Enhancing The Effectiveness Of Tobacco Package Warning Labels: An Elaboration Likelihood Perspective

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ABSTRACT

Graphic health warning on cigarette packages is the latest initiative to encourage cessation and reduce smoking uptake, nevertheless, it is not clear on how effective this approach can inform and change smoking behavior. The role of recipient factors influencing the processing of anti-smoking messages on cigarette packs is also unclear. This paper attempts to investigate these gaps by studying how cigarette pack graphical health warning messages and positive gain-framed statements are processed, and its impact on smoker's attitude using the information-processing theory of elaboration likelihood. Two models were developed for this experimental study. The first model focused on elaboration levels as determinants of attitude towards smoking. A total of 60 private college students were selected for this study. A 2x2 factorial experimental design was used to test the influence of elaboration (IV) on attitude towards smoking (DV). The second model tested the effect of four recipient factors on elaboration likelihood, the factors are: general health consciousness, need for cognition, personal relevance and prior knowledge. A two-way between subjects ANOVA was used to test the first model which had three null hypotheses. The two-way between subjects ANOVA test showed that recipients who scored high on elaboration had a stronger attitude against smoking due to the additional gain-framed arguments presented on the cigarette pack, while those who scored low on the elaboration had stronger attitudes against smoking based on the gruesome graphic health warning. Pearson Correlation Coefficient test was used for the second model and the outcome showed that only one factor that is personal relevance was strongly correlated with elaboration, the other factors were weakly correlated.

Keywords: Health Communication, elaboration, fear communication, gain-framed statements

1. INTRODUCTION

Cigarette smoking is currently the leading cause of preventable death, accounting for 6,000,000 deaths every year around the world (World Health Organization, 2016). In the context of South East Asia, approximately 30% or 127 million of ASEAN adults fall under current smoker category, and in Malaysia 23.1% 4.37 million (43.9% of male

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and 1% of female) of Malaysian adults smoked tobacco (Southeast Asia Tobacco Control Alliance, 2012).The Southeast Asia Tobacco Control Alliance (2012) report also indicated that 30.9% of Malaysian boys and 5.3% girls aged between 13-15 years-old respectively were categorized as current smokers. The Institute for Public Health study in the year 2011 showed that 20.9% (4.28 million) of all the current tobacco smokers were daily smokers (39.9% of men, 0.7% of women) while the remaining 2.3% (0.46 million) were considered as occasional smokers (4.1% of men and 0.4% of women). According to Paek and Gunther (2007) many adolescents around the age of 18 started smoking taking the cue from their smoking peers. In a recent survey it was found that smoking prevalence in Malaysia is high among individuals in the age group 18-24(21%) and 25- 44(29%) (Global Adult Tobacco Survey, 2015). The Director General of Health Malaysia stated that there are 4.7 million smokers and a large majority start smoking around the age of 18 (Chiew, 2015).

According to Johnston et al. (2006) the initiation of cigarette smoking typically occurs in the early years of college life. The smoking rate among college students is increasing and this is a global trend. This finding supports a similar smoking trend in Malaysia where smoking uptake is high among college students (Chiew, 2015). Many college students experience a new found freedom from parental control which motivates them to make decisions on controversial issues like smoking. Smoking is symbolized as an expression of attaining adulthood status. The Malaysian national anti-smoking 'TakNak' campaign launched in 2005 and sustained till 2010 was successful in creating awareness of the dangers of smoking nevertheless the smoking uptake statistics continue to show an upward trend (Global Adult Tobacco Survey, 2015). Generally, there are also not many studies done on tobacco smoking among college students (Zhi and Chen, 2011).

Several public health education initiatives have been undertaken by the Malaysian Government to address this seemingly insurmountable menace, and the most recent being the launch of a series of on-pack graphical health warnings (GHW) in 2009. This initiative to be further enhanced by including gain-framed statements to facilitate elaboration. According to the Elaboration Likelihood Model (ELM) of persuasion, arguments can enhance message elaboration (Petty and Cacioppo, 1986). The amount and direction of processing influences attitude and intention to quit (Hammond et al., 2003). The ELM framework has not been studied in the context of on-pack GHW as such this study will provide useful insight which can be considered in the effort towards improving the impact of on-pack GHW.

In summary, this study aims to investigate using an experimental design on how cigarette pack GHW messages combined with gain-framed statements are processed, and its impact on smokers' attitude towards smoking using the Information Processing Theory of elaboration likelihood.

2.   BACKGROUND OF THE STUDY
GHW visuals printed on cigarette packages is a new and aggressive approach to discourage smoking. GHW provide information about the health-damaging consequences of smoking through gruesome visuals. Emphasizing the importance of visuals, Rogers (1975), emphasized that visuals give persuasive messages more presence, and hence command more attention from receivers, and perhaps cause more attitudinal changes in receivers. Pertaining to the use of fear-inducing visuals on cigarette packs, Witte and Allen (2000) concluded that the strongest predictor of message effectiveness is the severity of the consequences depicted, and in the context of smoking, severity was depicted in the form of gruesome pictures.

Canada was the first country in the world to introduce GHW on cigarette packages and it was launched in the year 2001 (Fong, Hammond and Hitchman, 2009). Prior to the usage of GHW in Malaysia, text-only warning messages were used and this was initiated in 1976. A single warning statement was printed on the pack:

WARNING BY MALAYSIAN GOVERNMENT, SMOKING IS HAZARDOUS TO HEALTH.
Refer Figure 1.

Figure 1. The text-only warning label used from 1977 -2009.
Source: International Journal of Environmental Research and Public Health (2010, p.7)

Many past research on health warnings on cigarette pack revealed that text-only messages were inferior in terms of impact compared to GHW (Borland et al., 2009; Fathelrahman et al., 2010; Fong et al., 2009; Hammond et al., 2011 and O' Hegarty et al., 2006). Robinson and Killen ⟨1997) found text-only warnings were ineffective among adolescent smokers, as adolescents were not seeing, reading, or remembering the warning label.

The Malaysian Ministry of Health launched its own GHW cigarette pack campaign on January 1, 2009. All tobacco brands in the country were required to print on a rotational schedule six GHW on the cigarette packages, and misleading descriptors such as "light" and "mild" printed on the packages was prohibited. The GHW takes the form of images of diseased mouths, diseased lungs, second-hand smoke effects, and death-related images.
Refer Figure 2.

Figure 2. Shows the six rotating series of GHW launched in January 2009.
Source: ITC Project, 2012.

Based on Global Adult Tobacco Survey (2015), the on-pack gruesome images motivated smokers to quit smoking; avoid smoking in front of children and create awareness of the dangers of smoking, nonetheless the smoking statistics do not show a downward trend. It is a fact that progress in reducing smoking uptake depends on developing new approaches (Flynn et al., 2011). This study, using an experimental design, will attempt to introduce gain-framed statements supporting the dangers of smoking depicted by the graphic visuals on the cigarette pack. Currently, there are only four textual items printed on the pack and they are: this product contains more than 4,000 chemicals including tar, nicotine, carbon monoxide that is dangerous to health, number of sticks, name, and address of the manufacturer and not for sale to minors below 18 years old). Since cognitive elaboration is triggered by GHW it would be pertinent that gain-framed textual messages are included on the cigarette package to facilitate elaboration on the gains of not smoking tobacco (Rothman et al., 2006).

3.   HEALTH COMMUNICATION AND MESSAGE PROCESSING

Health communication uses persuasion strategies aimed at behavior modification or change. Perloff (2003) defines persuasion as a symbolic process in which communicators try to convince other people to change their attitudes or behaviors regarding an issue through the transmission of a message, in an atmosphere of free choice. In a typical health communication, persuasion is achieved through transmission of messages. As such how much of the message is received and processed is vital in influencing attitudes which is the forerunner before any behavior change can take place. The impact of health communication on people cannot be effectively evaluated without understanding how people process the message. According to the Hovland/Yale model of persuasion people go through a series of steps to learn about the message, which can trigger attitudinal change. These steps, which include attention, comprehension, learning, acceptance and retention are shown in Figure 3.
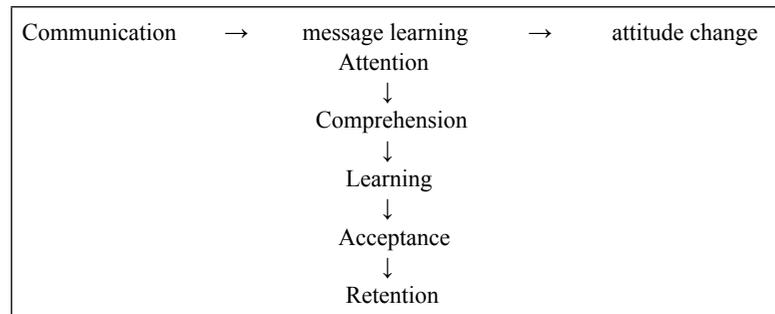

Figure 3. The Hovland /Yale Model of Persuasion
Source: Perloff (2003, p.121).*The dynamics of persuasion communication and Attitudes in 21st Century,* 2nd ed. Lawrence Erlbaum Associates: New Jersey.

The above model suggests that people receive and process information passively. Festinger and Maccoby (1964) in their study found that people actively process the message they receive, they do not just receive information but also simultaneously evaluate the information by juxtaposing their own agreements and disagreements and even derogations. This led to the development of a more progressive persuasive communication model namely the Cognitive Response Approach Model which emphasizes that people's own thoughts about the message are more important than the message itself in the context of attitudinal change. This model is illustrated in Figure 4.
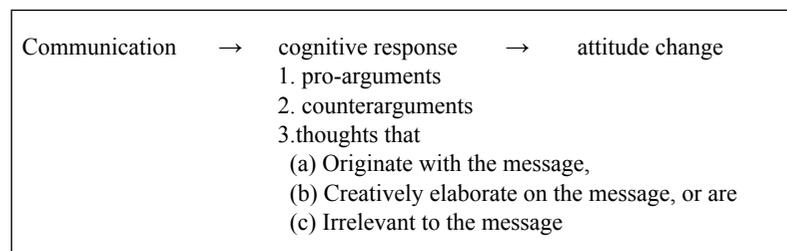

Figure 4. Cognitive Response Model of Persuasion
Source: Perloff (2003, p.121)*The dynamics of persuasion communication and Attitudes in 21st Century* 2nd ed. Lawrence Erlbaum Associates: New Jersey.

Referring to both models it is clear that in the context of health communication campaigns, communication triggers a learning process, which begins with attention and ends in retention of the message. Simultaneously the manner in which the recipient cognitively attends to or processes the message(s) will determine the extent of the change in attitude. The bulk of the anti-smoking campaigns in Malaysia and in other parts of the world use fear tactics to influence negative intent and attitude toward smoking. It is therefore pertinent to review how the recipients process fear

based anti-smoking messages.

Fear appeals have been prevalent in communicating health issues in the last two decades. A fear appeal is a communication message attempting to arouse fear in order to promote self-protective action (Rogers, 1975). According to Witte, Meyer and Martell (2001) fear appeals are persuasive messages that arouse fear by outlining the negative consequences that occur if a certain action is not taken. Fear appeals are also commonly termed as 'scare tactics', which outlines negative outcomes if a course of action is not taken. Fear appeals can motivate people to take affirmative action towards healthy behavior (Witte, Meyer and Martell, 2001). The key point about the fear model is that fear attracts attention and triggers the cognitive process as per the Yale/Hovland model in Fig 3. The Malaysian *TAKNAK* anti-smoking fear campaign launched in 2005 was successful in creating awareness, establishing a sense of susceptibility and severity, two important ingredients in a fear-based approach to modify smoking behavior (Southeast Asia Tobacco Control Alliance, 2012). Positive findings were also established in the research undertaken by Mahoney (2010), where 97% of young Australians recalled having heard or seen anti-smoking advertisements, and 98% of them believed in the message.

4.   THEORETICAL FRAMEWORK: ELABORATION LIKELIHOOD MODEL (ELM)

In the preceding review on fear communication and Cognitive Response Model of persuasion, it was established that communication effects could be effectively understood if the underlying processes by which messages influence attitude is analyzed. The cognitive response model states that an individual thinks actively and carefully about a persuasive message, and there are times when decisions are made using mental shortcuts. This implies that there are essentially two modes or mechanisms of cognitive processing that is a detailed and a short cut process (Perloff, 2003). The Heuristic-Systematic Model developed by Chaiken, Liberman and Eagly (1989) explains the short-cut mental process mechanism while the detailed process is explained by the ELM theory developed by Petty and Cacioppo (1986). Scholars have been using the ELM for explaining attitude change through persuasion because it incorporates both mechanisms of thinking, which affects attitudes. As defined by Petty and Cacioppo (1982), elaboration likelihood refers to the likelihood one engages in an issue-relevant thinking with the aim of determining the merits of the arguments for a position. In other words, the term *elaboration* refers to the extent to which people think about relevant arguments contained in persuasive messages, simply the extent to which the individual think about or mentally modify arguments contained in the communication. *Likelihood* is the probability that the event will occur; it is either likely or unlikely. ELM proposes that people are neither universally thoughtful nor mindless in appraising messages, which are persuasive. Alternately, the amount of cognitive effort a person devotes to processing a message depends on a number of situational and individual factors (Petty and Cacioppo, 1984).

ELM proposes that there are two different routes that influence attitude changes, which are peripheral and central routes. According to Dillard and Pfau (2002), the model suggests that a person has a continuum of elaboration approaches to process persuasive messages. This means users may engage in elaborating issue-relevant thinking or they may use simple decision rules to respond to messages. The nature of elaborative processing goes beyond simply paying attention to the arguments in the message.

The central route involves effortful cognitive activity in which a message recipient carefully evaluates all the information presented in support of the advocated position. In the central route, the recipient considers the quality of the message content and the merits of the arguments. In such a situation, the elaboration likelihood of the message is high. When elaboration likelihood is high, the most direct determinant of the recipient's reactions to the recommendation in the message is issue-relevant thinking. Consequently, the recipient is likely to derive an overall evaluation of, or attitude toward, the recommendation in the message (Cacioppo and Petty, 1982).

On other occasions, people may lack the motivation (for example, they may not see the topic as personally relevant) and/or ability (for example, they may lack sufficient knowledge about the topic or may have distractions in their environment) to elaborate carefully on a message. In such cases, they will not consider the strength of the arguments but instead look for simple characteristics of the message. For example, they may use the attractiveness or credibility of the persuader or the number of arguments as a basis for deciding to accept the message. In so doing, they are taking the peripheral route to persuasion, and the persuasiveness of the message will depend not on message content, but on other features of the message. According to Flynn et al. (2011) who conducted a study on smoking prevention via television messages based on the elaboration likelihood, suggested that ELM can provide a functional strategy for reaching young people who are more exposed to smoking risks especially lower academic performers. The ELM model is shown in Figure 5.
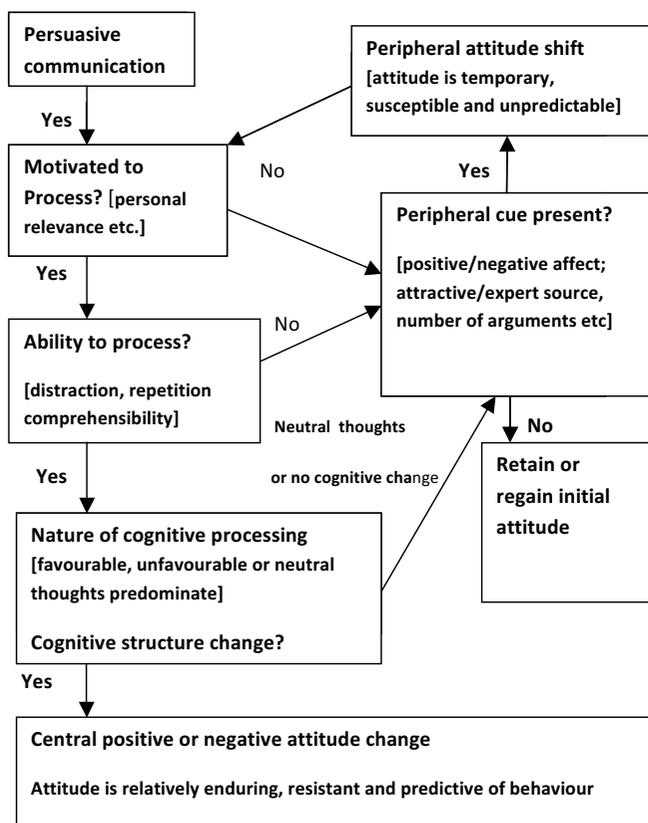
Figure 5. ELM - Perloff (2003, p.121).*The dynamics of persuasion communication and Attitudes in 21ˢᵗ Century,* 2ⁿᵈ edition. Lawrence Erlbaum Associates: New Jersey.

4.1   Cigarette Package Warning Labels: Gain-Framed Arguments

According to Toll et al. (2009), there are two types of arguments; namely gain-framed arguments and loss-framed arguments. Rothman et al. (2006) explained that gain-framed arguments refer to information on health behavior which emphasizes the benefits of taking recommended actions while loss-framed arguments refer to the costs or consequences of failing to take recommended actions. Toll et al. (2009) found that more people find loss-framed arguments to be disturbing. There are very limited textual messages included on the front and side of the packs and are as follows: (Warning: Cigarette causes mouth cancer; Infoline: 03-88834400; This product contains 4,000 chemicals including tar, nicotine and carbon monoxide, which is dangerous for health). Please refer to Fig 6 below:

Front	Back	Side

Figure 6. Picture of current box front, back and side.

This study predicts that including gain-framed statements on quitting or avoiding cigarettes to balance the negative GHW can enhance elaboration. According to Strahan et al. (2002), incorporating positive factual messages about the benefits of quitting could represent a simple but important improvement. A gain-framed message is equivalent to a positive message, which promotes benefits of adopting or avoiding an identified behavior. Strahan et al. (2002) in the context of graphic health warnings, which are loss-framed, can be made more effective by combining with gain-framed arguments or messages. In the context of the current study's theoretical framework based on the ELM, the message recipient may employ the heuristic that *more arguments are better* without the message recipient devoting much effort to assess the actual merits and implications of the gain-framed statements provided or alternatively it could result in a person thinking using the central route. In either case, it increases the impact on the attitudes towards smoking. The following six gain-framed statements will be inserted on the front flap of the cigarette pack where there is space and is sourced from Rothman et al. (2006).

T1 *Decrease your risk from suffering neck or throat cancer emphysema by saying NO to smoking.*
T2 *By not smoking you avoid ugly, painful long lasting and hard to cure smoking diseases.*
T3 *If no one smoked 10,000 lives would be saved in Malaysia each year.*
T4 *In addition to physical benefits of saying NO to smoking it can have a positive impact on your social life*
T5 *Saying NO to smoking not only keeps you healthy but also saves you money.*
T6 *Saying NO to smoking is to gain sleep, gain smelling good, gain health breath, gain beautiful skin, gain more friends.*

4.2   Conceptual Model and Hypothesis

The dependent variable in this study is the attitude towards anti-smoking messages. Attitude according to Perloff (2003) is a learned, global evaluation of an object, person, place, or issue that influences thought and action. The focus of this study is to investigate how the inclusion of gain-framed arguments can influence attitude towards smoking, hence the study will appraise the variables that motivate a high level of elaboration and favorable attitude towards smoking avoidance. In tandem with these two messages that are gain-framed statements and GHW; an existing standard text message will be evaluated in this study. Several recipient factors that moderate elaboration likelihood such as general health consciousness, need for cognition, personal relevance and prior knowledge will also be investigated.

4.3   Hypothesis formulation: Gain-framed Arguments

Gain-framed arguments should lead to greater persuasion and a changed attitude (Petty et al 1986). Petty and Cacioppo (1984b) explain that compelling, strong arguments will result in positive thoughts and enduring outcomes or attitudes via the central route. In a study on information technology (IT) acceptance, it was found that gain- framed argument influenced perceived usefulness and hence attitude towards IT acceptance (Bhattacharjee et al., 2006). In addition, gain-framed arguments are considered equivalent to a positive message (Tversky and Kahnmenan, 1981) and Strahan et al., (2010) concluded that gain-framed arguments are effective in preventive health behaviors such as avoiding or quit smoking.

Based on the above it can be hypothesized that *there is no significant difference in attitude towards smoking between the participants who received a standard GHW pack and participants who received the same standard cigarette GHW pack but with added gain-framed arguments (H1)*.

Research on ELM shows that increasing the number of gain-framed arguments provides opportunities to increase persuasiveness and hence message processing which can result in favorable issue-relevant elaboration (Petty and Cacioppo, 1984b), Individuals who prefer mental short-cuts to decision making may consider, *the more the arguments the better*, resulting in favorable attitudes (Petty and Cacioppo,1984).

Hence it can be hypothesized that *there is no significant difference in attitude towards smoking between high and low elaboration likelihood participants in the standard GHW cigarette pack condition and the modified GHW cigarette pack condition (H2).*

In another study on motorcycle safety and public service announcements showed that low involved participants elaborated on the humor advertisement while the high involved participants elaborated on the direct and logical issue-relevant advertisement (Aptekar et al., 2003).

Based on this it can be hypothesized that *there is no significant difference of the effect of high versus low elaboration likelihood for participants in the standard GHW cigarette pack condition and modified GHW cigarette pack condition (H3)*.

4.4   Personal variables that influence elaboration

General health consciousness

A recipient's general health consciousness refers to his or her predisposition and interest to integrate health concerns into their daily activities (Jayanthi,1998). According to Dieterich (2012) the person with health interest in smoking will be more attracted to graphic health warnings and therefore will be more motivated in processing smoking messages. Based on this it can be hypothesized that *there is a positive correlation between a recipient's general health consciousness and elaboration likelihood of anti-smoking messages (H4)*.

Need for cognition

Cacioppo, Petty and Kao (2013) defined cognition as the scale of individuals' tendency to engage in and enjoy effortful cognitive effort. Several studies including a study by Areni, Ferrell and Wilcox (2000) treated it as a motivational variable, and the study has shown that need for cognition plays a big and important role in the persuasion process. Hence if a person's level of cognition is high the elaboration of likelihood will also be high. Based on this it can be hypothesized that *there is a positive correlation between a recipient's need for cognition and elaboration likelihood of anti-smoking messages (H5)*.

Prior knowledge

Another recipient variable is prior knowledge. Dieterich (2012) stated that people become more able to think about issue-relevant information when they have prior knowledge. On the other hand when prior knowledge is low individuals will use simple cues to make decisions. Based on this it can be hypothesized that *there is a positive correlation between a recipient's prior knowledge and elaboration likelihood of anti-smoking messages (H6)*.

Personal relevance

Research on persuasion has shown that self-generated arguments are more convincing than arguments provided by external sources (i.e. information provided by other individuals), as individuals tend to trust themselves more than external sources (whose information they are more likely to adjust according to personal views) (Mussweiler and Neumann, 2000). Self-generated arguments are often perceived as more accurate than information that is provided by somebody else. Thus, personal relevance is likely to have a positive relationship with elaboration likelihood (Petty, Cacioppo, and Shumann, 1983); Celsi and Olson, 1988). Based on this it can be hypothesized that *there is a positive correlation between a recipient's personal relevance and elaboration likelihood of anti-smoking messages (H7)*.

4.5   Conceptual Framework

Based on all the independent and dependent variables, a conceptual model has been developed to facilitate this research. The conceptual model is shown in Figure 7. The

conceptual model comprises of two models, Model 1 is on the effect of gain-framed statements on GHW cigarette packs and attitude towards smoking and Model 2 is on the moderating effect of recipient variables on elaboration likelihood.
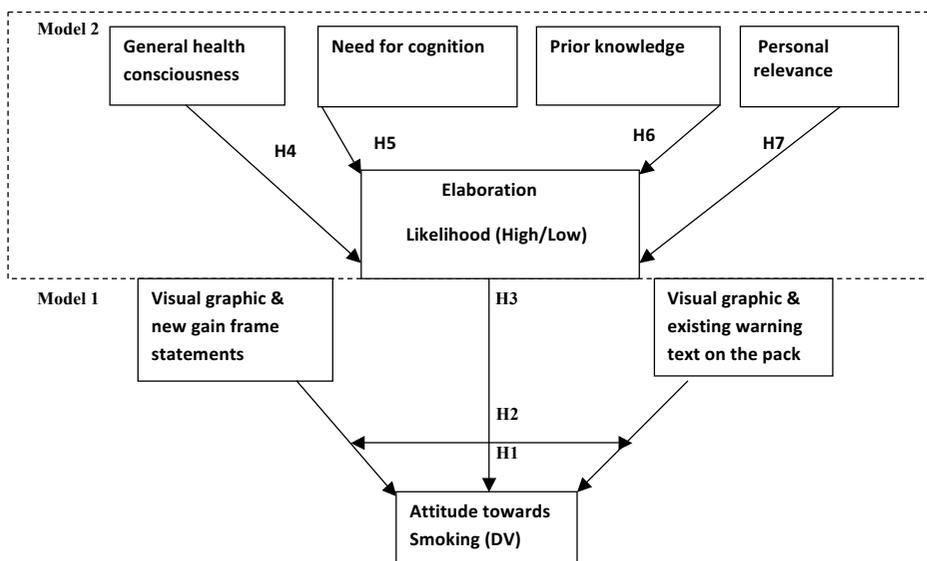

Figure 7. Conceptual Framework

5.   METHOD

The objectives and research hypotheses in this study require an evaluation of how fear arousing GHW and gain-framed statements are processed cognitively (independent variable), and how this influences smoking attitudes (dependent variable). An evaluative study of both variables suggests a positivist paradigm or quantitative approach as the most appropriate methodology. The quantitative methodology comprises several specific methods and since this research involves manipulation of variables in reference to the independent variables the experimental method seems most appropriate. Sekaran (2009), defines an experimental method as "a study used to test cause and effects relationships between variables" (p. 226). The experimental method is deemed appropriate for a study if the fundamental conditions to conduct an experiment can be fulfilled. According to Vogt, Gardner and Hoeffel (2012), the experiment is a conglomeration of related designs and as such it is not a single design and all experimental designs have common features which allow the experiment to be conducted effectively.

5.1   Research Design

This study involves two independent variables. The first independent variable is

represented by standard cigarette pack with GHW and text messages. The second independent variable is a modified cigarette pack with same GHW and six additional gain-framed statements. The dependent variable is the participant's attitude towards smoking. Participants are expected to process the health-risk visual and textual messages at two possible modes namely peripheral cognitive processing and central cognitive processing. According to Wimmer and Dominick (2011), the factorial design is appropriate when two or more independent variables are simultaneously analyzed. Specifically, the two-factor design was used because the study involved manipulating two independent variables. Because the two independent variables or factors were expected to be processed at two levels of elaboration, a 2x2 factorial design was used. Table 1 shows the 2 x 2 factorial designs used in this study.

Table 1. Factorial design

	Control	Experimental
	Standard visual(GHW) & text messages	Standard visual(GHW) & gain-framed statements
High elaboration	Attitude	Attitude
Low elaboration	Attitude	Attitude

The 2 X 2 factorial design is generally described as between-subjects design and this type of design is to compare participants in the control and experimental groups (Vogt, Gardner and Haeffele, 2012). Participants are assigned using the random assignment approach symbolized by R to the control and experimental groups. The experimental group is denoted by X and is subjected to the treatment while the control group is not subjected to the treatment. The symbol O represents the outcome or observation of the experiment. This study while being a 2X2 factorial design is based on a post-test approach where both groups are not tested prior to the introduction of the treatment (X). This is to ensure participants do not become too conscious of the subject-matter of study which will affect the actual experiment. Table 2 shows between group post-test designs for this study.

Table 2. Between-group post-test design

Group 1	R	X	O
Group 2	R	-	O

5.2   Experimental Study Participants

On a voluntary basis, 60 students from one private college located in Kuala Lumpur were recruited for this experimental study. Students came from different courses in the

selected private college. All of them fulfilled the required criteria that they must be smokers regardless of their gender. A smoker is defined as smoking 10 cigarettes a day (Patel, Wilson and Palmer, 2012).

5.3   Task Procedures: Selection of GHW
Prior to the actual experiment, a pilot-test was carried out to determine the most threatening GHW cigarette pack used in the Malaysian anti-smoking campaign. This procedure was important because the nationwide campaign used six different GHW's to scare people from smoking. Reference can be made to the six graphic images in Fig. 2. A total of 60 private college students (smokers) located in Selangor were randomly chosen to select the most threatening graphic image. The cancer of the throat graphic image was voted as the highest fear-arousing GHW. This group of students were not used for the experimental procedure.

5.4   Experimental Study Procedure
The 60 participants who volunteered for the study were randomly assigned to the control group and the treatment group. Each group consisted of 30 participants. Two research assistants were used to brief the control and experimental group simultaneously while the researcher handled overall coordination. Participants in both groups were briefed about the study and given specific instructions by the research assistants. This is to ensure minimum disruption. Following this, both groups completed a questionnaire which contained demographic questions and questions on the four recipient variables which influenced elaboration namely personal relevance, prior knowledge general health consciousness and the need for cognition.

After completing the first phase of the study, the participants were given instructions on the second phase of the study. The second phase of the study involved the presentation of the modified and non-modified GHW cigarette package printed on A4 size paper. The experimental group was presented with the modified cigarette pack which depicted a throat-cancer graphic image with six gain-framed arguments on the front portion of the pack. The control group was presented with the standard GHW cigarette pack. Recipients of the cigarette pack images in both groups were given twenty minutes to study the image and information on the pack. The cigarette pack images were collected. Following this, the participants in both groups completed a questionnaire related to elaboration and attitude. Upon completion, the questionnaires were collected and the participants debriefed.

5.5   Manipulation
Attaining experimental realism is vital for this study as such the modified cigarette pack image presented to the experimental group had additional text in the form of gain-framed statements to support the throat cancer graphic image. The gain-framed arguments emphasized the positive gains of not smoking. This is expected to influence cognitive processing or elaboration. In a study by Hammond et al. (2003) it was found that 91% of smokers reported having knowledge of the content of health warning implying that the health warnings was read, and hence the reason for inserting gain-framed statements on the GHW cigarette pack.

5.6   Questionnaire Design
Two sets of questionnaires were used for the control and the experimental group. The first set measured basic demographic details and the four recipient variables. A total of 22 questions based on a seven-point Likert scale measured the four recipient variables namely general health consciousness, need for cognition, prior knowledge, and personal relevance. Five questions on general health consciousness were sourced from Jayanthi and Burns (1998) which will measure the level of health consciousness which moderates preventive health care behavior. Eight questions on the need for cognition was adapted from Cacioppo and Petty (1982) which will measure an individual's inclination to think deeply or superficially which will influence elaboration. Three questions on prior knowledge were adapted from Chebat et al. (2001) which measured the moderating effects on persuasion in advertising. Six questions on personal relevance were adapted from Zaikowsky(2011). The second questionnaire set was on attitude and elaboration. A total of 18 questions using a seven-point Likert scale were used for the two items. Six questions on elaboration likelihood were adapted from Flynn et al. (2011), and Altheas and Tewksbury (2007). Twelve questions on attitude were adapted from Ajzen (2002).

5.7   Data Analysis Procedures
SPSS version 20 was used for analysis of data. The analysis was undertaken in two stages. In the first stage, scale validation was done to determine validity and reliability of items in the questionnaire. A pilot test was conducted for this purpose. According to Bruin (2006), Cronbach alpha scores on research questions should be 0.6 and above to be deemed as reliable. The Cronbach's alpha score on attitude items was .592, this score is marginally below the accepted value of .60 and as such, it was accepted as reliable. All other items used in the questionnaire scored above 0.6. Following this and based on research Model 1, the moderating effect of recipient variables on elaboration likelihood was measured using Pearson r correlation. The objective of this evaluation is to determine the relationship between the recipient variable and elaboration likelihood. Hypothesis testing for model 2 was done using the two-way ANOVA analysis, and this is an appropriate statistical test because there are two categorical variables: two experimental conditions and two levels of elaboration likelihood and attitude as the dependent variable. The elaboration likelihood variable, a continuous variable will be dichotomized or transformed using SPSS to high and low elaboration likelihood levels.

6.   FINDINGS
6.1   Demographic Profile of Respondents
This factorial experimental design involved two groups namely the control group and experiment group. Based on the demographic output the experiment group consisted

of 46.7 % (14) male and 53.3% (16) female participants. A total of 6.7% (2) were aged below 18, 16.7% (5) were aged between18-21 and 36.7% (11) were between the ages of 21-23. A total of 40% (12) of them were 24 years old of age. The control group consisted of 40% (12) male and 60% (18) female participants. Only 3.3% (1) were aged below 18, a total of 43.3% (13) were age between18-21 and above 33.3% (10) were between the ages of 21-23, only of 20% (6) of them were 24 years old. In summary, the demographic statistics indicated that percentage differences in gender and age in both experimental and control groups were not significantly different.

6.2   Manipulation Check
The experimental realism was successfully manipulated using the modified and standard cigarette pack. The mean score of the experimental group attitude towards smoking was 5.05 and was much higher than the control group's mean score of 4.47. The experimental groups mean score on the value of information on the cigarette pack was high 5.5 compared to the control groups mean score of 2.3.

6.3   Descriptive Output and Hypothesis Testing
This experimental design focused on the study of the main and interaction effects of two independent variables and one dependent variable. Mean score on the elaboration and attitude indicated that the experimental group's mean total score was 5.07 while the control group was 4.57. The experimental group's participants who were high elaborators scored a much higher mean score of 5.2 compared to the same participants in the control group. The Grand Mean of the dependent variable, the overall mean score on attitude was 4.766; however, the experimental groups mean score was higher at 5.055 compared to the control group's mean score of 4.47. Refer Table 3.

Table 3. Dependent Variable: Attitude

Pres	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Treatment	5.055	.195	4.664	5.446
Control	4.477	.197	4.081	4.872

In summary, the descriptive statistics indicated that the experimental group's mean score on elaboration and attitude were much higher than the mean scores of the control group.

Hypothesis Testing: Main and Interaction Effects
Three main null hypotheses were tested to evaluate the impact of different smoking messages, different levels of elaboration and the interaction between these two and attitude towards smoking. The three hypotheses are listed below:

1. Main Effect on types of smoking messages presented on cigarette packs.
a. Hypothesis 1
H_0: *There is no significant difference in attitude towards smoking between the participants who received a standard GHW pack and participants who received the same standard cigarette GHW pack but with added gain-framed arguments.*

Main Effect on Elaboration and Smoking messages
b. Hypothesis 2
H_0: *There is no significant difference in attitude towards smoking between high and low elaboration likelihood participants in the standard GHW cigarette pack condition and the modified GHW cigarette pack condition.*

3. Hypothesis 3
c. Interaction effect Message Presentation, Elaboration, and Attitudes
H_0: *There is no significant difference of the effect of high versus low elaboration likelihood for participants in the standard GHW cigarette pack condition and modified GHW cigarette pack condition.*

Table 4.Tests of Between-Subjects Effects

Dependent Variable: Attitude

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	11.940[a]	3	3.980	3.547	.020
Intercept	1323.313	1	1323.313	1179.349	.000
Pres	4.869	1	4.869	4.340	.042
Elmoverall	1.627	1	1.627	1.450	.234
pres * elmoverall	6.637	1	6.637	5.915	.018
Error	62.836	56	1.122		
Total	1473.222	60			
Corrected Total	74.776	59			

a. R Squared = .160 (Adjusted R Squared = .115)

The results of the experiment is shown in Table 4.

The main effects for presentation (Hypothesis1) showed that there was a significant difference in smoking attitude between participants exposed to the standard GHW cigarette pack message and the modified GHW cigarette pack message (gain-framed arguments).The 2x2 between subjects ANOVA showed a main effect for presentation $F (1, 56) = 4.340$, p=.42, a=.05 based on this the null hypothesis is rejected or alternatively, it can be said that presentation or the standard and modified GHW cigarette pack had a main effect on smoking attitude.

The main effect for elaboration (hypothesis 2) showed that there was no difference between high or low elaboration participants in both conditions on attitude towards smoking. The 2x2 between subjects ANOVA failed to show a main effect on elaboration, F (1, 56) =1.450, p=.234, a=0.5, based on this the null hypothesis was accepted.

**Table 5.** Presentation & Overall ELM

Dependent Variable: Attitude

Pres		Mean	Std. Error	95% Confidence Interval	
				Lower Bound	*Upper Bound*
	High	5.225	.257	4.711	5.740
	Low	4.885	.294	4.296	5.473
Control	High	3.972	.306	3.360	4.585
	Low	4.981	.250	4.481	5.482

Table 5 shows that participants with high ELM in the experiment group had a higher mean attitude score of 5.2 compared to participants in the control group who had a mean attitude score of only 3.9. In comparison, the low ELM participants in the experiment group had a 4.8 mean attitude score while participants in the control group had a 4.9 mean attitude score. This showed that participants in the higher elaboration likelihood tend to elaborate more if more information is available.

The interaction effects between presentation and elaboration likelihood showed (hypothesis 3) that there was a significant difference. The 2x2 between subjects ANOVA revealed a main interaction effect of having a high versus low ELM is probably different for the treatment and control conditions F(1,56)=5.915,p=.018, a= 0.5 Based on this the null hypothesis is rejected. The presentation condition high and low ELM output in Table 5 shows the means for both groups. The mean attitude score for participants in the experiment group, high ELM condition was 5.225 and the mean attitude score for participants in the control group, low ELM condition was 3.972.

The graph in Figure 8 shows the dependent variable that is attitude towards smoking (Y axis) and ELM (X axis) and separate lines representing the experiment group and control group. The graph showed that respondents in the control group have a positive attitude towards smoking while those in the experiment group have a negative attitude towards smoking. The graph showed that participants with high ELM tendency performed better in terms of smoking attitude when exposed to gain-framed statements while those low in ELM performed better in terms of smoking attitude with the standard GHW visual information, see Figure 8.
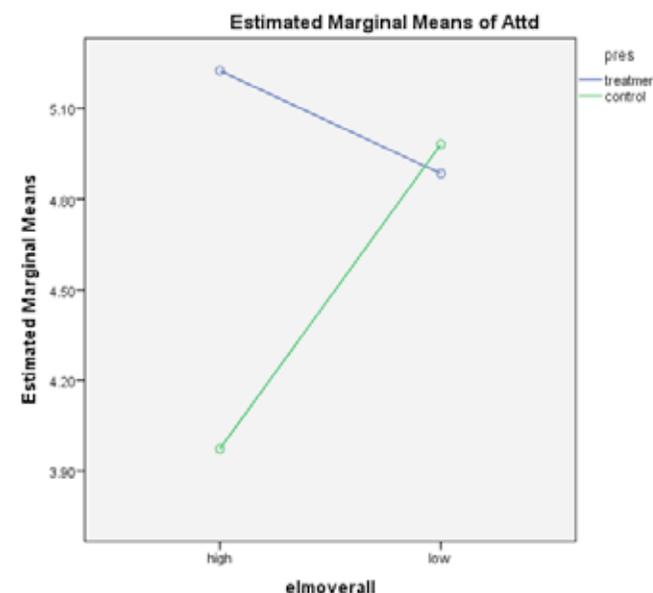
Figure 8. Overall interaction effect attitude & elaboration of both groups

6.4   Recipient Variables of ELM

All recipient variables except personal relevance was found to be statistically insignificant. This implied that relationship between general health consciousness prior knowledge and need for cognition had an insignificant relationship with elaboration likelihood. The Pearson r correlation analysis showed that there is a positive relationship between personal relevance and elaboration likelihood r = .379 and was statistically significant (p<0.05).

6.5   Participant's Perception of Information on Cigarette Packs

Based on the descriptive statistics summarized in Table 6, the experiment group perceived positively the additional gain-framed statements in the modified cigarette pack. Their mean score on questions related to the value of information was 5.5 compared to the control group who scored only 2.3. A total of 79% of the treatment group respondents found the gain-framed statements to be moderately interesting to interesting. In comparison only 24% of the control group respondents found it to be interesting. A total of 79% of the experiment group found the information to be appealing while only 10% of the control found it to be appealing. A total of 86% of participants in the experiment group found the modified cigarette pack to be informative and in comparison only 17% of participants in the control group found the cigarette pack to be informative.

Table 6. Response on cigarette packs information

	Experiment	Control
Means score	5.5	2.3
Interesting	79%	24%
Appealing	79%	10%
Informative	86%	17%

7.   DISCUSSION

The purpose of the present study was to investigate if additional information on cigarettes packs could have influenced private college students' attitudes toward smoking. The main effects for presentation (hypothesis1) showed that there was a significant difference in smoking attitude between participants exposed to the standard cigarette pack and the modified cigarette pack (gain-framed argument) conditions. This finding was consistent with Dieterich (2012) who argued that an individual with health interest in smoking will be more attracted to graphic health warnings and therefore will be more motivated in processing smoking messages. The majority of the experimental group respondents found the modified cigarette pack information to be interesting 79%, appealing 79% and informative 86% and as such their mean score on elaboration was stronger at 5.07 compared to the control group who scored 4.57. Detweiler et al. (1999) in their study of gain-framed messages and sunscreen use found the preventive messages more effective, and this supports the first hypothesis. Witte and Allen (2000) drew several conclusions on their meta-analysis of fear appeal including one relevant to the first hypothesis that is fear appeal efficacy is dependent on efficacy messages which refer to messages that provided information on how to avoid the effects and in this study, it referred to the gain-framed statements. Strahan et al. (2002) concluded that gain-framed arguments are relevant and effective in preventive campaigns.

The second hypothesis stated that there is no significant difference in attitude towards smoking between high and low elaboration likelihood participants in the standard GHW cigarette pack condition and the modified cigarette pack condition. The results indicated that there was no main effect for elaboration (hypothesis 2) and is inconsistent with Hammond et al. (2003) who found that intention to quit smoking and information processing has a strong relationship. According Petty and Cacioppo, (1986) individuals who are inclined towards lower elaboration tend to process available cues like the graphic image and number of arguments and this is commonly termed as peripheral processing. The mean score of participants in both the experimental and control was moderately high that is M=4.8 (experiment) and M=4.9 (control). This could have diluted the overall effect on elaboration.

The third hypothesis stated that there is no significant difference of the effect of high versus low elaboration likelihood for participants in the standard cigarette pack condition and modified cigarette pack condition. This study found that the interaction effects between presentation and elaboration likelihood (hypothesis 3)

were significant. According to figure 8, the lines are not parallel which implied an interaction effect. Alternatively, it can be said that presentation of cigarette packs (modified / standard) had an effect on elaboration. Participant's inclined towards high elaboration had stronger negative attitudes towards smoking under conditions of gain-framed statements than those exposed to the standard GHW cigarette pack.

Alternatively, those inclined towards low elaboration had a stronger negative attitude towards smoking under conditions of standard GHW cigarette pack than those in modified GHW cigarette pack. This implies that the modified cigarette pack worked well for smokers with high elaboration motivation or ability while the standard cigarette pack with strong visual graphics worked well for smokers with low elaboration motivation or ability. This outcome supports the ELM theory of Petty and Cacioppo, (1986).

7.1   Discussions on recipient variables for ELM

The personal relevance variable was the only variable which correlated with elaboration likelihood positively and significantly based on the ELM theory. Personal relevance is directly linked to motivation to process information. According to Perloff (2003), the ELM explains that individual involvement in an issue is high when they perceive the issue to be personally relevant and this generally results in a high issue-relevant thinking process. The participants in this study were all smokers and therefore it can be inferred that the personal relevance factor will have an impact and therefore be positively correlated with elaboration. This is also consistent with past research done by Witte and Allen (2000) and Dietrich (2012) where graphic health warnings were positively associated with perceived personal relevance. The other factors were weakly correlated with elaboration and it can be inferred that this could be due to the fact that all the participants were smokers and this could have diluted the impact of the other recipient variables.

8.   CONCLUSION

Overall this study contributes to the body of knowledge on anti-smoking initiatives in the Malaysian context. The Malaysian government's efforts in implementing pictorial or graphic warning on cigarette packs can be further enhanced by including gain-framed arguments which will cater to smokers who are inclined towards either low or high elaboration. Smokers in the low elaboration category may take the peripheral route message processing by relying on the number of arguments and the graphic visuals, and those in high elaboration category may take the central route to process the gain-framed statements, as such this modification of the cigarette package is recommended. According to Strahan et al. (2002) including positive factual arguments about the benefits of quitting represents a simple but important improvement in the effort to reduce smoking. It literally adds hope for quitting.

As with most studies, this study has specific limitations. One of the limitations is that the research findings are based on an experimental design which may not correlate with the real world as such this study can be further enhanced by using a

field experiment approach. Besides this, the research is focused on one category of the smoker to control for variation; however, the results will be more substantive if different types of smokers are used such as social smokers, occasional smokers, and former smokers. It must be noted that this study focused on *information processing* and as such, it is not intended to draw conclusions on whether it is effective in influencing intention to reduce or quit smoking.

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