

**HEALTH WARNINGS  
ON CONSUMER PRODUCTS:  
WHY SCARIER IS NOT BETTER**

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# TABLE OF CONTENTS

ABOUT WLF'S LEGAL STUDIES DIVISION .....	ii
ABOUT THE AUTHORS.....	iii
INTRODUCTION.....	1
I. CONSUMER HEALTH WARNINGS: SCARIER IS NOT BETTER .....	2
II. GRAPHIC HEALTH WARNINGS FOR TOBACCO: A CASE STUDY .....	6
A. What Graphic Health Warnings Are Meant To Do .....	7
B. The Social Psychological Basis for GHW .....	8
C. Why Fear-based Warnings Fail.....	11
1. Fear Control Rather Than Danger Control.....	11
2. Oversimplification and Exaggeration.....	15
3. Self-Esteem and Self-Efficacy .....	16
4. Lack of New, Relevant Information.....	18
5. Health-based Deterrents Ineffective.....	21
6. Impaired Credibility .....	23
7. The High Cost of Compliance.....	23
8. The Forbidden Fruit Effect .....	25
D. The Weight of the Psychological Evidence about Fear-Based Warnings.....	26
III. EMPIRICAL STUDIES ON THE EFFECTIVENESS OF GHW ON TOBACCO PRODUCTS.....	27
IV. GRAPHIC HEALTH WARNINGS AT ODDS WITH VALUES OF DEMOCRATIC SOCIETY .....	42
ENDNOTES.....	47

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## **Key Points in this WORKING PAPER:**

- Public health officials and activists argue that warnings with alarming language and graphic images are required to effectively “guide” the public toward better consumption decisions.
  - Graphic health warnings are not grounded in social psychological principles and are not supported by scientific evidence. Properly conducted studies show that such warnings not only are ineffective, but can be counterproductive.
  - Graphic health warnings are fundamentally at odds with three core democratic values: autonomy, respect, and freedom of expression.
- 

## **INTRODUCTION**

Consumer activists and many in the public health community have recently intensified their campaign for requiring warning labels for “risky” or purportedly unhealthy products. Anti-obesity advocates, for instance, now routinely argue that foods with high levels of salt, sugar, or fat should carry warnings similar to those on tobacco products. The motivation for such warning labels is not informing consumers of possible dangers. The labels, instead, are seen as an effective tool for changing consumers’ behavior in some desired direction. And the more offensive and fear-inducing the warning, advocates of this approach argue, the more effective it will be at jolting consumers into line.

The most recent instance of such efforts comes from the U.S. Food and Drug Administration (FDA), which has proposed a series of new graphic warnings for tobacco products.<sup>1</sup> Such warnings would include a text-based message along with an alarming image displaying the consequences of smoking. Part of the argument in favor of such warnings is that traditional, text-only health messages have failed to change smoking behavior; warnings that arouse fear and disgust are now needed to prevent and reduce smoking, particularly among young people.

This WORKING PAPER examines the case for using such “Graphic Health Warnings” (GHW) and the fear and shock strategy underlying them. The paper is divided into four parts. Part one offers a general examination of the traditional

purpose of warning labels and the contemporary debate over their new, expanded purpose. Part two examines what graphic, fear-based health warnings are meant to do and the psychological basis for them. Part three analyzes the use of GHW on tobacco products. Warnings on tobacco have been widely deployed and studied, and thus allows one to most accurately determine whether such warnings succeed at changing smoking behavior by reducing consumption, prevalence, and uptake. Finally, part four scrutinizes the central philosophical question implicated by GHW, which is even if they were to “work” as intended, are these warnings an acceptable use of government authority in a democratic society?

## **I. CONSUMER HEALTH WARNINGS: SCARIER IS NOT BETTER**

Though now ubiquitous, the concept of mandated placement of warning labels on consumer products dates only back to the early 1900s. In 1927, the United States Congress passed the Federal Caustic Poison Act which required the label “Poison” to be placed on dangerous chemicals like sulfuric acid. A decade later, Congress mandated food, drug, and cosmetic warnings, while in the 1960s, warning labels were required for over-the-counter drugs. And it was not until the 1960s as well that the proper use of such terms of “Danger,” “Caution,” and “Warning” were legislated.

In 1965, Congress required all cigarette packages and advertising to warn consumers that “Cigarette Smoking May be Hazardous to Your Health.” Soon after, in 1971, tobacco manufacturers took the voluntary step of placing warnings on cigarettes in the United Kingdom. At the time of the first tobacco warnings, warnings for consumer products were extremely rare and generally were directed to inappropriate products or inadvertent exposure to a hazardous substance that posed an immediate as opposed to a long-term risk. Cigarette warnings were different from these warnings in two senses: they warned against risks that were neither immediate nor the result of inappropriate use.

In the two decades following the advent of cigarette warnings, as a result of both the consumer rights revolution and the creation of specialized governmental agencies devoted to safety, the environment, and consumer protection, warnings proliferated, many of them modeled on the original cigarette warnings. For example, in 1988, Congress passed the Alcoholic Beverage Labeling Act, which required warnings on all drink containers. Today, it is unusual to find a consumer product that is lacking a warning. David Stewart and Ingrid Martin, writing about this trend toward ubiquitous warnings observe:

The number of warnings and places and products on which they are placed has grown precipitously in the last two decades, with increasing societal concern about the hazards of using and consuming various types of products and commodities. Among commercial products that carry warnings, alcoholic beverages, cigarettes, and other tobacco products, saccharin, tampons, and over-the-counter (OTC) medications (especially aspirin for children) are among the more controversial. Many other products carry warnings, however. These include cleaning products,

cosmetics, and other personal care products, and even popcorn. Lawn mowers, automobiles, microwave ovens, power tools, electrical appliances, and an array of other durable goods also carry warnings either on the product or in a user's manual that accompanies the product. Various service products, such as prospectuses for investment products and rides in amusement parks also include warnings or admonitions of caution. Neither is the presence of warnings restricted to product packaging and package inserts: they also appear in the advertising for various types of products and in places where products are sold or consumed, such as grocery stores or restaurants.<sup>2</sup>

Moreover, it is not simply products that are the focus of warning activists. For instance, the UK's Gambling Commission is considering requiring health warnings in gambling advertisements. Dermatologists from the United States have joined the warning bandwagon as well, by suggesting that gruesome pictures of various types of skin cancer, along with a warning about the risks of tanning, be posted outside of every tanning parlor.

Most recently the focus of warning activism has moved to food and beverages, with activists and governments arguing that certain foods are intrinsically unhealthy, a fact about which consumers must be warned. For example, the then-head of Britain's Food Standards Agency, Dame Deirdre Hutton, called for the introduction of a color-coded warning system for foods with high levels of salt, sugar, or fat, arguing that such warnings are the best way to inform consumers about the differences between healthy food and "junk" food.

Then-California Attorney General Bill Lockyer initiated legal action against fast food companies meant to compel the posting of warnings about the alleged human carcinogen acrylamide in their products. He also sued tuna packagers for failing to warn consumers about the alleged hazards of mercury in their fish. The Center for Science in the Public Interest has called for warnings about trans fats and excess salt in food, and anti-obesity crusaders have demanded warnings for all soft drinks and fast foods. Legal actions against food and drink manufacturers have also been suggested in the U.S. on the grounds that they have failed to warn about the risks associated with their products.

The U.S. government has required extensive nutrition labeling for the past decade, on the grounds that providing consumers with more information about their food would change their eating patterns and reduce obesity. These labels, however, have been purely informational, offering consumers information about the total number of calories and the grams of fat, cholesterol, sodium, protein, and carbohydrates. They are not warning labels in the traditional sense, which join information with an authoritative admonition about the health risks of certain behaviors. For example, telling someone that a product has two grams of fat is quite different from warning them that eating foods high in fat increases their risk of heart disease, which conveys a thinly veiled message to refrain from consuming that product.

For growing numbers of activists, both in Europe and North America, however, neutral, informational labeling is insufficient. They point out, for instance,

that years of nutritional labeling in the U.S. has failed to reduce the obesity rate. Instead, they believe that cigarette-type warnings for a range of food and drink are justified and necessary because: 1) certain foods, just like cigarettes, pose unacceptable health risks, even in the smallest quantities, and 2) only the salience and shock value of cigarette-type warnings will change consumer behavior. For example, in 2003, Terry Sullivan, Vice President of Cancer Care Ontario, argued that a prevention message such as a tobacco-like warning might be necessary to change eating habits. “These are all ways in which the public can be cued and aided in the job of making health decisions,” Sullivan claimed.<sup>3</sup>

The case for warning labels to aid people in the “job of making health decisions” appears to be based on three basic assumptions. First, people wish to avoid disease and death. Second, once they know that a certain behavior or product can lead to disease and death, they will avoid it. Third, an appropriate warning will give people the information necessary for them to change their behavior. The reality, however, is that assumptions two and three are, for many people in many instances, false.

There are three principal reasons for this. First, people often filter out much of the information available to them because they find it neither relevant nor interesting. Second, warnings that are attended to are not processed because individuals tend to avoid information that has negative self-implications. Through a process known as cognitive re-adjustment, people tend to exempt themselves as individuals who should be concerned with a warning. For instance, “seatbelt use is fine, though it isn’t necessary for me.” Even though someone has read and remembered a warning, they also can discount its personal applicability. Finally, even warnings that are read and processed are often discounted due to what experts call “warning fatigue,” where the overabundance of warnings or the familiarity of a specific warning, diminishes its effectiveness. Basically, the very ubiquity of the act of warning diminishes the power of all warnings.

The scientific evidence demonstrating these types of warning failures is extensive, though it often tends to be ignored or discounted by the public health community. For example, almost a decade after the U.S. mandated warnings on alcohol products, neither the risk perception nor the drinking behavior of those drinkers most likely to be a risk to themselves or others had changed. As Hankin et al. note from their research on drinking during pregnancy “among risk drinkers, the label law clearly has NOT affected drinking behaviour.”<sup>4</sup>

Hankin et al.’s research is supported by other studies, including a survey from the U.S. Centers for Disease Control and Prevention, which found that the percentage of women drinking during pregnancy had actually increased since the introduction of the warnings. As the report notes, “The rate of frequent drinking among pregnant women was approximately four times higher in 1995 than in 1991.”<sup>5</sup> Further, MacKinnon et al., who followed a group of 16, 661 high school students from 1989-1995, reported that “there was no beneficial change attributable to the warning in beliefs, alcohol consumption or driving after drinking.”<sup>6</sup> Several studies have also found that heavy drinkers, while aware of the warnings, are more likely to consider them less believable and to discount them more than other drinkers.

There is equally compelling evidence about the failure of food labeling. The U.S. Department of Agriculture's Economic Research, in an analysis of food labeling, notes, "labeling may not be an effective policy tool."<sup>7</sup> There are several reasons for this. Some researchers, for instance, have found that warnings or a large list of detailed product information causes many consumers to disregard the warnings and information completely. Again, studies of consumer behavior in grocery stores have found that consumers often make hasty food choices and fail to scrutinize warnings and food labels. One such study by Lorna Aldrich discovered that a consumer's income, not warnings or labels, was the key factor in determining which foods were purchased, and that income cancelled out the effects of information.<sup>8</sup>

A 2002 study found that nutritional labeling made no difference in food density choices. As the authors observe, "In this population, explaining the concept of energy density and providing nutritional information during meals had no overall impact on the weight of food consumed."<sup>9</sup>

Another study, which was conducted in a restaurant setting in the UK, found that providing information about "health and unhealthy food" did not substantially affect expectations of sensory quality and acceptance, or overall energy and fat intake. "What it did succeed in doing was to decrease the number of people selecting the 'lower fat dish' by those who knew it was lower in fat. Not a terribly strong demonstration of the 'effectiveness' of food labeling."<sup>10</sup>

A 2003 study which examined the effectiveness of nutrition labeling and warnings in an Army cafeteria found no significant difference in the sales of the items that subjects had been warned about.<sup>11</sup> Jayachandran Variyam of the U.S. Department of Agriculture notes, "These findings suggest that the benefits of labeling may be small or uncertain at best."<sup>12</sup>

The danger, however, is not simply that labels and warnings will fail; they may also be counterproductive. For example, large numbers of excessive risk-takers display what psychologists call reactance, in which there is a high level of resistance to the demands of outside authority and control. For these individuals, a warning label represents an attempt to unreasonably (at least from their perspective) shape their behavior and makes them more likely to ignore rather than heed the warning. Again, warning labels also highlight risk, and for those attracted to risk-taking, this serves to make the very thing warned about more, rather than less, attractive. One saw both of these reactions to warnings in the 1980s when British teens stole signs which declared, "Heroin screws you up" from public places and put them in their bedrooms.

This WORKING PAPER will explain why, according to what is known about shock warnings and their use in various countries, scarier is not better. The use of such warnings contradicts two of the central principles of medical ethics and the ethics of health promotion: beneficence – doing good – and non-maleficence, avoiding harm where compelling evidence demonstrates that GHW will do no good and might cause harm. One comprehensive analysis of the use of scary graphics concluded, "This review indicates that the contribution of fear appeals to the adoption of self-protective behaviour is in doubt. Fear arousal may render information concerning

response efficacy and self-efficacy more salient... but it is the impact of these messages on attitude and intention formation that determine the effect of a fear appeal on precautionary action.”<sup>13</sup>

Though this paper uses GHW on tobacco products as a case study, one should bear in mind that the reasons such warnings are ineffective are not tobacco-specific, but instead arise from the very concept of warnings through fear and the nature of those consumers to whom the warnings are directed. Indeed, the same arguments could be made if the graphic warning appeared on a cigarette packet, a soft drink can, a carton of ice cream, or an Internet site.

## **II. GRAPHIC HEALTH WARNINGS FOR TOBACCO: A CASE STUDY**

“...searching for evermore powerful warnings is fruitless. There is no ultimate deterrent in smoking, no mother of all health warnings that will finally alert smokers to the error of their ways.”

G. Hastings & L. MacFadyen  
*The Limitations of Fear Messages*<sup>14</sup>

“...the observed association between warning label knowledge and subsequent increases in smoking may suggest that even if attention and recall can be improved, cigarette warning labels may do more harm than good.”

T. Robinson and J. Killen  
*Do Cigarette Warning Labels Reduce Smoking?*<sup>15</sup>

After decades of public relations demonization of tobacco products, public health activists likely believe that policy makers and the public will accept and implement nearly any policy measure to reduce smoking. Because of the public and legal policy precedents that tobacco control programs can set, and to ensure responsible law making, proposals such as the FDA graphic health warnings must be subjected to critical scrutiny.

Such scrutiny reveals that for four reasons, FDA’s proposal is not an instance of sensible regulation. First, the scientific evidence suggests that such warnings do not increase smokers’ awareness of the risks associated with smoking. Second, the evidence shows that such warnings will not reduce youth smoking initiation. Third, the evidence shows that such warnings fail to reduce either smoking prevalence or consumption among youth and adults. Fourth, some evidence demonstrates that for certain smokers such warnings might well be counterproductive in that they may act as a disincentive to quit smoking.

This section will first examine the purported goals of GHW. Next, it will assess the social science literature about the effectiveness of visual, fear-based warnings. Finally, it will review the empirical studies of their effects, both in laboratory settings and in countries which have already adopted them.

## **A. What Graphic Health Warnings Are Meant To Do**

In January 2001, Canada became the first nation to require graphic health warnings. They consisted of a large text warning accompanied by graphic, fear-inducing images portraying the health risks associated with tobacco. Supporters of the Canadian warning believed that GHW would increase smokers' awareness of the risks associated with smoking; discourage young people from starting to smoke; and reduce smoking prevalence and consumption by both young people and adults. Canada's health agency, Health Canada, wrote in December 2000 that "increasing the size and emotional content of warning messages on cigarette packages, including the use of message enhancing pictures, has the potential to encourage more smokers to stop smoking and deter more non-smokers from starting to smoke."<sup>16</sup>

A similar justification lies behind the European Union's support of GHW. Speaking at a press conference in Brussels in late 2004, Commissioner David Byrne said that, "People need to be shocked out of their complacency about tobacco. I make no apology for the pictures we are using. The true face of smoking is disease, death and horror – not the glamour and sophistication the pushers in the tobacco industry try to portray. The EU must hammer home this message to young people in its media campaign and to smokers via their cigarette packs." Commissioner Byrne referenced the Canadian experience, arguing that it showed that GHW "can help reduce smoking."<sup>17</sup>

Like their Canadian counterparts, EU health officials believed that GHW with their high "emotional content" will increase a smoker's fear level and will lead either to reduced smoking or to quitting. In the case of nonsmokers, the assumption behind GHW is that the stark images of the health risks of smoking will deter experimentation or initiation. Lee and Ferguson wrote this about such assumptions:

The success of the realistic fear strategy depends on young people being rational information processor. It is generally believed that fear will cause arousal and the arousal will lead to interest and subsequently to better information processing. Eventually, fear will help young people think about the negative consequences of risky behavior and thus reach the intended decision-making outcomes. Therefore, when young people are shown the devastating health consequences of smoking, they may abstain from or give up tobacco habits.<sup>18</sup>

In June 2011, FDA published a Final Rule mandating the use of nine new textual warnings along with certain graphic warnings.<sup>19</sup> In addition to the GHW, every cigarette package must include the number of a smoking cessation hotline along with the message "QUIT-NOW." In introducing the Final Rule, FDA Commissioner Margaret Hamburg along with Health and Human Services (HHS) Secretary Kathleen Sebelius, suggested that the reason for the GHW was to "make every single pack of cigarettes in our country...[into] a mini-billboard" against smoking.<sup>20</sup>

In a White House web video released in mid-November 2011, President Obama weighed in on the GHW issue by arguing that, “We...know that the best way to prevent the health problems that come with smoking is to keep young people from starting in the first place. Today, some big tobacco companies are trying to block these labels because they don’t want to be honest about the consequences of using their products. Unfortunately, this isn’t surprising.”<sup>21</sup>

These assertions about the utility of GHW are questionable, as a number of experts in risk communication have noted. For instance, in 2002, Gerjo Kok and Robert Rutter from Maastricht University have argued that frightening people by emphasizing the negative consequences of smoking was the worst way to convince people to quit, and called on European policymakers to “discontinue displaying these scary labels...”<sup>22</sup>

## **B. The Social Psychological Basis for GHW**

Advocates of GHW have acknowledged that there is little evidence that the use of such warnings on tobacco products is grounded in social psychological principles. For instance, Strahan et al. noted in a 2002 literature survey of studies examining the effects of tobacco warnings, “We did not find any articles that cast their findings in terms of ...social psychological principles.”<sup>23</sup> There is also considerable evidence in the literature that warnings in general fail to change behavior.<sup>24</sup>

The earliest examination of the role of fear arousal and persuasion was a study by Janis and Feshbach, which examined the effects of information about the causes of tooth decay and recommendations on oral hygiene.<sup>25</sup> An illustrated lecture on dental hygiene was presented with three different levels of fear intensity, but with the same recommendations for action. The group that received the minimum fear intensity was most consistent in following the recommendations on preventing tooth decay, while the group that received the maximum fear intensity failed to change their oral hygiene. The authors conclude that “the overall-effectiveness of a persuasive communication will tend to be reduced by the use of a strong fear appeal...”

In a subsequent study on the use of fear appeals for smoking, Janis and Terwillinger found that high fear appeals resulted in subjects developing more counterarguments against the warning and having poorer recall of the warning than with low fear appeals.<sup>26</sup> They conclude, “The more strongly fear is aroused by a warning communication, the more strongly motivated the person will become to avoid symbolic responses and thought sequences which lead him to recall or to focus his attention on the essential content of the argument and conclusions.”<sup>27</sup>

Following Janis, Feshbach, and Terwillinger’s pioneering work, numerous studies examined their hypothesis with respect to fear-arousing communications in specific circumstances. In all of these, the use of emotional, vivid descriptions and simulations of the physical consequences of failure to follow the message instructions aroused great fear.

In the 1960s, Howard Leventhal and others at Yale University assessed fear-based communications using films about the risks of lung cancer and smoking.<sup>28</sup> The

graphic films, one of which showed a lung cancer operation, were designed to convince subjects to stop smoking and get X-rays. Leventhal found that the high fear movie was significantly *less* effective in persuading subjects to stop smoking than a communication that simply used a pamphlet about the risks of smoking. He argued that the communications that aroused a high level of fear were ineffective with vulnerable groups because they increased these groups' sense both of apprehension and helplessness.

These results about the use of warnings that provoke high levels of fear arousal with smokers have been confirmed in more recent experimental work. For example, Keller and Block found that high fear appeals to smokers motivated them to elaborate on the problem – the risks of smoking – and ignore the solution.<sup>29</sup> This is because high fear warnings, which encourage problem elaboration, result in the subject becoming defensive in reaction to the warning.

While Janis and Feshbach and Leventhal's analyses of the effect of fear-based communication was experimental, in part because it predated the era of health-based warnings, their thesis about the failure of fear-based warnings has been confirmed repeatedly in a variety of real-world settings. For instance, MacKinnon et al., in a study of the effects of fear-based alcohol warnings, found that "there was no beneficial change attributable to the warnings in beliefs, alcohol consumption or driving after drinking" in a group of high school students followed from 1989-1995.<sup>30</sup> More importantly, they found that with the alcohol warnings, those who were the heaviest users had the best recall for the warnings, yet were the least likely to heed them.

Similarly, studies of pharmaceutical warnings have found that such fear-based warnings failed to alter consumer behavior.<sup>31</sup> Stout and Seago found in a 1995 study<sup>32</sup> of the effectiveness of fear-based public service announcements that even a high level of threat failed to produce behavioral change, and several studies of fear-inducing HIV prevention campaigns (using tombstone and grim reaper images) have also found them to be ineffective in changing behavior.<sup>33</sup> And in one of the few studies to examine the effects of fear-based cigarette warnings (using the U.S. Surgeon General's warnings) on the actual smoking behavior of adolescents, Robinson and Killen discovered a "significant increase in smoking from baseline to follow-up among those teenagers with greater knowledge of the warning labels on cigarette packages.... These associations are unlikely to be due to increased exposure to warning labels among smokers because the analysis controlled for the baseline level of smoking...."<sup>34</sup> This led them to conclude, "warning labels are, at best, ineffective for this target audience...." Indeed, they found that even if adolescent attention to the warning and recall of them might be increased, "cigarette warning labels may do more harm than good."<sup>35</sup>

Some students of the warning process have argued that arousing fear can be persuasive and bring about behavioral change. For example, in a meta-analysis of the effectiveness of fear appeals that examined over 100 studies, Witte and Allen claim that individual differences do not have an effect on people's responses to fear appeals.<sup>36</sup> Fear appeals, they suggest, can be effective provided that public health officials increase "references to the severity of the threat and references to the target

population's susceptibility to the threat," and link these to information about how individuals can avoid the threat – so-called high efficacy messages.<sup>37</sup> Indeed, Witte and Allen specifically endorse GHW by noting that, "Vivid language and pictures that describe the terrible consequences of a health threat increase perceptions of severity of the threat."<sup>38</sup>

The experimental evidence showing the failure of fear-based warning continues to accumulate, however, in part because in contrast to what Witte and Allen argue, it is not the severity of the threat that is most relevant for changing behavior but the individual's sense of being vulnerable to the threat (something that smokers often lack). A meta-analysis by Milne et al. found that the severity and susceptibility to threats, and the efficacy of possible responses, have only small effects on behavior.<sup>39</sup> Further, a 2004 study on the effects of fear appeals by Ruiter et al. notes that the recent experimental evidence shows "the effects of fear appeals on precautionary motivation are inconsistent," suggesting that Witte and Allen's support for using fear-based warnings in public health campaigns is misplaced.<sup>40</sup>

In their study, Ruiter et al. measure the response of subjects, based on their need for cognition, to a fear-based message on breast cancer that was followed by a persuasive message that recommended breast self-examination. The researchers found that individual differences in the need for cognition – that is, the need to actively engage in evaluating the strength of arguments and comfort with rational processes – made a difference in the effectiveness of fear-based warnings. Only subjects who have a high need for cognition reacted to the fear warning in a properly adaptive way through taking steps to control the danger – in this case engaging in breast self-examination. Subjects with a low need for cognition were much less ready to act on the fear-based warning and more likely to control their fear rather than the danger. Ruiter et al. note, "Among people low in need for cognition, presenting threatening information did not result in greater acceptance of the recommended response."<sup>41</sup>

Several studies have also linked low need for cognition with impulsiveness, which is also associated with risk taking and rebelliousness.<sup>42</sup> According to the Eysenck study, for example, impulsiveness is linked to a dislike of thinking and reasoning.

These findings about how the need for cognition affects the effectiveness of fear appeals are directly relevant to what we know about the smoking population. Inasmuch as this population is increasingly composed of individuals with low needs for cognition, it is likely that these individuals will react to fear-based GHW by attempting to control their fear rather than processing the warning and seeking to control the danger. In effect, the GHW will have no effect on their understanding of the risks of smoking or on their smoking behavior.

Ruiter et al. observe about the practical implications of their research for warning policy:

...fear-arousing information can easily be followed by emotional reactions instigating denial or avoidance of the presented information,

which may interfere with the adoption of the recommended action. This finding raises doubt about the renewed interest in fear arousal that we particularly witness in health education practice in The Netherlands. Examples with respect to this renewed interest are commercials that show traffic accidents with bloody and deadly consequences and the enlarged and now clearly visible printing of health warnings on cigarette packages.... Obviously, program developers presume that fear arousal directly motivates people to safer behavior. Our findings with regard to defensive responses, however, suggest that fear arousal should be used with greater caution and preceded by extensive pilot testing.<sup>43</sup>

Ruiter et al.'s analysis is supported by a recent research project backed by the UK's Economic and Social Research Council and conducted by Paschal Sheeran of Sheffield University.<sup>44</sup> Sheeran reviewed a range of strategies designed to change intentions and behavior that had been the subject of studies during the last twenty-five years. The review was designed to answer one critical question about interventions: "Do changing attitudes, norms and self-efficacy cause changes in intentions and behavior?" Two of Sheeran's findings suggest that there is not a compelling social psychological basis for GHW. First, Sheeran found that the least effective strategy in prompting behavior change was arousing feelings of regret and fear in subjects, which GHW are designed to do. Second, Sheeran reported that interventions involving self-efficacy produced both greater intention change and behavioral change than other types of intervention involving attitudes or norms. This is particularly significant when considering the effectiveness of GHW, since there is considerable evidence that many smokers have low self-efficacy, and fear-based GHW can inhibit smoking reductions because they decrease an individual's confidence (self-efficacy) in their ability to quit.

## **C. Why Fear-based Warnings Fail**

### ***1. Fear Control Rather Than Danger Control***

The reasons for the failure of these emotional, fear-based warnings stem from an early insight of Leventhal, who noted that fear messages evoke two parallel responses in a subject. The first process, a rational one, is danger control in which the subject recognizes and appraises the danger and considers ways to avoid it. The second process, fear control, is less rational and centers on the emotional aspect of the warning. In fear control, the individual focuses on ways to control his fear rather than on ways to control the danger. This may involve such fear-control behaviors as resting, drinking, or eating. Commenting on the failure of Leventhal's subjects to stop smoking and get X-rayed, even after seeing the gruesome lung cancer film, Sternthal and Craig writes, "Vivid pictorial representations may simultaneously activate fear control processes. The individual may eat, relax or engage in some other behaviour to cope with the emotional response.... If emotion is strong, a person may engage in cigarette smoking to reduce emotion and inhibit danger control."<sup>45</sup> In some instances, the subject's focus on fear control increased their sense of apprehension and helplessness without resulting in any attempts to deal with the

danger.<sup>46</sup>

- **Types of Fear Control**

**Avoidance.** Fear-based warnings are likely to fail because their target audience is attending more to fear control than danger control, a process psychologists refer to as maladaptive coping response.<sup>47</sup> The fear control responses take several forms. One response is to simply avoid processing the danger information because of its negative implications. In this case, the needs of fear control overwhelm the rational functions of danger control so that the subject fails to recognize the subject of the warning as dangerous. As Gina Agostinelli notes, “Compelling evidence abounds on how people avoid processing information that has negative self-implications and even fail to recognize familiar stimuli that are threatening.”<sup>48</sup>

**Defensive Processing.** Another fear-control response is termed defensive processing. Here a subject “argues” with the warning, produces effective counter-examples, and rejects its conclusions.<sup>49</sup> Defensive processing works much like the inoculation process in which the vaccine stimulates the body to create antibodies to resist the disease. The individual faced with a threatening warning mobilizes information that serves to refute the information conveyed in the warning, allowing him to “defend” himself against what the warning suggests. The warning, rather than serving to change behavior, serves as an “antibody” which inoculates the subject against the effect of the warning itself.

Liberman and Chaiken, for instance, found in a 1992 study, “with a threatening message, increased personal relevance may ... increase motivation to arrive at or defend a preferred conclusion or to reject an undesirable one.” Despite the supposed rationality of the message, “People do sometimes strongly prefer a particular conclusion, whether because of a health threat, a threat to self-interest, or simply reactance against an influence attempt.”<sup>50</sup>

Defensive processing is particularly evident in individuals who have prior knowledge and experience with a hazard. The effect of such knowledge is to tame the danger by reducing its imminence, credibility, specificity, and personal relevance. Inasmuch as individuals have confronted it before without mishap, they are inclined to believe they can do so in the future. As Tanner et al. observe, “For example, a person who has driven for 20 years without wearing a seatbelt and has never had an injury caused by an accident is likely to have a large repertory of coping responses, such as ‘I won’t have an accident’ or ‘I’m very careful when I drive’ or ‘I don’t need a seatbelt because I took a defensive driving course.’”<sup>51</sup>

The effect of such defensive processing is to negate the warning’s effectiveness through the way in which it is processed and remembered. Describing the consequences of this response to a fear-based warning, Agostinelli writes, “Threatening information can induce defense biases that also affect how it is constructed, interpreted, remembered, and evaluated such that negative self-implications are avoided.”<sup>52</sup> Several studies<sup>53</sup> found that whether the warning was

about smoking, tetanus shots, or seat belts, as the individual's vulnerability to the warning increased, its persuasiveness declined. Witte and Allen observed, "For high-relevance participants (those at risk for harm by the health threat), the defensive systematic processing was even more pronounced."<sup>54</sup> Thus even though the fear-based warning might increase the subject's feelings of vulnerability to the risk, defensive processing of the warning served systematically to negate that sense of vulnerability.

This process is especially evident in smokers. For instance, over time, smokers cognitively readjust their smoking-related beliefs particularly with respect to the credulity of smoking risks in general and in terms of their own vulnerability, both as a result of smoking and of seeing warnings. This readjustment makes them more likely both to selectively attend to warnings and to discount the warning. Agostinelli, for instance, writes about a "male smoker exposed to a counter-advertisement suggesting that smoking causes impotence [as GHW do]. He may feel threatened by such a message, decide it is stupid, and tune it out."

In a 2002 study for the EU of the fear-based, graphic tobacco warnings, the European Health Research Partnership and Centre for Tobacco Control found ample evidence of defensive reasoning on the part of smokers confronted by such warnings.<sup>55</sup> For instance, one focus group participant, commenting on the impotence warning noted, "You've just got to laugh at these things – wives tales." As the researchers observed, "Respondents in all countries found the image humorous and often appeared to find it difficult to take the intended message seriously."<sup>56</sup>

Similarly, with the mouth disease warning, the researchers found a large element of rationalization among smokers "who argued that such dental disease would be the result of bad oral hygiene generally, and not smoking specifically." Some focus group participants concluded, "The thing is if you have got teeth like that it is not 'cos you are smoking. It's 'cos you are not really taking care of them. All of us smoke and we dinnae exactly look like that, do we? Tobacco is not the simply cause of all this. With proper hygiene you can prevent this even if you smoke."<sup>57</sup>

Other participants in the study showed similar instances of defensive processing in response to the fear-based warnings. For example, one commented, "Using that guideline, they should also go after the cars as well, they also kill" Another, in response to the GHW noted that "...traffic accidents kill too."<sup>58</sup>

**Reactance.** A third fear control response, closely related to defensive processing, is psychological reactance, also referred to as the "boomerang effect." Psychological reactance occurs when the subject perceives the fear-based warning as threatening his freedom and then moves in the opposite direction from that proposed by the warning.<sup>59</sup> These findings of reactance are, as Brehm and Brehm note, consistent across many studies and show that warnings from an authoritative source, with a dogmatic tone which demand compliance, harden a subject against the warning and reduce compliance.

For instance, Bushman and Stack, in their 1996 study of reactance to warnings on violent television programs, write:

According to reactance theory, when an individual's freedom to engage in a particular behavior is threatened or eliminated, the individual will experience psychological reactance, defined as the unpleasant motivational state that consists of pressures to re-establish the threatened or lost freedom. The more important the freedom is to the individual, the greater is the reactance when the freedom is threatened or eliminated. One method of re-establishing the freedom is to engage in the proscribed behavior.<sup>60</sup>

They found that high-reactance individuals were especially interested in viewing the very programs that the warning cautioned against.

Commenting on the risks associated with warning induced reactance, Stewart and Martin observed:

Warnings that produce psychological reactance, serve as signals for risk-taking opportunities, or make a product more attractive may produce behaviour that is exactly the opposite of that intended by the placement of the warning, at least among certain groups of individuals. Such effects are clearly unintended, but their consequences, under some circumstances, can make the use of warning messages less desirable than no message at all.<sup>61</sup>

Indeed, as we shall see, these counter-productive consequences of GHW raise the question of whether the use of these "warning messages" is less desirable than no message at all.

Numerous studies have found that one of the most reliable predictors of smoking uptake is rebelliousness.<sup>62</sup> If smokers, particularly young smokers, are rebellious, then they are highly likely to be reactant to the attempts to control or influence their behavior through warnings. Indeed, their reactance will work against the warning and make them more likely to continue smoking.

For instance, a study by Miller et al. reports that reactant behavior, which they define as "the tendency to resist adult control, to engage in superficial, oversimplified thinking, to emulate adult behaviours...to feel invincible; and to rebel against authority..." is one of the most important factors in predicting adolescent smoking behavior.<sup>63</sup> The importance of reactance in fashioning adolescent smoking prevention measures is also highlighted in a study by Grandpre et al.<sup>64</sup> They found that explicit anti-smoking messages increased the reactance of tenth grade students. They write, "Whereas younger message recipients may be accustomed to, or more tolerant of, behavioural restrictions, adolescents are less receptive to messages targeting behavioural changes... Adolescents simply do not like having their choices limited and their options clearly delineated." Strong, explicit anti-smoking messages, the study notes, "may even boomerang and have negative effects on adolescents' health behaviours."<sup>65</sup>

Further, in a study using fear warnings, Lee and Ferguson discovered that the more rebellious the young smokers were, the less likely they were to quit smoking after seeing a fear-based smoking communication.<sup>66</sup> Noting that adolescents were more prone to accept health risks than older people, they caution that, "health

messages designed to persuade them to reduce risk-taking behaviors must recognize their risk-taking tendencies or reasons. Otherwise, the messages may backfire and reinforce the unhealthy behaviour. For example, some might take risks to be rebellious. Scare tactics might trigger their rebellious tendencies.”<sup>67</sup> Based on their findings, they concluded, “Even though the high-rebellious participants reported more interest in the ads, the higher in rebelliousness they scored, the less likely they were to quit smoking after viewing the realistic fear ads.... The traditional method of inducing fear by seriously portraying the consequences of smoking might not be as effective for targeting highly rebellious risk takers.”<sup>68</sup>

## ***2. Oversimplification and Exaggeration***

Fear-based warnings such as GHW also fail for a variety of reasons additional to a focus on fear control rather than danger control. For instance, fear-based warnings, because of their high emotional content and emphasis on danger, are often oversimplified or exaggerated, and it is this exaggerated quality that causes them to fail to convince their intended audience. This failure, known as the Reefer Madness Response after the 1936 film in which the dangers of drug use were exaggerated, is produced by the tendency of fear-based appeals to suggest risks that have no credible basis in the subject’s daily experience. For instance, Sherif and Hovland note that for a person to accept a piece of information the information must be close enough – within what they call the “Latitude of Acceptance” – to the person’s current beliefs.<sup>69</sup> Views that were outside of the subject’s latitude of acceptance were likely to be rejected as improbable.

Smokers, for instance, understand the common and easily grasped diseases most often identified as risks of smoking. Warnings about these risks are not so far removed from smoker’s experiences as to lack credibility. On the other hand, smokers have no daily experience of the diseased lungs portrayed in GHW, and the use of these warnings is likely to be outside the smoker’s latitude of acceptance, and thus much more likely to be rejected as improbable.

Writing about the preference for simplistic and overly rationalistic models as the basis for adolescent smoking prevention, Lloyd and Lucas note:

The complexity of the decision-making process concerning the adoption of health-related behaviours must not be underestimated. Much health promotion activity has been predicated on somewhat simplistic interpretations of influential social-psychological models, in which such decisions are interpreted as logical and straightforward. An individual’s motivation for engaging in a given behaviour is not simply the opposite pole of his or her motivation for avoiding that behaviour. Motivations for and against engagement are commonly very different psychological structures... It is also important for the successful modification of beliefs that the risks should not be exaggerated for the sake of emphasis, nor be excessively oversimplified. The consequence of such exaggeration may be a reduction in credibility of future messages brought about by a perceived discrepancy between health messages and people’s own experiences. In any programme or intervention it is essential to

produc[e] .... Information that is direct enough to be appropriate to the medium used, without translating probability data into messages that may be interpreted as implying inevitability and which may be contrary to most people's experience.<sup>70</sup>

For example, research has shown that simplistic fear-based warnings which predict dire consequences from ignoring the warning are discounted because the consequences fail to occur in the short term.<sup>71</sup> As Stewart and Martin write, "Such effects are most likely to occur when failure to heed a warning cannot be connected directly and immediately to potential consequences. This is frequently the case for many potential hazards that occur over the long term and are probabilistic in character. Each time the behaviour is enacted without the adverse result, the credibility of the warning system may be reduced."<sup>72</sup>

Breznitz found that such diminished respect for fear-based warnings is particularly true for tobacco warnings. He observed, "in spite of information to the contrary, one smokes a cigarette and nothing happens unlike the result of swallowing bleach or not using protective gloves when handling toxic chemicals.... One smokes another cigarette and still nothing happens. Thus, in the absence of any clear signals that may indicate the danger involved, these threats turn out subjectively to be false alarms."<sup>73</sup>

This sort of "alarm failure" can be observed in a qualitative focus group study on tobacco warnings by the European Health Research Partnership and Centre for Tobacco Control Research for the European Commission.<sup>74</sup> Summarizing the result of their qualitative research, the report found that fear warnings tended to be rejected because of their "radical generalizations." As one focus group participant notes, "Few people my age fall ill because of tobacco."<sup>75</sup>

### **3. *Self-Esteem and Self-Efficacy***

Fear-based warnings also fail with groups that have low self-esteem and low self-efficacy. Studies of warnings in relation to self-esteem<sup>76</sup> have found that while high self-esteem individuals react to the warning by focusing on controlling the danger, low esteem individuals focus instead on controlling the fear and ignoring the danger. The greater the fear-based threat, the higher the acceptance of the threat in high self-esteem individuals, and the lower the acceptance in low self-esteem subjects.<sup>77</sup> Inasmuch as smokers, particularly young smokers, have low self-esteem, there is a strong likelihood that such warnings will fail.

Similarly, research on self-efficacy suggests that an individual's sense of their capability to act conditions their reaction to fear-based warnings. Individuals with high self-efficacy react rationally by acting to control the danger highlighted by the warning. But individuals with low self-efficacy – the individual's estimate of his ability to address the danger – tend to focus on the fear and feel incapable of dealing with the danger itself.<sup>78</sup> Individuals with low self-efficacy fail to address the subject of the warning because they see themselves as ineffective, and instead focus solely on dealing with their fears. Low self-efficacy often results from failures in previous attempts to deal with the danger in the recommended way, for instance, in the case of

Leventhal's subjects, stopping smoking and getting an X-ray. McGuire observed that failure to heed a warning tends to further ingrain the subject's behavior by establishing a pattern of unsuccessfully coping with the danger.<sup>79</sup> And Sternthal and Craig note such a pattern is difficult to break in that subjects who fail to act on a warning will increasingly feel "hopelessly inadequate and thus pursue a self-fulfilling prophecy."<sup>80</sup>

Effectively, frightening the individual with low self-efficacy reduces the chances that the warning will be heeded, creating a boomerang effect. "If people believe that they cannot cope with a threat," write Self and Rogers, "increasing the level of threat decreases intentions to adopt the recommended response. Thus, people actually planned to consume more alcohol, exercise less, and avoid precautions against STDs. The conditions producing this deleterious effect are beliefs people have that they are incapable of protecting themselves because the coping response is ineffective and/or they cannot perform the response."<sup>81</sup>

As Robinson and Killen observe in analyzing tobacco product warnings and young smokers, "high fear messages may actually inhibit reductions in smoking by decreasing a person's perceived ability to quit."<sup>82</sup>

Fear-based warnings' failure in relation to low self-efficacy is particularly relevant to smokers. First, low self-efficacy is an important risk-factor for smoking initiation, a fact that suggests that fear-based warnings would have little impact on preventing smoking uptake. Second, smokers who have a history of unsuccessful quit attempts might find their failure to comply with the fear-based warnings further reduces their self-efficacy, thus reinforcing their smoking. Third, fear-based warnings that emphasize the addictive properties of smoking are likely to further enhance the feelings of helplessness typical of smokers with low self-efficacy. For example, Eiser et al. found that the most important predictor of smoking cessation was confidence in one's ability to quit. Lower confidence, and crucially, less behavioral change was closely linked to considering oneself "addicted."<sup>83</sup>

The same point was made by Lloyd and Lucas in their study of adolescent smokers. They write, "...regular smokers claimed that they themselves were addicted. This latter observation supports an assertion in Regis's 1990 study that an overemphasis on the addictive properties of cigarettes may be counterproductive: expected, as well as actual, addiction is used by adolescents and adults alike as a rationalisation for continuing to smoke."<sup>84</sup>

Talk of addiction, with its clear implications of powerlessness, thus works against the very type of attitudinal and behavioral change that fear-based warnings are designed to promote. As the EU research on fear-based warnings concluded, "The majority of the messages focus on the behaviour of the individual and ways in which they should modify or change their behavior. Consequently, many smokers perceive them to be blaming and a personal attack on their lack of willpower while not recognizing the difficulties associated with cessation."<sup>85</sup>

#### **4. *Lack of New, Relevant Information***

Fear-based warnings also fail to work when the message being conveyed is already clearly understood and fails to provide new information. Kip Viscusi of Harvard has noted in his research on the effectiveness of warnings, for them to effect behavioral change, warnings must provide information that is not previously known and is useful.<sup>86</sup> Viscusi's research confirms earlier work<sup>87</sup> which suggests that warnings are ineffective in changing behavior with familiar products when they fail to convey information that the individual finds novel and relevant. Despite the claims that smokers do not understand the risks of smoking and that GHW convey new information, the empirical evidence suggests that this is not the case. Not only do smokers overestimate the mortality risks associated with smoking,<sup>88</sup> but having grasped the fact that smoking can kill, they are uninterested in and inattentive to a detailed knowledge of the particular ways in which this might occur. This is not peculiar to smokers. For instance, it is difficult to believe that risky behavior with respect to AIDS would change appreciably by including in AIDS prevention materials graphic pictures of the individual diseases caused by AIDS. This is because once subjects understand the possibly fatal risks associated with an activity or product, the precise ways in which death might ensue do not have a further impact.

Viscusi computes the actual risk of smoking by using the total lung cancer and death risk estimates from the U.S. Surgeon General. Using these figures, the life expectancy loss from smoking ranges from 3.6 to 7.2 years. The risk of dying from lung cancer because of smoking is between 6 and 13 out of 100, and the risk of dying from any disease because of smoking is between 18 and 36 out of 100. Similar estimates come from the Office on Smoking and Health at the Centers for Disease Control and Prevention, which reported in 1996 that "on average, smokers die nearly seven years earlier than nonsmokers."<sup>89</sup>

Using these figures as the actual risk of smoking, Viscusi then compares consumers' perceived risk of smoking. Based on a national sample from the United States, Viscusi reports that in response to the question, "out of every 100 smokers, how many of them do you think will get lung cancer because they smoke?," the average response was 47 people. This clearly exaggerates the risk of getting lung cancer from smoking, which suggests that rather than underestimating the risks of smoking, individuals overestimate those risks.

Other surveys and researchers have found similar responses. For instance, a 1999 telephone survey conducted for the Annenberg Public Policy Center of the University of Pennsylvania with 2,002 young people aged 14-22 and 1,504 adults aged 23-95, asked, "Out of every 100 cigarette smokers, how many do you think will get lung cancer because they smoke?"<sup>90</sup> The mean response was roughly 56. Slovic asked a slightly different question: "Out of 100 people who smoke half a pack a day, how many do you think will eventually develop a life-threatening illness from smoking?" The mean results were 50 for adult smokers and 56 for teen smokers.

Equally important is the fact that these overestimates of smoking risks are not just confined to the risks from lung cancer. Viscusi, for instance, asked people not just about their risk of getting lung cancer from smoking but about the total mortality

risks from smoking. His question of “Among 100 smokers how many of them do you think will die from lung cancer, heart disease, throat cancer, and all other illnesses because they smoke?” elicited a mean response of 42 from smokers, again exceeding the Surgeon General’s estimate of 18-36.

Moreover, these overestimates of smoking risk are roughly constant across all segments of society, regardless of educational level. According to Viscusi, non-secondary school graduates put the perceived risk of dying from smoking-induced lung cancer at 52.6 out of 100 smokers, compared with 47 for those with a university degree,<sup>91</sup> a finding which belies the claim that GHW are necessary for those with lower education levels to understand the risks of smoking. Where the overestimates are not constant, however, is with respect to age. Numerous surveys have shown that young people consistently overestimate the risks of smoking across a range of factors, such as the risks of dying, the risks of lung cancer, the difficulty of quitting, and the harmfulness of even occasional smoking. For instance in the Annenberg survey previously cited, smoking respondents aged 14-17 believed that 53 out of 100 smokers would have heart problems because they smoke, compared with 46 out of 100 for smoking respondents aged 18-22. Smokers aged 14-17 believed that out of 100 smokers, 53 would die from a smoking related disease compared with 48 out of 100 for smokers aged 18-22. Ninety-four percent of smokers aged 14-17 agreed that smoking every day would be very or somewhat risky compared with 86 percent of older smokers.

Similar results are found in the UK. Goddard, in her landmark study on why young people begin to smoke, found that virtually all of her subjects had a clear idea about the health risks of smoking.<sup>92</sup> For example, 92 percent of students reported that if they were regular smokers at age fifteen they were “less likely to feel really healthy.” Moreover, this was not simply a general feeling of ill-health; it was linked specifically with smoking-associated risks – lung cancer and chronic obstructive lung disease. Eighty-seven percent reported that if they smoked at age fifteen they were more likely to “start to get lung cancer” while 79 percent thought that they would be more likely to “get out of breath.” As Goddard notes, these results show that the “overwhelming majority of pupils had extremely negative attitudes toward smoking.” Again it was not simply that the students understood the risks associated with smoking; Goddard’s results also showed that they cared intensely about those risks. For instance, 97 percent reported that they “cared a lot” about “feeling really healthy” and 93 percent cared a lot about “starting to get lung cancer.”

Goddard’s results thus show that not only are the risks of smoking known and understood, they are understood in terms of quite specific health risks. They also show further that the risks are considered very important to the overwhelming majority of young people.

More recent evidence from the UK also shows how well young people understand the risks of smoking. In her analysis of smoking in England in 2006, Fuller found that “almost all pupils thought smoking causes lung cancer” (98 percent). Ninety-seven percent believed that it can “harm unborn babies;” 96 percent thought it “can harm nonsmokers’ health;” and 94 percent thought it can “cause heart disease.” Moreover, these percentages “have remained at similar levels since the

early 1990s,” which suggests that even in an environment with tobacco advertising, as opposed to simple displays of cigarettes, there was a near universal understanding of the risks of smoking. Indeed, on five specific smoking-related health risks, over 80 percent of Fuller’s subjects agreed that each was a risk of smoking. Nor is the understanding of the risks of smoking confined to only serious illnesses. Eighty-six percent of Fuller’s subjects believed that smokers were liable to “get more coughs and colds than non-smokers.” Additionally, 84 percent believed that smoking made one “worse at sports.”

In addition to Fuller’s analysis, the ongoing *Liverpool Longitudinal Study on Smoking* also examines young people’s knowledge of smoking’s health risks.<sup>93</sup> The authors report, “It is clear that the young people demonstrated a very strong knowledge of the health risks related to smoking. Throughout the years all participants spoke widely and in-depth of the health problems associated with smoking. Responses focused both on changes to a person’s physical appearance and overall fitness, and on the illnesses caused by smoking, including cancer, heart disease, lung disease, chest infections and premature death.” In particular, “the overwhelming majority of people in all qualitative data collected felt that smoking was more harmful to young people than older people.”

The failure of GHW to convey new and relevant information to smokers can also be found in the comments of the EU focus groups where participants rejected the warnings as “patronizing and worn out,” clearly indicating that they failed to convey new information about smoking relevant to smokers. Again, evidence from Canada<sup>94</sup> indicated that 98 percent of adult smokers were aware of the harmful consequences of smoking and only 3 percent of adult smokers failed to recall correctly one of the current package warnings, indicating that smokers clearly understood smoking related risks.

Despite the universal appreciation of smoking-related risks, especially among smokers, proponents of fear-based warnings refuse to accept that smokers understand those risks. Instead, they cling to the belief that if smokers were exposed to additional, more alarming information, then smokers would act more “rationally.” Borland and Hill, for example, took this position in writing about the impact of Australia’s new warnings:<sup>95</sup> “It is true that in Australia almost everybody has heard about dangers of smoking ... but this does not mean that they know and believe all the information that is central to making rational decisions about whether or not to smoke. The data clearly indicate that what knowledge they have is not very salient... or there is a reluctance to admit it, or both.”<sup>96</sup> While this might be true, it fails to take into account the evidence that fear-based warnings do not change smokers’ reluctance to address the health risks of smoking. Further, it is contradicted by more recent evidence from Australia. Oakes et al. report that 80.9 percent of respondents (adult smokers and recent quitters) agreed with the statement, “I have made an informed choice to smoke in full knowledge of the risks I am taking.”<sup>97</sup>

Writing about the repetitive nature of tobacco warnings, Hastings and MacFadyen argue:

[R]epeating this to a population that knows it, two thirds of whom already want to quit, is of questionable value. To return to our initial example, there comes a point where the theatre-goer shouting 'fire' is reduced to the irritation of a malfunctioning alarm. Furthermore, searching for evermore powerful warnings is fruitless. There is no ultimate deterrent in smoking, no mother of all health warnings that will finally alert smokers to the error of their ways.<sup>98</sup>

This problem of failing to provide new and relevant information is amplified by research that shows that increased familiarity with products over time lessens the perceived hazard associated with them and this familiarity in turns reduces the attention to a warning.<sup>99</sup>

The evidence suggests the claims that smokers are uninformed about the risks of smoking, and that they suffer from an information deficit which GHW can alleviate, are incorrect. The empirical evidence shows that individuals – both smokers and nonsmokers – are aware of the risks, not simply in general terms, but also in terms of specific smoking-related diseases. Both smokers and nonsmokers report that smoking is associated with the highest risk of any product or activity. The evidence also suggests that not only are smokers and nonsmokers, adolescents and adults, aware of the risks, but they also substantially overestimate those risks. Together these facts suggest that it is highly unlikely that the population-wide risk perception of smoking can be increased through using GHW, or indeed, by any other means.

### **5. *Health-based Deterrents Ineffective***

Fear-based warnings fail with adolescents and others because those audiences are not influenced by health-based deterrents. Lloyd and Lucas in their UK-based study of adolescent smoking note this failure:

A further problem with the traditional knowledge-attitude-behaviour formula so often employed in health promotion is that it assumes that a risk to physical health is necessarily a deterrent. ...[T]he possibility that young people view health at least ambivalently should also be considered. From the 1950s' James Dean to the 1960s' Jim Hendrix, from the 1970s' Sid Vicious through to the 1990s' Kurt Cobain and beyond, teenage heroes have been characterized by 'unhealthy,' risk-taking behaviour. There is an undeniable appeal in the image of the artist, actor or musician, whose lifestyle is fast, chaotic and exciting. Across five decades of teenage culture, appearing 'fashionably wrecked' by such behaviour has only served to heighten charisma and desirability.<sup>100</sup>

The failure of fear-inducing messages based on health effects is well-known in areas outside of smoking prevention. Hale and Dillard write about why such warnings go wrong:

The impact of age on the persuasiveness of fear appeals also helps to explain why so many fear appeals to promote better health are ineffective. Televised public service messages to decrease driving under the influence of alcohol or drug abuse are frequently targeted at adolescents. Those messages frequently employ fear appeals, but fear appeals are unlikely to influence the young people at whom they are aimed. We can imagine living rooms across America where parents of adolescents find a public service announcement compelling, but where the target of the appeal... is unaffected by it.<sup>101</sup>

For instance, in a recent study on fear appeals, de Hoog found that not only do fear appeals fail to affect behavior, but that however significant the risk to health might be, it is unlikely to change behavior if individuals did not feel vulnerable to the risk:

Whereas the emphasis of health education campaigns has frequently been on depicting the severity of health consequences, as well as on stressing the response efficacy of the recommended action, we have found that although these factors affected attitudes, they failed to have much of an impact on intention and behavior. Intention and behavior were solely determined by vulnerability. This suggests that however severe a health risk, and however effective the protection offered by the recommendation, unless we can persuade individuals that they are vulnerable to the health risk, they are unlikely to take protective action.<sup>102</sup>

Yet the evidence suggests that this very absence of health risk vulnerability characterizes many young people to whom warnings are directed. Indeed, Lloyd and Lucas in their study of adolescent smokers in the UK found that young smokers, based on their own experience and the observation of other smokers, did not feel vulnerable to the health risks of smoking. They wrote, "Regular smokers described lifelong smokers they knew who appeared to be healthy and well. These individuals were offered as an illustration of the discrepancy between the message *as they saw it* and their own experiences."<sup>103</sup>

As Robinson and Killen note in a study of the paradoxical effects of warning labels on adolescents "... warning labels are intended to reduce smoking behaviour by frightening people with the health hazards of smoking. However, adolescents are generally not influenced by interventions that focus only on more distal, health-related outcomes."<sup>104</sup>

Nor are these reactions confined to adolescents. Eiser argues:

The possibility exists that many people engaging in unhealthy behaviour see the costs to their health as outweighed (at least in the short term) by benefits in other domains. The message here is that health researchers should be wary of imposing their own value system on their subjects' responses. Many health-related behaviours may actually be predicted better from values other than 'health' (Kristiansen, 1985)... In short, such findings allow the possibility that many substance users are doing what, up to a point,

they want to do, but that what they want to do is not necessarily to stay healthy.<sup>105</sup>

## **6. *Impaired Credibility***

Fear-based warnings fail because their source is perceived to lack credibility. The persuasiveness of fear-based warnings is determined by the subject's judgment as to the threat's genuineness, severity, and likelihood. But these factors are contingent on the subject's judgment about the warning's credibility, which is linked to the authority of its source. If the warning is judged to come from a less than credible source, then its claims about a hazard's genuineness, severity, and probable occurrence are discounted.

The EU warnings research specifically examined the issue of fear-based warning credibility and found that the warning's credibility was severely compromised by the fact that its source was the government. "Smokers did not respond well," they write, "to regulatory bodies as a possible source of messages." As one subject noted, "But they don't take an active part in helping people to stop. What they are doing is just making laws and Acts and rules. It's all political."<sup>106</sup> Summarizing the compromising effects of the government as a source of fear-based warnings, the EU researchers conclude, "Smokers in all countries generally perceived government and regulatory bodies to lack empathy with their needs which made it easier for them to reject the message."<sup>107</sup>

## **7. *The High Cost of Compliance***

Fear-based, graphic warnings fail because consumers determine that even allowing for the reality of the risks described, the costs of avoiding the risks are too substantial. The rational-knowledge-based assumption on which warnings are founded – that informing and providing knowledge about risks leads to behavioral change – is in fact not supported by the evidence. In effect, as part of the warning process consumers perform a cost-benefit analysis in which the costs of complying with the warning are weighed against the benefits, both present and future, derived from risks.<sup>108</sup> As the cost of responding to the fear appeal increases, changes in attitude, intention, and behavior decrease. Commenting on the ways in which compliance costs defeat fear appeals, Hale and Dillard write:

Response costs refer to negative outcomes that result from complying with a message recommendation. In Fruin et al.'s 1992 study of exercise to reduce risks of cardiovascular disease, response costs included lost time and physical discomfort associated with exercising. In Witte's 1992 study of risk behaviours and AIDS, response costs of wearing condoms might have included lost spontaneity. In Hale et al.'s 1993 study of risks from ultraviolet radiation, several participants would not use a sun block every day because its application was inconvenient."<sup>109</sup>

For example, in an experiment involving college students, Godfrey et al. found that the cost of compliance with a warning (in this case about a broken door)

determined compliance rates. In a situation where the cost of compliance was high, there was no statistically significant change in behavior. This failure to heed a warning is not due to the fact that the warning has not been understood. There are numerous studies that have shown that individuals clearly understood the risks associated with a behavior but chose to continue anyway.<sup>110</sup>

As Eiser observes, "... many people engaging in unhealthy behaviour see the costs to their health as outweighed (at least in the short term) by benefits in other domains."<sup>111</sup> Nor is the failure to heed a warning an instance of irrational behavior. Because many risks are both uncertain and distant, the failure to follow a warning cannot be judged as irrational, though it is frequently portrayed in this fashion by some in the public health community. Rather it can be plausibly construed as evidence simply of a different appraisal of the values present in any situation involving risk and uncertainty. Judgments about risk are, at the end of the day, idiosyncratic. Stewart and Martin note:

Despite well-known information about potential dangers, consumers continue to use products and engage in behaviours that are unsafe, at least at some level. The argument that 'if people just knew better, they would change their behaviour' is not supported by common experience, neither is it supported by empirical studies... It also may be the case that consumers understand and accept the content of the warning, but choose not to act on it after evaluating the costs and benefits of complying or not complying.

A consumer may decide that the risks associated with smoking are not sufficient to give up whatever benefits they believe they derive from this activity. Likewise, a consumer may deliberately take a greater dosage of an analgesic than is recommended because he or she desires the benefit of a stronger dose. It may also be the case that the costs of inconvenience of compliance are perceived to be greater than the risk posed by the product. For example, a consumer might find it inconvenient to wear protective glasses when using a power tool for a very brief period. Finally, a consumer might decide that the immediate benefits of consumption of a given product are sufficiently desirable that a low probability of harm that may occur at some point in the distant future is discounted. Thus, he or she may continue to drink heavily because he or she enjoys the immediate relief from tension provided by alcohol and considers the risk of health impairment to be small.<sup>112</sup>

Studies have shown that smokers make similar tradeoffs in terms of the costs and benefits of warning compliance. For example, Beltramini found that smokers who believed that cigarettes posed a risk to their health were more inclined to believe the package warnings than those who did not, and there was no connection between smoking behavior and the warning's believability.<sup>113</sup> Smoking status did not reduce warning credibility. Clearly there was acceptance of a hazard, but without change of behavior. In the EU survey on the GHW, for instance, smokers complained that the warnings seemed to downplay the costs of compliance, which obviously were a salient

consideration for them in the decision to stop smoking.

### **8. The Forbidden Fruit Effect**

Finally, fear-based graphic warnings fail because of what psychologists term the “forbidden fruit effect.” Considerable empirical evidence reflects that certain individuals are attracted to proscribed and risky products and activities.<sup>114</sup> Highly charged, emotional warnings act to advertise these products and activities and make them more attractive to these individuals than they would otherwise be. Stewart and Martin argue:

A source of excitement for some people, both individually and within certain cliques, is the transgression of restrictions imposed by law and taboo in a society.... Warnings may draw attention to risks that members intentionally choose to take. When asked about their reasons for risk taking, these individuals often indicate that risk taking is a means to other goals such as social acceptance or a thrilling experience. Warnings can represent a signal of opportunities for risk taking in such circumstances.<sup>115</sup>

Taylor, for instance, found that certain personality types are drawn to activities that are designated as high risk because of the thrill attached to risk-taking itself.<sup>116</sup> Bushman and Stack, in an analysis of warnings about television violence, found that the warning itself increased interest in viewing the violent content.<sup>117</sup> Snyder and Blood studied young adult consumers’ reaction to alcoholic beverage warnings and found that the presence of the warning led the young drinkers to not only rate the benefits of drinking more highly, but report more frequent intentions to drink.<sup>118</sup> Boddewyn found a correlation between adolescent risk-taking propensities and curiosity about the risks of smoking.<sup>119</sup>

In an extensive examination of the types of personality drawn to risk, Ferguson et al.<sup>120</sup> describe three risk-taking profiles – impulsive risk takers, rebellious risk takers, and unconventional risk takers – for whom the forbidden fruit effect is particularly strong. Each of these types of risk-taker would not only be attracted to a risk that is highlighted by a warning, but, more importantly, highly unlikely to attend to, process, or act on the warning. For instance, according to Ferguson et al., each of these risk-taking types is likely to be a smoker, and each is likely to be impervious to most warnings about smoking. The reasons for this, according to the authors, vary by risk-taker type:

Impulsive risk takers are much more difficult to reach. They do not like to think and we expect that they may process information heuristically... Rebellious risk takers... are not going to respond to experts solving their problems... These risk takers do not want to be told what to do: they want to be in charge. Of all the risk-taking predispositions, getting the attention of and persuading the unconventional risk taker will be one of the most challenging goals.... These risk takers... do not care about their health, and they do not have confidence in a source as widely respected as the

Surgeon General. These risk takers seem to value unconventionality.<sup>121</sup>

Warnings for these individuals thus run the risk of being counter-productive since they both heighten the attractiveness of the risk – the forbidden fruit – while at the same time failing effectively to mitigate its consequences.

#### **D. The Weight of the Psychological Evidence about Fear-based Warning**

A review of the relevant psychological literature shows, as Strahan et al. observed,<sup>122</sup> that graphic, fear-based tobacco product warnings are not grounded in social psychological principles. Indeed, the psychological evidence suggests why the use of graphic, fear-based warnings is likely to fail to accomplish its objectives: increasing smokers' understanding of the risks of smoking and reducing smoking initiation, consumption, and prevalence. Graphic, fear-based warnings are likely to fail to change either smokers' knowledge or behavior because they may:

- Evoke fear control rather than danger control responses;
- Elicit defensive message processing;
- Promote reactance;
- Be oversimplified and exaggerated;
- Not to work with individuals who have low self-esteem and low self-efficacy;
- Often fail to provide new, relevant information;
- Falsely assume that risks to health serve to deter;
- Not be credible;
- Exact too high a cost to comply; and,
- Serve to make smoking appear more, rather than less, attractive with certain groups.

Additionally, the psychological literature on reactance and forbidden fruit suggests that such warnings might not simply fail to prevent or reduce smoking but might rather initiate or increase it.

### III. EMPIRICAL STUDIES OF THE EFFECTIVENESS OF GHW ON TOBACCO PRODUCTS

Writing in 1995, Barwick, Bergham, and Burns, in a report for the New Zealand government, note:

It has not proved possible to establish any direct relationship between the provision of health warnings and health information on tobacco products and changes in actual or intended smoking behaviour.... It does not seem to be currently possible to empirically establish either that health warnings and information definitely do, or do not, influence smoking behaviour.<sup>123</sup>

While those comments might have been true in 1995, they are certainly not true today. Since graphic, fear-based health warnings were introduced in Canada in January 2001, considerable evidence has arisen that such warnings fail in their purposes and are potentially counterproductive. The evidence comes from a relatively large number of studies, the most important of which are examined below.

#### 1. **The Liefeld Report – *The Relative Importance of the Size, Content and Pictures on Cigarette Package Warning Messages* (University of Guelph 1999-2000)**

Prior to the introduction of GHW, Health Canada commissioned a study of the effects of fear-based graphic health messages from Professor John Liefeld of Guelph University. On the basis of Liefeld's report, the government argued that GHW improved the "effectiveness" of tobacco warnings. Liefeld showed teen and adult smokers pairs of test tobacco packages and asked them which package would discourage them from smoking or beginning to smoke. The results hardly support the conclusion that GHW are more effective in increasing smokers' understanding of the health risks or of preventing initiation or reducing prevalence and/or consumption.

Of the six subject groups, only four found GHW encouraged them to avoid smoking, and in only two of these four were the differences statistically significant. In other words, the evidence for the effectiveness of the GHW was generally not statistically significant. Further, the GHW were not the main factor, according to subjects, that would influence them to either quit or not start smoking.

Equally important, Liefeld's study, despite his own reservations about such attitudinal research, was based entirely on his subjects' *beliefs* about whether GHW would encourage them to stop or not start smoking. It did not measure their *actual* smoking behavior in the face of GHW. This sort of problem, as will be discussed below, is common to almost all of the studies on the alleged effectiveness of GHW. The studies claim that GHW are effective based on the subjective appraisals of smokers or nonsmokers. Yet these sorts of appraisals are notoriously unreliable as indicators of behavioral change. As McCarthy et al. note in their study of the impact of warnings on user behavior, "...subjective opinions on the quality of labels may not be a valid predictor of the impact of the labels or user behaviour...."<sup>124</sup> Indeed, one of

the major problems with much of the research on the supposed effectiveness of GHW is that it is based on the subjective opinions of focus groups. As Agostinelli and Grube have explained, the research based on such groups is plagued with problems that make the conclusions drawn from them highly suspect:

Focus groups only inform us of what content individuals think influence them and not what actually does influence them... People are notoriously inaccurate in making attributions for the causes of their behavior... Further, with the public format of focus groups, there are conformity pressures....<sup>125</sup>

Finally, and most importantly, based on these equivocal results, Liefeld refused to conclude that GHW would reduce smoking or help prevent initiation. He writes, “Overall the effects of increasing the size and emotional content of warning messages on cigarette packages and including message enhancing pictures, has the *potential* (our emphasis) to encourage more smokers to stop smoking and deter more non-smokers from starting to smoke.” Of course, that potential is an article of faith inasmuch as it was not statistically demonstrated in his study.

## **2. The Canadian Cancer Society Study – *Evaluation of New Warnings on Cigarette Packages* (Environics Oct. 2001)**

The anti-smoking movement and government regulators in other jurisdictions have described the Canadian GHW as a marked success. For example, in a 2004 New Zealand MOH Consultation Document, it was claimed that after “only a short time” the GHW increased knowledge of the health effects of smoking, made smokers think more about these effects, increased smokers’ motivation to quit, increased the number of quitting attempts and encouraged people to smoke less. These results, it is claimed, were measured against a pre-GHW baseline to insure that they were valid.<sup>126</sup>

These claims, however, are inaccurate. The survey referred to in the New Zealand Consultation Document was carried out by the Canadian survey firm Environics for the Canadian Cancer Society. This survey did not measure the alleged effects of GHW against a pre-GHW baseline. This fact renders the reported effects essentially useless since there was no attempt to determine how the previous warnings impacted information, intention to quit, quit rates, or cigarette consumption. A properly designed and controlled social science experiment would have conducted two surveys, one before the introduction of GHW and one after.

Environics did the survey from September 19 to October 10, 2001 and utilized 2,031 adults, 652 of whom were smokers. Despite the fact that there was no pre-GHW baseline control, the lack of results for the new warnings is striking. For example, one of the claims for the new warnings was that they increased smokers’ awareness of the risks. But in response to the question of how much new knowledge smokers had on the effects of smoking, 65 percent of respondents indicated that they had no new knowledge. When asked whether the GHW had increased their level of concern about the health risks of smoking, 58 percent of respondents indicated that the warnings had no impact. As for quitting, 81 percent of respondents replied that the warnings had no impact on their decision to have a cigarette, with 56 percent

indicating that the GHW had produced no impact on their motivation to quit.

But perhaps the most striking feature of the Environics survey is the fact that it failed to address the critical success factor for legitimate regulatory measures: was there a change in behavior that was a direct consequence of the regulation? This is interesting given the fact that Health Canada's own commissioned research in 1999 from Liefeld describes two types of data that could be used to demonstrate the effectiveness of GHW. Type 1 data measures the actual changes in behavior brought about by GHW, while Type 2 data measures changes in psychological states such as attitudes, beliefs, feelings, and intentions. Liefeld argues that only Type 1 data provides legitimate and reliable evidence that GHW are effective and not counterproductive.

As we shall see, this failure to provide Type 1 evidence to address behavioral change is a consistent feature of GHW studies commissioned by governments. Yet, the psychological literature is full of references to the fact that the key criterion of an effective warning is changing a subject's behavior with respect to the danger. This process of behavioral change appears to succeed when three factors are addressed: 1) cognitive factors which devote attention to and understanding of the need for change; 2) facilitating factors which provide means for the change to occur; and 3) reinforcing factors which cement the new behavior. Warnings in general and GHW in particular, while addressing the first of these factors – the cognitive – fail to address the second and third, and thus fail to produce behavioral change.

### **3. Health Canada Commissioned Wave Surveys (Environics 2001-2002)**

Health Canada commissioned Environics to conduct a series of surveys (called Wave surveys) in Canada to assess the effectiveness of GHW. Prior to the introduction of GHW in January 2001, Environics conducted a baseline survey, referred to as Wave 1, in November-December 2000. Follow-up surveys Waves 2-6 were conducted from March-April 2001 to December 2002. The results for the baseline Wave 1 survey were released by Health Canada, but it has not released the results of Waves 2-6 except through an Access to Information request.

The results of Waves 2-6 clearly demonstrate that GHW fail in each of their tobacco control objectives both with youth and adult smokers. First, the surveys show there was no statistically significant trend of declining youth smoking prevalence, either regular or occasional, following the introduction of GHW. In fact, one year after their introduction, occasional youth smoking was actually higher than before.

Second, there was no statistically significant decline in youth consumption, either regular or occasional, after the introduction of GHW. As with prevalence, a year after the introduction of GHW, occasional youth consumption was higher than before.

Third, notwithstanding claims that GHW increase the awareness of the health risks of smoking, the Wave results showed that the number of young people who believed that smoking was not a health problem, 2 % pre-GHW, was the same post-

GHW. Despite the prominence given to the impotence/sexual dysfunction GHW, according to the survey only 1% of the population cited it as a “top of mind” smoking-related health problem. Again, the surveys showed little change in the leading “top of mind” smoking-related health problems (lung cancer, cancer in general, heart attack, and lung disease) over the survey period or compared with the baseline.

Finally, even though there was a post-GHW increase in the number of youth who expressed an intention to quit, this was not reflected in the number of young people who actually attempted to quit, further highlighting the gap between reported attitudes, beliefs, and intentions, and actual smoking behavior.

A similar pattern of failure was found with GHW and the behavior of adult smokers. First, there was no change in consumption levels among adult smokers, either occasional or regular smokers. Second, there was no statistically significant change in adult smoking prevalence. Third, the percentage of adults who attempted to stop smoking did not significantly change following the introduction of GHW. Fourth, there was no statistically significant change in the numbers of adult smokers who believe that smoking is a major source of disease, nor was there a change in the subjects’ views about the role of smoking in the major “top of mind” smoking related diseases. Fifth, there was a decrease in the number of adult smokers who look at the warnings several times a day. There was also an increase in the number of smokers, and indeed nonsmokers, who never look at or read the warnings.

**4. N. Gospodinov and I. Irvine, *Global Health Warnings on Tobacco Packaging: Evidence from the Canadian Experiment Topics in Economic Analysis and Policy* (2004)**

In August 2004, two researchers from Concordia University released a study which looked at the actual behavioral effects of Canada’s GHW. The study used data from two waves of Health Canada’s Canadian Tobacco Use Monitoring Surveys: one prior to the introduction of the GHW, the other subsequent to it. The authors found that there was no statistically significant decline in either smoking prevalence or tobacco consumption. The authors also looked at the potential behavioral impact of the GHW by age group but found no difference in the null effect regardless of whether the ages were 15-19, 20-64, or over 64.

**5. D. Hammond et al., *Impact of the Graphic Canadian Warning Labels on Adult Smoking Behavior*, TOBACCO CONTROL (2003)**

The Hammond et al. study, which was published once in *Tobacco Control* in 2003 and again in the *American Journal of Public Health* in 2004, is often cited as evidence of the effectiveness of the Canadian graphic warnings. In the study, the authors conducted a telephone survey of 616 adult Canadian smokers in October/November 2001 with a follow-up survey three months later. The survey looked at subjects’ smoking behavior and demographic variables, knowledge of the warnings, and “depth of cognitive processing” of the warning labels. In the follow-up survey, information was collected about smoking status, knowledge of the warnings, depth of cognitive processing and any changes in smoking behavior.

The authors claim the study provides support for three of the four goals of GHWs – reducing smoking consumption, prevalence, and increasing smokers' understanding of the health risks associated with smoking. They write that their “findings indicate that graphic warnings labels are a salient means of communicating health risk information and may serve as an effective smoking cessation intervention.”<sup>127</sup> In our opinion, the study does not support these claims. If it provides evidence of anything, it is that the Canadian GHW failed. Indeed, it mirrors the results of the Health Canada Wave studies and the Gospodinov/Irvine study.

First, the Hammond et al. study displays a flaw prevalent in studies that purport to demonstrate that health warnings are effective – it confuses the salience or prominence of warnings with their effectiveness. For instance, they note, “Research has identified the basic principles for enhancing the effectiveness of tobacco warning labels: colour pictures or graphics, positioning on the front of packs, increases in size, and direct unambiguous messages all increase the likelihood that smokers will notice warnings labels.”<sup>128</sup> In effect, their claim is a mixture of truism and non sequitur. The truism is that the more salient the warning the more it is noticed, and the non sequitur is that noticing a warning means that someone will consider and act on it. While noticing a warning might be a necessary condition for considering and acting upon it, it is not, as the social psychological literature and the empirical evidence demonstrates, a sufficient condition. Indeed, the heart of the problem with warnings is that their messages, however noticed and indeed considered, are not converted into action.

Second, it is unclear what one can conclude about the effectiveness of the Canadian GHW compared to the previous health warnings from this study since this study has no pre-GHW baseline against which the effectiveness of the new GHW can be measured. Ruitter and Kok wrote about the Hammond study, “Using a no control group, post-test only, design... their evidence is based on self-reports in a longitudinal survey, after the introduction of labels.”<sup>129</sup> They added, “Asking a population of smokers about intentions to quit always results in substantial percentages of intenders. Smokers will often say they quit because of their health. Without an experimental design, there is no evidence that warning labels are responsible for these outcomes, as ‘third variables’ may be overlooked, nor is there any evidence that quitting percentages are higher than before the introduction of warning labels.”<sup>130</sup>

Third, Hammond et al. ignore the substantial research which suggests that those most at risk, such as smokers, react defensively to fear-arousing warnings like those contained in GHW. As research by Ruitter in The Netherlands found, smokers exposed to fear-arousing messages made quitting smoking a lower priority compared with other health behaviors.<sup>131</sup>

In a Letter to the Editor of the *European Journal of Public Health*<sup>132</sup> they argue, “A recent meta-analysis of the literature on public health communications concluded that ‘strong fear appeals and high-efficacy messages produce the greatest behavior change,’ and found no evidence of any ... ‘boomerang’ effects for strong fear appeals.” Ruitter and Kok retorted, “Witte and Allen make it very clear that ‘practitioners should always ensure that a high threat fear appeal is accompanied by an equally high efficacy... message.’ They also state that ‘as a fear appeal increases in

strength, it produces stronger fear control/defensive responses than danger control responses,' and the 'more one is defensively resisting a recommendation, the less one is making appropriate changes in line with the message's recommendations.'"133

Because most smokers have already made several unsuccessful attempts at quitting, they lack precisely the "high efficacy" in their ability that is necessary to make the fear appeal work. Ruiter and Kok conclude, "Fear-arousing graphic warnings will not help them even when accompanied by a few words on what to do."134

Indeed, this is the central problem not only with graphic warnings, but with studies that report significant numbers of smokers claiming they intend to change their behavior by stopping smoking. As Ruiter and Kok note, people do not do what they say they will when in a defensive condition brought on by trying to control their fear – that is in precisely the condition occasioned by graphic warnings. Their so-called intentions to change are simply not translated into actions.

In the *European Journal of Public Health*, Hammond et al wrote, "... we are unaware of a single empirical study which suggests that graphic pictorial warnings are ineffective, or worse, counter-productive." The research literature, however, is full of evidence about the failure of pictorial fear-based warnings. First, the earliest work on fear-based warnings by Leventhal and Niles from the 1960s used exceptionally graphic images and films showing lung cancer operations to warn about the risks of smoking. However, Leventhal found that the graphic depictions were less effective in persuading subjects to stop smoking than simple, written materials. Second, several HIV prevention campaigns have used graphic pictorial images (the Grim Reaper, for instance) as warnings, but these have been found to be ineffective in changing behavior.<sup>135</sup> Third, as we have noted above, the Gospodinov and Irvine study from 2004 which examined the effect on smoking behavior of the new Canadian GHW found there was no statistically significant decline in either smoking prevalence or tobacco consumption after the introduction of GHW. Whatever definition one uses of "ineffective," this surely counts as an instance.

Fourth, it is unclear to what degree the graphic warnings, as opposed to the written messages, were recalled by subjects since they were asked to recall the location of the warning label and identify the message, but were not asked to identify the graphic. Given that the fear-based graphic was the entire point of the new warning, this is a rather extraordinary oversight.

Fifth, it is not accurate to say that the GHW increased the subjects' knowledge of the health risks associated with smoking since the authors report that only 91% of subjects had read the warnings and could recall the warnings. This compares to 98% of smokers in the Health Canada Wave 1 (pre-graphics) who had read and could correctly recall the warnings. Indeed, fewer smokers read and remembered the GHW than the previous warnings.

Sixth, the crucial depth of cognitive processing – the measure of the warning's salience and the extent to which smokers thought about the warning – actually declined from the baseline survey to the follow up. As the authors admit, "Overall cognitive processing of the warnings decreased from baseline to follow up."<sup>136</sup> The claim that GHW increase salience and warning processing, one of their supposed

major advantages, is quite questionable.

Seventh, the study's flawed methodology makes it impossible to draw any causal conclusions about the effects of GHW on smoking behavior. This is true for two reasons. Studies of smoking predictors have identified over 100 different predictors for smoking behavior, including initiation and cessation, none of which were controlled for, by Hammond et al. Inasmuch as none of these were controlled for, it is impossible to draw any conclusions about the effects of GHW as distinct from the effects of other influences on smoking behavior.

Also, the association alleged to be causal between reading and thinking about the GHW and quitting is just as easily explained in a reverse causal fashion. That is, those smokers contemplating quitting paid more attention to GHW than others because they were thinking about quitting. Indeed, the authors even acknowledge this, noting that the direction of this relationship is unclear – “smokers who intend to quit may be more likely to read the labels.” Because of the study's methodology, the true direction of the causality, key to the authors' flawed claims, cannot be determined.

Finally, the key measure of effectiveness – individual results for cessation behaviors (intentions to quit, quitting, attempts to quit and reductions in smoking) – was not statistically significant. In fact, the strongest relationship between baseline behavior and subsequent quitting was intention to quit, not GHW. In effect, GHW did not change either prevalence or consumption.

**6. Ruiter et al., *Saying is Not (Always) Doing: Cigarette Warnings Labels are Useless*, EUROPEAN J. OF PUB. HEALTH (2005)**

This article provides a critique of the 2004 version of Hammond et al. and questions the claim that their study demonstrates the effectiveness of GHW. In particular, Hammond et al. claim that GHW do not have aversive effects. On the contrary, Ruiter et al. found that following the use of graphic, fear-arousing messages, the subjects in the study ranked quitting smoking as *less* of a priority than previously. Also, the subjects devoted less attention to health messages with a high- as opposed to a low-threatening content. In effect, Ruiter et al. showed two key claims about GHW – that they make health messages more salient and that they encourage quitting – were false.

**7. Koval et al., *The Potential Effectiveness of Warning Labels on Cigarette Packages*, CANADIAN J. OF PUB. HEALTH (2005)**

This Canadian study examined the effects of the GHW introduced in 2002 among subjects aged between 20 and 24, a population segment not generally covered in GHW research. It is based on responses from subjects who had participated in a ten-year longitudinal study on the factors affecting smoking. The results provide a damning indictment of the failure of GHW, as according to the authors, “Almost all the participants said the labels did not motivate them to quit.”

**8. M. Ptito and J. Chebat, *Lighting up! The Neurophysiological Effects of Anti-tobacco Advertising on Smokers and Non-smokers* (2006)**

University of Montreal neuroscientist Maurice Ptito and HEC-Montreal School of Management Professor Jean-Charles Chebat conducted the first neurological study of the effectiveness of GHW for the Canadian Tobacco Control Research Initiative. Though the study is a small pilot, it provides dramatic evidence of the failure of GHW. Unlike conventional analyses of warnings, which rely on a subject's report on the effects, neuro-imaging instead shows the brain's response to a warning. Ptito and Chebat used brain-imaging to examine the responses of twelve female adolescent smokers to fifteen of the current Canadian warnings. According to their findings, when the subjects were shown each GHW, there was no response to any of the warnings in the parts of the subject's brain associated with negative feelings, a finding which contradicts the claim of GHW proponents that such warnings induce negative reactions in smokers who view them.

According to Ptito, the research shows "an urgent need" to revisit the GHW campaign as, "The ads are maybe not the best thing to discourage people from smoking."

**9. D. Hammond et al., *Text and Graphic Warnings on Cigarette Packages: Findings from the International Tobacco Control Four Country Study*, AM. J. OF PREVENTIVE MED. (2007)**

In this study, which the authors claim is a "quasi-experimental design," the findings are said to support the conclusion that, "Large, comprehensive warnings on cigarette packages are more likely to be noticed and rated as effective by smokers." The problems with these findings are substantial. First, the information about the Canadian graphic health warnings is offered without baseline comparisons to the previous text-only messages, so that evidence of effectiveness is impossible to determine. Second, the authors concede that the evidence is based entirely on self-reporting, which has substantial limitations in terms of reliability. As Kok et al. have noted, the evidence of quitters is suspect: "This is introspection and as such it forms an unreliable source of information."<sup>137</sup> Third, no evidence is presented on the most crucial measures of effectiveness – reduced consumption and reliability. This is particularly odd, given that the authors had available to them evidence from Canada which showed *no* reduction in either of these measures following the introduction of the graphic warnings. Fourth, the authors claim that the "findings also suggest that larger pictorial warnings, such as those implemented in Canada... are likely the most effective means of communicating the full range and severity of health risks to smokers..." This is contradicted by their own data which shows, for instance, that it was the text-only messages in the UK, not graphic warnings in Canada that attracted the notice of the highest proportion of smokers – 82.0 percent.

**10. J. Kees et al., *Tests of Graphic Visuals and Cigarette Package Warning Combinations: Implications for the Framework Convention on Tobacco Control*, J. OF PUB. POLICY & MARKETING (2006)**

In this study the authors examine the effects of adding graphic visual warnings to the current U.S. text-only package messages. They argue that such graphics can “decrease the attractiveness of the package and create higher levels of negative affect, such as fear or anxiety.” However, as we have noted above, fear or anxiety, particularly coupled with the low self-efficacy of smokers, actually works against smoking cessation. As Kok et al. observe in a recent report on graphic warnings, “Fear-oriented information is the worst kind of information. There is no evidence to suggest that scary images on cigarette packets will have any beneficial effect...”<sup>138</sup> Albarracin et al. concluded about the use of fear-based warnings in AIDS prevention, “Fear inducing arguments were not effective when introduced in either passive or active interventions, either immediately or later in time, for any population, or in combination with any other strategy.”<sup>139</sup>

Again, this study offers no evidence that the visual warnings influenced the behavior of smokers, either in terms of reduced smoking, quit attempts, or actual quitting, since the authors report only their subjects’ intentions. Such self-reported intentions are unreliable, both with respect to their cause – in this cause the alleged presence of the graphic warning – and also with respect to their translation into behavioral change. As the authors acknowledge, “when dealing with a challenging behavior such as smoking, reported intentions to quit ... might be different from actively trying to quit or actually quitting.”

Moreover, as would be expected given these limitations of fear-inducing messages, the authors acknowledge that the short term changes in intentions could not be generalized “to long-term smoking-related behaviour.”

**11. Jansen et al., *The Scarier the Better? Effects of Adding Images to Verbal Warnings on Cigarette Packages* in S. Carliner et al. Eds., *RECENT RESEARCH IN INFORMATION AND DOCUMENT DESIGN* (John Benjamins Amsterdam, 2006)**

One of the most important analyses of the effectiveness of GHW comes from a research group at Radboud University Nijmegen led by Professor Carel Jansen. The group ran an experiment with 214 subjects to compare the effects of traditional tobacco warnings with the GHW proposed by the EU.

The Jansen et al. study was prompted by a small study carried out in New Zealand by Searle et al.<sup>140</sup> As Jansen et al explain, the Searle et al. study is severely compromised as it does not use a theoretical model to interpret its data. Also, its statistical analysis is so limited that it is difficult to draw any valid conclusions about the effectiveness of GHW. Most significantly, the Searle et al. study provides no baseline against which to interpret its results since it does not compare GHW with the existing tobacco warnings. One thus cannot determine whether GHW are more effective.

In order to correct these flaws, Jansen et al. place their study clearly within the psychological constructs which explain why fear-based warnings often fail and provides a thorough statistical analysis of their results. Subjects were shown four proposed warnings from the EU database: a ‘tumor-infested throat... and a badly stained set of teeth... a female with an empty baby carriage... and a limp cigarette...,’ along with a verbal version of the current package warnings.<sup>141</sup> Subjects were then given a set of questions about the perceived severity of the health warnings, the extent to which the warnings made the subject frightened and anxious, whether the warning would influence a subject’s smoking behavior (e.g. not start, reduce) and what the subject’s reaction would be to packages with such a warning (e.g. “I prefer to buy cigarette packages without this health warning”). The results show that, as in Canada, there are no statistically significant changes in smoking behavior to be expected from GHW.

For instance, Jansen et al. found that the “smokers rated the threatening dangers as less serious, considered themselves more susceptible to them, were less frightened in the case of the explicit warnings, were less inclined to let their smoking behavior be influenced in the desired direction, and were less disposed to make a conscious effort to shield themselves from the anti-smoking warnings on the cigarette packages.”<sup>142</sup> Such results are consistent with the literature on the expected effects of fear-based warnings, which predict that such warnings will activate a stronger fear control as opposed to danger control response. In other words, smokers saw the dangers portrayed as less significant, were not frightened by the warnings, and were more inclined to focus on fear control as opposed to danger control. Moreover, with non-smokers who are meant to be deterred from smoking by the graphic warnings, Jansen et al. found instead that the strongest effect of the warnings was to increase their desire for fear control as opposed to their desire to control the danger, that is, avoid smoking. As he notes, “this effect [fear control] is distinctly stronger than the effect on the variable danger control mode.”<sup>143</sup> Though finding that non-smokers claimed that the graphic warning increased their expectation that they would not start smoking (a not unexpected result from fear-based warnings which often change attitudes, but not behaviors), Jansen et al. also found that they showed a much more pronounced tendency to react defensively to the graphic warnings.

The authors conclude, “For the smokers, there appeared to be no significant effects of adding visual to verbal warnings on cigarette packages, as intended by the EU.... To put this in a nutshell: confronting smokers with the new warnings does not increase their willingness to cut down smoking, but they do expect they will more actively shield themselves from the warnings....”<sup>144</sup>

**12. N. de Hoog et al., *The Impact of Fear Appeals on Processing and Acceptance of Action Recommendations*, PERSONALITY & SOCIAL PSYCH. BULL. (2005); N. de Hoog, FEAR AROUSING COMMUNICATIONS AND PERSUASION: THE IMPACT OF VULNERABILITY ON PROCESSING AND ACCEPTING FEAR APPEALS (Optima Grafische Communicatie, Utrecht 2005)**

In her 2005 monograph on the effectiveness of fear-based communications, Natascha de Hoog begins with the observation that “warnings on packs of cigarettes are supposed to make smokers concerned about the hazardous consequences of

smoking in such a way that they will stop smoking, yet most smokers continue to smoke.”<sup>145</sup> She then proposes to examine, through a series of careful experiments, whether the “plan in the Netherlands in 2006 ...to put explicit ‘scary’ pictures of individuals suffering from the consequences of smoking on cigarette packs” will prevent smoking or convince smokers to quit.<sup>146</sup>

In the experiments, which examined subjects’ responses to fear-based communications on the consequences of alcohol consumption, repetitive strain injury, and hypoglycemia, de Hoog found that fear-based warnings that stressed a behavior’s negative consequences did not change the subjects’ attitudes and intentions. In an extensive meta-analysis of fear-based appeal experiments, she found that the use of “scary images is not more effective than only stressing the negative consequences of a certain behaviour.”<sup>147</sup> The reason for the failure of “scary” images is that such warnings, though they may affect attitudes (as the literature on GHW shows), fail to convince individuals that they are *personally* vulnerable (as opposed to belonging simply to a vulnerable group such as smokers) to smoking’s health risks:

Thus, feeling vulnerable instead of belonging to a vulnerable group, motivates intention and behaviour change. In addition, it was found that extremely ‘fear-arousing’ messages are no more effective than messages that simply state the negative consequences of a certain behavior. These findings have important practical implications.

The emphasis of health education campaigns has frequently been on the severity of negative health consequences by presenting vivid, scary materials, as well as on stressing the response efficacy of the recommended action. However, this thesis shows that, although these factors affect attitudes, they fail to have much of an impact on intention and behaviour. Furthermore, vivid, scary images are in no way more effective than just presenting negative consequences in a sober way....

Therefore, if the warnings are having a limited effect on smoking cessation now, adding scary pictures will not make much of a difference.<sup>148</sup>

**13. Harris et al., *Self-affirmation Reduces Smokers’ Defensiveness to Graphic On-pack Cigarette Warning Labels*, HEALTH PSYCH. (2007)**

In this study, 87 young smokers were assigned a task prior to viewing four different GHW images intended for use in the EU on cigarette packs. The images were rated for both threat and personal relevance. Subjects were then asked about intentions to quit, reducing consumption, and negative impressions of smoking.

According to the authors, the results demonstrate that the subjects found the GHW images both more threatening and personally relevant than traditional text-only messages. However, several important considerations about these results

should be kept in mind. First, measures of intentions to quit are notoriously unreliable as a measure of behavioral change. Second, the results show that the subjects had strong reactions to the GHW, something that the critics of GHW predict. Third and most significant, there were no changes in quitting or consumption behaviors between the group exposed to GHW and the control group.

**14. Brown et al., *The Inhibitory Effect of a Distressing Anti-smoking Message on Risk Perceptions in Smokers*, PSYCH. & HEALTH (2007)**

In this study, 102 smokers were confronted with either an anti-smoking message using graphic images to maximize emotional distress, or the same anti-smoking message using less distressing images. The result was that those seeing the graphic images designed to maximize distress had lower estimates of their personal risk from smoking, an outcome predicted by defensive processing and reactance theory. The authors conclude that the lowered risk estimates – which are opposed to what is predicted of GHW – were an outcome of defensive processing activated by the graphic image.

**15. Brown et al., *Defensive Responses to an Emotive Anti-alcohol Message*, PSYCH. & HEALTH (2009)**

Subjects were presented with graphic medical images of various alcohol-related illnesses, after which they were asked to complete questionnaires. Drinkers who were exposed to the GHW produced lower risk estimates of vulnerability than those who were exposed to a less emotive message. The authors conclude that highly emotive warnings might well trigger defensive avoidance responses.

**16. Sarbane et al., *Recency Versus Repetition Priming Effects of Cigarette Warnings on Nonsmoking Teenagers*, J. OF APPLIED SOCIAL PSYCH. (2009)**

This research examined the differences in effects between non-smoking teens exposed in an experimental website to text-only or no warnings and those exposed to text and picture warnings as proposed for generic packaging. The study involved a convenience sample from only a single secondary school, hence the results cannot be extrapolated to other smoking populations. Moreover, the study found that with familiar brands the GHW did not affect smoking intent directly – which means that, as with the vast majority of these studies, there was no observed change in smoking behavior. The most important implication of the study, however, was that for unfamiliar brands, the use of GHW actually increased smoking intent rather than reducing it.

**17. Gallopel-Morvan et al., *The Use of Visual Warnings in Social Marketing: The Case of Tobacco*, J. OF BUSINESS RESEARCH (2009)**

This study reports the results of an experiment using the EU-approved pictorial warnings on French smokers through a series of focus groups. Despite the authors' claims that the graphic warnings added value to tobacco warnings, they note that "the fear appeals also provoked many defensive reactions." Indeed, these reactions to fear appeals "hardens" smokers in their behavior and decreases the

likelihood of quitting.

**18. Leshner et al., *Scare 'em or Disgust 'em: The Effects of Graphic Health Promotion Messages*, HEALTH COMM. (2009)**

In this research the authors examined the effects of fear-based images as part of anti-tobacco advertisements. The authors report that messages using images involving a high fear or disgust content work against the viewer encoding, recalling, and ultimately acting on the message: “Trying to make a message more fearful by including negative graphic images may result in the viewer cognitively withdrawing from encoding the message.”

**19. Borland et al., *Impact of Graphic and Text Warnings on Cigarette Packs: Findings from Four Countries over Five Years*, TOBACCO CONTROL (2009)**

This study, part of the evaluation of the Framework Convention on Tobacco Control’s effectiveness, examines the “impact” of GHW in Canada, the United States, the United Kingdom, and Australia. The results are based on self-reported survey data, itself highly unreliable for a variety of reasons. More significantly, the study suffers from several crucial defects.

First, only two of the countries, Australia and Canada, actually used GHW during the period under study. Second, the authors claim that the Australian GHW led to more avoidance of the warnings and stimulated “more cognitive responses.” However, they acknowledge that on the only measure that really counts, foregoing cigarettes, there was no statistically significant increase due to the use of GHW.

Third, the new UK warnings, text-only, used during this period had a higher salience than the Australian GHW packs, something which refutes the entire rationale for GHW. Fourth, it is impossible to determine whether the greater level of cognitive responses stimulated by the Australian warnings were due to the GHW or the larger warning size. Thus, on the only measure showing GHW as superior, it is not clear whether the claimed improvement is actually due to the GHW.

Fifth, the authors misstate the effect of GHW in Canada. The Canadian government’s own Wave Studies found no statistically significant effects on a variety of key factors discussed above. Finally, the authors concede that the most important measure of GHW success – change in smoking behavior – is not supported by this study as they have no direct data showing declines in either smoking prevalence or consumption.

**20. Chang et al., *The Impact of Graphic Cigarette Warning Labels and Smoke-free Law on Health Awareness and Thought of Quitting in Taiwan*, HEALTH ED. RESEARCH (2010)**

This study is marred by the fact that it employed no control group and failed to separate out the quite different effects on smoking behavior produced by GHW and public smoking bans. Again, the study used only self-reported data on the effects of GHW. The study’s other major flaw is that it failed to find a behavioral change due to

GHW. Though the authors report an increase in awareness of the health consequences of smoking, they fail to present any evidence that the GHW resulted in changes in prevalence or consumption.

**21. Gyax et al., *Relevance of Health Warnings on Cigarette Packs*, HEALTH COMM. (2010)**

This study examined the way in which adolescents of different ages processed tobacco warnings. The authors report that except for one age group – 16 year olds – “graphic displays did not...increase the proportion of positive answers or shorten the time it took participants to respond. Overall, graphical supplement did not seem to have any impact.”

**22. Leshner et al., *When a Fear Appeal Isn't Just a Fear Appeal: The Effects of Graphic Anti-tobacco Messages*, J. OF BROADCASTING & ELEC. MEDIA (2010)**

Growing out of the authors' previous research (number 18 above), this study again examines the results of two common anti-smoking television messages – those that evoke fear and those that evoke disgust through negative graphic images. The study examined the ways in which fear and disgust images affected how viewers responded to the ads. Such images significantly affected how the subjects processed the warnings. By including both fear and disgust through graphic images, the warning served to evoke intense aversive responses in the subjects. Messages focusing on disgust – which is typical of most GHW – were particularly likely to evoke aversive responses. As the authors conclude, “Trying to make a message more fearful by including negative graphic images may result in the viewer cognitively shifting resources away from encoding key points...”

**23. Kees et al., *Understanding How Graphic Pictorial Warnings Work on Cigarette Packaging*, J. OF PUB. POLICY & MARKETING (2010)**

This study's title reveals the authors' firm belief that GHW works; the question to them is how. This study, which involved 500 subjects, reports that GHW strengthen smokers' intentions to quit smoking, though the GHW also reduce the recall of the warning. Although the authors claim that the use of GHW increased quit intentions, there was no examination of actual quitting behavior, so the study provided no evidence of a relevant measure of GHW's effectiveness. More critical, as the authors themselves admit, the intention to quit measure for the GHW “only reached moderate levels” that is 4.13 on a seven point scale.

**24. Nonnemaker et al., *Experimental Study of Graphic Cigarette Warnings Labels*, FDA Center for Tobacco Products (2010)**

This study examined the likely effect of GHW on smoking in the United States. FDA designed the project to “develop graphic images to accompany the nine warning statements and to conduct a series of studies to assess the relative efficacy of graphic warnings labels... at conveying information about various health risks of smoking and at encouraging smoking cessation and discouraging smoking initiation.”

Even ignoring the significant methodological flaws of this study – particularly the use of subjects’ intentions to quit or likelihood of smoking in one year’s time as reliable measures of behavioral change – the study provides no evidence that GHW work to encourage smoking cessation or discourage smoking initiation. Indeed, the authors’ conclusion is a striking indictment of GHW: “The graphic cigarette warnings labels did not elicit strong responses in terms of intentions related to cessation or initiation.” Indeed, in FDA’s Regulatory Impact Analysis of the GHW rule, the agency, based on the Nonnemaker et al. study, concedes that GHW will lead to a reduction in smoking rates of 0.088%, a rate which according to the FDA is “in general not statistically distinguishable from zero.”<sup>149</sup>

It is striking that in the face of this bald lack of statistical significance, FDA would still go forward with its proposal. In another labeling context when faced with a similar situation, the science led FDA to the correct conclusion. In 1993 the agency noted that the “lack of statistical significance indicates that such findings could have arisen by chance and thus cannot support a causal relationship.”<sup>150</sup>

**25. Erceg-Hurn et al., *Does Exposure to Cigarette Health Warnings Elicit Psychological Reactance in Smokers?*, J. OF APPLIED SOCIAL PSYCH. (2011)**

This study enlisted 250 Australian smokers in an attempt to determine whether GHW products inspire reactance in smokers, thus negating their effectiveness. Though the research literature has suggested that reactance is a highly likely outcome, the proponents of GHW have denied that the warnings will lead to such a response.

Subjects were shown either text-only warnings or graphic warnings, after which they completed a reactance scale questionnaire. Smokers exposed to text-only warnings experienced little reactance, but only 19.2% of smokers who were exposed “to graphic warnings experience no reactance.” The difference was statistically significant. As the authors note, “it is possible that some smokers may restore their freedom by ‘digging in their heels’ and becoming less motivated to quit. Approximately 15% of Australian smokers reported that graphic warnings make them less motivated to quit smoking.”

**26. Loeber et al., *The Effect of Pictorial Warnings on Cigarette Packages: On Attentional Bias of Smokers*, PHARM. BIOCHEM. BEHAV. (2011)**

This study investigated how much attention smokers paid to cigarette packages with health warnings. The authors enrolled 59 smokers and 55 non-smokers in a test designed to assess the attention paid to cigarette packages, with and without health warnings. Light smokers displayed an attentional bias toward packages without graphic warnings, whereas heavy smokers allocated attention toward packages with GHW. As a result of this increased attention, heavy smokers displayed an increase in craving and anxiety, thus making increased smoking likely. In effect, GHW was counterproductive with heavy smokers, as the warnings

themselves increased behavior associated with smoking.

**27. Wardle et al., *Evaluating the Impact of Picture Health Warnings on Cigarette Packages*, National Centre for Social Research UK Final Report (2011)**

This research looked at the impact of GHW in the UK following their introduction in 2008. It consisted of two survey waves, one conducted before the introduction of GHW and the other after GHW were introduced (summer of 2010). Unlike other GHW studies, this one focused on the key areas of changes in smoking prevalence and consumption, particularly the forgoing of cigarettes. No evidence from the data showed that GHW had an impact on any of these measures.

The authors write, “Forgoing a cigarette when about to smoke one, stubbing out a cigarette or using a variety of techniques to avoid viewing the health warnings messages are important behavioral responses to health warnings. Among both adults and young people, the prevalence of forgoing a cigarette or stubbing a cigarette out did not change post implementation of the pictures.” Again, speaking about the responses to GHW, the report states that “... these ‘emotional’ responses have not been translated into behavioural change.” Even in terms of increasing awareness of the risks of smoking – another claimed benefit of GHW – “There were few changes post implementation of the pictures in the range and depth of the health risks of smoking.”

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Despite the claims GHW proponents advance about the effectiveness of these warnings, the evidence, both from social psychology and empirical studies of their effects in real world settings, indicates that they do not represent sensible regulation. Indeed, using a cost-benefit analysis, it appears that GHW provide no benefits for either smokers or non-smokers. At the same time, GHW threatens serious costs in terms of smoker concentration on fear (as opposed to danger avoidance), defensive processing, and reactance, as well as feelings of low self-esteem and self-efficacy. Finally, GHW has been shown to make tobacco products appear more attractive to certain individuals.

#### **IV. GRAPHIC HEALTH WARNINGS AT ODDS WITH VALUES OF DEMOCRATIC SOCIETY**

This WORKING PAPER has argued that graphic health warnings and particularly the GHW for tobacco products which FDA has proposed, fail the standards of sound public policy.

As has been presented above, the need for GHW is based on the flawed assumption that smokers suffer from an “information deficit,” namely that they do not understand the risks, or that they underestimate those risks. Also, this WORKING PAPER has demonstrated that the general social science research literature about graphic health messages suggests that such warnings have not only failed in general

to achieve their objectives, but they have also been counterproductive.

In this final section, we argue that GHW affront the core values of a free and democratic society to which all public policy must conform: values such as freedom of expression, autonomy, and respect. Government has a legitimate interest in providing consumers with factual information about products and services that might be considered “risky.” It also has a legitimate interest in advancing and protecting public health. Those two interests are not, however, advanced by the warnings which FDA proposes and those which have been imposed in other democratic nations. Such warnings improperly utilize the state’s legitimate warning authority in a manner that converts risky products’ packaging into displays for government’s opinions. The very products which government has decided are undesirable for its citizens, and their producers, are enlisted to manipulate consumer behavior.

The text of FDA’s Federal Register notice confirms that the agency’s motivation for requiring GHW is not primarily the provision of factual information. FDA relates that “many of the proposed warnings elicited significant impacts on the salience measures” where salience is construed to mean the ability to elicit emotion.<sup>151</sup> According to FDA, the warnings were chosen to make consumers “depressed, discouraged and afraid,” and be “difficult to look at.” FDA’s Commissioner and the HHS Secretary said the warnings were designed to make “every single pack of cigarettes... a mini-billboard.”<sup>152</sup> The HHS Secretary noted at the FDA press briefing the warnings are designed to convey the message that “smoking is gross,” hardly a purely factual and uncontroversial claim.<sup>153</sup>

The GHW include images that are digitally manipulated along with a stylized cartoon drawing of a baby in an incubator, both of which fail the test of neutral, factual information. As Judge Richard Leon of the U.S. District Court for the District of Columbia observed in his order imposing a preliminary injunction against FDA’s warnings proposal, “This fundamental failure, coupled with the Government’s emphasis on the images’ ability to provoke emotion, strongly suggests that the Government’s actual purpose is not to inform, but rather to advocate a change in consumer behavior.”<sup>154</sup>

For instance, the GHW showing a man in a shirt with the no-smoking symbol and the words “I Quit” conveys no factual information about the risks of smoking. Similarly, the requirement that all GHW carry the 1-800-Quit-Now smoking number underscores that the warnings are designed for advocacy purposes, as opposed to providing information about risks. Indeed, an *amicus* brief submitted by anti-smoking groups in the *RJ Reynolds Tobacco* case argued that a major purpose of GHW is to “ensure patient access to quitlines and promote quitline use” through serving as a “direct and immediate cue for action.”<sup>155</sup>

FDA’s requirements about the size of the GHW – 50 percent of the front and back of cigarette packages, and the location of the GHW – the top of package, suggest that the agency’s purpose is not informational, but rather a seizure of a sizeable portion of the package for the anti-smoking message. As Judge Leon wrote, “the dimensions alone strongly suggest that the rule was designed to achieve the very objective articulated by the Secretary of Health and Human Services: to ‘rebrand our

cigarette packs...’”<sup>156</sup>

Finally, the claim that GHW are designed to provide information does not fit the agency’s past actions or views with respect to tobacco warnings. In 1996, FDA rejected GHW and increased warning size because it believed that the current Surgeon General warnings were adequate.<sup>157</sup> However, the agency now advocates GHW even though its own study found them ineffective on the crucial measures.

Under the guise of providing information, the state is intruding on citizens’ autonomy. Instead of providing such objective and non-controversial risk information as “Smokers live an average of X years less than non-smokers,” GHW are designed to emotionally push an individual’s decision in the “right” direction. Indeed the process is no longer one where reliable information is integral to an individual decision; rather, the state manages and presents “information” in such a fashion that it ensures the “right” choice. In the first instance, information is important because it helps the central actor – the individual – make the best decision for himself. In the second instance, information is important only as it pushes the individual to adopt the government’s view of risk. Rather than trusting its citizens to make their own assessments about risk and lifestyle, FDA now aims to dictate decisions.

Such an intrusion on personal autonomy shatters the core of what it means to be a democratic citizen. Citizens in democratic societies are defined in part by their right to shape their own minds and lives, together with the responsibility for the results of doing so, without the intrusion of state-sponsored advocacy. By allowing the information sharing process to be hijacked for advocacy, one cedes to the government the right and the tools to manipulate the judgments and choices of its citizens.

Such health paternalism collectivizes risk. Individual judgments about what constitutes acceptable levels of risk would become the function of government. It is difficult to conceive of a more fundamental challenge to personal autonomy. The risk and reward calculus – chocolate yes, smoking no, scuba diving no, travel by car, yes – is obviously personal, largely ad hoc, and deeply inconsistent. But at the same time it constitutes part of the core of being a free person.

As mentioned at the outset of this WORKING PAPER, the justification for, and pursuit of, graphic health warnings is not exclusive to tobacco products. We are already beginning to see activists and government entities drift towards the use of GHW for disfavored foods and beverages. New York City’s public health agency, for instance, has produced and aired videos depicting an individual drinking fat from a glass, and utilizing images of amputation to drive home the city’s points about soda and portion sizes.<sup>158</sup> The Boston Public Health Commission, in partnership with community organizations, is promoting a “FatSmack” campaign which includes a video depicting a soda-drinking teen being smacked in the face with a glob of fat.<sup>159</sup> The City of Los Angeles public health agency, with funding from the federal HHS, has created a series of videos including one on salt which commences with a screen full of police-tape banners bearing the word “warning,” and one particularly misleading clip on soda where a mother fills an entire glass with sugar.<sup>160</sup>

While government entities are currently limiting their graphic warnings approach to “educational” videos on “junk food,” it is not a large step towards mandating them on food and beverage packaging. As Michael Siegel of Boston University has written, “McDonalds could be required to post disgusting pictures of people with diseases caused by obesity at the point of purchase. Beer bottles could be required to include the phone number of Alcoholics Anonymous. My beloved Vienna Fingers could be required to include a graphic depiction of diseases related to increased fat intake.”<sup>161</sup>

GHW and the health paternalism on which they are founded are clearly incompatible with respect as a foundational democratic value. This is because GHW are not designed to provide information which the individual can use as part of a reasoned process of deciding about risk, but rather use emotion to push the individual to accept the state determined view of what constitutes acceptable risk. Indeed, GHW proceed on the assumption that citizens need to be managed if not saved through emotional shock therapy from their faulty views about tobacco.

GHW violate one final core democratic value – freedom of expression. FDA’s mandated GHW forces tobacco manufacturers to communicate messages they otherwise would not provide. The manufacturer’s autonomy to determine the content of its speech, indeed whether to speak at all, is usurped.

Generally speaking, the government may require manufacturers to include warnings and other information on their product packaging. The Supreme Court ruled in *Zauderer v. Office of Disciplinary Counsel* that the state can require companies to provide consumers with “purely factual and uncontroversial” information about their products.<sup>162</sup> But, as has been discussed above, FDA’s proposed warnings are not designed to be factual or uncontroversial, but instead are devices of controversial advocacy, miniature anti-smoking billboards. The courts have consistently found such forced speech to be unconstitutional. The Supreme Court wrote in *Hurley v. Irish-Am. Gay, Lesbian & Bisexual Grp. a/Boston, Inc.*:

Since all speech inherently involves choices of what to say and what to leave unsaid, one important manifestation of the principle of free speech is that one who chooses to speak may also decide what not to say. Although the State may at times prescribe what shall be orthodox in commercial advertising by requiring the dissemination of purely factual and uncontroversial information, outside that context it may not compel affirmance of a belief with which the speaker disagrees....<sup>163</sup>

Judge Leon, in his injunction order, made a similar point:

A fundamental tenant of constitutional jurisprudence is that the First Amendment protects ‘both the right to speak freely and the right to refrain from speaking at all’... Thus, where a statute ‘mandates speech that a speaker would not otherwise make,’ that statute ‘necessarily alters the content of the speech’.... As the Supreme Court itself has noted, this type of compelled speech is ‘presumptively

unconstitutional'.... [W]hile the line between the constitutionally permissible dissemination of factual information and the impermissible expropriation of a company's advertising space for Government advocacy can be frustratingly blurry, here – where these emotion-provoking images are coupled with text extolling consumers to call the phone number '1-800-QUIT' – the line seems quite clear.<sup>164</sup>

The FDA's GHW fail the test of sound and legitimate public policy not simply because they are designed for a non-existent policy need (smoker's information deficit) or because they have failed to work in other jurisdictions, but also because they are fundamentally at odds with three core democratic values: autonomy, respect, and freedom of expression.

## ENDNOTES

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