virtually the entire time that our young audience could plausibly have seen smokeless tobacco print ads, the number of such ads that they see may be small enough for the warning to retain its effectiveness.

The size of the health warning clearly matters, as message recall increased significantly with larger font size for all four of the measures of recall. Based on the measure we consider most realistic (proven aided recall), 63% of viewers were reached by the high contrast warning message in the 10 point font size, and 62% by the low contrast warning in the 12 point font size, which are the minimum levels currently mandated for a print ad of the size used. Doubling the size of the warning to correspond to a 20 point font would increase the recall rate from 63% to 76%, representing a 20% improvement in the number of young people potentially receiving the warning message. Tripling the warning size, to 30 point font with high contrast, yields an estimated 81% recall rate, although the reliability of this estimate is somewhat less certain because it lies outside the observed range of sizes.

Current discussion of warning label strategies sometimes focuses on the percent of the total advertisement space that is occupied by the warning. The current minimum requirement with 10 point font calls for a symbol that is 1.25 inches at the widest point by 1.42 inches high at the highest point. The

rectangular area implied by these dimensions is 1.76 square inches, or about 2% of the space in a typical 8 by 10 inch full-page magazine advertisement.¹⁶ Doubling the minimum font size to 20 point would require a symbol occupying about 9% of the space in an 8 by 10 inch print ad, while a 30 point requirement would occupy about 20% of the space.

In establishing the minimum requirement for warning size, a key question is what proportion of the readers who see a magazine ad for smokeless tobacco should remember the health warning. A useful benchmark may be the proportion who remember the brand name of the product. Before the subjects in the present study were asked any questions about the health warning, they were asked to recall the product and brand being advertised; 84% correctly did so. This is considerably higher than the 63 percent who correctly identified the warning message. To equal that recall rate would require warnings in the range of 30 points or larger, according to the model estimates (see Table 5).

Table 5: Predicted Percentages of Positive Proven Aided Recall at Various Font Sizes

| Font Size | Symbol Area as % of 8" x 10" Ad | % Positive Recall with High Contrast | % Positive Recall with Low Contrast |
|-----------|------------------------------------|---|--|
| 8 | 1.4% | 58.3% | 53.7% |
| 10 | 2.2% | 62.9% | 58.4% |
| 12 | 3.2% | 66.5% | 62.2% |
| 14 | 4.3% | 69.4% | 65.2% |
| 16 | 5.6% | 71.8% | 67.8% |
| 18 | 7.1% | 73.8% | 70.0% |
| 20 | 8.8% | 75.5% | 71.9% |
| 24 | 12.7% | 78.3% | 74.9% |
| 26 | 14.9% | 79.5% | 76.2% |
| 28 | 17.2% | 80.5% | 77.3% |
| 30 | 19.8% | 81.4% | 78.4% |
| 34 | 25.4% | 83.0% | 80.1% |
| 40 | 35.2% | 84.9% | 82.3% |
| 48 | 50.6% | 86.8% | 84.5% |

It is perhaps unrealistic to propose that a third of the ad space be devoted to the health warning message, but 20 percent may be feasible. A 30 point font warning with low contrast level yields a predicted recall rate of 78%. Approximately the same recall is predicted for the 24 point font with high contrast. Warnings of this size would occupy about 20% and 13%, respectively, of the space in an 8 by 10 inch ad.

¹⁶ Note that the rectangular area is somewhat greater than the actual amount of space consumed by the irregularly shaped warning symbol.

This discussion takes at face value the model estimates of recall differences for high and low contrast warnings. The models consistently estimated higher recall rates with high contrast, although the difference between high and low contrast was statistically significant for only one of the four measures tested. We feel that the consistency of the estimates is sufficient to support the current regulatory approach of allowing a smaller font size with high contrast backgrounds.

Other Substantive Findings

The results follow qualitatively similar patterns to those found in Popper and Murray (1989). As in that study, a warning of any tested size and contrast produced significantly greater recall than ads with no warning. High contrast in both studies was associated with greater levels of recall, but the difference from low contrast warnings was statistically significant for only one of the four measures in the current study and none in the earlier work. Both studies found greater recall with larger warnings, but this study found a somewhat stronger effect and found it to be statistically significant. It is likely that this difference occurred because of the larger sample size and greater range of font sizes tested in the present study. Differences in the composition of the sample and administration of the test as well as changes occurring over the intervening decade all probably contribute to these differences.

Additionally, message recall had direct relationships with three demographic variables: education, non-work (versus employed or in school), and Hispanic ethnicity. The research literature does not offer relevant material on education or employment status due to its focus on college students. One may speculate that those who are employed, in school, or better educated are more aware of health risks. The method of personal interview was chosen over self-administration to reduce problems associated with literacy issues, but one possibility is that education and unemployment are related to one's ability to perform a task that requires attention, recall, and recognition.

Compared to non-Hispanic Whites, Hispanics had the lowest recall of the racial/ethnic groups in our sample. Even though recruiters screened for English fluency, the variable "hispanic" may act as a proxy for other differences that impact message recall, such as English literacy, level of acculturation, or exposure to print ads in U.S. magazines.

We found no statistically significant relationships of recall with cigarette smoking, smokeless tobacco use, cigarette smoking, (self-reported) previous exposure to tobacco product print ads, or age.¹⁷ and too few subjects were married to evaluate the influence of marital status which may be a proxy for health awareness associated with family responsibilities. A correlation between recall and smokeless tobacco use had been seen in some prior research (MacKinnon and Fenaughty [1993] found higher

recognition of warning labels on packages among lifetime users of the product). However this study, as well as Popper and Murray (1989), found no relationship between recall of smokeless tobacco ad warnings and use of either cigarettes or smokeless tobacco. This suggests the possibility that the recognition phenomenon operates differently for magazine advertisements than for warnings on the product packages.

Study Limitations

Two key limitations of the study must be borne in mind. First, the sample is a convenience sample of 16 to 24 year old males encountered at shopping malls in urban and suburban areas of Massachusetts. The demographic composition of the sample suggests that it is reasonably representative of that population group, but statistical generalization to a larger population is not possible. Because the sample does not include females, persons over age 24, or residents of rural areas or other regions of the country, the results cannot be assumed to be similar for those groups. The absence of females and persons over age 24 is arguably not important, because young males are the principal users of smokeless tobacco and therefore the most important audience for smokeless tobacco advertising. The absence of rural residents and residents of other parts of the country is more important, because levels and patterns of smokeless tobacco use vary across these dimensions.

Second, the study measures message recall which is a proxy for, but not the same as, the effectiveness of the warning in influencing behavior. Further research is needed to know how large a difference in immediate message recall is necessary to translate into a reduced likelihood of using smokeless tobacco.

¹⁷ There is a small non-significant relationship between age and recall controlling for education; that is, recall is lower for older subjects when education is the same.

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WARNING:

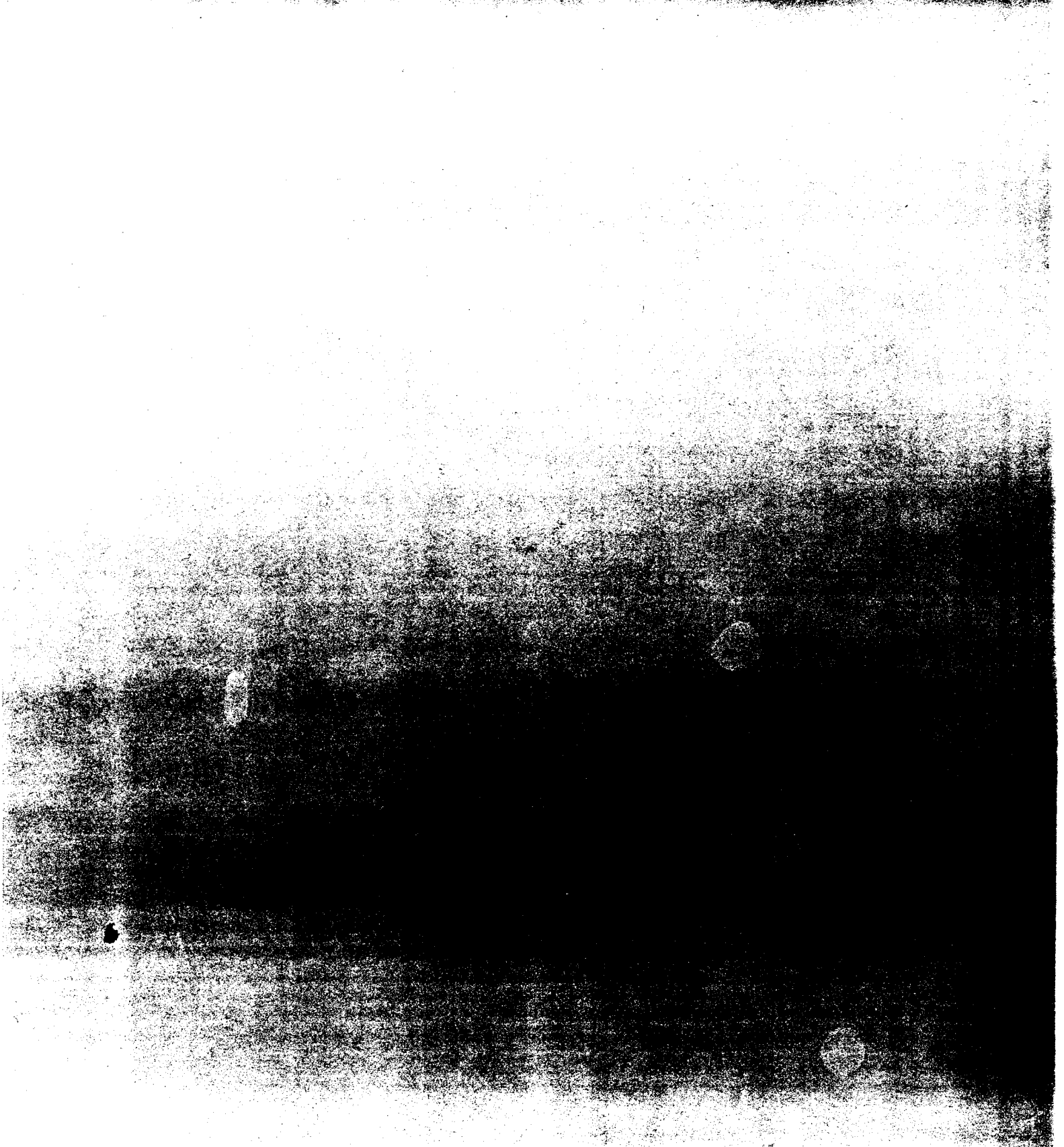
THIS PRODUCT
MAY CAUSE GUM
DISEASE AND
TOOTH LOSS

My time. My Skoal.

SKOAL

Your time deserves the best.

SKOAL



How US Tobacco Product Warning Labels Can Be Improved

Comments to the Federal Trade Commission on the
Proposed Amendments to the Smokeless Tobacco
Trade Regulation Rule (16 CFR Part 307)
Massachusetts Department of Public Health
July 2000

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EXECUTIVE SUMMARY

Tobacco product warning labels are one of the oldest and most widely used disclosures mandated by the federal government. In the more than three decades since cigarette package warning labels were mandated by the 1965 Cigarette Labeling and Advertising Act, warnings have played a central role in the government's policy to alert consumers to the dangers of tobacco. They are an important component of the Comprehensive Smokeless Tobacco Health Education Act of 1986, which required the first health-risk warning labels for these products.

Warning labels were mandated as a principal means of discouraging the use of tobacco products, which are the single greatest cause of premature disease and death in the United States. Despite the widespread use of tobacco warnings, no research was conducted prior to their implementation to determine appropriate messages, formats, and target populations, and surprisingly little is known about their effectiveness. Two studies^{1,2} indicate only moderate awareness and knowledge of cigarette warning labels among adults, and there is a lack of data on their effects on actual smoking behavior.³ The impact of warnings on tobacco use among adolescents is of critical importance, since they are at high risk for experimentation with tobacco products and eventual addiction. More than 90 percent of adult smokers began smoking as teenagers,⁴ and smoking among young teens increased by more than 30 percent between 1991 and 1995.⁵ The efficacy of smokeless tobacco warnings is a particular concern, given the alarming rise in the use of these products by adolescents over the last two decades. Current data suggest that each year, more than 800,000 young people in the United States between 11 and 19 years of age experiment with smokeless tobacco, nearly one third of whom become regular users.⁶ Yet the few studies that have been conducted to date reveal that the current warning labels are not well noticed, recalled, or believed by adolescents, and are therefore ineffective in discouraging them from using cigarettes and smokeless tobacco.⁷⁻¹⁰

These unfortunate findings have led some researchers to declare that the present legislative approach to mandated tobacco health warnings has failed as a public health policy,^{11,12} or to at least question the value of warnings as a deterrent to use.^{13,14} However, mandated health messages warrant revision, rather than abandonment, as they are a practical and fairly inexpensive way of conveying information on the dangers of tobacco to the public, and can enhance the effectiveness of other smoking reduction programs. By providing pertinent health risk information, warnings have the potential to influence consumer behavior by supporting the motivation not to begin smoking or to stop smoking. It has been demonstrated that, notwithstanding the influence of compelling factors such as addiction and social pressure, people tend to act rationally on the basis of information that is available and salient to them.¹⁵ To present information to the individual at the time the act of smoking is being contemplated maximizes its availability and salience, thereby increasing the probability that a rational appraisal of that information will influence behavior. Finally, but certainly not of least importance, tobacco warnings answer to the basic moral, and often legal, right of consumers to be informed about the risks of using these inherently dangerous products.

Three world leaders in the area of tobacco health messages, Canada, Australia, and Thailand, have all adopted the same approach in requiring substantially larger, more prominent health warnings on cigarette packages (in addition to banning advertising). In 1993, Health Canada implemented regulations that increased the number of warning messages from four to eight and required that they be printed in black and white and occupy 25 percent of the top of the principal pack display surfaces.

A 3-4 mm border was to surround the warning, so that the effective size of the warning was between 33 and 39 percent, depending on the package size.¹⁶ Last June, even more stringent measures were enacted, requiring 16 new black-and-white warnings occupying 50 percent of the top of the front and back panels,* accompanied by "hard-hitting" graphics.^{17,18} Information about smoking-related diseases, toxic constituents or emissions, and how to quit smoking is also included. According to a Health Canada news release, these packaging measures were selected for their effectiveness following extensive focus group testing among youth and adult smokers.¹⁹ Research conducted by Health Canada showed that the larger the health warning message, the more effective it is at encouraging smokers to stop smoking.²⁰ The new warnings requirements, which go into effect in January 2001, apply to all tobacco products, including smokeless and pipe tobacco, cigars, kreteks, and bidis.²¹

The new larger, more prominent health warnings and strengthened contents labeling of cigarette packs introduced in Australia in 1995 were also based on a program of empirical research designed to ensure maximum impact.²² Six warnings are required, which are printed in black and white and occupy 25 percent of the front of the package at the top. An information number to call and elaborated contents labeling are also included. Studies conducted prior to implementation indicated that larger warnings (increased from 15 to 25 percent of the front-of-pack surface) are more noticeable and legible, and are likely to render a pack less appealing to adolescents.²³ A study consisting of a pre- and post-implementation survey revealed that there was a high awareness of the new warnings, particularly among smokers, with the increased size of warnings being the most salient feature.²⁴ The new warnings were also more potent at stimulating both thoughts about the negative effects of smoking and the appropriate consequent action of not smoking the planned cigarette.²⁵ This is important, as spontaneous rejection of cigarettes predicted subsequent cessation.

The European Community has also recognized the need for larger, more conspicuous warnings. In November 1999, the European Commission published a proposal for legislation concerning tobacco product regulation, including new warning labels.²⁶ The proposed directive specifies bigger and clearer warnings (i.e., "Smoking kills," or "Smoking can kill") covering 25 percent of the pack face and printed in black and white with a 3-4 mm border. In addition to the general warning, a list of additional warnings must be used in rotation. In June, the Council of Health Ministers reached a political agreement on the directive, which is expected to pave the way for early adoption of the new rules.²⁷

In the United States, Congress has enacted legislation since 1965 that has increased the size, number, and specificity of tobacco health warnings. However, these changes have been consistently less restrictive than the Federal Trade Commission's recommendations, largely due to the influence of the tobacco industry. In June 1997, the Universal Tobacco Settlement Act, a national initiative also commonly known as the McCain Tobacco Bill after its sponsor Senator John McCain (R-AZ), was defeated. This sweeping legislation, which was aimed at curbing underage tobacco use, would have required the placement of nine cigarette and four smokeless tobacco rotating warning labels on both packages and advertising. Package warnings would occupy 25 percent of the principal display panel or carton (the upper portion of the front panel for cigarettes), while advertisements would carry warnings occupying 20 percent of their area. Both are substantially larger and more conspicuous than the present warnings.

* According to the regulations, the warnings must be displayed in English on one principal display surface and in French on the other.

The current US strategy of using multiple rotating cigarette and smokeless tobacco warning labels has remained essentially unchanged since they were mandated by Congress under separate legislation in the mid-1980s. Federal law regarding tobacco health warnings continues to preempt state actions that might otherwise provide for stronger warnings in the absence of effective Congressional action in this important area of public health policy. Therefore, we applaud the FTC for considering amending its smokeless tobacco regulations implementing the health warning requirements of the Comprehensive Smokeless Tobacco Health Education Act of 1986 in order to increase their efficacy. Currently, three statutory warnings are in use, which are required to appear in a circle-and-arrow format in smokeless tobacco print advertisements. The FTC regulations stipulate that the warnings must occupy 5 percent of product print advertisements and a small portion of the side of packages. However, the package warnings are not required to be printed in a conspicuous black-and-white format, as in Canada and Australia. Since the Commission regulates the format and display provisions of the warnings (but not the actual wording), comments should be directed to the size and colors that would more effectively communicate the messages mandated by Congress.

The FTC has also recently proposed entering into a consent decree with the cigar industry that would require five rotating warnings on cigar packages and print advertisements. These warnings would be printed in black and white and cover from 8 to 15 percent of the front of the package – about half the size of the current Canadian warning on cigar and cigarette packages. Unlike smokeless tobacco, the FTC would be able to address the wording of cigar warnings in the consent decree, as well as other ways to communicate risk, such as requiring periodic testing of the warnings for efficacy.

The following review of the scientific literature on tobacco product warnings strongly supports the use of health risk messages similar to those implemented in Australia and Canada, which have been well researched and demonstrated to be effective in target populations – namely, adolescents and those who want to stop smoking or have attempted to quit.

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I. History of Tobacco Product Health Warnings in the US

Tobacco health warnings are the most frequently used health disclosure. The initial warning was mandated by the federal Cigarette Labeling and Advertising Act of 1965, which required all cigarette packages to carry the message, "Caution: Cigarette Smoking May Be Hazardous to Your Health." As cigarette consumption increased in the face of mounting scientific evidence of the dangers of tobacco use, a more stern warning was adopted under the Public Health Cigarette Smoking Act of 1969: "Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous to Your Health." In 1972, the Federal Trade Commission obtained consent orders from six major tobacco companies to include this warning in all cigarette advertisements.

According to the 1965 Act, cigarette warning labels were mandated so that "the public may be adequately informed that cigarette smoking may be hazardous to health." At that time, however, little was known regarding the way people would react to them, nor were there any specific criteria for determining their effectiveness and hence, monitoring their impact. Policymakers apparently presumed that consumers would simply "read and heed" the message, but there were indications that it may be falling far short of the expected success. A 1981 FTC staff report concluded that, based on the findings of national surveys and focus groups, the current warning did little to inform the public about the dangers of smoking and was neither noticed nor read by the vast majority of people.²⁸ Possible reasons were that it was overexposed and worn out, no longer novel, too abstract and therefore difficult to remember, and not likely to be perceived as personally relevant. The report also noted that a singular warning did not communicate sufficient information on the major, specific risks of smoking.

The Commission determined that further protective action was necessary and developed four rotating warning labels, each describing a different smoking health hazard. These warnings were mandated on all cigarette packages and advertisements under the 1984 Comprehensive Smoking Education Act. One of the goals of the Act was to "provide a new strategy for making Americans more aware of any adverse health effects of smoking." It was anticipated that by presenting specific research-based information on the hazards of smoking, the new Surgeon General's warnings would ultimately influence smoking behavior. However, like the initial 1965 warning, this system was not formally evaluated prior to implementation. This has, in turn, made it difficult to determine whether the labels have had an impact on consumer decision-making or behavior.

In 1986, in recognition of the growing problem of adolescent smokeless tobacco use, Congress enacted the Comprehensive Smokeless Tobacco Health Education Act, thereby establishing a comprehensive scheme for the regulation of these products. The Act required, among other things, the placement of one of three health-risk warning labels on all smokeless tobacco packages and advertisements (with the exception of outdoor billboards). Advertisements were required to display the warnings in a "circle-and-arrow" format. The wording of these warnings is merely patterned after the rotating cigarette warnings (i.e., specific health risks), without any prior research conducted to determine their potential efficacy.

II. Research on the Efficacy of the Current US Warnings

By the early 1990s, there was an increasing interest in the efficacy of product warnings in general, partly as a result of a greater focus on warnings issues in product liability suits. Paradoxically, such litigation has had the unintended consequence of shielding the tobacco industry from damage actions.

The industry contends that warnings provide adequate information about the potential hazards of tobacco use and that manufacturers are therefore exempt from product liability.²⁹ Conversely, in recent state health suits against the industry, plaintiffs have contended that the companies have not done enough to warn potential users of the dangers of tobacco.

In any case, it remains unclear whether the post-1985 rotational warnings adequately warn the public or are effective in discouraging the use of tobacco products, as there are surprisingly few studies that have empirically examined this issue. Those that have been conducted to date pertain primarily to warnings in advertisements; research on package warning labels is even scarcer. Nevertheless, these studies suggest that the current warnings fail to effectively communicate the hazards of tobacco use. More importantly, they may be ineffective among adolescents, the group from which nearly all new tobacco users are recruited. The authors of these studies underscore the need for research in order to develop more effective warnings.

The scientific literature on tobacco health warnings consists of both surveys and experimental research. In one of the earliest studies of the present warnings, Fischer and colleagues employed well-accepted market research techniques to determine whether adolescents read and recalled the messages when viewing tobacco advertisements.³⁰ These included studies of eye tracking, recall of masked areas of the ads (pack, main ad heading, and warning), and an aided recognition test for the warnings. A total of 61 subjects viewed five different ads (four cigarette and one smokeless tobacco) without any time constraints while a computer recorded their eye movements. The average viewing time of the warnings amounted to only 8 percent of the total advertisement viewing time. More than 40 percent of the subjects did not view the warning at all, while another 20 percent looked at the warning but failed to actually read it. The remaining subjects read the warning, although the mean duration of the total reading time was only 0.23 seconds – enough time to read only about one third of the words in the warning.

Masked recall scores indicated that the subjects were more likely to identify the pack than either the heading or the warning. There was also a statistically significant association between the participants' smoking status and their recall score for both the pack and the heading. In contrast, the relationship between smoking status and recall of the warning was not significant, although it was in the same direction. Subjects were also unable to reliably identify the actual warnings in the aided recognition test, with their scores indicating performance only slightly better than random guessing. These findings led the authors to conclude that the federally mandated warning is an ineffective public health message in so far as adolescents are concerned.

In a 1989 study of adults, Richards, Fischer, and Connor also found no significant difference between smokers and nonsmokers in their knowledge of the content of the cigarette warning label.³¹ They noted that this finding was surprising because, for example, one-pack-a-day smokers view the pack 7300 times during the course of a year, permitting ample opportunity for exposure to the warning.

In contrast, in a 1993 study in adolescents, MacKinnon and Fenaughty did find a significant relationship between use and recognition memory for the warnings for both cigarettes and smokeless tobacco.³² These results suggest that exposure to a warning label, as measured by the amount of product use, is positively related to memory for the warning. However, the correlation between use and memory, while significant, was never larger than .34, explaining about 12 percent of the variance

in the memory score.

A 1997 study by Robinson and Killen was among the first to examine the effect of cigarette warning labels on actual smoking behavior.³³ This study involved 1747 ninth-graders attending four public high schools in northern California whose self-reported knowledge of warning labels on cigarette packages and advertisements was assessed. The students were classified as never smokers, experimental smokers, monthly smokers, or regular smokers. A follow-up assessment of 803 students from two of the schools was conducted approximately three months after the baseline evaluation. Paradoxically, in the longitudinal sample, greater knowledge of warning labels on cigarette packages (but not advertisements) was, in general, significantly associated with higher levels of smoking, mostly among smokers. Knowledge of warnings on magazine and billboard advertisements, however, did not differ significantly by level of smoking. Like Fischer, these authors concluded that the current cigarette warning labels are ineffective among adolescents. They also suggest that these messages, and any new warnings or designs, be evaluated for effectiveness in experimental trials.

Despite the dramatic increase in adolescent use of smokeless tobacco, there is at present an even greater scarcity of studies evaluating the effectiveness of the current warning labels for these products. One survey of over 500 junior- and senior-high school students, published in 1986 (before the warning labels were required) suggested that their value in educating the public or of discouraging smokeless tobacco use may be limited.³⁴ When asked if warning labels would deter them from purchasing these products, 28 percent of junior-high users, 18 percent of senior-high users, and 64 percent of nonusers believed that the labels would have such an effect.

In 1990, Brubaker and Mitby investigated whether adolescents attend to the smokeless tobacco package warning labels and the impact of the warnings on their intentions to use such products.³⁵ A total of 192 high school students ages 14 to 18 years (who were not users of smokeless tobacco) enrolled in a university-affiliated public school in a rural Kentucky community participated in the study. Subjects viewed illustrations of five consumer products, including a can of oral snuff and a pouch of chewing tobacco displaying one of the three required warning health warnings or no warning. Afterward, they indicated via questionnaire the likelihood that they would use each of the products.

Fewer than half the subjects (43.4 percent) exposed to the warnings recalled seeing them, and approximately one third of those who did see them (32.2 percent) recalled the content of the message. Another 11.9 percent recalled the general thrust of the warning message, but not the correct wording. Of note is the finding that significantly more males than females (43 versus 22.8 percent, respectively) correctly recalled the content of the label they had seen. The warning labels had no significant effect on the subjects' ratings of whether they would use either snuff or chewing tobacco in the future. However, males indicated a significantly greater likelihood than females that they would use snuff (44.2 versus 8.7 percent) and chewing tobacco (33.6 versus 8.85 percent). There was also evidence to suggest that males had more experience, or contact with, smokeless tobacco products than females. For example, 64.1 percent of the males had previously tried smokeless tobacco, compared to only 13.9 percent of the females. This may have accounted for the males' higher recall of the warning labels, since they may have already been aware that the products carried the labels. The authors note that at the very least, the results of this study point to the need

for a careful analysis of the value of health risk warning labels on smokeless tobacco products as a preventive measure.

The four rotating cigarette warning labels were mandated in an attempt to more strongly influence consumer attitudes about the specific health risks of smoking.³⁶ The assumption is that if consumers believe the warning information presented, they will be more likely to adjust their smoking behavior. However, a 1988 study by Beltramini showed that the perceived believability of the warnings among young adults depends, in part, upon the firmness of initial individual attitudes toward the hazards of smoking.³⁷ This study involved 727 business students at a major American University who were surveyed by questionnaire. There was a varied, yet predominantly believable, response to the five warnings presented (the standard 1969 warning and the four rotating warnings). Those who held more firmly that smoking is harmful were found to perceive the warning label information as significantly more believable than those who held less firmly that smoking is harmful. Smoking behavior, however, had no significant effect on the perceived believability of the warning label information. Messages about specific risk outcomes (i.e., lung cancer, heart disease, fetal injury, premature birth) were rated more believable than messages about toxic smoke constituents, such as carbon monoxide, or risk-reducing behaviors (i.e., quitting smoking). Beltramini notes that this finding might suggest that some warning messages may be inherently more believable than others, because of familiarity, personal relevance, specificity, etc. It also demonstrates the need for additional research to improve warning label effectiveness, particularly with regard to format modifications, if future warnings are intended to draw attention to scientific research results.

In 1996, Cecil, Evans and Stanley investigated the perceived believability of cigarette package warnings among adolescents.³⁸ This study involved 691 students in grades 5 through 12, who were assessed with regard to both gender and current smoking status. In contrast to the Beltramini study, smokers (both male and female) reported significantly less belief in the validity of three of the health warning labels than nonsmokers, leading the authors to question the value of health warning labels as a deterrent to cigarette smoking.

Additional research indicates that the warnings are not effective because they require high levels of reading comprehension.³⁹ Some studies suggest that cigarette warning labels on outdoor billboards may be difficult to read. Davis and Kendrick found that under typical driving conditions, the average motorist could read an entire warning on less than half of street billboard advertisements, and in only 5 percent of ads on highways.⁴⁰ Stationary observers could not read the warnings in any of the transit advertisements studied. All warnings in the study were in compliance with the congressionally mandated FTC warning-size templates. In contrast, subjects could almost always read the brand names and identify the advertisement's notable imagery.

III. Impact of Tobacco Advertising on Warnings Efficacy

In light of the evidence demonstrating the lack of efficacy of tobacco health warnings, it is important to consider that these messages must compete within an environment that is strategically designed to glamorize tobacco use and even portray it as a healthful activity. Cigarette advertising relies heavily on visual imagery rather than verbiage to convey powerful messages of independence, romance, adventure, and sociability – personal attributes that are especially appealing to impressionable adolescents.⁴¹ Some studies suggest that cigarette advertisements capitalize on the discrepancy between adolescents' perceived and "ideal" self-image by portraying smoking as a way to bridge the

gap.⁴²⁻⁴⁴ Subjects who had small differences between their self-image and their image of smokers, and those who had large differences between their actual and ideal self-image, were found to have greater intentions to smoke.⁴⁵ The overall pervasiveness of cigarette advertising appears to lead youth to overestimate the prevalence of smoking, which is one of the strongest predictors of smoking initiation.⁴⁶ Adolescent recognition of tobacco advertising is also closely associated with individual smoking status.⁴⁷ Even very young children are susceptible, as demonstrated by one study in which children as young as three to six years of age recognized the Joe Camel cartoon character and knew that he sold cigarettes.⁴⁸

That brand imagery has a strong youth appeal is supported by data indicating that adolescents consistently smoke the most advertised brands of cigarettes both in the United States and abroad.⁴⁹⁻⁵¹ A recent Massachusetts survey of storefront tobacco advertising revealed that the four cigarette brands that account for the majority (93 percent) of youth smoking – Marlboro, Camel, Newport, and Winston – were also the four most heavily advertised brands.⁵² One R.J. Reynolds internal report notes that 40 percent of regular smokers have made a loyal brand choice by age 18.⁵³ Nonsmoking youth who are able to name a favorite cigarette brand or advertisement are more susceptible to taking up smoking.⁵⁴ Moreover, following the introduction of advertisements that appeal to young people, the prevalence of the use of those brands – and even of smoking in general – increases.⁵⁵ For example, RJR's Joe Camel advertising campaign appears to have substantially increased Camel's market share among persons under age 18.⁵⁶ A similar associated increase in smokeless tobacco use among adolescent males was also observed after the launch in the 1970s of a major industry advertising and promotional campaign focusing on "beginners."⁵⁷

Implied healthfulness is a predominant feature of many cigarette ads, which link recreational activities – veritable "images of health" – with smoking. The tobacco industry adopted this style of advertising following the release of the 1964 Surgeon General's report, abandoning its earlier approach of making verbally explicit health protection promises in the wake of increased public knowledge about smoking hazards. This strategy directly contradicts the health warning messages by portraying smoking as a normal, healthful activity. In addition, many ads for "low-tar" cigarettes portray them as a viable alternative to quitting smoking, thereby propagating the false belief that these brands are "safe."

When viewed in the context of the industry's powerful advertising imagery, it is not unexpected that the efficacy of the warnings, which are dramatically staid in comparison, would be seriously diminished. Indeed, study evidence suggests that imagery draws attention away from the text of the warnings.⁵⁸⁻⁶⁰ For example, in a 1998 study, Fox and colleagues used eye tracking to determine how adolescents attend to cigarette and beer print ads and their associated product warnings.⁶¹ Each participant viewed five full-page product ads frequently run in popular magazines of interest to teens, including two ads for Camel and Marlboro cigarettes. On average, participants spent significantly more time viewing the Camel cigarette ad, including Joe Camel, than any of the other four ads. Significantly more subjects (86 percent) attended to the Marlboro ad warning than the warning in the Camel ad (78 percent), even though both carried the same warning. The authors contended that the relatively high level of attention to the Camel ad is due to the youth appeal of the Joe Camel campaign, noting that many groups, including the 13 California cities and counties and the FTC, had reached the same conclusion. Therefore, they concluded that, at least for adolescents, it is critical that warnings be tested in the competitive environment of an ad, not in isolation.

The 1981 FTC report on cigarette health warnings suggested that cigarette companies were explicitly designing advertisements to “divert or distract attention away from the health consequences of smoking.”⁶² Intentional or not, the sheer volume of cigarette advertising, all of which conveys positive imagery associated with smoking, may overwhelm the health-promoting effect of the warnings in advertisements.⁶³

Fischer and colleagues, whose eye-tracking study revealed that adolescents pay little attention to the warnings, note, “If the warnings are not seen, or are seen but not processed, they are extremely unlikely to be effective in countering the promises of power, romance, and fun implied by the tobacco advertisements.”⁶⁴ They emphasize that the effectiveness of a warning must be measured within the environment of the total advertisement and compared with the effectiveness of the image-based advertising with which it competes.

The effectiveness of warnings is further hampered by the dramatic shift in industry marketing practices away from traditional print advertising toward promotional expenditures, which now account for the majority of all cigarette marketing expenses.⁶⁵ Tobacco manufacturers aggressively target adolescents with brand-name items such as hats, T-shirts, caps, key chains, lighters, and other “gear.” This insidious merchandising strategy not only attracts young customers, but as one RJR report phrased it, effectively turns them into “walking billboards,” that lure still more youth into the smoking habit.⁶⁶ The fact that high school students in Massachusetts who own a promotional item are more than twice as likely to smoke points to its success.⁶⁷ More importantly, these items convey an advertising message without an associated warning, since only the printed materials (such as catalogues and item wrapping) are required to carry warning labels.

Warnings requirements on event sponsorship logos are also conspicuously absent from the current legislation. By sponsoring widely popular events, such as the Virginia Slims tennis tournament or the Winston Cup National Association for Stock Car Auto Racing (NASCAR), the industry was able to circumvent the 1969 statutory ban on cigarette broadcast advertising and access youth markets of potential smokers without having to include any government warnings.⁶⁸ This strategy establishes a powerful association between the event and the cigarette brand name, which continues unabated on broadcast media, and event programming continues to feature cigarette logos.

Event sponsorship also extends to smokeless tobacco products. Connolly, Orleans, and Blum reported that in 1991, Skoal and Copenhagen, the two brands preferred by adolescents, were promoted on national television through UST’s sponsorship of professional rodeo, hunting, and various motor races, including formula car, “monster” truck, drag, sprint car, and stock car racing.⁶⁹ The authors concluded that “the harmful effects of tobacco are camouflaged against the backdrop and thrill of athletic victory.”⁷⁰

In 1998, tobacco industry promotional allowances were \$2.88 billion, up 18.1 percent from the \$2.44 billion spent in 1997.⁷¹ As it has been each year since 1994, this was the single largest category of advertising and promotional expenditures, accounting for 42.8 percent of all 1998 spending, which totaled \$6.73 billion – the most ever reported by the major cigarette manufacturers. Since 1988, spending on promotional allowances has tripled. Since 1981, there has been a fairly steady increase in promotional allowances from 14.8 percent of total spending to 42.8 percent in 1998. During this time, however, print expenditures (newspapers, magazines, and outdoor ads) declined from nearly 57

percent of total expenditures to just 9 percent. This alarming long-term trend indicates that the industry is thriving in an advertising environment where warnings are either nonexistent or are virtually invisible.

IV. Limitations of the Current US Approach to Mandatory Health Warnings

The current cigarette and smokeless tobacco warnings were mandated by Congress with the intent of influencing consumer attitudes and behaviors regarding tobacco use. However, they were created without a fundamental understanding of how consumers respond to and process disclosed information, nor with specific communication goals or target populations in mind. Policymakers may therefore have been in error in presupposing that the messages would have an effective impact on consumers. While warnings have the potential to communicate, research indicates that merely placing a warning statement on a tobacco product label or advertisement does not necessarily constitute effective communication.⁷² There is a clear distinction between *information provision* and *information impact*.⁷³

Since the 1965 Cigarette Labeling and Advertising Act was passed, Congress has attempted to strengthen tobacco warnings by changing their wording, extending them to both cigarette packages and advertisements, implementing rotating messages, and changing the shape of the warning (i.e., circle-and-arrow format for smokeless tobacco warnings). These changes, however, have been consistently less stringent than the Federal Trade Commission's recommendations, largely due to tobacco industry intervention. Moreover, Fischer and associates contend that from a communication perspective, these legislative attempts to create stronger warnings represent "only 'tinkering' with what is a fundamentally limited communication strategy."⁷⁴

In addition to being inherently flawed, there is evidence that the warnings have had effects that were unanticipated or unintended. Paradoxically, the tobacco industry has used the warnings as a legal defense against product liability claims, even though these messages were mandated by legislation it has steadfastly resisted since 1965. Also, an experiment conducted on British versions of mandated cigarette warnings that had been in place since 1971 noted that a "boomerang" effect may occur, making cigarettes more desirable among smokers.⁷⁵ Warnings that portray products as "forbidden fruit" may actually make them attractive to people.⁷⁶ The 1997 study by Robinson and Killen, published in the *Archives of Pediatric Adolescent Medicine*, revealed such a paradoxical effect in that greater knowledge of cigarette package warning labels among teens was significantly associated with higher levels smoking.⁷⁷ This finding prompted the editor of the journal to include a note on the first page of the study facetiously suggesting that the warning labels should read: "Your parents think smoking is cool," as a way to discourage teen smoking.⁷⁸

The strategy of using four cigarette and three smokeless tobacco rotating warnings has not changed since the mid-1980s. Equally important, the display of the cigarette warnings in a box with black-and-white text has not changed since 1965, when it became required on packages and in 1972 on advertisements. Smokeless warnings, although they were mandated in a novel circle-and-arrow format for advertisements, are nonetheless simple print stimuli patterned after the wording of the cigarette warnings.

Given the demonstrated lack of efficacy of the current cigarette and smokeless tobacco warnings, it is evident that new strategies are needed. Existing research can help design targeted labels that are

more noticeable, readable, understandable, believable, memorable, and therefore potentially more effective. Before implementation, warning labels should be evaluated in the context of the advertising messages with which they must compete and tested in experimental settings to ensure that they function effectively as communicating devices. It is also crucial that the effectiveness of warnings be monitored over time. It may be necessary to develop new warnings periodically to guard against "wearout," and to ensure that the messages reflect the latest research findings on smoking and health.

V. Research on Improving the Efficacy of Tobacco Warnings

Studies on improving the efficacy of tobacco warnings suggest that novel messages and warning formats may be more effective. Messages that are developed and tested using standard market research methods may better communicate specific smoking health risk information.⁷⁹ Larger warnings positioned on the upper front surface of cigarette packages are more noticeable and legible and may reduce the attractiveness of the package to adolescents.⁸⁰ Canada and Australia have recently implemented new warnings for all tobacco products that are printed in black and white and occupy 50 percent and 25 percent of the package front panel, respectively. Both nations conducted extensive research and testing prior to implementing the new warnings requirements, and studies to date indicate that the Australian warnings are more effective.^{81, 82} There is also evidence that plain or generic packaging can increase reading and recall of warning labels.^{83, 84} In addition, readers may be more likely to believe, learn from, and act on warnings that are perceived as personally relevant than on warnings that are abstract and technical.⁸⁵ While these studies involve cigarettes, there is no reason to doubt that the principles identified could be applied to smokeless tobacco as well as other tobacco products.

a. The Warning Message Should Be Targeted

As a communication tool, mandated tobacco warnings have the potential to promote public health by reducing the consumption of tobacco products. Yet given existing differences in individual attitudes toward the health risks of smoking^{86, 87} it is unlikely that all consumers in any given population will be equally influenced by the warning messages, regardless of any changes that may be made. Therefore, it is important that warnings be targeted toward those segments of the population in which they are most likely to effect an attitudinal and behavioral change.

Because smoking is a habit of addiction, warning changes are probably not going to have any impact on smokers who have no intention of giving up.⁸⁸ This would also be true for some users of smokeless tobacco products. However, it is plausible that modified warnings would elicit behavioral changes in those individuals who are already contemplating quitting, or have actually tried to do so.⁸⁹ Most often, these are mature smokers. Although there is the possibility that smokers who believe they are addicted will feel to helpless to act, there are ways to help them progress beyond that point.⁹⁰

Another even more important group that could be influenced by manipulations of warnings are those who are contemplating tobacco use or already experimenting with tobacco products. Since initiation of tobacco use occurs primarily during adolescence, it is crucial that warnings also be targeted toward this population segment. This is especially important with regard to smokeless tobacco, in view of the dramatic increase in adolescent use of these products. Many children underestimate the risk and potency of nicotine addiction, and these children are more likely to take up smoking.⁹¹ Adolescents have been singled out in public policy as one of the groups requiring special attention

with regard to lowering tobacco consumption, and it is evident that the present warnings are having little effect in discouraging them from tobacco use.

There is research evidence that warnings can play a supportive role in discouraging smoking in these two population segments. Household surveys conducted in Australia to monitor trends in the recall of warnings indicated that both young people (aged 14 to 24 years) and those motivated to quit were better at recalling the messages.⁹² However, levels of recall were still low among young people, with smokers only recalling on average two of the four rotating warnings implemented in 1987. This demonstrates the need for action to increase the salience and/or memorability of the key health messages incorporated in the warnings.

Notwithstanding the importance of targeting adolescents who may be considering using tobacco and mature adults who may be thinking about or attempting to quit, it is crucial that warnings provide all potential users and quitters with the opportunity to contemplate the health risks of tobacco use, regardless of age.

b. Warning Messages Must Be Developed Using Standard Advertising Techniques

Tobacco warnings vie for attention within a highly competitive advertising environment. Therefore, warnings need to be developed using the same strategies that are used to develop the advertisements with which they must compete. In a 1993 study, Fischer and colleagues evaluated the efficacy of new cigarette warnings developed using standard advertising techniques in comparison to the mandated Surgeon General's warnings in a group of adolescents.⁹³ Three new warnings were developed by a creative team with extensive commercial design experience, based on insight from focus groups conducted as part of the study:

- Smokers Inhale CARBON MONOXIDE (printed in both white and bright yellow backgrounds)
- Cigarettes Kill. One in every 3 smokers will die from smoking (printed in red and white)

These were compared with the currently mandated warning:

- Surgeon General's Warning: Quitting Smoking Now Greatly Reduces Serious Risks to Your Health.

A total of 220 subjects ranging from 13 to 19 years of age were exposed in a controlled setting to slide images of advertisements, including a Marlboro cigarette ad containing either the mandated or newly developed warnings. Standard market research methods (post-exposure recall, masked recall, and aided recognition) were used to evaluate the effectiveness of the warnings' communication. The mandated warning performed poorly as a communication device. It was identified as a health advisory, but failed to communicate more specific risk information. Only 15 percent of subjects recalled its health concept in the masked recall test. In contrast, the new warnings were more effective in communicating specific health risk information, with 66 percent recalling the health message. Notably, the major elements of the cigarette ad were quickly noted and frequently recalled: 97 percent of subjects identified what they saw as an ad for Marlboro cigarettes, and the median cumulative exposure time required to identify the image as such was only 0.03 seconds. The major elements of the ad were readily recalled in the masked recall test, with 81.7 percent of participants recalling the major heading ("Marlboro country") and the cigarette pack, and 43 percent recalling the subheading ("Come to where the flavor is").

The results of the focus groups also provided a number of insights that would be useful in developing more effective warnings messages:

- humor is ineffective
- the use of popular figures is problematic (a test warning, “Bo says, don’t do it” was not believable)
- fewer words, larger type, contrasting colors and graphic devices all increased attention to the warning
- simple, straightforward messages were more effective than the existing warnings in communicating health risks

c. Warnings are Potentially More Effective If They are Large and Prominent

To be effective, tobacco health warnings need to stand out from the surrounding package or advertisement design, and they need to be large enough to be read easily.⁹⁴ Research indicates that larger, more prominent warnings are more readily noticed and legible, and therefore potentially more effective. In 1992, the Centre for Behavioral Research in Cancer (CBRC) prepared a research brief summarizing the results of its comprehensive examination of health warnings and contents labeling on tobacco products in Australia.⁹⁵ The brief includes 13 empirical studies, which provided the basis for new larger, more prominent health warnings and contents labeling on cigarettes and other tobacco products introduced in Australia in January 1995.

One of the CBRC studies investigated the effects of varying background color and size on the legibility of cigarette pack warning labels.⁹⁶ Ten subjects ranging from 19 to 68 years of age were shown four packages of the same cigarette brand, each with the warning “Smoking causes lung cancer,” written in black type surrounded by a 1 mm-wide black border. The pack warnings were altered so as to systematically vary two factors: size (15 or 25 percent of the front pack surface) and color of the warning background (fluorescent green or white). The distance at which the warning could be read was used as an index of legibility.

The larger warning (25 percent) was significantly more legible than the smaller warning for both the black-on-white packs and black-on-fluorescent packs (Table 1). There was no difference in legibility between the black-on-white packs and the black-on-fluorescent packs for either the 15 or the 25 percent warning size.

Table 1
Mean distances at which brand name and warning label could be read

| Condition | Brand Name Legible (cm) | Warning Label Legible (cm) |
|----------------------|-------------------------|----------------------------|
| Black on White | | |
| 15 percent | 266 | 220 |
| 25 percent | 273 | 266 |
| Black on Fluorescent | | |
| 15 percent | 272 | 223 |
| 25 percent | 284 | 254 |

Source: Centre for Behavioural Research in Cancer, 1992.

Notably, brand names were legible at distances approaching the greatest tested (i.e., 300 cm). Brand

names were significantly more legible than the warnings on three packs: 15 percent black-on-white, and 15 and 25 percent black-on-fluorescent. However, there was no significant difference between brand name and warning legibility for the 25 percent black-on-white warning.

Another study included in the CBRC brief sought to identify warning label designs that render cigarette packs less attractive to adolescents and to quantify differences between experimental designs.⁹⁷ Two focus groups were conducted to obtain insights into adolescent perceptions and opinions about issues regarding brand image and smoking, and to explore the impact of test warning designs on the image of presented test packs. The focus group findings supported the notion that all aspects of design should be varied so as to enhance noticeability of the warnings. Accordingly, 16 warning designs were created to test the following variables:

- length
- position
- background color
- size
- border

A total of 64 mock packs were grouped into 32 pairs, so that one of the above variables was varied within each pair. Two brands were used and the brand type was kept constant within each pair. Pairs of cigarette packs were then photographed and made into 64 slides, 32 for each brand. Subjects were 120 adolescents, who were asked to indicate which pack of each pair they would “least like to be seen with.” As seen in Table 2, the majority of the subjects regarded warnings with the following design features as rendering a pack “less-liked-to-be-seen-with”:

- long warnings (eight words: “Smoking causes lung cancer, emphysema and heart disease.”) versus short warnings (four words: “Smoking causes lung cancer.”)
- top-of-pack warnings versus warnings located on the bottom of the pack (front surface of pack)
- fluorescent-background warnings versus black warnings on white background
- large warnings (25 percent of pack front surface versus 15 percent)
- warnings surrounded by a “zigzag” border versus a rectangular border

Table 2
Percentages nominating variant as “least liked to be seen with” (averaged across brands)

| Variable | Level | Mean percentage across test pair | p-value* |
|---------------------|-----------------|----------------------------------|----------|
| Length | Long | 64 % | 0.01 |
| | Short | 36% | |
| Position of Warning | Bottom | 34% | 0.01 |
| | Top | 64% | |
| Background Color | Black and white | 27% | 0.001 |
| | Fluorescent | 73% | |
| Size of Warning | 25 percent | 75% | 0.001 |
| | 15 percent | 25% | |
| Border of Warning | Rectangle | 34% | 0.01 |
| | “Zigzag” edge | 64% | |

* Chi-square tests, d.f. = 1

Source: Centre for Behavioural Research in Cancer, 1992.

Notably, warning size was the most potent single manipulation, followed by the use of fluorescent backgrounds. Length, position, and border type had less impact on judgments and attractiveness. These results reinforced the comments identified through the focus groups. That is, warnings that are long, printed on a fluorescent background, within a “zigzag” border, and occupy 25 percent of the front top surface of a pack are likely to render it “least-liked-to-be-seen-with.” Interestingly, while the previous study indicated that the use of fluorescent backgrounds does not detract from warning legibility, the results of this study reveal that they may be used to make cigarette packages less attractive to young people.

The CBRC concluded that these study findings confirm that prominent warnings on cigarette packs would discourage teenagers from use.⁹⁸ A subsequent CBRC study in which groups of teenagers handled and commented upon cigarette packs mocked up to include prominent warnings along with more detailed back-of-pack health risk information, suggested that such modifications would be acceptable and effective.⁹⁹ They would increase awareness and knowledge for all people, especially those smokers who are considered to be most in need of the information (i.e., young people and those trying to quit). Furthermore, the requirement of these changes would be viewed by them as demonstrating a government commitment to reducing the dangers of smoking.

The Australian research also revealed that among a sample of adult smokers, nearly nine of out ten wanted more health warning information on cigarette packages and supported making packs “less colourful and attractive” – providing that the changes could be shown to discourage young people from taking up smoking.¹⁰⁰ These results showed that there is overwhelming support for changes to tobacco packaging that would discourage young people from smoking. Moreover, among respondents who very much wanted to quit, 56 percent wanted more information, compared with 26 percent of those who didn’t want to quit at all, and 40 percent of those who had already given up ($p < 0.001$). Consistent with this finding, 48 percent of those likely to quit wanted more information compared with 32 percent of those who said they were unlikely quit ($p < 0.005$). These data are

consistent with the assumption that health warning information is of most importance and relevance to people when they are contemplating quitting, and least relevant to them when they are in the precontemplation stage of quitting.

The research brief also cites a 1985 study conducted by the Health Department of Western Australia that investigated several factors that might make a cigarette package warning message more noticeable.¹⁰¹ The four variables studied were:

- the position of the warning on the pack (top versus bottom)
- the size of the warning (10 or 20 percent of the surface)
- the use of a contrasting white background panel for the warning message
- the effects of verbal highlight by use of words such as "Warning."

The results revealed that the only one of these factors that made a large difference was the percent of the surface of the pack devoted to the warning. Packs with a warning occupying 20 percent of the surface resulted in 90 percent of subjects noticing the message, compared to 72 percent for warnings taking up 10 percent of the surface. The top of the front of the pack was the most noticeable position. In addition, a 1990 Canadian study showed that people believe that the top is the optimal position.¹⁰²

Research conducted by Health Canada after announcing its proposed new tobacco package labeling requirements last January showed that there was a significant linear relationship between the size of the health warning message and its influence on the decision to stop smoking, in the range tested (30 to 60 percent, at 10-percent intervals).¹⁰³ The larger the message, the more effective it is at encouraging smokers to stop smoking, although the difference is less pronounced from 50 to 60 percent than from, for example, 30 to 40 percent. The most effective impact for teenagers was attributed to the incremental increase of 30 to 60 percent; adults responded to an impact of 30 to 50 percent. Larger messages are more effective with those contemplating quitting and starting smoking, and least effective with hard-core smokers.

Another Health Canada study indicated that the proposed health warning designs (which are printed in black and white and cover 50 percent of the top of the front and back display panels) were about twice as legible and 3.5 times as effective as those in present use (which occupy 25 percent of the principal display surfaces).¹⁰⁴ Size of the printed words was the principal factor determining legibility; doubling the size of the letters more than doubled the legibility.

A June 1997 survey commissioned jointly by the London-based Action on Smoking and Health (ASH) and two European tobacco control organizations revealed that the present health warnings on tobacco products were largely ignored by smokers because they are barely visible and tend to blend in with the packaging design.¹⁰⁵ This survey was conducted in the UK, France, and Belgium among a representative sample of around 1000 people over age 13 in each country, and included both qualitative and quantitative research.¹⁰⁶ It also revealed that larger, bolder warnings, coupled with strong anti-smoking mass media campaigns, would be more likely to change smoking behavior. The results of this survey prompted ASH to call on the government and the European Union to revise the current laws on tobacco health warnings and tar yields so that smokers are given accurate information about the contents of tobacco and more information about the dangers of smoking.¹⁰⁷

Additional evidence cited by ASH¹⁰⁸ included the Health Canada research and a 1993 report issued

by the European Bureau for Action on Smoking Prevention, which includes a comparative study of the labeling of cigarette packs in the twelve member states.¹⁰⁹ The report notes that the visibility and legibility of the health warnings, which were implemented by a 1989 directive, is “severely compromised” by both their small size and the manufacturers’ practice of using colors that contrast only slightly or not at all with the background color of the pack or its general design.^{110*} The report recommended that the number of warnings be increased, and that their size be increased from a minimum of 4 to 25 percent of the two large surfaces of the package, and be printed in black and white surrounded by a black border. Accordingly, ASH recommended larger, clearer warnings occupying at least 25 percent of the front surface of the pack.

In November 1999, the European Commission proposed a directive for tobacco product regulation, which includes larger and bolder health warnings.¹¹¹ The directive specifies two health warnings for each pack (as is presently required): a general warning such as “Smoking kills,” and a list of additional warnings, which must be used in rotation. The warnings are required to cover 25 percent of the pack face and must be printed in black and white, surrounded by a 3-4 mm border. In June, the Council of Health Ministers reached a political agreement on the proposed directive in June, which is expected to be rapidly adopted in the second stage reading.¹¹²

d. Warnings Must Be Understandable

If warnings are to discourage the use of tobacco products, then the words and concepts used must be understood in the way intended, particularly by the population segments at which the messages are directed. Since youth smoking is a serious concern, it is especially important that warnings be understood by adolescents.

One of the studies in the Australian research brief sought to explore the extent to which words and concepts used in tobacco health warnings are understood by early adolescents.¹¹³ In this study, participants were presented with a questionnaire listing words and concepts selected as potentially difficult to understand from an assembled list of worldwide tobacco health warnings used in the past, present, or proposed. They were asked to define each of the terms using both open-response and multiple-choice formats.

The results are summarized in Table 3. It is clear that most of the words were not understood by high school students, who are at an age when they are likely to be considering taking up smoking. This appeared to be particularly true of the terms relating to illness and anatomy. Overall, only 22 percent of the words were fairly, definitely, partially, or completely understood by more than half the sample, while it is reasonably certain that 36 percent were definitely not understood by over half the sample.

* Directive 89/622 of 13 November 1989 states that warnings shall be printed on a “contrasting background.” However, there has been a tendency of manufacturers to adopt a minimalist interpretation of this requirement by printing warnings in non-contrasting colors (e.g., gold on white, grey on white, blue on darker blue, etc.) in order to minimize their visibility.

Table 3

Percent of high school students (a) definitely understanding, and (b) definitely not understanding various words and concepts used in actual and proposed cigarette pack warning messages

| Word or Concept | Under- Standing (%) ¹ | Not Under- standing (%) ² | Word or Concept | Under- Standing (%) ¹ | Not Under- Standing (%) ² |
|--------------------------|-------------------------------------|---|------------------------------|-------------------------------------|---|
| Cadmium | 0 | 52 | Lethal | 50 | 82 |
| Lateral | 0 | 83 | Brittle | 52 | 15 |
| Neonatal | 0 | 100 | Addictive | 58 | 6 |
| Inflammation | 2 | 57 | Fitness | 60 | 6 |
| Self extin- guishing | 4 | 45 | Oxygen | 61 | 12 |
| Lateral smoke | 11 | 85 | Refraining | 61 | 38 |
| Chronic | 12 | 57 | Pregnancy | 62 | 9 |
| Fatal | 12 | 54 | Disease | 67 | 4 |
| Hypersensitive | 13 | 35 | Heroin | 79 | 9 |
| Prematurely | 13 | 26 | Cocaine | 81 | 15 |
| Indication | 15 | 10 | Myocardial infarction | - | 100 |
| Resistance | 15 | 40 | Larynx | - | 100 |
| Cavity | 16 | 27 | Pulmonary | - | 100 |
| Life expectancy | 16 | 10 | Alveoli | - | 96 |
| Rate | 18 | 58 | Carcinogens | - | 93 |
| Capacity | 22 | 33 | Vascular | - | 88 |
| Carbon monoxide | 22 | 44 | Cardio-vascular | - | 77 |
| Limbs | 23 | 36 | Peptic ulcer | - | 75 |
| Equivalent | 24 | 11 | Oral cavity | - | 74 |
| Restricted | 24 | 15 | Tumour | - | 71 |
| Breathing capacity | 27 | 16 | Ulcers | - | 68 |
| Anti-social | 31 | 69 | Oesophagus | - | 68 |
| Pollution | 31 | 40 | Emphysema | - | 61 |
| Ignite | 32 | 36 | Respiratory | - | 61 |
| Causes | 33 | 19 | Hardening of the arteries | - | 52 |
| Paralysing | 35 | 9 | Allergy | - | 47 |
| Automobile exhausts | 36 | 9 | Stroke | - | 47 |
| Passive smoking | 37 | 14 | Arteries | - | 44 |
| Premature | 37 | 11 | Bronchitis | - | 38 |
| Hazards | 38 | 25 | Bladder | - | 38 |
| Arsenic | 40 | 54 | Cancer | - | 29 |
| Nicotine | 40 | 32 | Asthma | - | 25 |
| Victim | 40 | 19 | Circulation | - | 25 |
| Increase dramatically | 46 | 21 | Asthmatics | - | 23 |
| Manufacturer | 48 | 22 | Heart | - | 6 |
| Companion | 49 | 31 | Lungs | - | 6 |

Source: Centre for Behavioural Research in Cancer, 1992.

Notably, some words were misunderstood in a way that would be likely to cause confusion and lessen the desired impact of health warnings. For example, the word “cadmium” was widely misunderstood and frequently confused with “calcium,” with responses including “something in milk” and “food for your bones.” If teenagers think that cadmium is calcium, which they believe is

¹ Percent definitely correctly or partly understanding, as judged by the open-ended questions.

² Percent definitely not understanding as judged by responses to the multiple-choice questions.

good for their health, they will view the fact that cadmium is found in cigarette smoke and smokeless tobacco as a good thing. They will therefore misinterpret the intent of the message: to prevent or motivate stopping tobacco use.

Other toxic constituents of tobacco and cigarette smoke were misunderstood. Carbon monoxide, for instance, was referred to as “some kind of medicine” and “fresh air, while arsenic was described by one subject as “a needle or something you take when you are ill.” Nicotine evoked a particularly imaginative response: “a certain time.”

Even more “generic” terms were poorly understood. While “fatal” was generally described as bad, serious, and harmful, respondents frequently missed the key point – causing death. “Lethal” evoked responses that were clearly influenced by the film *Lethal Weapon*: “something that needs to be registered as a dangerous weapon,” and simply “weapon.” “Victim” was not only misunderstood, but repeatedly evoked responses opposite to its actual meaning. Two subjects defined victim as a “robber,” and two others responded, “someone that has done something wrong and someone is after.” Another answered “someone that steals things and gets away with it is called a victim.”

The “problem words” identified in this study should either be avoided in warnings or special care taken to elucidate their meaning. The study findings also have serious implications for proposals to expand contents labeling information on tobacco products, and clearly indicate that supporting information about the harm they can do to the body would be required. On the other hand, there are also important terms that are frequently mentioned in the media and in discussions about smoking health risks that should not be avoided and need careful explanation. These include names of diseases such as emphysema, and terms such as passive smoking, which appeared to be frequently confused with chain smoking. Exceptions to this are words for which there are suitable synonyms or paraphrases. For example, the words “fatal,” “victim,” and “lethal,” could easily be replaced by the (arguably more powerful) phrase “smoking kills.”

In the course of the CBRC research, health educational texts were developed to elucidate the warnings and tested for their ability to increase knowledge among teenagers.¹¹⁴ The texts were developed as prototypes for expanded back-of-pack cigarette health warning information sought by Australian adult smokers, as previously discussed.¹¹⁵ They were written with short sentences, taking into account the principles of clear communication (e.g., noticeability, legibility, etc.) outlined in the CBRC research brief, and difficult words were clearly defined. The texts contained information on the following issues:

- the effect of smoking on a range of immediate and long-term health risks
- passive smoke exposure risks
- dangers of smoking during pregnancy
- the addictive nature of tobacco
- benefits of quitting

Two page-length “test texts” (Text A and Text B) were developed from these prototypes. Study subjects were 177 scouts (mostly boys) aged 11 to 15, who were recruited from the 1992 International Scout Jamboree held in Ballarat, Victoria. The scouts were provided with Text A, Text B, or no text (control), followed by administration of a multiple-choice questionnaire designed to test their comprehension of the information contained in the texts. As predicted, reading information

about the specific effects of smoking increased adolescents' knowledge of this information in the short term. Thus, the inclusion of extra information on cigarette packs is likely to be an effective means of disseminating facts about smoking and health to young people.

e. Warnings Must Be Believable

Even warnings that are understood may vary in their persuasive power, depending in part upon the characteristics of the message itself, such as its believability and the way in which it is presented. The importance of the credibility of warnings is underscored by the finding that significant numbers of smokers are either ignorant or not convinced that smoking is dangerous. The Federal Trade Commission reported that in the period from 1978 to 1980, 17 percent of all smokers and 24 percent of heavy smokers did not know or believe that smoking is a health hazard.¹¹⁶ In a 1983 survey of a large Australian sample, Hill and Gray found that 24 percent of the smokers questioned did not believe that smoking caused any illnesses at all.¹¹⁷ A 1989 sample survey conducted in Victoria, Australia (after the four rotating pack warnings were introduced and comprehensive Quit antismoking campaigns begun) found a comparable figure of 16 percent in response to the same question.¹¹⁸ It is obviously possible that this lack of knowledge and belief is caused by not having read or understood the warnings.

As part of its research, the CBRC conducted a study to identify messages from a pool of tobacco health warnings that were perceived by adolescents as having relatively more impact, based on believability and potency criteria.¹¹⁹ Subjects were given either of two versions of a list of 36 randomly ordered tobacco health warnings and asked to rate them on a three-point believability scale (hard to believe, not sure, easy to believe) and a five-point potency scale (very weak, weak, neither, strong, very strong). The specific messages were categorized into ten strategies, which are provided along with supporting examples in Table 4. Of the ten conditions tested, two dealt with framing of warnings (1, 2) and eight explored the content of the messages (3-10).

Table 4
Number of items in each message strategy and examples of specific messages

| Strategy | Number of Warnings | Example |
|---------------------------|---------------------------|---|
| (1) action versus product | 3 | <i>Cigarettes cause lung cancer versus Smoking causes lung cancer</i> |
| (2) cause/major cause | 2 | <i>Smoking causes versus Smoking is a major cause of lung cancer</i> |
| (3) statistics | 4 | <i>Nine out of ten lung cancer victims are smokers</i> |
| (4) warnings on use | 4 | <i>Harmful to health when smoked</i> |
| (5) health threat | 4 | <i>Smoking reduces your fitness</i> |
| (6) disease | 4 | <i>Smoking is a major cause of heart disease</i> |
| (7) kills | 5 | <i>Smoking kills</i> |
| (8) image | 4 | <i>Smoking gives you wrinkles</i> |
| (9) passive smoking | 3 | <i>Your smoking can harm others</i> |
| (10) addiction | 3 | <i>Smoking is addictive</i> |

Source: Centre for Behavioural Research in Cancer, 1992.

The study results suggested that warnings have higher perceived impact when they are structured as short, simple, and unambiguous statements. A number of specific issues were identified as important, including the nature of smoking as addictive and harmful to self and others, and its effect on fitness, disease risk, and mortality. The following warnings stood out on the basis of potency and believability judgments made by the adolescents:

- Harmful to health when smoked
- Smoking reduces your fitness
- Smoking kills
- Your smoking can harm others
- Smoking is addictive
- Smoking causes lung cancer
- Smoking causes/is a major cause of heart disease
- Smoking causes/is a major cause of emphysema

The Western Australia Health Department has also provided relevant data on the acceptance of health warnings. In one study, adults were asked to rank statements for believability.¹²⁰ The warnings that emerged as being of **high believability** were:

- Smoking is addictive
- Smoking causes lung cancer and heart disease
- Smoking damages your lungs
- Smoking during pregnancy harms your baby

The warnings considered **least believable** were:

- Keep fit – don't smoke
- Pregnant? Please don't smoke
- Smoking kills
- Don't smoke near children
- Smoking stunts growth of unborn babies

Studies in other nations have investigated the kinds of warnings that are most likely to be credible and/or effective. These include a major study by the UK Health Education Authority¹²¹ and studies conducted in New Zealand¹²² and Canada,¹²³ the results of which are summarized in Table 5.

Table 5
Health messages judged most believable in studies in the U.K., New Zealand, and Canada

| U.K.: Health Education Authority (1990) | New Zealand: Laugesen (1990) | Canada: Tuffin (1990) |
|---|--------------------------------|--|
| Smoking when pregnant harms your baby | Smoking causes lung cancer | Smoking causes cancer |
| Protect children: don't make them breathe your smoke | Smoking causes heart disease | Smoking kills |
| Smoking causes cancer, chronic bronchitis, and other chest diseases | Smoking is addictive and kills | Danger. Cigarettes cause cancer and can kill you |
| Smoking kills | Smoking damages your lungs | |
| Save money – stop smoking | | |

f. Warnings Must Be Presented Boldly

While the content of a warning undoubtedly influences its impact, the way in which the message is presented may also affect how it is perceived by the reader. To understand the possible impact of the presentation of a warning, the CBRC conducted a study of young adults' responses to differently-framed health messages about smoking.¹²⁴ Subjects were 300 first-year psychology students aged 21 or under who were either current smokers or were considered vulnerable to taking up smoking (i.e., having smoked any tobacco in the previous year or admitting any chance of taking up smoking in the next year). Eight potential consequences of smoking were selected as the basis for the health messages:

- lung cancer
- heart disease
- emphysema
- passive smoking
- reduction in general fitness
- death
- quitting smoking
- premature aging

Each message was written in six framing formats, including two "standard" and four other strategies for a total of 48 messages. Two warnings examples (lung cancer and heart disease) from each of the six message conditions are provided in Table 6. Because two studies^{125, 126} showed that imagining an event can greatly increase one's estimate of the likelihood of that event actually occurring, a

condition instructing readers to “imagine” experiencing specific symptoms of smoking-related diseases was included.

Table 6
Examples of warnings used in the each of the six message conditions

| Framing Format | Health Warning (lung cancer and heart disease) |
|--------------------|--|
| Question: | Is it true that smoking causes lung cancer? Does smoking cause heart disease? |
| Personal: | Your smoking can give you lung cancer. Your smoking can cause you to have a heart attack. |
| Imagine: | Imagine a lethal cancerous tumour growing silently in your lungs. SMOKING CAUSES LUNG CANCER Imagine the sudden paralysing pain of a heart attack. SMOKING CAUSES HEART DISEASE |
| Statistics: | Nine out of ten lung cancer victims are smokers. In younger people, three out of four cases of heart disease are due to smoking. |
| Mixed: | Two, image, two question, two personal, and two statistics were used in this condition. |
| Standard: | Smoking causes lung cancer. Smoking causes heart disease. |

Source: Centre for Behavioural Research in Cancer, 1992.

Subjects were randomly allocated to receive a questionnaire containing one of the six different message-frame conditions. Before and after viewing the warnings, each subject responded to four dependent-variable questions written in a slightly different form for smokers and nonsmokers. The questions asked the percentage chance that:

- smoking would cause a fatal illness
- smoking would damage one’s health
- smokers would quit smoking/nonsmokers would try smoking in the future
- a nonsmoker’s health could be damaged by living with a heavy smoker

The goal of the study was to determine whether any particular message framing strategies were more effective in producing change in the dependent variables. While no frame was found to be unequivocally superior to the straightforward standard, the “imagine” frame significantly reduced behavioral intentions to smoke. Furthermore, among the frames tested, imagine is most strongly supported in theory and research. It was also strongly endorsed in comments made by focus group participants in the study that evaluated the effects of warning label design on the attractiveness of cigarette packs to adolescents.¹²⁷ The effects of the imagine frame, particularly upon the behavioral intentions of vulnerable nonsmokers, led the study authors to suggest that evocative words that encourage readers to identify with the suffering caused by smoking should be chosen for tobacco health warnings and supporting explanatory text wherever possible.

g. Warnings Must Be Personally Relevant

Research indicates that personal relevance may enhance the efficacy of warnings.¹²⁸ Furthermore,

having warnings about a broad range of the ill-effects of smoking increases the chance that people reading those warnings will find at least one to which they can relate.¹²⁹ The CBRC determined that the likelihood that the message will be perceived as personally relevant by the reader will be increased by:¹³⁰

- explicitly naming the target group at whom the message is aimed
- providing arguments against the likely counter-propaganda*

Evidence supporting these assertions is presented in reviews.^{131, 132} Also, Janz and Becker reviewed the evidence showing the importance of making health messages appear personally relevant to their recipients.¹³³ These authors reported that in approximately 80 percent of the studies examined, the perception of personal vulnerability to a risk increased the probability that someone would follow advice about avoiding it.

In the study by the Western Australia Health Department, in addition to being asked whether they believed a message to be true, subjects ranked the warnings in terms of personal relevance.¹³⁴ The five judged **most personally relevant** were:

- Smoking causes lung cancer and heart disease
- Smoking causes shortness of breath
- Cigarettes cause cancer
- Smoking is addictive
- Smoking damages your lungs

The five of **lowest personal relevance** were:

- Smoking is a health hazard
- Non-smokers live longer
- Smokers die younger
- Don't smoke near children
- Your smoke harms others

h. Warnings Must Be Monitored and Altered Periodically to Prevent Habituation

Tobacco users are invariably frequently exposed to warnings on cigarette packages and other product containers. This raises the question of whether repeated exposure results in habituation to the messages, lessening their effectiveness. As noted earlier, a 1981 FTC staff report alluded to this phenomenon, concluding that the warning on cigarette packages and advertisements had become overexposed and "worn out," and thus was no longer effective.¹³⁵ Also, a study conducted by the CBRC found that after an initial rise in the recall of the four rotating tobacco warnings following their introduction in Australia in 1987, recall of the messages failed to increase over the next four years.¹³⁶ This was partly attributed to the effects of habituation, which resulted in the messages often not being noticed by smokers. However, the same study showed that young people and people intending to quit or recently having tried are more likely to recall the messages. This suggests that the warnings may be more effective for newer smokers who have been less habituated to them and that, under some conditions, smokers become re-sensitized to the presence of the messages. Other studies indicate that habituation may neutralize warnings that were at first effective.^{137, 138} There is also some evidence to suggest that warnings are less likely to be noticed by those who have been exposed a number of times to a risk without obvious adverse effects or consequences, and those with greater familiarity with a product.¹³⁹ Furthermore, the effects of warnings on perceptions of risk may

* "Counter-propaganda" means the arguments to which the reader of the message will subsequently be exposed, which are against the intent of the warning.

be reduced if people have had previous experience with potentially dangerous products.¹⁴⁰

The CBRC report cites three factors that are likely to affect the speed and degree of habituation:

- frequency of repetition of the message
- degree of similarity between messages, where more than one message or warning is used
- general (meta-) habituation to health and warning messages (i.e., as a result of repeated exposure to a variety of messages and warnings about a product or products, people could become habituated to messages and warnings in general)

The report also suggests a number of ways to lessen or avoid the effects of habituation:

- (1) change warnings and messages frequently
- (2) during the life of a message:
 - vary its physical presentation format – position on pack, color, or size
 - introduce novel stimulus material (e.g., arrows or borders)
- (3) make messages used in close temporal conjunction dissimilar with regard to psychological and physical packaging factors
- (4) consider the introduction of periods in which no warnings appear on packs.

In addition, the CBRC recommends that provision be made with respect to all aspects of labeling for changes to be made in light of new discoveries regarding the consequences of smoking and the effectiveness of warnings, and for ongoing monitoring and evaluation to ensure continued effectiveness.

VI. What the US Can Learn from Other Countries

In January 1995, Australia implemented new larger, more prominent health warnings and contents labeling information on all tobacco products. These changes were based on recommendations emerging from commissioned research by the Centre for Behavioural Research in Cancer, which demonstrated the need for changes, that changes could increase the effectiveness of warnings, and that the changes were acceptable to the public.¹⁴¹ Although the tobacco industry fought the warnings and some modifications were made as a result, six new stronger warnings with elaborations on the back of the pack, an information number to call, and elaborated contents labeling were implemented.

a. Australian Research

The CBRC determined that there was a strong case for strengthening the warnings. The scientific evidence documented was used to argue that existing smokers were not adequately informed by the present four rotating cigarette warning labels implemented in 1987, and that potential smokers were likely to be even less informed.¹⁴² The CBRC also contended that the plateauing of effects of the warnings meant regular changes were important, and that the warnings needed to be more prominent. It initially recommended that 12 rotating warnings be placed at the top of the front of packs, occupying not less than 25 percent of the surface area, and that the back of the pack be completely taken up by an elaboration of the warning, a summary of the main health consequences of smoking, and a telephone number that smokers could call to get further information and help to quit.

For the product labeling, the Centre contended that providing information about what the constituents of cigarette smoke were and the harm they could cause was needed to make the existing information more salient to smokers. One of the studies conducted by the CBRC assessed smokers' knowledge

of tar, nicotine, and carbon monoxide levels (in ranges) of their usual brands.¹⁴³ Overall, only 51 percent of smokers knew the tar level of their brand. For nicotine and carbon monoxide, correct answers were even less frequent (32 and 9 percent, respectively). Adolescents in the age group at risk for taking up smoking had a poor understanding of the main constituents of smoke.¹⁴⁴ However, the CBRC determined that it was not appropriate (based on current knowledge) to include details about other smoke constituents on the packages, as there is potential for confusion if too much information is provided. It was initially recommended that the entire side of the pack be given over to smoke constituent information (excluding the portion that is part of the lid), and that the type face, colors, and borders be specified by regulation.

On the basis that a warning could only identify one (or at most, two) of the many dangers associated with smoking, the CBRC proposed providing more comprehensive supplementary information. Possibilities for this included package inserts and the use of the back of the pack. The recommendation was based on a study described earlier in which it was demonstrated that reading relevant information can increase knowledge in adolescents at an age when they might be expected to be experimenting with tobacco use.¹⁴⁵

Generic packaging was also recommended, based primarily on outside research,^{146, 147} as the CBRC's research indicated only moderate support for plain packaging,¹⁴⁸ even though there was strong support among smokers for making packs "less colourful and attractive," so long as the changes were likely to discourage smoking uptake.¹⁴⁹ While this recommendation was not adopted, the governments did call for more research on the issue.

The following six warnings were ultimately adopted in the regulations:

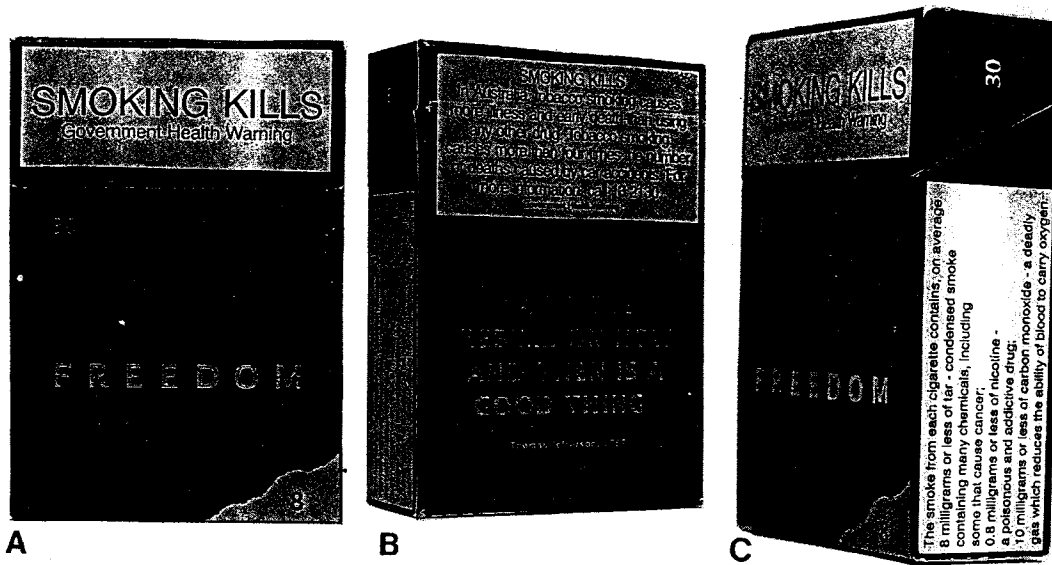
- Smoking Kills
- Smoking Is Addictive
- Smoking Causes Lung Cancer
- Smoking Causes Heart Disease
- Your Smoking Can Harm Others
- Smoking When Pregnant Harms Your Baby

Two of the warnings, "Smoking Causes Lung Cancer" and "Smoking Causes Heart Disease," were retained from 1987 regulations. Two others, "Smoking Reduces Your Fitness" and "Smoking Damages Your Lungs," were replaced under the 1995 regulations.

The health effects summary was dropped from the regulations, and the telephone line was restricted to providing information and not active help for cessation. For product labeling, it was recommended that one side of the pack be used for a more detailed description of smoke contents, which was essentially adopted. Both the warnings and contents labeling are black-on-white, with layout prescribed as recommended.

Figure 1 provides an example of the new package warning and contents labeling requirements.

Figure 1
The New Australian Cigarette Package Warning and Contents Labeling Requirements



(A) the front, (B) the back, and (C) one side of a cigarette pack showing the warnings and contents information.
 NB: The brand "Freedom" was launched at the time of the introduction of the warnings as part of an attempt by the industry to depict them as an infringement of the freedom of smokers, presumably that of being able to smoke without being reminded of the risk they are running.

Source: Borland and Hill, 1997b.

Drs. Ron Borland and David Hill of the CBRC, who participated in the warnings research, note that it was clear from the public reactions of the Tobacco Institute of Australia (TIA) and from extensive tobacco industry lobbying that the proposed changes were threatening to the tobacco industry.¹⁵⁰ As the industry also fought the new Canadian warnings,¹⁵¹ Borland and Hill concluded that its response supported their position that stronger warnings would be effective deterrents to smoking.

Another industry strategy was to sue the Anti-Cancer Council of Victoria, which set up the CBRC in 1986, under the Trade Practices Act. The objective of this Act is to provide consumers and other businesses protection against unfair trade practice (similar to the FTC Act). To succeed, the TIA would have had to show that the conducting of research by the CRBC was a form of "trade," that its methods were invalid or conclusions wrong, and that its publications adversely affected the tobacco companies' business. The TIA action sought to suppress publication of the research brief and extract an admission of error. It succeeded in neither, but, as Borland and Hill observed, if its intent was to harass and divert researchers' energies to self-defense, it did succeed.

It appears to us that the writ was designed to help the tobacco industry in their lobbying by implicitly impugning our report, and to act to discourage us or others from doing such work in [the] future. The tobacco industry has a long history of attacking scientific work it considers unfriendly.¹⁵²

One argument used by the tobacco industry in attempting to discredit the report was that the researchers had not demonstrated that the warnings would have any effect on smoking (which was acknowledged in the report). But Borland and Hill note that it is not possible to demonstrate benefits

in advance for new strategies that can only be implemented widely. What is needed is research to show that there is a plausible cause that it will work and will have very little chance of negative effects. Basing recommendations for change on an integrated body of research was an important part of making the case for change, and is also likely to mean that the effects of the changes are more likely to be beneficial.

Borland and Hill conclude that while the new warning system goes further than the previous requirements towards providing the moral imperative of adequate information, the failure to include a summary of the main health effects of smoking on the back of the cigarette package can be considered a setback, at least in terms of the consumer's right to know. While the new warnings may have some impact on the image of cigarette packs, the manufacturers' trademarks and packaging style remain the most salient features. Therefore, consideration still needs to be given to some form of generic or standardized packaging. Finally, the current phone number on packs provides "rather prosaic" recorded advice, and is precluded from providing direct cessation assistance. They point out that to fund an effective advice system would cost very little in comparison with the costs of smoking, but to date, neither federal nor state governments have had the will to act.

Canada has recently adopted even more stringent warnings that occupy 50 percent of the principal pack display surfaces and employ graphic imagery, such as diseased lungs and gangrenous feet caused by smoking.

b. Initial Impact of the New Australian Warnings and Contents Labeling

Shortly before and a few months after the new Australian tobacco health warnings were implemented in January 1995, Borland and Hill conducted surveys to assess their initial impact on consumer knowledge and beliefs.¹⁵³ Approximately 500 smokers and 500 nonsmokers were surveyed in December 1994, and similar numbers were surveyed in May 1995, a time when a mix of cigarette packs with old and new warnings were being sold.

The study results revealed there was a high awareness of the new warnings, particularly among smokers, with the increased size of the warnings being the most salient feature (Table 7). More than a third of smokers reported being affected by the warnings, with reductions in consumption and talking about warnings being the most common effect. Among smokers, there was an increase in knowledge about the main constituents of tobacco smoke. The number of types of health effects mentioned also increased, as did the number of warnings correctly recalled. Overall, beliefs about the six warning statements became stronger. Few changes were found for nonsmokers. The knowledge and recall effects were replicated in the re-contact subsample, but the belief changes were not. Based on these findings, the authors concluded that the new health warnings are resulting in better informed smokers, and thus suggest that informative health warnings can play an important role in better informing consumers.

Table 7**Unprompted reports of recent changes to health warnings on cigarette packs in Australia: cross-sectional follow-up sample**

| Change to Warning | Smokers (n = 512), % | Nonsmokers (n = 521), % |
|--|---------------------------------|------------------------------------|
| Bigger warning | 69.7 | 35.5 |
| More warnings | 31.8 | 14.0 |
| Top-of-pack placement | 20.3 | 7.1 |
| Black on white | 4.9 | 1.3 |
| Back-of-pack explanation | 5.5 | 0.4 |
| Side contents explanation | 5.3 | 0.6 |
| Stronger/more specific/different content | 4.9 | 4.2 |
| Information line number | 0.6 | 0.0 |
| Total Aware | 91.4 | 50.9 |

Source: Borland and Hill, 1997a.

Other aspects of this study reported by Borland showed that the prevalence of forgoing cigarettes as a result of noticing the warnings increased following their introduction.¹⁵⁴ The increase was found in both the cross-sectional and longitudinal samples. Furthermore, foregoing cigarettes as a result of noticing the old warnings at baseline was predictive of having quit by the time of the follow-up survey.

Based on their research findings, Borland and Hill concluded that the new Australian health warnings on cigarette packs are an important advance on previous warning systems in that they have clearly improved community knowledge relevant to an assessment of the risks associated with smoking, and have increased the salience of knowledge of health consequences.¹⁵⁵ This improved knowledge base should help consumers to make more informed decisions. Notably, they contend that it is reasonable to presume that stronger warnings introduced in other countries will have similar benefits to those found in Australia.

VII. Conclusions

The current US tobacco health warnings system is ineffective in discouraging tobacco use, particularly among adolescents. Studies show that the warnings are not well noticed, understood, or recalled by adolescents. The messages are old and worn out, and their impact is seriously compromised by their small size, being further diminished by powerful imagery used in tobacco advertising and packaging. Despite several attempts by the FTC to provide for stronger warnings, the tobacco industry has continually succeeded in influencing Congress to mandate messages that are substantially watered down.

Research conducted in Australia by the Centre for Behavioral Research in Cancer provides much needed insight into improving the current US warnings system. This research served as the basis for the new warnings implemented in Australia in 1995, which must be printed in black and white and occupy at least 25 percent of the top of the front of the pack. Studies conducted shortly after the new warnings were implemented reveals they have had a positive impact. Notably, Canada has recently enacted packaging regulations that the government claims are the toughest in the world,¹⁵⁶ requiring warnings that cover 50 percent of the principal display surfaces and include graphic depictions of cancerous tumors or other afflictions.

Based on the research examined in this review, we strongly recommend that at a minimum, Australian-type warnings (i.e., covering 25 percent of the package front surface and printed in black and white) or warnings similar to those implemented in Canada be adopted in the United States for cigarettes, smokeless tobacco, and cigars. Similar warnings have been recommended for tobacco product packaging in the European Union, which are likely to be implemented. Stronger warnings based on specific communication goals should be implemented for all tobacco products. In sum, these new messages must:

- be thoroughly tested for format, size, and color among targeted groups
- be targeted toward specific populations in which they are most likely to be effective (i.e., adolescents who are contemplating beginning smoking and potential quitters)
- be developed using standard advertising techniques
- be large and prominent, so that they are not obscured by powerful packaging and advertising imagery
- be understood by target populations
- be believed to be true
- be presented boldly
- be personally relevant, without attribution to the Surgeon General
- be monitored and altered periodically to prevent habituation, or “wearout,” and to ensure that they are consistent with the latest smoking-and-health research
- employ graphic imagery that communicates risk
- include phone numbers to access smoking cessation services

While larger, more potent messages can be mandated, it is important to realize that warnings alone cannot accomplish the crucial public health objective of decreasing tobacco use. Therefore, warnings would be most useful as an integral component of a sustained, comprehensive campaign aimed at educating consumers about the dangers of tobacco.

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