

**EXPLORING WARNING MESSAGES ON CONDITIONAL PRINCIPLES &
PREDICTING SOCIAL BEHAVIOR**

By

Jee-Hoon Rim

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
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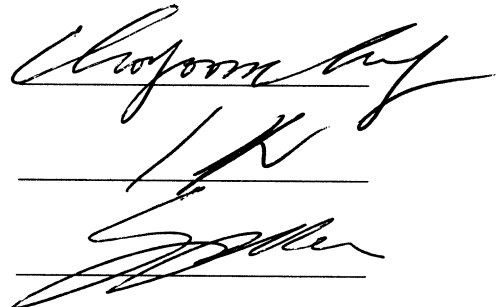
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ABSTRACT

EXPLORING WARNING MESSAGES ON CONDITIONAL PRINCIPLES & PREDICTING SOCIAL BEHAVIOR

By

Jee-Hoon Rim

Alcohol warning (or moderation) messages as integrated communication tools have been designed in a wide range of variety to reduce or moderate consumer attitudes toward alcohol consumption. The aim of this study is to explore the relationship between alcohol warning messages and alcohol consumption attitude or behavior. In this regards, this study reviews various theories and models based on warnings and consumer behavior related studies. In particular, this study mainly applied extended Fishbein model, which is the well-known social behavior theory, to examine how alcohol warning messages affect consumer attitudes, subjective norms, intention to switch alcohol consumption, and eventually behavioral change. Moreover, this study examines effects of alcohol warning messages by applying different forms. To measure the findings, this paper conducted surveys, and applied statistical analysis using chi-square, factor, and regression. The result indicated that alcohol warning messages positively affected consumer attitudes toward reduction or moderation of alcohol consumption. This study provides managerial implications for alcohol warning and advertising related policies.

Keywords: Alcohol Warning Messages, Advertisements, Advertising, Attitudes, Subjective Norms, Intention, Extended Fishbein Model.

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I. Introduction

Warnings have been designed in a wide range of variety and widely exposed worldwide, in response to social concerns of hazards. From the period of 1970s, the number of warnings has grown sharply, because the consumer's concerns of possible hazards of using diverse types of products increased from that period (Stewart and Martin 1994). Nowadays, consumers cannot easily find out any products without warnings in any where they go. In particular, the warning labels on cigarettes, alcoholic beverages, and medications have been controversial issues for policy makers, regarding industries or parties, and individuals, even though many of other products also include warnings. In advertisements, the use of warnings may become increasingly common, too (Smith 1990). Thus, many of advertisements carry warnings in these days, even though some of them are not overtly placed on the advertisements.

Warnings are useful and important tool not only for consumers but also policy makers themselves. In this regards, a study by Mayer et al. (1991) addressed that warnings are "an appealing policy tool because of their relatively low cost and their consistency with individual freedom of choice." Also, seen from alcohol warning perspective, a study by Wilkinson and Room (2009) mentioned that alcohol warning labels were an increasingly popular plan for the alcohol policy. Thus, designing and placing effective warnings can be one of the most important social issues to reduce social cost. Since warning related issues became to rise to the surface, many researchers have explored various warning related issues. Among warnings with respect to various consumer products such as alcoholic beverages, medicines, cigarettes, etc, this study focused on alcohol warning messages, and the overall aim of this paper is to estimate the effectiveness of diverse alcohol warnings.

Many researches (see table II-1) have explored alcohol warnings such as the purpose of warnings, forms of warnings, alcohol moderation advertisements, and the impact of

alcohol warning messages to the alcohol consumption attitude or behavior in countries such as U.S. In this regards, some theories such as persuasive communication theory (Andrews et al. 1990; Bettman et al. 1986; Petty and Cacioppo 1986), reactance theory (Skurnik et al. 2005; Stewart and Martin 1994; Synder and Blod 1991; Feingold and Knapp 1977) and social contract theory (Toress et al. 2007), and some models such as hierarchy effects of models (Stewart and Martin 1994; Scammon 1991; Friedmann 1988) and McGuire's model (McGuire 1980) have been adopted for some of alcohol warning studies. Many researches explored the effectiveness of alcohol warning messages based on these theories and models, or at least other social behavior related theories and models, which were reviewed in chapter 4, although some researchers didn't note the exact names of these theories and models into their studies.

In order to analyze effectiveness of alcohol warning messages, this study explored how alcohol warning messages affect a consumer's attitudes toward alcohol consumption based on various theories and models that consider social behavior, attitude, and learning. By reviewing previous studies that address warning messages and advertisements, this study reviewed and analyzed theories and models that are closely related to the content of this study. Among various theories and models, this paper mainly applied the well-known theory that investigates social behavior, "extended Fishbein model" (Ajzen and Fishbein 1980) to examine how alcohol warning messages affect a consumer's attitudes, subjective norms, intention, and eventually behavioral change.

To explore this study, both qualitative and quantitative researches have been conducted. This study has conducted content analysis for qualitative research, and it has conducted various statistical analysis and tests such as factor analysis, regression analysis, and chi-square analysis for quantitative research. Moreover, this paper reviewed various types of alcohol warning messages (see table II-2) mainly from U.S., and Korea to support both

qualitative and quantitative research. In particular, based on extended Fishbein model, other related theories and models, and types of alcohol warning messages, this study investigated the following research questions;

- i) How do ‘attitude estimates’ concerning reduction or moderation of alcohol consumption such as behavioral beliefs and evaluations affect ‘differential attitudes’ toward alcohol warning messages after perceiving alcohol warning messages?
- ii) How do ‘estimates of subjective norms’ concerning reduction or moderation of alcohol consumption such as normative beliefs and motivations to comply affect ‘differential subjective norm’ (i.e., attitude toward alcohol warning messages based on subjective norm) after perceiving alcohol warning messages?
- iii) How do ‘differential attitudes’ toward alcohol warning messages affect ‘differential intention’ to switch alcohol consumption attitude?
- iv) How do ‘differential subjective norm’ affect ‘differential intention’ to switch alcohol consumption attitude?
- v) Is there any difference between the effect of ‘differential attitude’ on ‘differential intention’ and the effect of ‘differential subjective norm’ on ‘differential intention’?
- vi) How do ‘differential intention’ to switch alcohol consumption attitude affect ‘behavioral change’ to reduce or moderate alcohol consumption?

II. Literature Review

Numerous studies have attempted to find and explore warning related issues including the effectiveness of alcohol warning messages. This paper studied various theories and models that support warning related studies reviewed in chapter IV, and text books which could be applied to the warning related studies. This paper reviewed many of diverse warning related academic journals and text books, particularly for alcohol warning messages. Table II-

1 shows a summary of diverse researches regarding warnings. Previous studies on the topic of warning messages have explored various issues such as the effectiveness of warning messages, the purpose of warning messages, diverse forms of warning messages, related content and quantitative research, etc., as table II-1 shows. It is found that various studies on the topic of warning messages have more in the 90s rather than other period (see table II-1). It seems that the issues of warning messages have paid more attention after 90s, because “the federal government has mandated warning labels for beer, wine and liquor since November 1989” (Snyder and Blood 1991).

Table II-1 Summary of Studies related to Warnings

Year	Author	Title	Major Issues of Studies
1981	Cunitz	“Psychologically Effective Warnings”	This paper explained derivative psychological principles with respect to the adequacy and sufficiency of warnings.
	Ross	“Legal and Practical Considerations for the Creation of Warning Labels and Instruction Books”	This paper explained how to create warning labels and instruction books more effectively. The author argued that manufacturers should design adequate instructions and warnings “to minimize hazards and improve safety, to avoid accidents, to improve the efficiency and reliability of the product, and to improve the quality of the product in the minds of its customers”.
1983	Schucker et al.	“The Impact of the Saccharin Warning Label on Sales of Diet Soft Drinks in Supermarkets”	This paper found out that a ripple effect and a response level of warning labels had some difference depending on demographic factors and educational backgrounds.
1984	Orwin et al.	“Evaluating the Life Cycle of a Product Warning: Saccharin and Diet Soft Drinks”	This paper measured the relationship between saccharin warning label and sales of diet soft drinks. Results showed that “the label produced a small yet statistically significant reduction in sales”.
1986	Bettman et al.	“Cognitive Considerations in Designing Effective Labels for Presenting Risk Information”	This paper mainly adopted the human information processing model. Based on this model, this paper argued general guidelines for designing labels to present risk related information.
1988	Beltramini	“Perceived Believability of Warning Label Information Presented in Cigarette Advertising”	This paper studied the perceived believability of the warning label information, and the target audience was young adults.
1989	Laughery and Stanush	“Effects of Warning Explicitness on Product Perceptions”	This study measured how people differently reacted to explicit and non-explicit warning labels. The result showed that people perceived products more dangerous and related injuries as more severe when warning labels are explicit.
1990	Andrews et al.	“Believability and Attitudes Toward Alcohol Warning Label Information: The Role of Persuasive Communications Theory”	Using persuasive communication theory, this paper measured 1) how customers perceive believability of and attitudes toward the information of five different alcohol warning labels; 2) if prior beliefs and attitudes toward consuming alcohol mediate the effectiveness of five different warning messages; and 3) if ‘attitudes toward drinking alcohol’, ‘alcohol belief statements’, and ‘label believability’ influence ‘attitudes toward alcohol label information’.
	Smith	“The Impact of Product Usage Warnings in Alcoholic Beverage Advertising”	This study explored communication capabilities of warnings. Results showed that there had a positive communication potential for including warnings in TV advertising for alcoholic beverages, but the effects varied based on ‘message severity’ and ‘transmission mode’ (audio versus video)
1991	Brown et al.	“The State-of-the-Art in Labeling Research Revisited: Developments in Labeling Research 1978-1990”	This study explored the development of labeling research from 1978 to 1990. This research had been related to the Marketing Science Institute state-of-the-art review.
	Mayer et al.	“Evaluating the Impact of Alcohol Warning Labels”	This paper evaluated the effectiveness of recently mandated alcohol warning labels. The result suggested that the public awareness toward warning messages is high, and ‘the

			admonition against drinking during pregnancy' was the most memorable among the warnings.
	Mazis et al.	"An Evaluation of the Alcohol Warning Label: Initial Survey Results"	This paper estimated the effectiveness of alcohol warning labels by conducting national surveys from May 1989 to May 1990. The finding was the public's risk perception level with respect to consuming alcohol beverages had been slightly increased during that period.
	Snyder and Blood	"Alcohol Advertising and The Surgeon General's Alcohol Warnings May Have Adverse Effects on Young Adults"	This paper measured the boomerang effect of alcohol warnings, especially for young people. Through the result, authors suggested that alcohol warning labels might be counterproductive, and alcohol advertisements with health warnings at the bottom of advertisements make consuming alcohol more attractive.
	Wogalter	"Consumer Product Warnings: The Role of Hazard Perception"	This study measured the factors with respect to people's hazard perceptions of consumer items. Also, the authors measured how these perceptions were related to one's willingness to read warnings of products.
1992	Griffin et al.	"Consumer Assessments of Responsibility for Product-Related Injuries: The Impact of Regulations, Warnings, and Promotional Policies"	This paper mainly studied the effectiveness of regulations, promotional policies, and warning labels on people's 'attributional processes'.
1993	Barlow, and Wogalter	"Alcohol Beverage Warnings in Magazine and Television Advertisements"	This study measured the effectiveness of alcohol warnings in mass-media advertising from print(i.e., magazine) or broadcast(i.e., TV). The results suggested that warnings in advertisements could communicate information only if they were presented in a salient form.
	Frantz and Rhoades	"A Task-Analytic Approach to the Temporal and Spatial Placement of Product Warnings"	This paper investigated the impact of warning placement by using a task-analytic approach. Their result showed the effectiveness of warning placement was significant.
	Graves	"An Evaluation of the Alcohol Warning Label: A Comparison of the United States and Ontario, Canada in 1990 and 1991"	This paper conducted national household telephone surveys in the US(N=2000) in 1989, 1990, and 1991. Also, they conducted Ontario in Canada (N=1000) in 1990 and 1991. In 1991 in the US, the awareness of the label increased to 27%. Especially, mean, 18 to 29 year olds, heavy drinkers, and the more educated people were more likely to have seen the labels.
	Hankin et al.	"The Impact of the Alcohol Warning Label on Drinking During Pregnancy"	This study mainly adopted the 'McGuire 10-phase model'. The authors examined the reported drinking of 4397 pregnant African-American women based on this model. Their finds were lighter drinkers decreased reduced alcohol consumption during pregnancy by a small but statistically significant amount, while risk drinkers did not significantly change their alcohol consumption during pregnancy.
	Hilton	"An Overview of Recent Findings on Alcoholic Beverage Warning Labels"	This paper explored the effectiveness of warning labels, awareness of the label, risk perception, behavioral change, interpretations of the findings on label effect, design features of labels, posters as a warning medium, and cognitive response to the label.
	Laughery et al.	"The Noticeability of Warnings on Alcoholic Beverage Containers"	Authors argued that one of the important factors in the effectiveness of warnings is its 'noticeability'. Through their experiments regarding 'noticeability', they argued that the probability of desired effectiveness increased when warnings were created more saliently,
	Malouff et al.	"Important Characteristics of Warning Displays on Alcohol Containers"	This paper found out that the conspicuousness of health warning messages on alcohol containers influenced possible effectiveness. Through their findings, they suggested the displaying rules of the required warning on alcohol containers be reexamined to increase the conspicuousness of the warning so that alcohol drinkers could notice, read, and recall the warning messages more effectively.
1994	Clark and Brock	"Warning Label Location. Advertising, and Cognitive Responding"	This paper adopted the 'persuasive communications approach' to explore the effectiveness of warnings on attitudes as opposed to how well those were recalled.
	Krugman et al.	"Do Adolescents Attend to Warnings in Cigarette Advertising? An Eye-Tracking Approach"	This paper measured masked recall of warning messages by using state-of-the-art eye-tracking equipment with cognitive processing of warnings. The result showed there have a significant relationship between the eye-tracking measures and a masked recall of warning messages.
	Stewart and Martin	"Intended and Unintended Consequences of Warning Messages: A Review and Synthesis of Empirical Research"	Authors argued that general warnings informed instead of persuade customers, so consumers selectively attended to warning messages. In this regards, greater caution is needed when designing warning messages, because of multiple effects of warnings. Moreover, they championed that warning

			messages should be created by using empirical research rather than expert judgment or opinion.
1995	Adams and Edworthy	“Quantifying and Predicting the Effects of Basic Text Display Variables on the Perceived Urgency of Warning Labels: Tradeoffs Involving Font Size, Border Weight, and Colour”	This study explored the relationship between design variables and the effectiveness of warnings. The result showed that there had a linear relationship between each variable and a perceived urgency: text size had the greatest effect, followed by border width. Also, the author proved signal word had to be around twice as big in black as in red to provide the same perceived urgency.
	Braun et al.	“The Influence of Color on Warning Label Perceptions”	The result of their study showed that color may increase the saliency of warnings, and the level of communicated hazard.
1996	Wogalter et al.	“WARNING! Sign and Label Effectiveness”	This paper illustrated stages of warning information processing
1998	Bang	“Analyzing the Impact of the Liquor Industry’s Lifting of the Ban on Broadcast Advertising”	This paper measured 1)whether or not hard liquor advertising increase hard liquor consumption, 2)what impact hard liquor advertisement have on public’s beliefs and attitudes, and 3)whether or not alcohol warning messages are effective.
2001	MacKinnon et al.	“Longitudinal Relationship Between the Alcohol Warning and Alcohol Consumption”	This study estimated the longitudinal relationship between the exposure of alcohol warning label and alcohol consumption of adolescents. The results showed that the alcohol warnings didn’t affect alcohol consumptions.
2005	Skurnik et al.	“How Warnings about False Claims Become Recommendations”	This paper mainly adopted the ‘reactance theory’. The authors argued that repetition of claims in advertising and media can distort one’s memory toward original context. This side effect comes from increased familiarity with the claims.
2006	Roznowski and Eckert	“Exploring What “Drink Responsibly” Means to College Students”	This paper measured “drink responsibility” means to college students who have risky drinking behaviors. Their finding showed that these message delivered diverse health and safety related messages, but other topics such as “being of age” were not mentioned by participants.
	Taylor	“Alcohol Warning Labels in the UK”	This paper illustrated the history of the health warnings, and explored which types of alcohol health warnings should
2007	Torres et al.	“The effects of warning-label placement in print Ads”	This paper adopted ‘social contract theory’ for their study. Their finding showed that consumers responded more positively for recall, attitude toward the brand, attitude toward the ad, purchase intention, and responsible advertisement, when warnings were overtly rather than discreetly placed in print ads.
2008	Atkin et al.	“The role of advertiser motives in consumer evaluations of ‘responsibility’ messages from the alcohol industry”	This paper used the concept of ‘strategic ambiguity’, which is firstly introduced by Eisenberg in 1984. Also, it applied attribution theory. The authors mainly concerned with “how alcohol advertisements with socially responsible messages are discerned by consumers, and how this discernment may affect well-known advertising outcomes”.
2009	Wilkinson and Room	“Warnings on alcohol containers and advertisements: International experience and evidence on effects”	Authors argued that warnings can be ineffective, but the tobacco experience presented that effective warning labels were possible. Thus, the alcohol warning labels should be evaluated with respect to the impact on attitude and behavior.

2.1 Purpose of Warnings

In defining warnings, it may be useful to begin with the suggestion that dictionary defines “If you *warn* someone about something such as a possible danger or problem, you tell them about it so that they are aware of it” or “If you *warn* someone not to do something, you advise them not to do it so that they can avoid possible danger or punishment” (Cobuild 2001). So, according to Cobuild (2001), the general purpose of warnings is to alert any possible danger or to avoid possible problem. Also, alcohol warnings have at least one of these factors, which are “awareness of any possible danger” and “avoidance of possible

problem” (Cobuild 2001).

Seen from human factor’s point of view, Lehto and Miller (1986) mentioned “warnings are those stimuli that alert people to hazardous condition.” Similarly, Snyder and Blood (1991) suggested that warnings are proposed to “inform consumers of the risks involved in using some dangerous products, such as cigarettes, prescription drugs, and alcohol.” On the other hands, Ross (1981) championed that effective warnings communicate what the risk is, show the magnitude of the related risk, and inform the receiver about how to avoid the related risk. This definition tends not to differentiate among “warnings, product instructions, and more general information about safety” (Stewart and Martin 1994).

Theoretically, one of reasons of conveying warnings is for the altruistic purpose, which means warnings are created “to inform consumers and help generate a safe consumer response toward a product” (Torres et al. 2007). In this regards, the “social contract theory” could support their argument clearly (Torres et al. 2007). On the other hands, seen from behavioral perspective, Wogalter and Laughery (1996) suggested the purpose of warnings is dual. “The first goal is to inform people so they appreciate potential hazards, and the second goal is to change behavior, that is, to redirect people away from performing unsafe acts that they might otherwise perform” (Wogalter and Laughery 1996). In line with this, the ultimate purpose of warnings is to change one’s behavior re-directly.

Regulators, marketers, and any other related party, however, communicate warnings for a number of reasons depending on situations, so warnings may serve many purposes. For example, “there is a public health interest in describing the health risks, whereas the producer and seller will prefer to present information on the attractions of the product” (Wilkinson and Room 2009). Governments have mixed interests, because a government regulates warning labels to reduce harm, and simultaneously, act on labeling in ways to assist a local industry (Wilkinson and Room 2009). In this sense, Stewart and Martin (1994) already addressed, “the

same warning can serve as a means for alerting the consumer to potential hazards while also serving to protect a manufacturer from liability claims.”

Nonetheless, warnings are “an appealing policy tool because of their relatively low cost (both in administration and compliance) and their consistency with individual freedom of choice” (Mayer et al. 1991). In line with this, from the societal perspective, “warnings can be a means of reducing aggregate social costs associated with the inappropriate use of products” (Stewart and Martin 1994). Lastly, from the ideology of consumer capitalism point of view, people who have full information will act in “their own best interest” (Wilkinson and Room 2009). According to Wilkinson and Room (2009), this view can support the reason why complete information should be provided in combination with the purchase of product.

2.2 Forms of Warnings

Alcohol warnings have diverse forms such as pictorials, messages, moving pictures, labels, etc. In these days, the range of alcohol warnings has broadened. For instance, diverse alcohol moderation advertisement, simulation tests, campaigns, various programs, games, etc are the today’s alcohol warnings. As Table II-2 shows, messages of alcohol warnings also take various forms. Some of alcohol warning messages address ‘positive reinforcement’ while others address ‘negative reinforcement’, or address ‘both’ (two-sided). Moreover, some alcohol warning messages address ‘self’ related contents while others address ‘social responsibility’ or ‘others’ related contents, or focus on health-risk related contents (see table II-2).

Seen from information content’s point of view more, warnings may differ on a variety of dimensions. For examples, some warning messages just provide information of product contents or product effects, whereas other warnings provide some specific prohibitions (Stewart and Martin 1994). Moreover, some warnings identify a specific target

audience, while other warnings are aimed at an unidentified audience, and some warning messages are short, while other messages are long (Stewart and Martin 1994).

“Different types of warnings make very different assumptions about the intended audience for and the effect of warning” (Stewart and Martin 1994). For instance, informing a drinker that drinking alcoholic beverage contains acetaldehyde assume that drinkers understand what acetaldehyde is and what effect it has. These kinds of assumptions, however, could be sometimes dangerous since readers could have different level of knowledge. Thus, assumptions should be matched with an identified audience very carefully to prevent any misunderstanding. Similarly, according to the research from Roznowski and Eckert (2006), although many alcohol brewers and industries promote “drink responsibly”, college students, who have risky drinking behaviors, only perceived safety and health related messages through these words. They couldn’t perceive other important messages, such as “being of age.” (Roznowski and Eckert 2006).

According to Wilkinson and Room (2009), alcohol warning labels or signs may take several forms, which are 1) Information about the contents or composition of the alcoholic beverage; 2) Health-oriented alcohol warnings, statements or claims; and 3) locations and formats for alcohol warning signs. Wilkinson and Room (2009) addressed that various types of alcohol warning messages have been developed based on this criteria. In another point of view, the alcohol warnings could be largely divided into two forms, which are on-product warnings and off-product warnings (Torres et al. 2007). In this regards, the alcoholic bottle label can be one of the examples of on-product alcohol warnings, and ‘drink responsibly’ print advertisement can be one of the examples of off-product alcohol warnings.

Lastly, according to Stewart and Martin (1994), some warnings provide a strong and direct link between a behavior and its effects, while other warnings provide a more probabilistic association. Also, some warnings present specific actions to protect users from

danger, whereas other warnings don't provide particular actions (Stewart and Martin 1994). Up to now, the forms of alcohol warnings have been reviewed. In the following chapter, this paper will discuss an alcohol moderation advertisement.

2.3 Alcohol Moderation Advertisement

As this paper already mentioned in an earlier chapter, some warnings have multiple purposes. These kinds of warning messages can be very effective for one purpose but at the same time, might be less effective for another (Stewart and Martin 1994). The alcohol moderation advertisement, which has been provided from alcohol industries, can be one of examples of warnings which include multiple purposes. In contrast to the voluminous scholarship on alcohol issues, there have been few general studies on alcohol moderation advertisement issues in South Korea, since there are few alcohol moderation advertisements in Korea, unlike to other developed countries such as U.S., U.K., and Germany. Thus, understanding the concept of alcohol moderation advertisement could be useful to develop this study more broadly. In particular, alcohol moderation advertisements have been addressed by both public (e.g., government organization such as Ministry of Health & Welfare) and private sector (e.g., alcohol industry such as Heineken) more in the developed countries: alcohol moderation messages have been more addressed by private sector due to the concept of “strategic ambiguity” (Atkin et al. 2008).

Eisenberg (1984) addressed that in order to understand the alcohol moderation advertisement, one must understand the concept of “strategic ambiguity” in advance. A study by Eisenberg (1984) firstly introduced the concept of strategic ambiguity, and championed that strategic ambiguity is “an interactional concept that develops through a combination of source, message, and receive factors” (Atkin et al. 2008). The concept of alcohol moderation advertisement is very much like that of the concept of strategic ambiguity, because alcohol

moderation messages include a sophisticated marketing strategy. In this regards, Atkin et al. (2008) argued that alcohol industries have “multiple goals to accomplish and multiple targets to influence with the same message.”

Unlike alcohol warning advertisements from a public sector, alcohol moderation advertisements from a private sector are usually created with two goals in mind, which are 1) create a positive image for the company; and 2) communicate the company’s view on a social , business or environmental issue (Belch and Belch 2004). According to Atkin et al. (2008), alcohol moderation campaigns or advertisements are created to produce positive image or reputation for the company so that target audiences can perceive that the alcohol moderation advertisements are socially responsible. But, simultaneously, these advertisements can still hold messages which promote brand purchase and alcohol consumption (Atkin et al. 2008). This study will evaluate how people perceive alcohol moderation advertisements from a private sector versus alcohol warning messages from a public sector differently.

2.4 Effectiveness of Warnings

2.4.1 Multiple Criteria to Estimate the Effectiveness of Warnings

Many researchers have widely studied the effectiveness of warnings, so there are diverse opinions and arguments in the alcohol warning effects’ related studies. Before this paper embarks upon a review of various arguments for the effectiveness of warnings, multiple criteria to estimate the effectiveness of alcohol warnings will be briefly examined. Some researchers (Laughery et al. 1993; Lehto and Miller 1986) championed that warning messages are effective as long as they inform the consumer, while others (Hilton 1993; Hadden 1991; Beltramini 1988) argued that warning messages are effective only if they alter one’s behavior.

Understanding the criteria to estimate the effectiveness of warnings is important, because it has direct implications for designs (Stewart and Martin 1994). For example, warning messages, which are designed to inform, may take a very different form from those, which are designed to persuade individuals (Stewart and Martin 1994). In other words, alcohol warning messages designed to persuade might be more effective than those designed to inform in certain conditions, and vice versa. For example, according to Torres et al. 2007, “warning labels are ostensibly meant to effectively communicate the risks of product usage, leading to more informed consumer decisions.” Thus, to understand and estimate the effectiveness of alcohol warning messages, “multiple and potentially inconsistent effect” (Stewart and Martin 1994) should be considered very carefully.

A study by Stewart and Martin (1994) addressed that warnings are generally designed to get in touch with large groups of people, so individual could perceive same warnings in different ways. That is to say, many warnings are generally designed to ‘inform’ instead of ‘persuade’. This is a controversial matter to define which one is more effective than others, because there have been a wide variety of types, purposes, and measures of the effectiveness of warning messages in our society. Thus, there is no sole conclusive definition of the effectiveness of alcohol warning messages, and policy makers or alcohol industries should understand the characteristics of warnings more multi-dimensionally before designing alcohol warning messages.

2.4.2 Adopted Classical Theories and Models in Alcohol Warning Effects related Studies

A study by Torres et al. (2007) addressed that the main concept of social contract theory (SCT) suggests a moral framework to measure the relationships between company acts, company brands, and customer perceptions, attitudes, and decisions. Furthermore, through this moral framework, researchers could measure customers’ attitude toward companies’

intention of warning messages in various ways. Although the concept of SCT, however, could be applied to some marketing researches in various purposes, surprisingly, little studies SCT in marketing fields (Torres et al. 2007; Dunfee et al. 1999). This paper applied some basic concept of SCT framework to measure the effectiveness of alcohol moderation advertisement.

Some researchers applied the persuasive communication theory to study their warning related researches (Andrews et al. 1990; Bettman et al. 1986; Petty and Cacioppo 1986). Andrews et al. (1990) argued that this theory may be a useful tool to develop the effectiveness of warning information. Similarly, Bettman et al. (1986) posited that designers may predict the effectiveness of a particular format of warnings more accurately by grasping how customers process information, and Petty and Cacioppo (1986) championed that relatively ‘strong’ message persuasions may not be persuasive since customers could perceive those as ‘unbelievable’.

According to Ajzen and Fishbein (1980), believability or acceptance of supportive arguments and evidences make persuasion more effective in the persuasive communication theory. In this point of view, Andrews et al. (1990) measured 1) how customers perceive believability and attitudes toward five different alcohol warning labels; 2) if prior beliefs and attitudes toward consuming alcohol mediate the effectiveness of five different warning messages; and 3) if ‘attitudes toward drinking alcohol’, ‘alcohol belief statements’, and ‘label believability’ influence ‘attitudes toward alcohol label information’. The result shows all warnings are rated as believable, but the warnings with respect to ‘driving impairment’ and ‘birth defects’ are perceived to be significantly more believable than the other warnings (Andrews et al. 1990).

Given that people or target audience can be regarded as information processing machines in the ‘Hierarchy of effects model’ point of view (O’Shaughnessy and O’Shaughnessy 2007), it could be applied to various social science fields including warning

related issues. To study consequences of warning messages, the 'Hierarchy of Effects model' can be adopted. For example, in seeing accepting warning as information processing machines, the certain mental stages can be 1) Attention to warning messages; 2) Processing of Warning messages; and 3) Effects of Warning on Behavioral Intention and Behavior (Stewart and Martin 1994). Likewise, it is also assumed each stage is not same.

Similarly, several other previous studies also argued the effectiveness level of warning messages is not uniform over each different stage of the hierarchy of effects model (Scammon 1991; Friedmann 1988). In other words, attention level to a warning message is not necessarily related to acceptance level of a warning message or change level of behavioral intention (Stewart and Martin 1994; Scammon 1991; Friedmann 1988). In this sense, it is very helpful to the researchers who wish to study the effects of warning messages at each stage of the hierarchy of effect, instead of as a whole (Stewart and Martin 1994), even though there have some counter-arguments (LeDoux 1997; Goleman 1995; Damasio 1994).

Also, a study by McGuire (1980) posited that the McGuire's model has 10 processes, which are a person 1) must be exposed to the label; 2) given exposure, must attend to the message and 3) react affectively; 4) must comprehend the information provided in the message and 5) believe what the message says; 6) stores the information after initial instant of exposure; 7) when the moment to act arrives, retrieves the information, 8) decides on the action to be taken, 9) behaves according to the decision, and 10) anchors the beliefs. According to Hilton (1993), "changes in the perception of risk are a necessary precondition for behavioral change in McGuire's model." The important concept of this model, however, is awareness of the warning label existence is necessary but it is not enough condition for the perceptual or the behavioral change (Hilton 1993).

On the other hands, some researchers argued that ineffective warning messages of alcohol beverages or drugs could boomerang (Skurnik et al. 2005; Stewart and Martin 1994;

Snyder and Blood 1991; Feingold and Knapp 1977). One of the ineffective messages may be the repeated exposures of same messages. In this regards, some researchers already proved empirically that people's behavior could not be consistent with the message, and people even could hold counter-argumentations, when highly intensified same messages are repeatedly exposed (Skurnik et al. 2005; Stewart and Martin 1994; Snyder and Blood 1991; Pechmann and Stewart 1988; Petty and Cacioppo 1986; Calder and Sternthal 1980; Cacioppo and Petty 1979). This is unintended effects of repeated alcohol warning messages.

Also, there has another important reason why boomerang effect may occur. That is because there have certain groups in our society who look for activities with high perceived risk (Taylor 1976). That is to say, certain individuals or groups don't follow warnings because disobeying restrictions imposed by society is their excitements. For these people, warnings are even some signals of chances for risk taking (Stewart and Martin 1994). Stewart and Martin (1994) argued that warnings could make products or items more attractive in some atmosphere.

Lastly, this reactance theory may be related to various different age groups in diverse circumstances. The generations of young adults or teens are more related to boomerang effect of warnings, however (Snyder and Blood 1991). Snyder and Blood (1991) also noted that the boomerang of warning messages might be "a function of teen rebellion." Although the reactance theory has been studied in numerous ways, there have some limitations, so researchers should be very careful when they proves whether or not there has more boomerang effect in young adults groups than other generations, as some researchers argued. Also, 'Motivational state' of freedom threatening could be drawn by adopting this theory (Clee and Wicklund 1980).

2.5 Warning Messages of Alcohol Beverage.

As mentioned in earlier, alcohol warning messages have been developed in a wide range of variety. In this regards, there have been many researches on the effects of diverse alcohol warnings. However, according to Stewart and Martin (1994), these researches tend to focus more on the format, structure, and form of warnings than information content. Nowadays, researches (Atkin et al. 2008; Roznowski and Eckert 2006) more focused on information content of warnings than before, but still not many. Thus, this paper concentrated on analyzing information content of diverse alcohol warning messages instead of forms of warnings.

To analyze the impact of information content of alcohol warning messages, this paper researched several websites (e.g. Google image, Nate, Korea Law Service Center, Anheuser-Busch Corporate, Dasarang Central Hospital Oriental Hospital, Diageo Korea, Drinkaware, General Insurance Association of Korea, Heineken, Korean Alcohol Research Foundation, Korean Public Health Association, Minister of Land, Transport and Maritime Affairs, Ministry of Health & Welfare, National Police Agency, Oriental Brewery Company, Public Health Service, Road Traffic Authority, Marine Institute, Vladivar Vodca, etc.) and some streets in Seoul city in Korea. As a result, this paper could summarize 56 warning messages of alcohol beverage, as table II-2 shows. Among 56 messages, 55 messages were chosen from web sites (see online resources on page number 104-108), and 1 message was chosen by the banner on the road. These 56 alcohol warning messages includes various forms such as warning label, banner, campaign, print advertisement, moving pictures, game, newspaper, etc. but, this paper only estimated the effectiveness of information content of alcohol warning messages, as mentioned above. After analyzing these 56 alcohol warning messages, this study classified types of warning messages; 1) negative reinforcement versus positive reinforcement; 2) one-sided versus two-sided; 3) public versus private; 4) self related

issues versus other related issues; and 5) health related issues versus others.

‘Negative reinforcement’ means that an alcohol warning message that addresses negative reinforcement while ‘positive reinforcement’ means that an alcohol warning message that addresses positive reinforcement. ‘One-sided’ means an alcohol warning message that addresses only negative or positive reinforcement while ‘two-sided’ means an alcohol warning message that addresses both negative and positive reinforcement. ‘Public’ means an alcohol warning messages from a public sector, while ‘private’ means an alcohol warning (or moderation) messages from a private sector. In this study, a private sector is confined to only alcohol industries or brewers. Other private sectors such as private hospital, profit-health-related-organization, etc are included in a public sector in this study for better segmentation. ‘Self-related issue’ means an alcohol warning message that addresses self related issues, while ‘others-related issue’ means an alcohol warning message that addresses other related issues based on subjective norms. Lastly, ‘health-related issue’ means an alcohol warning message that addresses health related issues. These classifications are based on some related theories and models, which were reviewed in chapter 3.

Table II-2 Summary of Warning Messages of Alcohol Beverage

Types	*NR/PR	Warning messages/moderation AD	Reference	Communication tools
Self	NR	Excessive drinking may cause cirrhosis of the liver or liver cancer and increase the probability of accidents while driving or working.	Warning (1) regulated by government(South Korea, Last updated: 2010)	Label
	NR	Drunken driving! You can die with even one glass of alcoholic beverage.	Public AD (2) from Korea Broadcast Advertising Corp. (South Korea, Last updated: 2010)	Moving pictures (TV, internet, etc)
	NR	You will regret next morning due to excessive drinking.	Public AD (3) from Ministry of Health& Welfare (South Korea, Last updated: 2010)	Moving pictures (TV, internet, etc)
	NR	Did you enjoy? It can be the last driving of your life.	Public AD (4) from Korea Broadcast Advertising Corp. (South Korea, Last updated: 2010)	Moving pictures(TV, internet, etc)
	NR	GOVERNMENT WARNING: Consumption of alcoholic beverages impairs your ability to drive a car or operate machinery, and may cause health problems.	Mandated Warning (5) (USA, Last updated:2010): See Title 27: Alcohol, Tobacco and Firearms. Part 16 – Alcoholic Beverage Health Warning Statement, § 16.21 Mandatory Label Information	Label
	NR	Did you know? Alcohol isn’t a stimulant, it’s a depressant.	Warning (6) from Drinkaware (UK-wide charity)	Print AD

	NR	Abuse of this product is hazardous to your health.	Mandated Warning (7) (Mexico, Last updated: 2010): See Article 218 of the General Health Law	Label
	NR	Alcohol is a shortcut to early death.	Alcohol Warning Poster (8) from Dasarang Central Hospital Oriental Hospital (South Korea)	Print AD
	NR	Red light of health! This is a result from wrong alcohol consumption habit.	Public AD (9) from Ministry of Health & Welfare and Korean Public Health Association (South Korea)	Banner in Subway stations.
	NR	Moderation in drink! Needed. Appropriate quantity of alcohol consumption is about 3 glasses per male, around 2 glasses per female. If you drink over 5 glasses, you will lose your health due to binge drinking. A pregnant woman should never drink!!	Public AD (10) from Ministry of Health & Welfare, and Korean Public Health Association (South Korea)	Banner in Subway stations
	NR	Excessive drinking, an express train to shorten your life.	Prize-winning alcohol warning poster (11), Contested by Ministry of Health & Welfare, and Korean Public Health Association in 2008 (South Korea)	Poster
	NR	The start of misfortune, and the end of life. Excessive drinking may lead to the start of misfortune and the end of your life.	Prize-winning alcohol warning poster (12), Contested by Ministry of Health & Welfare, and Korean Public Health Association in 2008 (South Korea)	Poster
	NR	Alcohol is brimming over! It may take your life.	Prize-winning alcohol warning poster(13), Contested by Ministry of Health & Welfare, and Korean Public Health Association in 2008 (South Korea)	Poster
	NR	Almost half of all adult drowning deaths involve alcohol.	Public AD (14) (Australia)	Print AD
	NR	Your life insurance could be paid despite one glass of an alcoholic beverage.	Public AD (15) (Korea)	Print AD
	PR	Wanna go home with me tonight? I'm the designated driver. It's the one pick up line that always works.	Budweiser's designated driver program (16) to promote awareness of the designated driver concept and encourage the use of alternate transportation(Anheuser-Busch, 2010)	Program(TV, Radio, Internet, etc)
	PR	Hoof it! Drink less, Play more	Campaigns (17) from Drinkaware(UK-wide charity)	Programs/Events including game, label on the soccer ball, etc.
	PR	"Absolute Moderation"	Alcohol moderation AD (18) by Absolute Vodka	Print AD, etc
	PR	"Drink quality, not quantity"	Alcohol moderation Ad (19) (2008~) by Vladivar	Print AD, etc
	PR	Enjoy and Know when to say when	Alcohol moderation AD (20) by Budweiser	Label, Print AD,
	PR	Drinking? Please drink healthy you're your high drink-IQ.	Campaign (21) of Diageo Korea(Last updated: 2010)	Education program
	PR	Enjoy drinking alcoholic beverage slowly like drinking tea.	Alcohol moderation AD (22) by Diageo Korea	Pictorial AD
	PR	The commencement is important for alcohol moderation habit.	Public AD (23) from Public Health Service (South Korea)	Pictorial AD
	PR	I'll start drinking healthy after I'm 19 years old (American age basis).	Public AD (24) from Dasarang Central Hospital Oriental Hospital (South Korea)	Banner(Internet)
	PR	I'll drink happily but moderately.	Public AD (25) from Dasarang Central Hospital Oriental Hospital (South Korea)	Banner(Internet)
	PR(NR)	Simulation program of drunken driving.	Campaigns (26) of Minister of Land, Transport and Maritime Affairs (South Korea,2010)	Campaigns (simulation program of drunken driving)
	NR+PR	The Chief Medical Officer recommend men do not regularly exceed 3-4 units daily and women, 2-3 units daily.	Voluntary Warning (27), (UK, Last updated: 2010)- See http://www.dh.gov.uk/	Label
	NR+PR	Drinking in moderation is a comma, but excessive-heavy drinking is a period!	Prize-winning alcohol warning poster (28), Contested by Ministry of Health & Welfare, and Korean Public Health	Poster

			Association in 2008 (South Korea)	
Others	NR	Drunken driving is a time bomb on the road, which threatens one's life. Drunken driving is a criminal act which destroys one's family.	Public AD (29) from National Police Agency, Road traffic Authority, and General Insurance Association of Korea. (South Korea)	Moving pictures(TV, internet, etc)
	NR	Drinking alcoholic beverages during pregnancy even in small quantities can have grave/serious consequences for the health of the baby.	Mandated Warning (30) (France, Last updated:2010)- refer to http://www.vins-bourgogne.fr/connaitre/la-terre-de-bourgogne/l-etiquetage/gallery_files/site/321/360.pdf	Label
	NR	Drinking alcohol during pregnancy or nursing may adversely affect the development of your fetus or child.	Voluntary Warning (31) (Japan, Last updated:2010) – refer to Self-Regulatory Code of Advertisement Practices and Container Labeling for Alcoholic Beverages	Label
	NR	Will you drive under the influence of alcohol if you are with your family?	Public AD (32) (South Korea)	*Banner on Road
	NR	Your excessive drinking can be a pain for somebody.	Public AD (33) from Ministry of Health & Welfare (South Korea)	Print AD
	NR	The society which has a shame for heroic exploits in drunken driving is a pure developed country for traffic. Drinking capacity of a heavy drinker cannot be a driving license.	Public AD (34) (South Korea)	Print AD)
	PR	“Good Sport: Responsibility Matters”	Alcohol moderation AD (35) by Budweiser(Anheuser-Busch, 2010)	Print Ad, Label, etc.
	PR	Please properly fill a glass. Your alcohol moderation behavior makes us smile with joy.	Alcohol Moderation Poster (36) from Ministry of Health & Welfare, and Korean Public Health Association (South Korea)	Print AD
	NR+PR	People are not equal before the alcoholic beverage. My heavy drinking behavior is not same as others. Let's respect other's drinking capacity.	Public AD (37) from Hyundai Health News (South Korea)	Pictorial AD (Internet news)
	NR+PR	Could you take a responsibility for the time you blacked out? Excessive drinking result in terrible situation such as family breakdown.	Public AD (38) from Ministry of Health & Welfare, and Korean Public Health Association (South Korea)	Moving pictures(TV, internet, etc)
Self+Others	NR	Warning: Excessive consumption of alcohol may cause liver cirrhosis or liver cancer and is especially detrimental to the mental and physical health of minors.	Warning (39) regulated by government (South Korea)	Label
	NR	Warning: Excessive consumption of alcohol may cause liver cirrhosis or liver cancer, and especially, women who drink while they are pregnant increase the risk of congenital anomalies.	Warning (40) regulated by government (South Korea)	Label
	NR	Excessive drinking may lead to unemployment, divorce, hospitalization, and accident. Today, drink in moderation for you.	Public AD (41) from Ministry of Health & Welfare and Korean Pubic Health Association	Moving pictures(TV, internet, etc)
	NR	GOVERNMENT WARNING: According to the Surgeon General, women should not drink alcoholic beverages during pregnancy because of the risk of birth defects.	Mandated Warning (42), (USA, Last updated: 2010): See Title 27: Alcohol, Tobacco and Firearms. Part 16 – Alcoholic Beverage Health Warning Statement, § 16.21 Mandatory Label Information	Label
	NR	Alcohol is not for children and teenagers up to age 18, pregnant & nursing women, or for persons with diseases of the central nervous system, kidneys, liver, and other digestive organs.	Mandated Warning (43), (Russian Federation, Last updated: 2010): See Ministry of Health in a decree dated January 19, 2007 No. 49	Labels on Wine, Vodca, and other alcohol beverages.
	PR	If you reduce a little, happiness is shown. Drinking with moderation is absolutely not a difficult task. Let's make a healthy alcohol culture by drinking with moderation but filling in joy.	Prize-winning alcohol warning poster (44), Contested by Ministry of Health & Welfare, and Korean Public Health Association in 2008 (South Korea)	Poster
	PR	I am a cool drinker! Let's make a healthy	Campaign (45) of Diageo	Campaign at 7

		drinking campus.	Korea(2009.5.20~22)	universities in Seoul, including Korea university
	PR	Responsibly Cool - Healthy drinking, enjoy responsibly, 2 XTREME WALKING Event – Do not walk in a X way after drinking.	Campaign (46) of OB beer(2009.5.15 ~6.1)	Simulation drinking game & Campaigns at 8 universities in Seoul, including Yonsei university
	PR	Cool drinker: Slow Slow, let's cheers slowly, it looks good, Quick Quick, let's have a short drinking party.	Alcohol Moderation AD (47) by Diageo Korea	Moving pictures(Internet, etc)
	PR	Cool drinker: cool, nice, wise, responsible, able to drink in moderation, no drunken driving.	Alcohol Moderation Campaign (48) by Diageo Korea	PrintAD, Campaign, Internet, etc
	PR	Depending on each one's preference... depending on each one's drinking capacity... a healthy drinking culture starts from my behavior.	Public AD/Campaign (49) from 'the Korean Alcohol Research Foundation'	Print AD, Campaign, internet, etc.
	PR	Let's drink responsibly! If you are in extreme generation, let's have a cool drinking manner	Alcohol Moderation Campaign (50) of OB beer (2009.5.15 ~ 6.1)	Campaign at 8 universities in Seoul including Yonsei university
	PR	Enjoy Heineken Responsibly.	Alcohol moderation AD (51) by Heineken	Print AD, TV, Internet, etc.
	PR	Enjoy Responsibly, Drink Responsibly.	Warning (52) from Drinkaware(UK-wide charity)	Label, Print AD, etc.
	NR+PR	Excessive consumption of alcohol may cause liver cirrhosis or liver cancer and is especially detrimental to the mental and physical health of minors. Cool drinker: The successful campus life starts by being drunk with love instead of alcohol (i.e., a healthy alcohol consumption and a healthy date).	Alcohol Moderation AD (53) by Diageo Korea	Moving pictures(Internet, etc)
	NR+PR	"KnowtheSigns: When people drink one too many, they start showing the signs of embarrassing characters. Can you Spot them in this bar? Click where you see a sign"	Alcohol moderation campaign (54) by Heineken (Globally)	Internet game (Knowthesigns.com)
	NR+PR	[Healthy Drinking Campaign] Forcing people to drink is a murder... Some of researches suggested drinking with moderation can be a good medicine.	Article (55) from Sports Today (2001-02-02)	Internet news
	NR+PR	Why do we keep doing the foolish parade? Let get rid of our wrong alcohol culture, and drink like intellectuals!	Public AD/Campaign (56) from 'the Korean Alcohol Research Foundation'	Print AD, Campaign

*Note1: NR stands for Negative Reinforcement, and PR stands for Positive Reinforcement.

*Note2: Warning (1), Public AD (2),.....; (1) (2)... was added to specify the sources (See online resources on page number 104-108)

2.6 Content Analysis of Warning Related Literatures

Based on review of 56 previous researches, this paper summarized alcohol warning message types as Table II-2 shows. Largely, 56 warning messages can be segmented into 3 types based on conditioning principles, and at the same time, these 56 warning messages can be differently segmented into 3 types based on self and subjective norms. The 3 types based on conditioning principles are 22 one-sided warning messages that address positive reinforcement, 26 one-sided warning messages that address negative reinforcement, and 8 two-sided warning messages that address both positive and negative reinforcement. On the

other hands, the 3 types based on self and subjective norms are 28 warning messages that address self, 10 warning messages that address others, and 18 warning messages that address both self and others.

Among 22 one-sided warning messages that address positive reinforcement, the sum of warning messages that address self are 11, the sum of warning messages that address others are 2, and the sum of warning messages that address both self and others are 9. Among 26 one-sided warning messages that address negative reinforcement, the sum of warning messages that address self are 15, the sum of warning messages that address others are 6, and the sum of warning messages that address both self and others are 5. Among 8 two-sided warnings that address both negative and positive reinforcement, the sum of warning messages that address self are 2, the sum of warning messages that address others are 2, and the sum of warning messages that address both self and others are 4.

All types of messages also can be segmented into public versus private. Among 28 warning messages that address self, 22 warning messages are from public sectors and 6 messages are from private sectors. Among 10 warning messages that address others, 9 warning messages are from public sectors, and 1 message is from a private sector. Among 18 warning messages that address both self and others, 8 warning messages are from public sectors, and 10 messages from private sectors.

In summary, 56 alcohol warning messages are divided into 5 one-sided warning messages that address positive reinforcement and self from public sectors, 6 one-sided warning messages that address positive reinforcement and self from private sectors, 1 one-sided warning message that addresses positive reinforcement and others from a public sector, 1 one-sided warning message that addresses positive reinforcement and others from a private sector, 1 one-sided warning message that addresses positive reinforcement and self plus others from a public sector, 8 one-sided warning messages that address positive

reinforcement and self plus others from private sectors, 15 one-sided warning messages that address negative reinforcement and self from public sectors, 0 one-sided warning message that addresses negative reinforcement and self from a private sector, 6 one-sided warning messages that address negative reinforcement and others from public sectors, 0 one-sided warning message that addresses negative reinforcement and others from a private sector, 5 one-sided warning messages that address negative reinforcement and self plus others from public sectors, 0 one-sided warning message that addresses negative reinforcement and self plus others from a private sector, 2 two-sided warning messages that address negative and positive reinforcement, and self from public sectors, 0 two-sided warning message that addresses negative and positive reinforcement, and self from a private sector, 2 two-sided warning messages that address negative and positive reinforcement, and others from public sectors, 0 two-sided warning message that addresses negative and positive reinforcement, and others from a private sector, 2 two-sided warning messages that address negative and positive reinforcement, and self plus others from public sectors, and lastly, 2 two-sided warning messages that address negative and positive reinforcement, and self plus others from private sectors. Based on these types of alcohol warning messages, this paper conducted content analysis using chi-square. Chi-square results ($\chi^2 = 31.23$) found that there are significant difference between two categories of message types, self, others, self & others and one sided (positive and negative) and two-sided (significant at 5%).

Table II-3 Summary of Alcohol Warning Message Types

Message Types	Self		Others		Self+Others		Total
	Public	Private	Public	Private	Public	Private	
One-sided (Positive Reinforcement)	5	6	1	1	1	8	22
One-sided (Negative Reinforcement)	15	0	6	0	5	0	26
Two-sided (Negative + Positive)	2	0	2	0	2	2	8
Total	22	6	9	1	8	10	56
Sum of Public and Private	28		10		18		

III. Hypothesis Development

3.1 A Basic Framework of This Study

Among many theories and models, the “extended Fishbein model” (Ajzen and Fishbein 1980) was adopted for this study. The extended Fishbein model was created to improve its predictive ability by researchers because a customer’s attitude frequently doesn’t predict his or her behavior in the ‘original Fishbein model’ (Solomon 2008). That is to say, the extended Fishbein model was designed to solve existing questionable linkage between attitudes and behavior in the original Fishbein model (Solomon 2008). In this regards, the newer version of the Fishbein model is also called the “theory of reasoned action” (Holbrook and Havlena 1988).

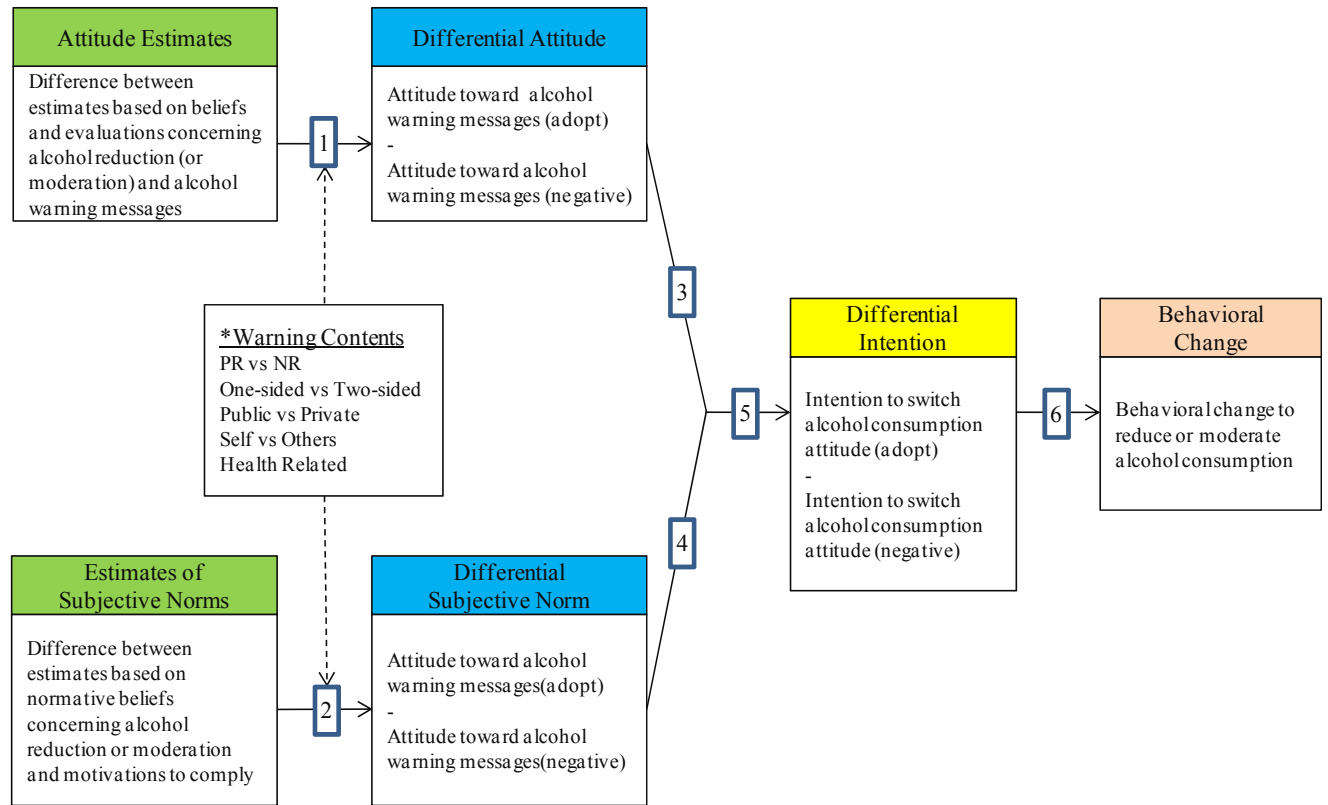
According to extended Fishbein model, individual belief (e.g., B_i) or the sum of beliefs (e.g., $\sum B_i$), and evaluation (e.g., e_i) or the sum of evaluation (e.g., $\sum e_i$) are considered to measure the attitude (i.e., $A_{act} = \sum_{i=1}^n b_i e_i$) (Solomon 2008). And at the same time, normative belief (e.g., NB_i) or the sum of normative beliefs (e.g., $\sum NB_i$) and motivation to comply (e.g., Mc_i) or the sum of motivation to comply (e.g., $\sum Mc_i$) are used to estimate the subjective norm (i.e., $SN = \sum_{i=1}^n NB_i Mc_i$) (Solomon 2008). Through these integrated factors, behavioral intention is measured depending on one’s attitude and subjective norm (i.e., $BI = w_1[A_{act}] + w_2[SN]$) (Solomon 2008). This extended Fishbein model does a better work of prediction even though it is still not perfect, (Abelson 1988). One of advantages of this model is that it is useful to measure the behavior itself.

Based on the extended Fishbein model, this study adopts the ‘applied model of extended Fishbein model’ as a basic framework. This applied model was adopted in various social behavior studies such as estimating the relationships among differential beliefs, attitudes, intentions, and voting choice in the 1976 presidential election, and measuring the relationships between attitudes, subjective norms, differential intentions and choice intentions

concerning occupational orientations (Ajzen and Fishbein 1980). This applied model includes 6 basic steps as following: 1) the effects of attitude estimates on differential attitude; 2) the effects of estimates of subjective norm on differential subjective norm; 3) the effects of differential attitude on differential intention; 4) the effects of differential subjective norm on differential intention; 5) the effects of differential attitude and differential subjective norm on differential intention; and 6) the effectiveness of differential intention on behavioral change (Ajzen and Fishbein 1980).

Simultaneously, this paper reviewed a wide range of alcohol warning advertisements and messages (see table II-2). Among these messages, this study selected 8 types of alcohol warning advertisements based on five basis: 1) advertisements that address ‘positive reinforcement’ versus ‘negative reinforcement’; 2) ‘one-sided’ versus ‘two-sided’ advertisements; 3) advertisements from a ‘public sector’ versus a ‘private sector’; 4) advertisements that address ‘self-related issue’ versus ‘others-related issue’; and 5) advertisements that address health related issues. Applying the basic framework of extended Fishbein model with eight types of alcohol warning messages, this paper could develop Figure III-1. Through this framework, this paper will measure relationships between attitudes, subjective norms, differential intentions, and behavioral change with perception of alcohol warning messages, and will estimate how the effectiveness level is different depending on types of alcohol warning advertisements.

Figure III-1 A Framework of the Effectiveness of Alcohol Warning Messages on Conditional Principles



***Warning Contents:** See table II-2

----- ► The Effects of 8 Types of Warning Messages

————► Stable Theoretical Relations linking Beliefs to Behavior (RQ1 - RQ6)

3.2 Hypothesis Development of This Study

Through the literature reviews and theoretical foundations, this paper could largely develop six research hypotheses according to the following categories: 1) the effectiveness of ‘attitude estimates’ on ‘differential attitude’; 2) the effectiveness of ‘estimates of subjective norm’ on ‘differential subjective norm’; 3) the effectiveness of ‘differential attitude’ on ‘differential intention’; 4) the effectiveness of ‘differential subjective norm’ on ‘differential intention’; 5) the difference between the effects of ‘differential attitude’ on ‘differential intention’ and ‘differential subjective norm’ on ‘differential intention’; and 6) the effectiveness of ‘differential intention’ on ‘behavioral change’.

3.2.1 The Effectiveness of Attitude Estimates on Attitude toward Alcohol Warning Messages

To understand ‘attitude estimates’, one first has to know the concept of attitude. The definition of attitude is “a lasting, general evaluation (including oneself), objects, or issues” (Solomon 2008). According to Ajzen and Fishbein (1980), attitudes are determined by “the set of salient beliefs he holds about performing the behavior.” For example, consider one’s salient beliefs toward alcohol reduction or moderation behavior. If he or she believes that this behavior will lead to positive consequences, he or she will have a favorable attitude toward alcohol reduction or moderation behavior, and vice versa. Also, evaluating this consequence is important to understand his or her attitude toward the behavior (Ajzen and Fishbein 1980).

As figure III-1 shows, attitude estimates of this study are the difference between estimates, based on beliefs and evaluations concerning alcohol reduction (or moderation) and alcohol warning messages. According to Ajzen and Fishbein (1980), the attitude estimates are related to behavioral beliefs and outcome evaluations, but this study applied not only behavioral beliefs and evaluations toward alcohol reduction or moderation habit, but also beliefs and evaluations toward alcohol warning messages.

With respect to ‘differential attitude’ shown in figure III-1, this study applied differential attitude to ‘attitude toward alcohol warning messages.’ So, this paper measures whether one’s attitude toward alcohol warning messages is formed positively or negatively after exposing diverse types of alcohol warning messages. To conduct the impact of attitude estimates on differential attitude toward alcohol warning messages, eight types of different alcohol warning messages, which are 1) one-sided warning messages that address positive reinforcement; 2) one-sided warning messages that address negative reinforcement; 3) two-sided warning messages that address both positive and negative reinforcement; 4) warning messages from a public sector; 5) warning messages from a private sector; 6) warning

messages that address self-related issues; 7) warning messages that address others-related issues; and 8) warning messages that address health-related issues were adopted in the survey.

In this research, the basic focus of the first hypothesis is the relationship between attitude estimates concerning reduction or moderation of alcohol consumption and alcohol warning messages, and differential attitude toward alcohol warning messages.

H1: ‘Attitude estimates’ concerning reduction or moderation of alcohol consumption and alcohol warning messages positively affect ‘differential attitude’ after perceiving alcohol warning messages.

3.2.1.1 Alcohol Warning Messages that address Positive Reinforcement and Negative Reinforcement based on the Operant Conditioning Model

There have been some researches (Allen and Madden 1985; Bierley et al. 1985; Stuart et al. 1987; Mcsweeney and Bierley 1984; Grossman and Till 1998) based on conditioning model in consumer behavior fields such as advertising. Surprisingly, little studies conditioning model in warning related fields, however. Among two types of conditioning models, which are “classical conditioning model” and “operant conditioning model” (O’Shaughnessy and O’Shaughnessy 2007), this study applied the operant conditioning model to explore the effectiveness of alcohol warning messages.

The operant conditioning model was developed by Skinner (1953), and the main concept of this model is that “all living organisms are spontaneously ‘emitting’ behaviour and whenever this behaviour is reinforced, the chances they will repeat the behaviour are increased” (O’Shaughnessy and O’Shaughnessy 2007). For example, whenever the customer purchases any specific product and the result is pleasant, this is called as “positive reinforcement” which encourages a repetition of the buying action (O’Shaughnessy and O’Shaughnessy 2007). On the other hands, “negative reinforcement” comes whenever

removing something negative is pleasurable (O'Shaughnessy and O'Shaughnessy 2007). In summary, a study by Skinner (1953) addressed that the operant conditioning controls one's behavior by manipulating these reinforcements. More theoretical backgrounds with respect to conditioning model were reviewed in chapter 4.2.

As table II-2 shows, this study divided 56 alcohol warning messages into two types according to operant conditioning model. For example, alcohol warning messages such as 'Cool drinker: cool, nice, wise, responsible, able to drink in moderation, no drunken driving' in table II-2 was segmented into PR, which is the alcohol warning message that addresses positive reinforcement. On the other hands, alcohol warning messages such as 'alcohol is a shortcut to early death' in table II-2 were segmented into NR, which is the alcohol warning message that addresses negative reinforcement. To conduct the difference between the effects of alcohol warnings that address positive reinforcement and negative reinforcement, four warning messages were adopted.

For the warning messages that address positive reinforcement, following warning messages were adopted: 1) Cool drinker: cool, nice, wise, responsible, able to drink in moderation, no drunken driving; and 2) Please properly fill a glass. Your alcohol moderation behavior makes us smile with joy (see table II-2). On the other hands, for the warning messages that address negative reinforcement, following warning messages were adopted: 1) Your life insurance could be paid despite one glass of an alcoholic beverage; and 2) Almost half of all adult drowning deaths involve alcohol (see table II-2).

***H1a:** The effects of attitude estimates on differential attitude are different depending on whether alcohol warnings address 'positive reinforcement' or 'negative reinforcement'.*

3.2.1.2 One-sided and Two-sided Alcohol Warning Messages

Advertisers normally make efforts to promote their brands or products as superior to

competing brands or products on “determinant attributes” (Aaker and Myers 1987; Ogilvy 1985). However, a study by Pechmann (1992) addressed that “consumers tend to be skeptical of ad claims..., [and] may not perceive the brands as favorably as was intended by the advertisers.” Thus, some researchers argued that two-sided advertisements could enhance the credibility of the claims (Settle and Golden 1974; Smith and Hunt 1978), because two-sided advertisements include not only advantages of the brands but also shortcomings (Pechmann 1992). However, a study by Pechmann (1992) posited that the two-sided advertisements were more effective than one-sided advertisements “only when negatively correlated attributes were featured.”

This study applied the concept of one-sided and two-sided advertisements to explore the effectiveness of alcohol warning messages. The one-sided advertisement was applied into the one-sided alcohol warning message, and the two-sided advertisement was applied into the two-sided alcohol warning message in this study. Moreover, this study applied the concept of ‘operant conditioning model’ into that of one- and two-sided warning messages. Thus, the one-sided warning messages are regarded as warning messages that address either positive reinforcement or negative reinforcement, and two-sided warning messages are regarded as warning messages that address both positive and negative reinforcement.

Seen from one- and two-sided warning message’s point of view, ‘NR’ in table II-2 means that a one-sided warning message that addresses negative reinforcement, ‘PR’ in table II-2 means that a one-sided warning message that addresses positive reinforcement, and ‘NR+PR’ in table II-2 means that a two-sided warning message that addresses both negative and positive reinforcement. To conduct the effectiveness of two-sided warning messages, following warning message was adopted in the survey among two-sided warning messages in table II-2: ‘Excessive consumption of alcohol may cause liver cirrhosis or liver cancer and is especially detrimental to the mental and physical health of minors. Cool drinker: The

successful campus life starts by being drunk with love instead of alcohol (i.e., a healthy alcohol consumption and a healthy date)’.

***H1b:** The effects of attitude estimates on differential attitude are different depending on whether alcohol warnings address ‘one-sided message’ or ‘two-sided message’.*

3.2.1.3 Alcohol Warning Messages from a Public Sector and a Private Sector

As discussed earlier, the effects of alcohol moderation messages from a private sector could be different from alcohol warning messages from a public sector (see chapter 2.3). This is mainly because alcohol moderation advertisements from a private sector are usually designed with two goals in mind (Belch and Belch 2004). To find out the difference between the effects of alcohol warnings from a public and a private sector, one alcohol warning message from a public sector and two alcohol moderation messages from a private sector were adopted in surveys. In this study, the private sectors are confined to only alcohol brewers or industries, so other private sectors such as private hospitals were grouped in public sectors for better segmentation, as mentioned earlier.

***H1c:** The effects of attitude estimates on differential attitude are different depending on whether alcohol warnings are from a public sector or a private sector.*

3.2.1.4 Alcohol Warning Messages that address Self-related issues and Others-related issues

To understand ‘self-related issues’, one first has to know the concept of self. The definition of self-concept is “the beliefs a person holds about his or her own attributes and how he or she evaluates these qualities” (Solomon 2008). According to Solomon (2008), the self-concept significantly affects consumer behavior, because the self-concepts are reflections of consumers’ attitudes toward themselves. Moreover, “products often play a pivotal role in

defining the self-concept” because consumers choose to buy many products because they think those products are similar to their personalities (Solomon 2008). On the other hands, the concepts of “subjective norm” and “social pressure”, which was argued by Azjen and Fishbein (1980), were adopted in this study, and we call it ‘others’.

This study applied the concept of self and others to investigate the effectiveness of alcohol warning messages. ‘Self’ in table II-2 means that a warning message that addresses self-related issues, and ‘others’ in table II-2 means that a warning message that addresses others-related issues. For example, alcohol warning messages such as ‘Drunken driving! You can die with even one glass of alcoholic beverage’ in table II-2 are the alcohol warning messages that address ‘self-related issues’, because this warning message focuses on your consequences caused from your drinking. On the other hands, alcohol warning messages such as ‘Your excessive drinking can be a pain for somebody’ are the alcohol warning messages that address ‘others-related issues’, because this warning message focuses on the consequences of somebody (i.e., others) caused from your drinking.

To find out the difference between the effects of alcohol warnings that address self-related issues and others-related issues, four warning messages were adopted in the survey.

H1d: *The effects of attitude estimates on differential attitude are different depending on whether alcohol warnings address ‘self-related issues’ or ‘others-related issues’.*

3.2.1.5 Alcohol Warning Messages that address Health-related issues

The health-belief model addressed that a consumer may be very likely to take action to keep away from a disease if he believes that “1) he is personally susceptible to the disease; 2) that the occurrence of the disease would have at least moderately severe negative consequences on some aspect of his life; and 3) that taking a particular action would be beneficial to reducing his susceptibility” (Rosenstock 1974, in Azjen and Fishbein 1980). So,

messages would stress the negative consequences caused from continued drinking with suggesting how this action could be avoided and recommending an alternative action (Ajzen and Fishbein 1980).

A study by Wilkinson and Room (2009) addressed that positive health claims were common on alcoholic beverage containers and in alcoholic beverage advertising in the past (e.g., ‘Good for you’ by Guinness). In developing countries, there still have positive health claims in alcoholic beverage advertising (Jernigan 1997), but in the USA and most other developed countries, positive health claims in advertising are not allowed or discouraged (Wilkinson and Room 2009). Thus, most of health claims on alcoholic beverage containers and in beverage advertising are negative health claims in developed countries such as 1) Warning: Excessive consumption of alcohol may cause liver cirrhosis or liver cancer, and especially, women who drink while they are pregnant increase the risk of congenital anomalies.; 2) Red light of health! This is a result from wrong alcohol consumption habit.; and 3) Abuse of this product is hazardous to your health (see table II-2). Like 1) and 3), many countries have “mandated health-related messages on alcoholic beverage containers (Wilkinson and Room 2009). Lastly, a study by Malouff et al. (1993) addressed that “the conspicuousness of health warnings on alcohol containers tends to influence their possible effectiveness.”

To measure the effects of alcohol warnings that address health-related issues, two warning messages were adopted in surveys.

H1e: *Attitude estimates significantly affect differential attitude toward alcohol warning messages that address ‘health-related issues’.*

3.2.2 The Effectiveness of Estimates of Subjective Norms on Differential Subjective Norm

To understand ‘estimates of subjective norm’, the concept of ‘subjective norm’ should be reviewed. According to Solomon (2008), the definition of subjective norm is “an additional component to the multi-attribute attitude model that accounts for the effects of what we believe other people think we should do.” So, one’s subjective norm is formed based on beliefs, but the important thing is that the beliefs in this case are ‘normative beliefs’ instead of ‘behavioral belief’ (Ajzen and Fishbein 1980). For example, a belief such as ‘I would have better health condition if I reduce or moderate alcohol consumption’ is not considered as a normative belief, but a belief such as ‘Important person near me (such as family members) think I should reduce or moderate my alcohol consumption attitude’ is considered as a normative belief. Subjective norms are formed based on “the total set of salient normative beliefs, each weighted by motivation to comply” (Ajzen and Fishbein 1980).

As figure III-1 shows, ‘estimates of subjective norms’ are the difference between estimates based on normative beliefs concerning alcohol reduction or moderation, and motivation to comply. According to Ajzen and Fishbein (1980), the ‘estimates of subjective norm’ are related to normative beliefs concerning behavior and motivations to comply, so this study applied normative beliefs concerning alcohol reduction or moderation, and motivation to comply. With respect to ‘differential subjective norm’ shown in figure III-1, this study applied this into attitude toward alcohol warning messages based on subjective norms. To conduct the effectiveness of estimates of subjective norms on differential subjective norm (i.e., attitude toward alcohol warning messages based on subjective norm), eight types of different alcohol warning messages are also adopted.

In this study, the basic focus of the second hypothesis is to measure how estimates of subjective norms concerning alcohol reduction or moderation of alcohol consumption such as

normative beliefs and motivation to comply affect differential subjective norm (i.e., attitude toward alcohol warning messages based on subjective norm).

***H2:** ‘Estimates of subjective norms’ concerning reduction or moderation of alcohol consumption positively affect ‘differential subjective norms’ after perceiving alcohol warning messages.*

***H2a:** The effects of estimates of subjective norms on differential subjective norm are different depending on whether alcohol warnings address ‘positive reinforcement’ or ‘negative reinforcement’.*

***H2b:** The effects of estimates of subjective norms on differential subjective norm are different depending on whether alcohol warnings address ‘one-sided message’ or ‘two-sided message’.*

***H2c:** The effects of estimates of subjective norms on differential subjective norm are different depending on whether alcohol warnings are from a public sector or a private sector.*

***H2d:** The effects of estimates of subjective norms on differential subjective norm are different depending on whether alcohol warnings address ‘self-related issues’ or ‘others-related issues’.*

***H2e:** The effects of estimates of subjective on differential subjective norm are different depending on whether or not alcohol warnings address ‘health-related issues’.*

3.2.3 The Effectiveness of Differential Attitude on Differential Intention

To understand ‘differential intention’, the concept of behavioral intention should be reviewed in advance. According to Ajzen and Fishbein (1980), one’s intention is determined by one’s attitude toward the behavior and by one’s subjective norm, and this intention is assumed to be “the immediate antecedents of actions.” A measure of intention would not be an appropriate predictor of behavior at all times, however (Ajzen and Fishbein 1980). That is to say, like one of the old expressions, which are “the road to hell is paved with good

intentions” said, many factors could interfere with acting the intended behavior (Solomon 2008). Thus, the effectiveness of one’s attitude and subjective norm on behavior is affected by one’s behavioral intention. For example, even if a researcher knows that one intends to reduce or moderate alcohol consumption behavior, it may not present precise prediction of one’s actual behavior to reduce or moderate alcohol consumption. In this regards, a study by Ajzen and Fishbein (1980) addressed that “the longer the time interval is, the greater the likelihood is that events will occur which will produce changes in intentions.” This study has the limitation of timing between behavioral intention and actual behavior.

As figure III-1 shows, this study applied ‘differential intention’ to ‘intention to switch alcohol consumption attitude.’ So this paper measures whether differential attitude affects differential intention positively. In other words, this paper estimates whether one’s attitude toward alcohol warning messages, which are formed by attitude estimates, affects the intention to switch alcohol consumption attitude positively or not. To conduct differential intention, eight types of different alcohol warning messages are also adopted. Overall, the basic focus of the third hypothesis is the relationship between differential attitude toward alcohol warning messages, which were formed by attitude estimates, and differential intention to switch alcohol consumption attitude.

H3: There is a positive relationship between ‘differential attitude’ and ‘differential intention’.

3.2.4 The Effectiveness of Differential Subjective Norm on Differential Intention

This paper also measures whether differential subjective norm affects differential intention positively. That is to say, this paper estimates whether one’s attitude toward alcohol warning messages based on subjective norm affects the intention to switch alcohol consumption attitude positively or not. To conduct the effectiveness of differential subjective norm on differential intention, eight types of different alcohol warning messages are also

adopted. In this study, the basic focus of the fourth hypothesis is the relationship between differential subjective norm (i.e., attitude toward alcohol warning messages based on subjective norm), and differential intention to switch alcohol consumption attitude.

***H4:** There is a positive relationship between ‘differential subjective norm’ and ‘differential intention’.*

3.2.5 The Difference between the Effects of Differential Attitude on Differential Intention and the Effects of Differential Subjective Norm on Differential Intention

As this paper mentioned earlier, the behavioral intention is determined by one’s attitude toward the behavior and by one’s subjective norm (Ajzen and Fishbein 1980). A study by Ajzen and Fishbein (1980) addressed that in most cases, “people hold favorable attitudes toward behaviors their important others think they should perform and negative attitudes toward behaviors their important others think they should not perform.” Sometimes, the attitude toward behavior may not be compliant with the subjective norm, however (Ajzen and Fishbein 1980). For example, the differential attitude toward alcohol warning messages, which is formed from ‘attitude estimates’, may not be compliant with the differential subjective norm (i.e., attitude toward alcohol warning messages based on subjective norm), which is formed from ‘estimates of subjective norm’ depending on situations. Differential attitude toward alcohol warning messages can be more important in determining behavioral intention to switch alcohol consumption attitude than is differential subjective norm, and vice versa.

Thus, this paper finds out which component is more important to determine the intention to switch alcohol consumption attitude. In this study, the basic focus of the fourth hypothesis is the difference between the effectiveness of differential attitude toward alcohol warning messages on intention to switch alcohol consumption attitude, and the effectiveness

of differential subjective norm (i.e., attitude toward alcohol warning messages based on subjective norm) on intention to switch alcohol consumption attitude.

***H5:** The effect of ‘differential attitude’ on ‘differential intention’ will be different from the effect of ‘differential subjective norm’ on ‘differential intention’.*

3.2.6 The effectiveness of ‘differential intention’ on ‘behavioral change’

To understand ‘behavioral change’, the concept of behavior needs to be reviewed. The definition of behavior is “a consumer’s actions with regard to an attitude object.” (Solomon 2008). As already mentioned, there could be some gap between one’s intention and behavior. So, some researchers look for a consumer’s past purchase behavior instead of knowing his or her intentions to predict his or her future behavior more effectively (Solomon 2008). However, this paper doesn’t find a consumer’s past behavior. Instead, this paper only measures whether or not the differential intention to switch alcohol consumption attitude positively affects behavioral change to reduce or moderate alcohol consumption. It may be a limitation of this study, since there could be a gap between one’s intention to switch alcohol consumption attitude and real action to reduce or moderate alcohol consumption.

***H6:** There is a positive relationship between ‘differential intention’ and ‘behavioral change’.*

IV. Theoretical Background

There have been many theories and models in social science fields, which could be applied to study the effectiveness of alcohol warning messages. In this regards, this chapter reviews 9 theories and 17 models to support this study. Many of following theories and models are related to the effectiveness of advertising or warnings based on consumer behavior fields.

4.1 Theories that Support This Study

4.1.1 Social Contract Theory

Social contract theory (SCT) is one of the most well-known social theories, and it could be applied for researchers to measure the effectiveness of warning messages in an intention study point of view. According to SCT, customers originally expect companies to provide safe products or services with a proper and accurate notice of any product or service's related risks (Torres et al. 2007). Thus, customers may perceive companies' altruistic attempts more positively than their non-altruistic attempts, since customers already expect firms are sincere enough to customers or society (Torres et al. 2007). In the other point of view, firms or companies exist for themselves as well as interests of regarding stakeholders (Donaldson 1982).

4.1.2 Psychological Reactance Theory

The psychological reactance theory, also called boomerang effect has been studied not only in the laboratory but also in the various fields (Skurnik et al. 2005; Stewart and Martin 1994; Clee and Wicklund 1980; Wicklund 1974; Brehm 1972; Brehm 1966). According to this reactance theory (Brehm 1966; 1972), which is one of the most well-known social psychological theories, people are accustomed to having a free-will to choose among various alternatives, so if people meet some 'barriers' to reduce their freedom, it could lead people to have a reactance. What could be the barriers? The barriers, which reduce or eliminate freedom, could occur from various impersonal sources (Clee and Wicklund 1980). "Promotional influence," "manipulative advertisements," "product unavailability," "pricing," and "government regulations" could be the potential events which reduce or eliminate his or her freedom (Clee and Wicklund 1980).

To understand this reactance theory more clearly, one also must grasp some of cognition researches. According to some studies of cognitions (Tversky and Kahneman 1982; 1973), people sometimes count on cognitive heuristics to infer related risks, because people do not always infer related risks like “naïve scientists” or engineers’ way of thinking. In other words, people do not always reason logically whenever they perceive messages. This can be the one of the reasons why sometimes, there has some gap between intention of warning messages and people’s perceptions, which implicates to generate the boomerang effect.

4.1.3 Reversal Theory

Consumers seek excitement instead of boredom or, conversely, seek relaxation instead of anxiety (O’Shaughnessy and O’Shaughnessy 2007). Their relationship could best be described as the reversal theory, which is based on phenomenological psychology. According to Apter (1989), this reversal theory exhibits the different effectiveness depending on associations tied to excitement or relaxation. Seen from this point of view, it is presented in the contrast to the cognitive related theories, because the cognitive theory ignores emotion and motivations. Unlike reversal theory, the cognitive theory basically regards people as computer, so it typically concentrates on rational decision processes instead of emotion (O’Shaughnessy and O’Shaughnessy 2007).

To understand the reversal theory, one must understand the different situation of arousal increases in advance. According to O’Shaughnessy and O’Shaughnessy (2007), people have ‘excitement’ when high arousal is pleasant, but people have ‘anxiety’ when high arousal is unpleasant. Similarly, people have ‘boredom’ when low arousal is unpleasant, but there is relaxation when low arousal is pleasant. The thing is anxiety and boredom lead to emotional tension (O’Shaughnessy and O’Shaughnessy 2007). In other words, people seek excitement when they are bored. Conversely, people seek relaxation when they are anxious.

Thus, there are “anxiety-avoidance mode” and “excitement-seeking mode,” which are mutually exclusive, in the reversal theory (O’Shaughnessy and O’Shaughnessy 2007).

Moreover, achieving the goal is the most important motivation in a ‘telic mode’ to avoid anxiety or feel some relaxation, while achieving the goal would be secondary to performing the activity itself in a “paratelic mode” (O’Shaughnessy and O’Shaughnessy 2007). It means the goals may change to keep people’s enjoyment in a paratelic mode unlike in a telic mode. So, this reversal theory could give us a good implication to study warning related issues. For instance, researchers could study how different two modes affect people’s perception toward alcohol warning messages. Little studies the reverse theory in warning related researches, however.

4.1.4 Persuasive Communication Theory

The persuasive communication theory, which is based on the cognitive approach, mainly focuses on considering how information is processed by the customers (O’Shaughnessy and O’Shaughnessy 2007). So, persuasive appeals should be considered without any limitations to making associations according to the persuasive communication theory. This is because there have some ‘unparaphrasable’ effects in communication (Sperber and Wilson 1990). In this regards, a study by O’Shaughnessy and O’Shaughnessy (2007) posited that the persuasion is dependent on following three parts: 1) the individual receiver of the communication; 2) the communication/information source; and 3) the content/presentation of the message. This approach is similar to the ‘acceptance’ step of the hierarchy of effects model (O’Shaughnessy and O’Shaughnessy 2007).

4.1.5 Consistency Theory

Heider (1958) developed most concepts of the consistency theories by studying

‘causal attribution’ and ‘social perception’. This theory assumes that people strive toward consistency among his or her beliefs, attitudes, and behaviors (Ajzen and Fishbein 1980). In other words, people would feel uncomfortable or afraid if their beliefs, attitudes, and behaviors are not consistent. Experiencing and appearing consistent in social dealings help establish credulity not only for individuals but also for companies (O’Shaughnessy and O’Shaughnessy 2007). Thus, this theory may be adopted to measure how warning messages affect the relationship between attitudes and behaviors. Lastly, there are ‘balance model’, ‘congruity model’, and cognitive dissonance model in the consistency theory (O’Shaughnessy and O’Shaughnessy 2007).

4.1.6 Cognitive Dissonance Theory

The concept of the cognitive dissonance theory is almost same as that of the consistency theory, but the approach is slightly different. Ajzen and Fishbein (1980) mentioned that most original consistency theories were developed by ‘Heider’, but the cognitive dissonance theory developed by Festinger (1957) received attention mostly. According to the cognitive dissonance theory (Festinger 1957), inconsistency between cognitive elements such as beliefs, attitudes, or behaviors causes dissonance to happen. For instance, if customer’s behavior is not consistent with one’s attitude, one would change either one’s attitude or behavior to decrease one’s dissonance (Ajzen and Fishbein 1980).

As discussed above, the cognitive dissonance theory assumes people try to maintain consonance among cognitive elements (Cho 2001). There have some criticisms in the cognitive dissonance theory, however. In this regards, O’Shaughnessy and O’Shaughnessy (2007) pointed out that many of people’s beliefs are not tightly grounded. For example, people are sometimes unsure what they believe so they may say one thing with doing another (O’Shaughnessy and O’Shaughnessy 2007). Nonetheless, this theory still gives good overall

insight of the relationship between person's 'beliefs', 'attitudes', and 'behaviors', so it may be applied to warning related studies.

4.1.7 Behavioral Learning Theory

The behavioral learning theory is one of basic learning theories, which is based on 'consumer learning process' (Belch and Belch 2004). The behavioral learning theory posits the external stimuli are the main factors of causing behavior, instead of internal psychological process (Belch and Belch 2004). Thus, according to behavioral learning theorists, customer learning occurs through the relationship between "a stimulus and a response", because it is rooted on "stimulus-response orientation" (Belch and Belch 2004).

This behavioral learning includes two basic models, which are the classical conditioning and the operant conditioning (Belch and Belch 2004). My study adopts behavioral learning theory, especially for operant conditioning model among those two models, since operant conditioning approach gives a good insight of the concept of reinforcement. An explanation of these two basic models and the concept of reinforcement in the behavioral learning theory will be given in following chapters.

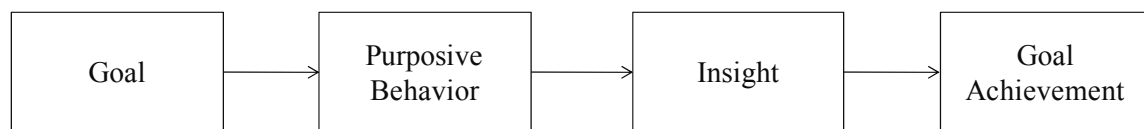
4.1.8 Cognitive Learning Theory

The cognitive learning theory is another basic learning theory, which is based on consumer learning process. According to this theory, people are regarded as information processing machines, so an input of information is regarded as 'sensory impressions', an internal processing of the information is regarded as 'thinking', and an output of information is regarded as 'verbalization of thought' (O'Shaughnessy and O'Shaughnessy 2007). Many researchers became to be interested in this cognitive approach, because behavioral learning theories only focus on external stimulus factors, and ignore internal psychological processes

(Belch and Belch 2004). Belch and Belch (2004) also mentioned that this cognitive learning theory has dominated consumer behavior fields for the past several years.

The basic concept of the cognitive learning approach is shown in figure IV-1. Diverse theories and models such as the persuasive communication theory, the consistency theory, the inconsistency theory, the balance model, the congruity model, the hierarchy of effects model, the elaboration likelihood model, etc are based on the cognitive approaches. In this regards, some researchers (Stewart and Martin 1994; Scammon 1991; Andrews et al. 1990; Friedmann 1988; Bettman et al. 1986; Petty and Cacioppo 1986) have adopted these cognitive learning theories to develop their warning related studies. This study also adopts some concepts of the cognitive learning.

Figure IV-1. The Basic Concept of the Cognitive Learning Theory



Source: Belch, George E., and Belch, Michael A. (2004), *Advertising and Promotion: An Integrated Marketing Communication Perspective*, MacGraw-Hill/Irwin, New York. pp. 127

4.1.9 Psychoanalytic Theory







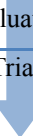

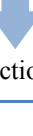
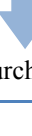
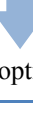
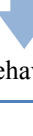
To better understand consumer behavior, ‘psychoanalytic theory’ should be reviewed. According to the psychoanalytic theory, the human personality system is made up of the “id, ego, and superego” (Blackwell et al. 2006). The psychoanalytic theory, which was originally developed by ‘Sigmund Freud’, concentrates on not only the structure of human personality system, but also the motivations for human behavior, however (Belch and Belch 2004). Thus, this theory is very helpful to understand consumer behavior more deeply. Belch and Belch (2004) argued that the progress of modern psychology, and accounts of personality and motivation have been strongly influenced by the psychoanalytic theory. This psychoanalytic approach also has been adopted in some warning related studies.

4.2 Models that Support Warning Related Studies

4.2.1 Traditional Response Hierarch Models

Researchers have developed a number of ‘traditional response hierarchy models’ to portray the stages of the response process of customers, because a grasp of the ‘response process’ of receivers is one of the most important factors of creating ‘effective communication programs’ (Belch and Belch 2004). Seen from this point of view, the traditional response hierarch models also can give good overall insight of understanding each reception level or the perception level of warning messages based on the cognitive approach. Four of the well known response hierarchy models are shown in figure IV-2 (Belch and Belch 2004), and a detailed explanation of two of these models will be given in following pages.

Figure IV-2 The Response Process Models

Stages	AIDA Model	Hierarch of Effects Model	Innovation Adoption Model	Information processing model
Cognitive Stage	Attention 	Awareness  Knowledge	Awareness 	Presentation Attention Comprehension 
Affective Stage	Interest Desire 	Liking Preference Conviction 	Interest Evaluation 	Yielding Retention 
Behavioral Stage	Action 	Purchase 	Trial  Adoption	Behavior 

Source: Belch, George E., and Belch, Michael A. (2004), *Advertising and Promotion: An Integrated Marketing Communication Perspective*, MacGraw-Hill/Irwin, New York. pp. 147

4.2.1.1 Hierarchy of Effects Model

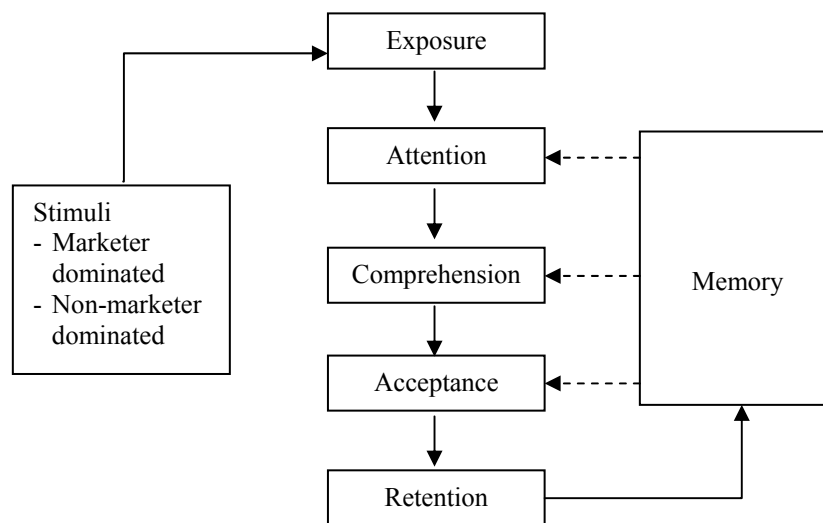
The ‘Hierarchy of effects model’ is one of cognitive approach models, which is based on ‘Learning theory’. Hovland et al. (1953), who proposed communication and persuasion theory, championed that messages should be learned in advance to be accepted by the target audience in persuasion. That is to say, this learning theory assumed there have some specific

mental steps before people consequently accept messages. The certain mental stages are “1) awareness/attention; 2) comprehending the message; 3) coming to accept the message as true; and 4) acting on this learned knowledge when there is an incentive to do so”(O’Shaughnessy and O’Shaughnessy 2007). The ‘Hierarchy of effects model’ follows this approach in marketing fields (O’Shaughnessy and O’Shaughnessy 2007).

4.2.1.2 Information Processing Model

The information processing model of advertising effectiveness was built up by McGuire (1978). According to Belch and Belch (2004), the information processing model assumes that “the receiver in a persuasive communication situation like advertising is an information processor or problem solver.” This model’s stages are very similar to the stages of hierarchy of effects model, because attention, comprehension, and yielding are similar to awareness, knowledge, and liking (Belch and Belch 2004). Furthermore, this model includes ‘retention’, which is not found in the other models (Belch and Belch 2004). This retention stage is important, because many of promotional campaigns are created “not to motivate consumers to take immediate action but rather to provide information they will use later when making a purchase decision.” (Belch and Belch 2004).

Figure IV-3 Information Processing: Exposure Through Retention

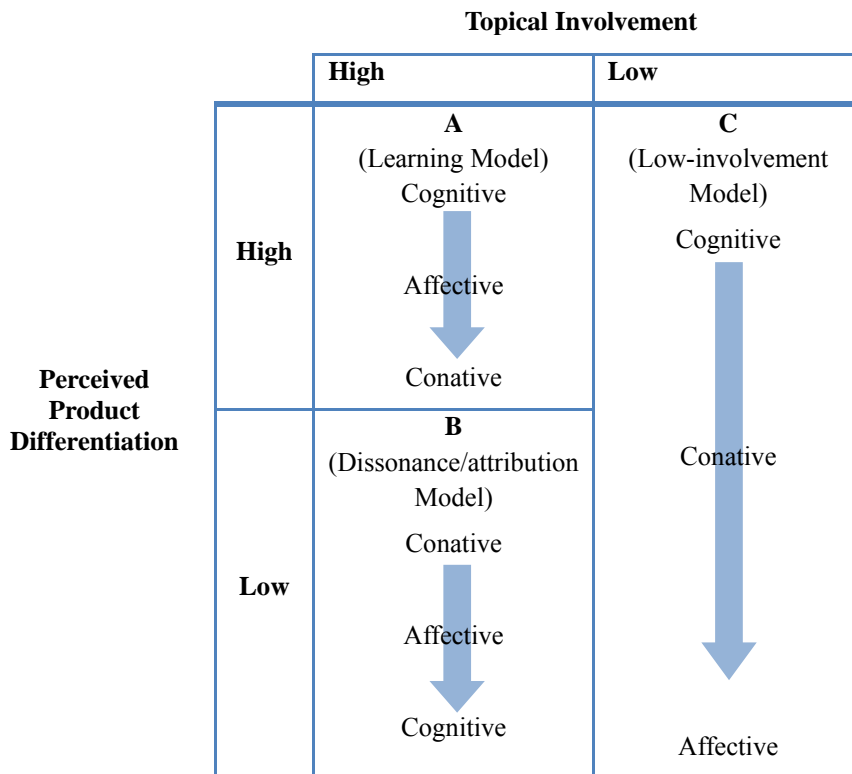


Source: Blackwell, Roger D., Miniard, Paul W., and Engel, James F. (2006), *Consumer Behavior, Tenth Addition*, Thomson Higher Education, Ohio, pp. 78

4.2.2 Alternative Response Hierarchies: the Three-Orders Model of Information Processing

The alternative response hierarchies have been developed by Ray (1973). According to the alternative response hierarchies (Ray 1973), there are three alternative hierarchies in information processing, and these three-orders are divided based on perceived item differentiation and item involvement. ‘Standard learning’ model, ‘dissonance/attribution’ model, and ‘low-involvement’ model are the alternative response hierarchies (Belch and Belch 2004). In this regards, figure IV-4 shows the concept of the alternative response hierarchies, and an explanation of these models will be given in following chapters.

Figure IV-4 Alternative Response Hierarchies: the three-orders model of information processing



Source: Belch, George E., and Belch, Michael A. (2004), *Advertising and Promotion: An Integrated Marketing Communication Perspective*, MacGraw-Hill/Irwin, New York. pp. 150

4.2.2.1 Standard Learning Model

The standard learning model, which is one of the alternative response hierarchies, has the sequence of 1) learn; 2) feel; and 3) do (Ray 1973). Customers acquire or learn knowledge and information about the diverse brands, and then it leads to develop feelings or affect, that makes what customers will do (Belch and Belch 2004). The standard learning model is likely when customers are highly related to product involvement, and there is much perceived product differentiation (Ray 1973). According to Belch and Belch (2004), customers in this hierarchy are the active participants who collect regarding information through active learning in the communication process. The standard learning hierarchy is placed in section A in figure IV-4.

4.2.2.2 Dissonance/Attribution Model

The dissonance/attribution model has the sequence of 1) do; 2) feel; and 3) learn (Ray 1973). According to Belch and Belch (2004), this happens in situations “where consumers must choose between two alternatives that are similar in quality but are complex and may have hidden or unknown attributes.” Thus, in this situation, the consumer may buy the products through advice from some non-media source, and then try to support his or her decision by forming a positive attitude toward the product (or brand), or forming a negative attitude toward the product (Belch and Belch 2004). It reduces any “post-purchase dissonance” or anxiety, and leads to “selective learning” (Belch and Belch 2004). Marketers or advertisers need to realize that attitudes develop after purchase in this situation, as does learning from the mass media (Belch and Belch 2004). The standard learning hierarchy is placed in section B in figure IV-4.

4.2.2.3 Low-Involvement Hierarchy Model

The low-involvement hierarchy model has the stages of 1) learn; 2) do; and 3) feel (Ray 1973). In this model, the consumer is regarded as passing from “cognition” to “behavior” to “attitude change” in situations of “low consumer involvement in the purchase process” (Belch and Belch 2004). A study by Ray (1973) addressed that this low-involvement hierarchy tends to occur when there is low involvement in the purchase decision, there have minimal differences among brand or product alternatives, and mass-media advertisings are important. Thus, the response stage in the low-involvement situation is 1) message exposure in low involvement situation; 2) shift in cognitive structure; 3) purchase; 4) positive or negative experience; 5) attitude formation (Belch and Belch 2004). The low-involvement hierarchy model is placed in section C in figure IV-4.

4.2.3. Elaboration Likelihood Model

The elaboration likelihood model (ELM), which is one of cognitive models, has a different view of attitude development from the case of hierarchy of effects model. This model mainly focused on changing the direction of attitudes by the persuasion, so it has a more difficult task than the hierarchy of effects models (O'Shaughnessy and O'Shaughnessy 2007). Petty and Cacioppo (1983) originally created the elaboration likelihood model, and the ELM illustrates "the process by which persuasive communications leads to persuasion by influencing attitudes" (Belch and Belch 2004). A study by Petty and Cacioppo (1983) posited that the character (or amount) of elaboration (or processing) of the information that happens in response to a persuasive message affects a formation or a change of attitude.

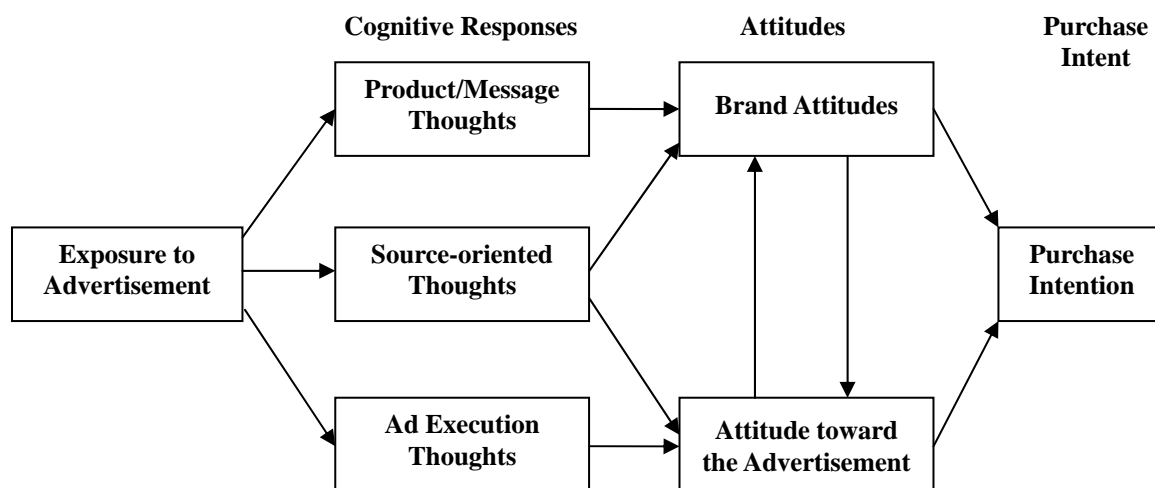
According to this model (Petty and Cacioppo 1983), there have two basic routes to change the direction of attitudes, which are the 'peripheral route' and the 'central route'. Receivers rely on peripheral cues rather than evaluating the information from the messages under the peripheral route to persuasion, while receivers are very active and involved participants in the process of communication under the central route to persuasion (Belch and Belch 2004). So, under the central route to persuasion, the level of cognitive response activity is very high, unlike the situation under the peripheral route to persuasion. Lastly, the distinction between the peripheral and central routes may reflect the difference between 'informational conformity' and 'social conformity' (O'Shaughnessy and O'Shaughnessy 2007).

4.2.4 Cognitive Response Model (Belch and Belch 2004)

According to Belch and Belch (2004), cognitive response model is one of the most widely used models to study a consumer's cognitive processing of advertising messages. This model assumes the thoughts which occur to consumers while they read, view, and/or hear a

communication (Wansink et al. 1994). Marketers or advertisers generally measure these thoughts “by having consumers write down or verbally report their reactions to a message”, because this model assumes that these thoughts reflect the consumer’s cognitive processes (or reactions), and help form final acceptance or rejection of the message (Belch and Belch 2004). With respect to the thoughts, this model includes three basic categories, which are “product/message thoughts,” “source-oriented thoughts,” and “ad execution thoughts” (Belch and Belch 2004). Figure IV-5 shows the flow of cognitive response model.

Figure IV-5 Cognitive Response Model



Source: Belch, George E., and Belch, Michael A. (2004), *Advertising and Promotion: An Integrated Marketing Communication Perspective*, MacGraw-Hill/Irwin, New York. pp. 157

4.2.5 Basic Model of Communication

The definitions of communication have been discussed variously, since communication process is not a simple matter. According to Schram (1955), communication can be defined as the idea exchange, the passing of information, an establishing process of commonness, or oneness of thinking between a sender and a receiver. So, for the communication to arise, some common thought is needed between two sides, and information should be passed from one person (or one group) to another (Belch and Belch 2004). The sender and the receiver are the two major participants in the communication process, and the

message and the channel are the two major communication tools. (Belch and Belch 2004).

Besides above elements, there are others such as encoding, decoding, response, feedback, and noise in the basic model of communication. The four factors of encoding, decoding, response, and feedback are the key communication functions and processes (Belch and Belch 2004). The sender encodes a message in an appropriate way for the receiver to decode it in the intended manner, and the receiver's feedback helps the sender to determine whether or not the communication tools and processes are effective (Belch and Belch 2004). Thus, for a successful communication in various fields, regulators, marketers, and any other related parties should deeply consider the flow of these factors.

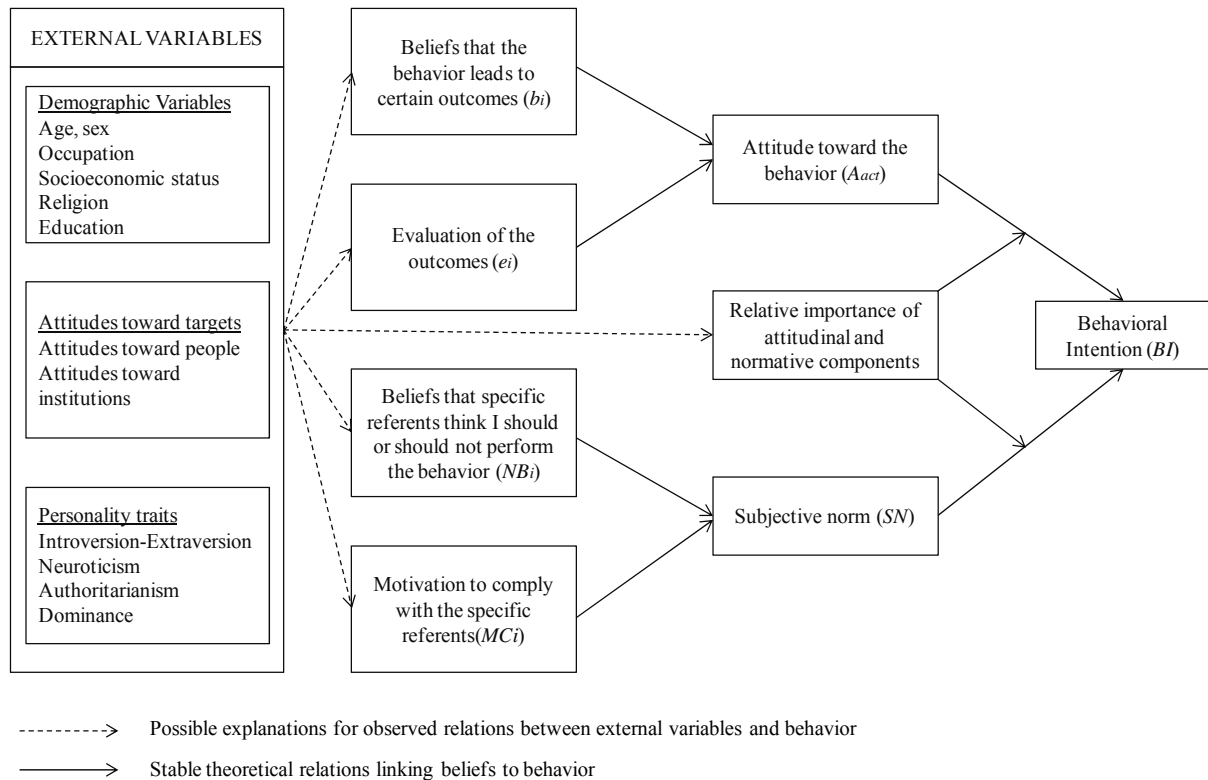
The noise, however, is unplanned distortion or interference in communication process (Belch and Belch 2004). The element of noise can interfere or distort with the process against the effective communication (Belch and Belch 2004). There are many reasons why the noise occurs. In this regards, a study by Belch and Belch (2004) addressed that "errors or problems that occur in the encoding of the message," "distortion in a radio or television signal," "distractions at the point of receptions," and the different field experiences between the sender and receiver are the examples of 'noise'. Thus, the element of 'noise' can support the idea of the reactance theory, which is reviewed in the previous chapter.

4.2.6 Extended Fishbein Model

As mentioned in 3.1 chapter, the proposed model of this study has been based on extended Fishbein model. As Figure IV-6 shows, 'attitude toward the behavior' is formed by 1) 'beliefs that the behavior leads to certain outcomes'; and 2) 'evaluation of the outcomes', while 'subjective norm' is formed by 1) 'beliefs that specific referents think I should or should not perform the behavior'; and 2) 'motivation to comply with the specific referents' (Ajzen and Fishbein 1980). Eventually, the 'behavioral intention' is decided by both 'attitude

toward the behavior' and 'subjective norm' (Ajzen and Fishbein 1980).

Figure IV-6 Extended Fishbein Model (Indirect Effects of External Variables on Behavior)



Source: Ajzen, Icek, and Fishbein, Martin (1980), *Understanding Attitudes, and Predicting Social Behavior*, New Jersey: Prentice-Hall, pp.84

4.2.7 The Values Transfusion Model

The concept of subjective norm in the Fishbein model is related to the concept of socialization related studies. According to Blackwell et al. (2006), the socialization is “the processes by which people develop their values, motivations, and habitual activity” or “the process of absorbing a culture.” So, the process of consumer socialization occurs throughout life (Moschis 1987), instead of a certain period. This model explains “how the values of a society are reflected in families, religious institutions, and schools, all of which expose and transmit values to individuals” (Blackwell et al. 2006).

4.2.8 Balance Model

The balance model is one of the models, which is based on the consistency theory. According to the balance model, customers try to find a balance between feelings and beliefs, because they can feel something to be true, but believe something to be false, or conversely, they can feel something to be false, but believe something to be true (O'Shaughnessy and O'Shaughnessy 2007). 'Feeling' is related to 'affect', and 'belief' is related to 'cognition', and if there has this conflict, emotional discomfort can occur (O'Shaughnessy and O'Shaughnessy 2007).

The concept of the balance model may be useful for some studies with respect to effectiveness of alcohol warnings, because customers' belief and feeling toward alcohol warning messages are not same in many cases, despite of their efforts to balance. Thus, it will be possible for the balance model to be adopted to measure how warning messages affect the relationship between people's feeling and belief.

4.2.9 Congruity Model

The congruity model is also based on the consistency premise. This is model is very similar to the 'balance model', which was already illustrated in above, but the approach is a little different. In congruity model, customers try to find to reconcile "their attitude towards the source of a communication and towards things linked to the source so as to make them congruent" (O'Shaughnessy and O'Shaughnessy 2007). So, this model mainly focuses on the importance of effective association. For instance, if the attitude towards the celebrity is very positive while a brand associated with the celebrity has some negative images, the negative images could be changed (O'Shaughnessy and O'Shaughnessy 2007). The concept of the congruity model may be useful to study the effectiveness of warning messages with celebrities.

4.2.10 McGuire's 10 Phase Model (Communication Persuasion Model)

Hovland et al. (1953), who suggested the communication theory, originally created the theoretical background for the effectiveness of warnings, but McGuire (1980) revised and applied the theory to the health warning messages (Hankin et al. 1993). We call this 'McGuire's 10 Phase Model', and some researchers (Hankin et al. 1993; Hilton 1993) applied this model into their warning related studies. The McGuire's model suggested a matrix of input and output, each of which is independent and dependent variables in his communication-persuasion model (Hankin et al. 1993). Inputs, which are independent variables, include 'source', 'message', 'channel', 'receiver', and 'destination' (Hankin et al. 1993). In line with this, this model is very similar to the basic model of communication, which is already reviewed in the previous chapter.

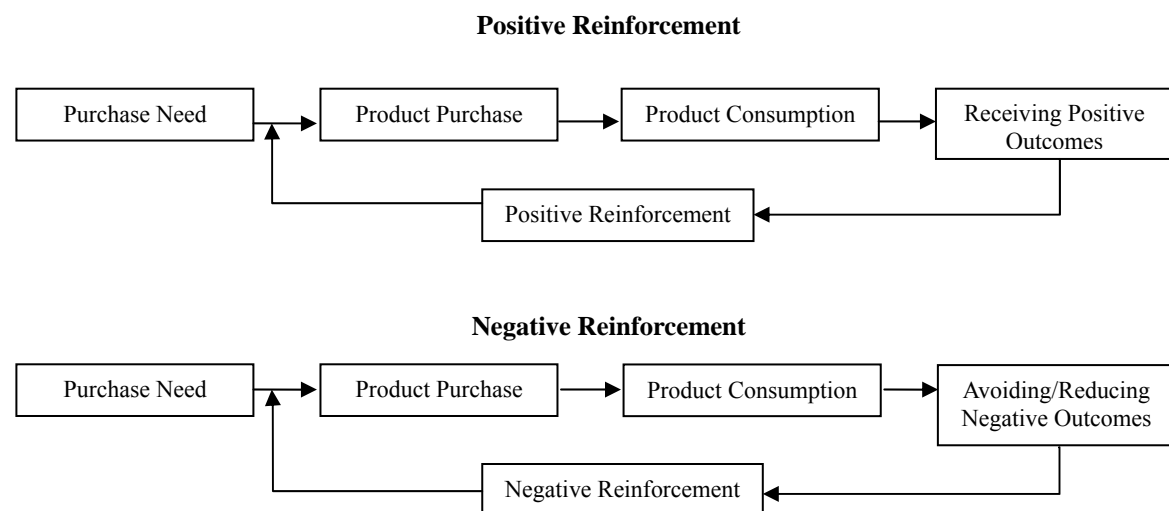
4.2.11 Classical Conditioning Model (Pavlovian Conditioning)

According to O'Shaughnessy and O'Shaughnessy (2007), the classical or Pavlovian conditioning model, which is known as the contiguity model, is the earliest form of behaviourism of J.B Watson (1924), but Pavlov (1927) who was a winner of a Nobel Prize conducted the first experiment by applying the classical conditional principles. This model, which is based on the behaviourism in psychology, presented that "how a stimulus acquires new meaning simply by its association with another stimulus" (Blackwell et al. 2006). Thus, the psychology of classical conditioning model is based on the relationship between stimulus (S) and response (R) (O'Shaughnessy and O'Shaughnessy 2007). Through the experiments with dogs, Pavlov (1927) proved that a particular response (i.e., unconditioned response) caused from a stimulus (i.e., unconditioned stimulus) could be transferred to 'conditioned response' by a new stimulus (i.e., conditioned stimulus). A number of advertisements depend on "the power of simple association for shaping consumers' opinions" (Blackwell et al. 2006).

4.2.12 Operant Conditioning Model (Skinner)

As mentioned earlier, the classical conditioning model is the psychology of “S (stimulus) → R (response),” however the operant conditioning model is different (O’Shaughnessy and O’Shaughnessy 2007). A study by Skinner (1953) addressed that the operant conditioning model views the behavior as acquired, shaped, and maintained by ‘stimuli after responses’ rather than ‘response after stimuli’. The operant conditioning model is also called ‘instrumental conditioning’, because the consumer’s response is instrumental in getting a positive reinforcement (i.e., reward) or negative reinforcement (i.e., punishment) (Belch and Belch 2004). Marketers or advertisers try to provide their consumers with “products and services that satisfy their needs and reward them to reinforce the probability of repeat purchase” (Belch and Belch 2004). Figure IV-7 shows the flow of positive reinforcement and negative reinforcement.

Figure IV-7 The Flow of Positive Reinforcement and Negative Reinforcement



Source: Blackwell, Roger D., Miniard, Paul W., and Engel, James F. (2006), *Consumer Behavior, Tenth Addition*, Thomson Higher Education, Ohio, pp. 203

V. Methodology

Given that the World Health Organization reported in 2001 an yearly alcohol consumption in South Korea is 14.4 liter per person, whose rate ranked 2nd place (Lee 2009), and drunken driving rate per person in South Korea has ranked 1st place among OECD countries (Lee 2009), more alcohol warning related researches should be needed in Korea, like what other developed countries have done. In this regards, the qualitative and quantitative surveys have been designed to people who currently live in Korea and experienced of drinking alcoholic beverages.

5.1 Methodology for Qualitative Research

There are many methodologies and theories for conducting the qualitative research, but this paper focused on characteristics of content analysis, which are “objective, systematic, and quantitative” (Kassarjian, 1977). The main purpose of this qualitative research was to receive interviewees’ opinions of ‘factors that affect attitude toward reduction of alcohol consumption. The target audience was people in 20s and above who currently live in Korea. This paper conducted in-depth interview with 3 males in 30s and 2 females in 30s, and it took around for 20 to 30 minutes per each person. This paper interviewed 3 people using Nate-on or MSN, 1 people using cell-phone, and 1 people by face to face. Two main questions for my qualitative research were as following: 1) how different individual perceives alcohol warning messages; and 2) what factors could contribute to reduce an individual’s behavior or attitude toward alcohol consumption.

5.2 Methodology for Quantitative Research

The main purpose of this paper’s quantitative research is to estimate the effectiveness of alcohol warning messages on conditional principles. To do this, this study will measure 1) the relationships between attitudes, subjective norms, differential intentions and behavioral

change with perception of alcohol warning advertisements, and 2) how the effectiveness is different depending on 8 types of alcohol warning advertisements. 172 survey questions were developed, and an online survey website, 'survey monkey' was used to conduct the quantitative research. Seven-point semantic scale was applied for each construct (e.g., 1 is 'strongly disagree', and 7 is 'strongly agree'). Sample size was 102, and all respondents were people in South Korea, who have Korean nationality and have an experience of drinking alcoholic beverages. These people were randomly chosen within South Korea, because this paper only focuses on receiving information of common Korean people's alcohol consumption behavior or attitude.

To assess the effectiveness of alcohol warning message more sophisticatedly, this study's survey questionnaire also includes 8 types of alcohol warning (or moderation) advertisements. These alcohol warning advertisements are as following: 1) alcohol warning messages that address 'positive reinforcement'; 2) alcohol warning messages that address 'negative reinforcement'; 3) alcohol warning messages that address both positive and negative reinforcement; 4) alcohol warning advertisements from a public sector; 5) alcohol moderation advertisements and campaigns from a private sector; 6) alcohol warning advertisements that address 'self'; 7) alcohol warning advertisements that address 'others'; and 8) alcohol warning advertisements that address health-related issue. These 8 types of alcohol warning images were appropriately selected based on hypothesis developments after reviewing around 100 alcohol warning advertisements. Most of them are pictorial advertisements, but some of them are screen shots from video types of alcohol warning advertisements. These 8 types of images were exposed to the respondents two times during the survey to measure 1) overall perception of alcohol warning advertisements; and 2) different perception depending on each type of alcohol warning advertisement.

VI. Data Analysis

6.1 Data Analysis of Qualitative Research

1) How to perceive warning message

4 interviewees (A, B, D, E) felt the exposure level of alcohol warning messages is very low, while 1 interviewee (C) felt the exposure level of alcohol warning messages is medium. Interviewee A could recall two messages from the alcohol warning message (causing the problem of liver decease, and impairing ability to drive a car) and interviewee B could recall one message (causing the problem of liver decease) and interviewee C could recall three messages (causing the problem of liver decease, impairing ability to drive a car, and causing the problem of pregnant woman) and interviewee D could recall two messages (causing the problem of liver decease and impairing ability to drive a car), and interviewee E could recall one message (causing the problem of liver decease) within 30 seconds. In this regards, all participants could recall at least one issue from alcohol warning messages, even though most of them felt the exposure level of alcohol warning messages is very low.

4 interviewees (A, B, C, D) felt that any kind of current alcohol warning messages from integrated communication tools are not effective to reduce alcohol consumption behavior or attitude, while 1 interviewee (E) felt current alcohol warning messages are slightly effective to reduce attitude. Furthermore, all interviewees felt that alcohol warning messages from alcohol industries are less sincere than those of PSAs from government agencies, but they felt both have same level of effectiveness. Some interviewees mentioned that the exposure level of smoking warning messages from integrated communication tools is much higher than that of alcohol warning messages.

Interviewees could receive alcohol warning messages from label on the alcohol bottle, internet, some magazines, or PSAs from TV. One interviewee (E) felt that better placement of warning message (e.g. place warnings near the brand name) or more exposures

of warning messages in various communication tools would be more effective to reduce attitude toward alcohol consumption. Interviewee A, C, and D, however, felt this improvement would not reduce alcohol attitude toward alcohol consumption, and interviewee B couldn't respond this issue. Lastly, interviewee B and E felt that shocking anti-alcohol posters or shocking warning messages from the print ads or alcohol bottle could reduce alcohol consumption attitude, such as some of smoking warning messages in some western countries.

2) Factors to reduce alcohol consumption

4 interviewees (A, B, C, D) mentioned that the alcohol warning message from integrated communication tools has never affected their alcohol consumption attitude or behavior. Three interviewees (A, D, E) mentioned some documentary TV programs, which broadcast alcoholic person's life, or some science/health TV programs regarding alcohol issues could affect their alcohol consumption attitude. However, they rarely changed their alcohol consumption behavior through this.

Interviewee A could reduce alcohol attitude toward alcohol consumption through some documentary TV programs, which present alcoholic person's life, or A's past experience, but A rarely changed A's alcohol consumption behavior. Interviewee B could stop drunken driving behavior, after having two drunken driving accidents. Also, B could reduce alcohol consumption behavior due to health deterioration in certain periods. Interviewee C could stop drunken driving behavior, after he came back to Korea from the states, but nothing could affect C's alcohol consumption behavior or attitude except drunken driving behavior. Interviewee D could have good alcohol moderation behavior through D's parents' appropriate education from a young age. Lastly, interviewee E could reduce alcohol consumption behavior after getting married.

Some interviewees (A, D, E) felt that indirect message tools such as TV documentary programs and dramas which broadcast alcoholic person's problems, or health/science programs which show the harmful effect of alcohol should be more effective than direct warning messages from alcohol industries or government agencies. And last but not least, some interviewees (A, B, D, E) felt that changing Korean alcohol culture (e.g. Korean dinner party cultures) could be the most important factor to reduce individuals' behavior toward alcohol consumption.

Figure VI-1 Summary for the qualitative research result

#	Sex	Marital status	Age	*F	Exposure level	Recall (in 30 sec)	Effective ness of warning message	Factors to reduce his or her attitude toward alcohol consumption	Factors to reduce his or her behavior toward alcohol consumption	Purpose of warning messages
A	M	Y	33	2	Low	2	None	TV documentary program which broadcast alcoholic person's life, past experience	None	To follow government regulation
B	M	N	33	2	Low	1	None	Past experience(Drunken driving), Health Deterioration	Past experience(Drunken Driving), health deterioration	To follow government regulation
C	M	Y	34	3	Medium	3	None	None	Regulation style(Drunken Driving)	To follow government regulation
D	F	N	31	2	Low	2	None	Good education from parents, TV drama or science & health program regarding alcohol issue	Good education from parents from a young age	To follow government regulation
E	F	Y	30	1	Low	1	A little	Marriage, TV programs which broadcast alcoholic person's life, warning message, diet	Marriage	To follow government regulation

*Note: Frequency

1. Once, twice, or less than per month on average during last six months
2. Once or twice per week on average during last six months
3. More than three times per week on average during last six months

6.2 Data Analysis of Quantitative Research

6.2.1 Demographics

Of the 102 participants, 67.6% were male, 29.4% were female, and 2.9% didn't answer. Around 50.0% are married, 47.1% are single, and 2.9% didn't answer. Among 51 participants who got married, 75.0% have his or her own child while 25.0% don't have his or her own child. Approximately, 2.0% of participants' current or final education background was associate degree, 68.6% of participants' current or final education background was

bachelor degree, 22.5% of participants' current or final education background was graduate degree, 3.9% of participants' current or final education background was PhD, and 2.9% didn't answer. Approximately, 1.0% answered annual house hold income of KRW 19,990,000 or under, 1.0% between KRW 20,000,000 and 29,990,000, 9.8% between KRW 30,000,000 and 39,990,000, 32.4% between KRW40,000,000 and 59,990,000, 16.7% between KRW 60,000,000 and 79,990,000, 2.0% between KRW80,000,000 and 99,990,000, 4.9% over KRW 100,000,000, and 32.4% didn't answer.

About 90.2% of respondents had a drive license, 6.9% didn't have a drive license, and 2.9% didn't answer. Among 92 participants who had a drive license, approximately, 46.1% of respondents were experienced of drunken driving, 28.4% were not experienced of drunken driving, and 25.5% didn't answer. Approximately, 7.8% of respondents were in the 20-29 age group, 85.3% were between 30-39, 3.9% were in the 40-49 age group, and 2.9% didn't answer. Around 9.8% were students, 47.1% were businessmen, 6.9% were bankers, 1.0% was teachers, 2.0% were professors, 7.8% were non-profit organization workers, 2.9% were government officers, 11.8% were engineers, 4.9% were business owners, and 2.9% were housewives. About 13.7% of respondents drink alcohol more than three times per week, 41.2% drink alcohol once or twice per week, and 45.1% drink alcohol once, twice, or less than per month on average during last six months. And lastly, 2.0% perceived the exposure level of alcohol warning or moderation messages from integrated communication tools was 'high', 18.6% perceived 'medium', and 79.4% perceived 'low'.

6.2.2 Hypothesis Testing

To analyze the proposed hypothesis, this paper estimates the factor analysis and the linear regression analysis using SPSS (v. 17). Data value is 5 % to measure alternative hypothesis. Factor scores and factor coefficient from factor analysis were used for regression

analyses (Cho 2010). “Using principal components analyses as the extraction method and Varimax rotation methods with Kaiser Normalization, the most relevant data emerged” (Cho 2010). Seven factors came out to be 1) attitude estimates: i) belief and evaluations on effects of alcohol consumption ii) attitude toward alcohol warning messages; 2) differential attitude toward alcohol warning messages; 3) estimates of subjective norm concerning reduction or moderation of alcohol consumption; 4) differential subjective norm: attitude toward alcohol warning messages; 5) differential intention to switch alcohol consumption; and 6) ‘behavioral change to reduce or moderate alcohol consumption’. These factors are grouped as variables when Eigen values are over 1.00. Overall, this study shows the results of factor analysis and regression analysis.

6.2.2.1 Hypothesis Testing of H1

Table VI-1 and VI-2 are the result of factor analysis of attitude estimates and VI-3 is the result of factor analysis of differential attitude toward alcohol warning messages. Based on factor coefficients from factor analysis, regression analysis was conducted, as Table VI-4 shows. The results of the regression analysis found $p = .001$ ($r\text{-square} = .205$) for the effects of attitude estimates (belief and evaluations on effects on alcohol consumption) on differential attitude toward alcohol warning messages, and $p = .006$ ($r\text{-square} = .304$) for the effects of attitude estimates (attitude toward alcohol warning messages) on differential attitude toward alcohol warning messages. Results indicated $p < .05$, therefore, alternative hypotheses 1 was supported.

H1: ‘Attitude estimates’ concerning reduction or moderation of alcohol consumption and alcohol warning messages positively affect ‘differential attitude’ after perceiving alcohol warning messages. – Accepted

Table VI-1 Factor Analysis for Attitude Estimates: i) Belief and Evaluations on Effects of Alcohol Consumption

1) Total Variance

Component	Initial Eigenvalues	
	Total	% of Variance
1	4.443	74.050

Extraction Method: Principal Component Analysis

2) Component Matrix

Beliefs and Evaluations on Effects of Alcohol Reduction or Moderation Attitude	Component
	1
I would have more well-being related lifestyle if I reduce or moderate my alcohol consumption attitude.	.923
I would have better health condition if I reduce or moderate alcohol consumption.	.884
I would enjoy more hobbies, if I reduce or moderate alcohol consumption attitude.	.867
If I reduce or moderate alcohol consumption, my bad drinking habits will be moderated.	.863
I would improve my performance in my workplaces or school if I reduce or moderate alcohol consumption.	.834
I would be a more responsible person, if I reduce or moderate my alcohol consumption attitude.	.786

Extraction Method: Principal Component Analysis

Table VI-2 Factor Analysis for Attitude Estimates: ii) Attitudes toward Warning Messages

1) Total Variance

Component	Initial Eigenvalues	
	Total	% of Variance
1	3.548	39.425
2	1.247	13.852
3	1.153	12.810

Extraction Method: Principal Component Analysis

2) Rotated Component Matrix

Attitudes toward Alcohol Warning Messages	Component		
	1	2	3
I think alcohol warning messages alarm me to reduce or moderate alcohol consumption.	.809	-.044	.159
I think alcohol warning messages are effective and persuasive.	.791	.002	.155
I am willing to reduce alcohol consumption due to the alcohol warning messages.	.753	.193	.165
I think the contents of alcohol warning messages are informative and believable.	.627	.253	.109
I think alcohol warning messages are widely exposed in South Korea.	.619	.480	-.026
I tend to pay attention to the alcohol warning messages.	.216	.793	-.049
I often recall alcohol warning messages from sources, such as TV, label, etc.	-.020	.784	.329
Alcohol warning messages are pleasant and favorable.	.074	.054	.906
Overall, I tend to believe what alcohol warning messages addressed.	.364	.147	.718

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization

Table VI-3 Factor Analysis for Differential Attitude (Attitude toward Alcohol Warning Messages)

1) Total Variance

Component	Initial Eigenvalues	
	Total	% of Variance
1	8.733	62.377
2	1.374	9.812

Extraction Method: Principal Component Analysis

2) Rotated Component Matrix

Differential Attitude toward Alcohol Warning Messages	Component	
	1	2
Alcohol warning messages alarm me that my reduction or moderation toward alcohol consumption attitude is important to have more well-being related lifestyle.	.898	.210
Alcohol warning messages alarm me to reduce or moderate alcohol consumption.	.866	.282
Alcohol warning messages alarm me that my reduction or moderation toward alcohol consumption attitude is important to improve my health condition.	.857	.273
I feel that I need to reduce or moderate my alcohol consumption by seeing those alcohol warning advertisements and messages.	.843	.322
Alcohol warning messages strengthen my beliefs toward alcohol reduction attitudes.	.823	.287
After I see alcohol warning advertisements, I think I would have better health condition if I reduce or moderate alcohol consumption.	.791	.299
After I see alcohol warning advertisements, I think my bad drinking habits will be moderated if I reduce alcohol consumption.	.784	.318
Alcohol warning messages alarm me that my reduction or moderation toward alcohol consumption attitude is important to be a more responsible person.	.769	.224
Alcohol warning messages alarm me that my reduction or moderation toward alcohol consumption attitude is important to improve my performance in my workplaces or school.	.608	.564
Now, I think that alcohol warning messages affect to change my drinking habit.	.564	.298
Now, I can recall other alcohol warning messages that I saw past.	.175	.916
Now, I can recall other alcohol warning messages even without any aids such as cues on labels.	.206	.890
I think that my performance will be enhanced when I follow (or listen) alcohol warning messages.	.515	.608
After I see alcohol warning (or moderation) advertisements, I think I would improve my performance in my workplaces or school if I reduce or moderate alcohol consumption.	.465	.568

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization

Table VI-4 Regression Analysis to Estimate the Effects of Attitude Estimates on Differential Attitude
i. The Effects of Belief and Evaluation on Differential Attitude

1) Model of Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.452 ^a	.205	.187	.90715583

a. Predictor: (Constant), REGR factor score for belief and evaluation

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	9.528	1	9.528	11.579	.001 ^a
Residual	37.032	45	.823		
Total	46.560	46			

a. Predictor: (Constant), REGR factor score for belief and evaluation

b. Dependent Variable: REGR factor score for differential attitude

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.038	.133		.285	.777
REGR factor score for 'belief and evaluation'	.477	.140	.452	3.403	.001

a. Dependent Variable: REGR factor score for differential attitude

ii. The Effects of Attitude toward Alcohol Warning Messages on Differential Attitude

1) Model of Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.551 ^a	.304	.261	.85956876

a. Predictor: (Constant), REGR factor score for attitude toward alcohol warning messages

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
2 Regression	15.796	3	5.265	7.126	.000 ^a
Residual	36.204	49	.739		
Total	52.000	52			

a. Predictor: (Constant), REGR factor score for attitude toward alcohol warning messages

b. Dependent Variable: REGR factor score for differential attitude

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.006	.119		.052	.959
REGR factor score for 'attitude toward alcohol warning messages'	.324	.112	.349	2.903	.006

a. Dependent Variable: REGR factor score for differential attitude

6.2.2.2 Hypothesis Testing of H2

Table VI-5 is the result of factor analysis of estimates of subjective norm concerning reduction or moderation of alcohol consumption, and table VI-6 is the result of factor analysis of differential subjective norm (i.e., attitude toward alcohol warning messages based on subjective norm). Based on factor coefficients from factor analysis, regression analysis was conducted, as Table VI-7 presents. The results of the regression analysis found $p = .002$ ($r\text{-square} = .213$) for the effects of estimates of subjective norm on differential subjective norm. Findings indicated $p < .05$, therefore, alternative hypotheses 2 was accepted.

H2: 'Estimates of subjective norms' concerning reduction or moderation of alcohol consumption positively affect 'differential subjective norms' after perceiving alcohol warning messages. - Accepted

Table VI-5 Factor Analysis for Estimates of Subjective Norm concerning Reduction or Moderation of Alcohol Consumption

1) Total Variance

Component	Initial Eigenvalues	
	Total	% of Variance
1	3.272	36.360
2	1.557	17.299
3	1.186	13.183

Extraction Method: Principal Component Analysis

2) Rotated Component Matrix^a

Subjective Norm concerning Reduction or Moderation of Alcohol Consumption	Component		
	1	2	3
If most people who are important to me decide to reduce or moderate their alcohol consumption, I would support their decision.	.799	.064	.126
If most people who are important to me have an alcohol moderation attitude, I think I can more easily reduce or moderate my alcohol consumption attitude.	.796	.224	.171
For me, the main reason why I drink alcoholic beverages is for relationship with people who are important to me.	.639	-.117	.396
Important person near me (such as family members) think I should reduce or moderate my alcohol consumption attitude.	-.113	.807	-.013
I, sometimes, want to reduce or moderate my alcohol consumption attitude because of my family members, relatives, or close friends' alcohol moderation behavior.	.262	.651	.277
If I decide to reduce or moderate my alcohol consumption, most people who are important to me would support my decision.	.479	.634	-.291
I think that I should reduce or moderate my alcohol consumption attitude when I see alcohol warning messages.	.038	.623	.513
I tend to do what my important others (such as family members) think I should do.	.246	-.080	.810
I tend to listen when health-related public advertisement alarm me what I should do.	.194	.312	.779

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization

Table VI-6 Factor Analysis for Differnetial Subjective Norm (Attitude toward alcohol warning messages based on Subjective Norm)

1) Total Variance

Component	Initial Eigenvalues	
	Total	% of Variance
1	5.168	57.425
2	1.163	12.920

Extraction Method: Principal Component Analysis

2) Rotated Component Matrix

Differential Subjective Norm (Attitude toward Alcohol Warning Messages based on Subjective Norm)	Component	
	1	2
If my family members or relatives have a positive attitude toward alcohol warning messages, I think that I also would have a positive attitude toward alcohol warning (moderation) messages.	.859	.206
Alcohol reduction (or moderation) attitude would help me to be a more socially responsible person.	.853	.046
After I perceive alcohol warning messages, at least, I consider to reduce or moderate my alcohol consumption for my important people.	.812	.375
After I perceive alcohol warning messages, at least, I consider to reduce or moderate my alcohol consumption not only for myself but also for social obligatory.	.792	.311
I think that I've seen more alcohol warning messages that address social responsibility related issues than alcohol warning messages that address self related issues.	.659	.302
I think that alcohol warning messages strengthen my subjective norm toward alcohol reduction (moderation) attitude. (e.g. value from my religion, family, others).	.615	.535
I, sometimes, feel guilty when I drink alcoholic beverages, because of alcohol warning (moderation) messages that address family related issues.	.051	.849
I, sometimes, feel uncomfortable seeing alcohol warning (moderation) messages with my family members or relatives.	.291	.783
I think that many people who are important to me want to reduce or moderate alcohol consumption partly because of alcohol warning messages.	.451	.695

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization

Table VI-7 Regression Analysis to Estimate the Effects of Estimates of Subjective Norms on Differential Subjective Norm

1) Model of Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.462 ^a	.213	.189	.90041118

a. Predictor: (Constant), REGR factor score 3 for subjective norm

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	21.547	3	7.182	8.859	.000 ^a
Residual	79.453	98	.811		
Total	101.000	101			

a. Predictor: (Constant), REGR factor score for estimates of subjective norms

b. Dependent Variable: REGR factor score for differential subjective norm

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	9.558E-17	.089		.000	1.000
REGR factor score for 'estimates of subjective norms'	.284	.090	.284	3.173	.002

a. Dependent Variable: REGR factor score for differential subjective norm

6.2.2.3 Hypothesis Testing of H3

Table VI-8 is the result of factor analysis of differential intention to switch alcohol consumption. Based on factor coefficients from factor analysis of differential attitude and differential intention (see table VI-3 and VI-8), regression analysis was conducted (see table VI-9). The results of the regression analysis found $p = .000$ ($r\text{-square} = .580$) for the effects of differential attitude toward alcohol warning messages on differential intention to switch alcohol consumption. Results showed $p < .05$, therefore, alternative hypotheses 3 was accepted.

H3: *There is a positive relationship between ‘differential attitude’ and ‘differential intention’.*

– Accepted

Table VI-8 Factor Analysis for Differential Intention to Switch Alcohol Consumption

1) Total Variance

Component	Initial Eigenvalues	
	Total	% of Variance
1	3.264	65.284

Extraction Method: Principal Component Analysis

2) Component Matrix

Differential Intention to Switch Alcohol Consumption		Component
		1
I'm willingness to switch my alcohol consumption attitude by seeing those alcohol warning (or moderation) advertisements and messages.		.873
I have a tendency to reduce or moderate drinking alcoholic beverages when I see alcohol warning messages.		.843
I intend to switch my alcohol consumption attitude.		.822
I intend to reduce or moderate alcohol consumption attitude.		.777
Overall, I tend to believe what alcohol warning messages addressed.		.717

Extraction Method: Principal Component Analysis.

Table VI-9 Regression Analysis for Differential Attitude toward Alcohol Warning Messages on Differential Intention to Switch Alcohol Consumption

1) Model of Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.762 ^a	.580	.564	.68672482

a. Predictor: (Constant), REGR factor score for differential attitude

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	32.628	2	16.314	34.593	.000 ^a
Residual	23.580	50	.472		
Total	56.207	52			

a. Predictor: (Constant), REGR factor score for differential attitude

b. Dependent Variable: REGR factor score for differential intention

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.004	.094		-.045	.964
REGR factor score for 'differential attitude'	.725	.095	.698	7.617	.000

a. Dependent Variable: REGR factor score for differential intention

6.2.2.4 Hypothesis Testing of H4

Based on factor coefficients from factor analysis of differential subjective norm and differential intention (see table VI-6 and VI-8), regression analysis was conducted (see table VI-10). The results of the regression analysis found $p = .000$ ($r\text{-square} = .579$) for the effects of differential subjective norm (i.e., attitude toward alcohol warning messages based on subjective norm) on differential intention to switch alcohol consumption. Results showed $p < .05$, thus, alternative hypotheses 4 was accepted.

H4: *There is a positive relationship between 'differential subjective norm' and 'differential intention'.* – **Accepted.**

Table VI-10 Regression Analysis for the Effects of Differential Subjective Norm (attitude toward alcohol warning messages based on subjective norm) on Differential Intention to Switch Alcohol Consumption

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.761 ^a	.579	.570	.65566712

a. Predictor: (Constant), REGR factor score for differential subjective norm

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	58.440	2	29.220	67.969	.000 ^a
Residual	42.560	99	.430		
Total	101.000	101			

a. Predictor: (Constant), REGR factor score for differential subjective norm

b. Dependent Variable: REGR factor score for differential intention

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-2.293E-16	.065		.000	1.000
REGR factor score for 'differential subjective norm'	.656	.065	.656	10.057	.000

a. Dependent Variable: REGR factor score for differential intention

6.2.2.5 Hypothesis Testing of H5

Based on factor coefficients from factor analysis of differential attitude, differential subjective norm, and differential intention (see table VI-3, VI-6 and VI-8), regression analysis was conducted (see table VI-11). The results of the regression analysis found $p = .000$, $\beta = .513$ ($r\text{-square} = .670$) for the effects of differential attitude toward alcohol warning messages on intention to switch alcohol consumption, and $p = .020$, $\beta = .264$ ($r\text{-square} = .670$) for the effects of differential subjective norm (i.e., attitude toward alcohol warning messages based on subjective norm) on differential intention to switch alcohol consumption. Thus, the effect of differential attitude on differential intention was more significant than the effects of differential subjective norm on differential intention. Alternative hypothesis 5 was supported.

H5: The effect of 'differential attitude' on 'differential intention' is different from the effect of 'differential subjective norm' on 'differential intention'. – **Accepted**

Table VI-11 Regression Analysis for the Effects of Differential Attitude on Differential Intention, and the Effects of Differential Subjective norm on Differential Intention

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.819 ^a	.670	.643	.62161574

a. Predictor: (Constant), REGR factor score for differential attitude, REGR factor score for differential subjective norm

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	37.660	4	9.415	24.365	.000 ^a
Residual	18.547	48	.386		
Total	56.207	52			

a. Predictor: (Constant), REGR factor score for differential attitude, REGR factor score for differential subjective norm

b. Dependent Variable: REGR factor score for differential intention

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.011	.085		-.134	.894
REGR factor score for 'differential attitude'	.534	.110	.513	4.836	.000
REGR factor score for 'differential subjective norm'	.247	.102	.264	2.412	.020

a. Dependent Variable: REGR factor score for differential intention

6.2.2.6 Hypothesis Testing of H6

Table VI-12 is the result of factor analysis of behavioral change to reduce or moderate alcohol consumption. Based on factor coefficients from factor analysis of differential intention and behavioral change (see table VI-8 and VI-12), regression analysis was conducted (see table VI-13). The results of the regression analysis found $p = .000$ ($r\text{-square} = .666$) for the effects of differential intention to switch alcohol consumption on behavioral change to reduce or moderate alcohol consumption. Results showed $p < .05$, therefore, alternative hypotheses 6 was accepted.

H6: *There is a positive relationship between 'differential intention' and 'behavioral change'.*

-Accepted

Table VI-12 Factor Analysis for Behavioral Change to Reduce or Moderate Alcohol Consumption

1) Total Variance Explained

Component	Initial Eigenvalues	
	Total	% of Variance
1	3.946	56.376
2	1.104	15.773

Extraction Method: Principal Component Analysis.

2) Rotated Component Matrix

Behavioral Change to Reduce or Moderate Alcohol Consumption	Component	
	1	2
I'll start to reduce or moderate my alcohol consumption attitude.	.870	.144
Above alcohol warning messages positively affect to switch my alcohol consumption.	.811	.060
I'll start to reduce or moderate my alcohol consumption behavior by seeing those alcohol warning (or moderation) advertisements and messages.	.793	.341
At least, I plan to purchase alcoholic beverages less.	.742	.327
I have a plan to start reducing (or moderating) alcohol consumption attitude soon.	.603	.428
I plan to attend meetings with drinking alcoholic beverages less.	.121	.911
I have a plan to hang out with people who don't enjoy drinking much after seeing alcohol warning messages.	.304	.851

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization..

Table VI-13 Regression Analysis for the Effects of Intention to Switch Alcohol Consumption on Behavioral Change to Reduce or Moderate Alcohol Consumption

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.816 ^a	.666	.663	.58091453

a. Predictor: (Constant), REGR factor score for differential intention

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	67.254	1	67.254	199.293	.000 ^a
Residual	33.746	100	.337		
Total	101.000	101			

a. Predictor: (Constant), REGR factor score for differential intention

b. Dependent Variable: REGR factor score for behavioral change

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.086E-16	.058		.000	1.000
REGR factor score for 'differential intention'	.816	.058	.816	14.117	.000

a. Dependent Variable: REGR factor score for behavioral change

Figure VI-2 Summary of the Results (H1 – H6)

H1: ‘Attitude estimates’ concerning reduction or moderation of alcohol consumption and alcohol warning messages positively affect ‘differential attitude’ after perceiving alcohol warning messages.	Accepted
H2: ‘Estimates of subjective norms’ concerning reduction or moderation of alcohol consumption positively affect ‘differential subjective norms’ after perceiving alcohol warning messages.	Accepted
H3: There is a positive relationship between ‘differential attitude’ and ‘differential intention’.	Accepted
H4: There is a positive relationship between ‘differential subjective norm’ and ‘differential intention’.	Accepted
H5: The effect of ‘differential attitude’ on ‘differential intention’ is different from the effect of ‘differential subjective norm’ on ‘differential intention’.	Accepted
H6: There is a positive relationship between ‘differential intention’ and ‘behavioral change’.	Accepted

6.2.2.7 Hypothesis Testing of H1a, H1b, H1c, H1d, and H1e

a) Hypothesis Testing of H1a

Based on factor coefficients from factor analysis of attitude estimates (belief and evaluation), differential attitude toward alcohol warning messages that address positive reinforcement, and differential attitude toward alcohol warning messages that address negative reinforcement (see table VI-1, VI-14 and VI-15), regression analysis was conducted (see table VI-16, and VI-17). The results of the regression analysis found $p = .001$, $\beta = .446$ ($r\text{-square} = .199$) for the effects of belief and evaluation on differential attitude toward alcohol warning messages that address positive reinforcement, and $p = .000$, $\beta = .525$ ($r\text{-square} = .275$) for the effects of belief and evaluation on differential attitude toward alcohol warning messages that address negative reinforcement. Thus, the both effects were significant, and the degree of effect with respect to the alcohol warning messages that address negative reinforcement was slightly higher than alcohol warning messages that address positive reinforcement. Alternative hypothesis H1a was supported.

H1a: *The effects of attitude estimates on differential attitude are different depending on whether alcohol warnings address ‘positive reinforcement’ or ‘negative reinforcement’.*

- **Accepted** (Both effects were significant, but degree of effects regarding negative reinforcement was slightly higher than positive reinforcement)

Table VI-14 Factor Analysis for Alcohol Warning Messages that address Positive Reinforcement

1) Total Variance

Component	Initial Eigenvalues	
	Total	% of Variance
1	7.159	71.590
2	1.040	10.400

Extraction Method: Principal Component Analysis

2) Rotated Component Matrix

Differential Attitude toward Alcohol Warning Messages that address Positive Reinforcement	Component	
	1	2
In general, I think that the advertisement addresses positive warning messages is more helpful than others to reduce or moderate one's alcohol consumption attitude.	.865	.280
I am more likely to remember and recognize figure 1 than other figures.	.865	.269
I think figure 1 is an effective tool for many people to have alcohol reduction (moderation) attitude.	.826	.409
How much do you think that figure 1 is effective or persuasive?	.820	.366
I think figure 1 alarm me to reduce or moderate alcohol consumption.	.819	.280
I think figure 1 strengthens my subjective norm toward alcohol reduction (moderation).	.800	.417
I think figure 1 is informative and believable alcohol warning (moderation) messages.	.644	.636
How much do you like figure 1?	.233	.929
How likely do you perceive information of figure 1?	.324	.873
I think figure 1 is a good alcohol warning (moderation) message.	.496	.697

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization

Table VI-15 Factor Analysis for Alcohol Warning Messages that address Negative Reinforcement

1) Total Variance

Component	Initial Eigenvalues	
	Total	% of Variance
1	7.025	70.250
2	1.011	10.106

Extraction Method: Principal Component Analysis

2) Rotated Component Matrix

Differential Attitude toward Alcohol Warning Messages that address Negative Reinforcement	Component	
	1	2
I think figure 2 alarm me to reduce or moderate alcohol consumption.	.895	.232
How much do you think that figure 2 is effective or persuasive?	.858	.344
I think figure 2 is an effective tool for many people to have alcohol reduction (moderation) attitude.	.845	.385
How likely do you perceive information of figure 2?	.844	.342
In general, I think that the advertisement that addresses negative warning messages is more helpful than others to reduce or moderate one's alcohol consumption attitude.	.795	.451
I am more likely to remember and recognize figure 2 than other figures.	.170	.838
I think figure 2 is a good alcohol warning (moderation) message.	.497	.783
I think figure 2 is informative and believable alcohol warning (moderation) messages.	.505	.771
How much do you like figure 2?	.279	.744
I think figure 2 strengthens my subjective norm toward alcohol reduction (moderation).	.565	.639

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization

Table VI-16 Regression Analysis to Estimate the Effects of 'Belief and Evaluation' on 'Differential Attitude toward Alcohol Warning Messages that address Positive Reinforcement'

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.446 ^a	.199	.184	.90442799

a. Predictor: (Constant), REGR factor score for belief and evaluation

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	10.567	1	10.567	12.918	.001 ^a
Residual	42.535	52	.818		
Total	53.102	53			

a. Predictor: (Constant), REGR factor score for belief and evaluation

b. Dependent Variable: REGR factor score for differential attitude toward alcohol warning message that address positive reinforcement

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.120	.123		-.977	.333
REGR factor score for 'belief and evaluation'	.443	.123	.446	3.594	.001

a. Dependent Variable: REGR factor score for differential attitude toward alcohol warning messages that address positive reinforcement

Table VI-17 Regression Analysis to Estimate the Effects of ‘Belief and Evaluation’ on ‘Differential Attitude toward Alcohol Warning Messages that address Negative Reinforcement’

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.525 ^a	.275	.261	.94733940

a. Predictor: (Constant), REGR factor score for belief and evaluation

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	17.729	1	17.729	19.755	.000 ^a
Residual	46.668	52	.897		
Total	64.397	53			

a. Predictor: (Constant), REGR factor score for belief and evaluation

b. Dependent Variable: REGR factor score for differential attitude toward alcohol warning messages that address negative reinforcement

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.175	.129		-1.360	.180
REGR factor score for ‘belief and evaluation’	.573	.129	.525	4.445	.000

a. Dependent Variable: REGR factor score for differential attitude toward alcohol warning messages that address negative reinforcement

b) Hypothesis Testing of H1b

Based on factor coefficients from factor analysis of attitude estimates (belief and evaluation), and differential attitude toward alcohol warning messages that address both positive and negative reinforcement (see table VI-1, and VI-18), regression analysis was conducted (see table VI-19). The results of regression analysis found $p = .006$, $\beta = .371$ ($r\text{-square} = .138$) for the effects of belief and evaluation on differential attitude toward alcohol warning messages that address both positive and negative reinforcement. As already mentioned, the results of the regression analysis found $p = .001$, $\beta = .446$ ($r\text{-square} = .199$) for the effects of belief and evaluation on differential attitude toward alcohol warning messages that address only positive reinforcement, and $p = .000$, $\beta = .525$ (two-tailed, $r\text{-square} = .275$) for the effects of belief and evaluation on differential attitude toward alcohol

warning messages that address only negative reinforcement. Thus, all effects were significant, but the degree of effect with respect to one-sided alcohol warning messages was slightly higher than two-sided alcohol warning messages that address both positive and negative reinforcement. Alternative hypothesis H1b was supported.

H1b: *The effects of attitude estimates on differential attitude are different depending on whether alcohol warnings address ‘one-sided message’ or ‘two-sided message’.* – **Accepted**
(All effects were significant, but the effects regarding one-sided alcohol warning messages are slightly higher than two-sided alcohol warning messages)

Table VI-18 Factor Analysis for Alcohol Warning Messages which address both Positive and Negative Reinforcement

1) Total Variance

Component	Initial Eigenvalues	
	Total	% of Variance
1	7.804	78.044

Extraction Method: Principal Component Analysis.

2) Component Matrix

Differential Attitude toward Warning Messages that addressing both Positive and Negative Reinforcement	Component 1
I think figure 3 is an effective tool for many people to have alcohol reduction (moderation) attitude.	.938
In general, I think that the advertisement that addresses two-sided warning messages is more helpful than others to reduce or moderate one's alcohol consumption attitude.	.937
I think figure 3 is informative and believable alcohol warning (moderation) messages.	.936
How much do you think that figure 3 is effective or persuasive?	.927
I think figure 3 strengthens my subjective norm toward alcohol reduction (moderation).	.926
I think figure 3 is a good alcohol warning (moderation) message.	.895
How much do you like figure 3?	.873
I think figure 3 alarm me to reduce or moderate alcohol consumption.	.873
How likely do you perceive information of figure 3?	.828
I am more likely to remember and recognize figure 3 than other figures.	.666

Extraction Method: Principal Component Analysis.

Table VI-19 Regression Analysis to Estimate the effects of ‘Belief and Evaluation’ on ‘Differential Attitude toward Alcohol Warning Messages that address both Positive and Negative Reinforcement’

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.371 ^a	.138	.121	.98062395

a. Predictor: (Constant), REGR factor score for belief and evaluation

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	7.842	1	7.842	8.155	.006 ^a
Residual	49.043	51	.962		
Total	56.885	52			

a. Predictor: (Constant), REGR factor score for belief and evaluation

b. Dependent Variable: REGR factor score for differential attitude toward two-sided alcohol warning messages

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.149	.135		-1.103	.275
REGR factor score for 'belief and evaluation'	.395	.138	.371	2.856	.006

a. Dependent Variable: REGR factor score for differential attitude toward two-sided alcohol warning messages

c) Hypothesis Testing of H1c

Based on factor coefficients from factor analysis of attitude estimates (belief and evaluation), differential attitude toward alcohol warning messages from a public sector, and differential attitude toward alcohol warning messages from a private sector (see table VI-1, VI-20 and VI-21), regression analysis was conducted (see table VI-22, and VI-23). The results of the regression analysis found $p = .196$, $\beta = .180$ ($r\text{-square} = .033$) for the effects of belief and evaluation on differential attitude toward alcohol warning messages from a public sector, and $p = .002$, $\beta = .423$ ($r\text{-square} = .179$) for the effects of belief and evaluation on differential attitude toward alcohol warning messages from a private sector. Thus, the effects of belief and evaluation on differential attitude toward alcohol warning messages from a public sector were not significant while the effects of belief and evaluation on differential attitude toward alcohol warning messages from a private sector were significant. Hypothesis 1c can be supported, but there have some limitations to measure the effects on attitude toward alcohol warning messages from a private sector. This is because alcohol warning messages from a private sector are not widely exposed in Korea until now.

H1c: The effects of attitude estimates on differential attitude are different depending on whether alcohol warnings are from a public sector or a private sector. –**Accepted** (but, there have some limitations since alcohol warning messages from a private sector are not widely exposed in Korea)

Table VI-20 Factor Analysis for Alcohol Warning Messages from a Public Sector

1) Total Variance

Component	Initial Eigenvalues	
	Total	% of Variance
1	8.240	82.401

Extraction Method: Principal Component Analysis.

2) Component Matrix

Differential Attitude toward Alcohol Warning Messages from a Public Sector	Component 1
I think figure 4 is a good alcohol warning (moderation) message.	.952
How much do you think that figure 4 is effective or persuasive?	.938
I think figure 4 is an effective tool for many people to have alcohol reduction (moderation) attitude.	.935
I think figure 4 alarm me to reduce or moderate alcohol consumption.	.915
In general, I think that the alcohol warning advertisement from a public sector is more helpful than others to reduce or moderate one's alcohol consumption attitude.	.911
I think figure 4 is informative and believable alcohol warning (moderation) messages.	.903
I think figure 4 strengthens my subjective norm toward alcohol reduction (moderation).	.891
How much do you like figure 4?	.889
How likely do you perceive information of figure 4?	.873
I more likely to remember and recognize figure 4 than other figures.	.866

Extraction Method: Principal Component Analysis

Table VI-21 Factor Analysis for Alcohol Warning Messages from a Private Sector

1) Total Variance

Component	Initial Eigenvalues	
	Total	% of Variance
1	6.561	65.610
2	1.538	15.382

Extraction Method: Principal Component Analysis

2) Rotated Component Matrix

Differential Attitude toward Alcohol Warning Messages from a Private Sector	Component	
	1	2
In general, I think that the alcohol moderation advertisement from a private sector is more helpful than others to reduce or moderate one's alcohol consumption attitude.	.913	.200
I think figure 5 is an effective tool for many people to have alcohol reduction (moderation) attitude.	.880	.311
I think figure 5 alarm me to reduce or moderate alcohol consumption.	.877	.164
I think figure 5 strengthens my subjective norm toward alcohol reduction (moderation).	.852	.383
How much do you think that figure 5 is effective or persuasive?	.845	.306
I more likely to remember and recognize figure 5 than other figures.	.731	.151
I think figure 5 is informative and believable alcohol warning (moderation) messages.	.658	.613
How much do you like figure 5?	.117	.940
How likely do you perceive information of figure 5?	.231	.896
I think figure 5 is a good alcohol warning (moderation) message.	.394	.777

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization

Table VI-22 Regression Analysis to Estimate the Effects of 'Belief and Evaluation' on 'Differential Attitude toward Alcohol Warning Messages from a Public Sector'

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.180 ^a	.033	.014	1.12273326

a. Predictor: (Constant), REGR factor score for belief and evaluation

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	2.164	1	2.164	1.717	.196 ^a
Residual	64.287	51	1.261		
Total	66.451	52			

a. Predictor: (Constant), REGR factor score for belief and evaluation

b. Dependent Variable: REGR factor score for differential attitude toward messages from a public sector

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.069	.154		-.449	.656
REGR factor score for 'belief and evaluation'	.208	.158	.180	1.310	.196

a. Dependent Variable: REGR factor score for differential attitude toward messages from a public sector

Table VI-23 Regression Analysis to Estimate the effects of 'Belief and Evaluation' on 'Differential Attitude toward Alcohol Warning Messages from a Private Sector'

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.423 ^a	.179	.163	.94510241

a. Predictor: (Constant), REGR factor score for belief and evaluation

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	9.924	1	9.924	11.111	.002 ^a
Residual	45.554	51	.893		
Total	55.479	52			

a. Predictor: (Constant), REGR factor score for belief and evaluation

b. Dependent Variable: REGR factor score for 'differential attitude toward messages from a private sector'

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.128	.130		-.986	.329
REGR factor score for 'belief and evaluation'	.444	.133	.423	3.333	.002

a. Dependent Variable: REGR factor score for differential attitude toward messages from a private sector

d) Hypothesis Testing of H1d

Based on factor coefficients from factor analysis of attitude estimates: belief and evaluation, differential attitude toward alcohol warning messages that address 'self-related issues', and differential attitude toward alcohol warning messages that addresses 'others-related issues' (see table VI-1, VI-24 and VI-25), regression analysis was conducted (see table VI-26, and VI-27). The results of the regression analysis found $p = .044$, $\beta = .278$ ($r\text{-square} = .077$) for the effects of belief and evaluation on differential attitude toward alcohol warning messages that address 'self-related issues', and $p = .009$, $\beta = .355$ ($r\text{-square} = .126$) for the effects of belief and evaluation on differential attitude toward alcohol warning messages that address 'others-related issues'. Thus, both effects were significant, but the degree of effects with respect to alcohol warning messages that address 'others-related issues' is slightly higher than alcohol warning messages that address 'self-related issues'. Hypothesis 1d is accepted.

H1d: *The effects of attitudes estimates on differential attitude are different depending on whether alcohol warnings address 'self-related issues' or 'others-related issues'.* – **Accepted**
(Both effects were significant, but degree of effects regarding 'others-related issues' was

slightly higher than ‘self-related issues’)

Table VI-24 Factor Analysis for Alcohol Warning Messages that address ‘Self-related issues’

1) Total Variance

Component	Initial Eigenvalues	
	Total	% of Variance
1	7.396	73.956

Extraction Method: Principal Component Analysis

2) Component Matrix

Differential Attitude toward Alcohol Warning Messages that address ‘Self’	Component 1
In general, I think that the alcohol warning advertisement which addresses ‘self’ related issues is more helpful than others to reduce or moderate one’s alcohol consumption attitude.	.928
I think figure 6 is informative and believable alcohol warning (moderation) messages.	.921
I think figure 6 is a good alcohol warning (moderation) message.	.919
I think figure 6 strengthens my subjective norm toward alcohol reduction (moderation).	.909
How much do you think that figure 6 is effective or persuasive?	.904
I think figure 6 is an effective tool for many people to have alcohol reduction (moderation) attitude.	.893
How much do you like figure 6?	.864
I think figure 6 alarm me to reduce or moderate alcohol consumption.	.806
I more likely to remember and recognize figure 6 than other figures.	.720
How likely do you perceive information of figure 6?	.698

Extraction Method: Principal Component Analysis

Table VI-25 Factor Analysis for Alcohol Warning Messages that address ‘Others related issues’

1) Total Variance

Component	Initial Eigenvalues	
	Total	% of Variance
1	8.339	83.390

Extraction Method: Principal Component Analysis

2) Component Matrix

Differential Attitude toward Alcohol Warning Messages that address ‘Others’	Component 1
I think figure 7 is an effective tool for many people to have alcohol reduction (moderation) attitude.	.956
I think figure 7 is informative and believable alcohol warning (moderation) messages.	.945
How much do you think that figure 7 is effective or persuasive?	.932
I think figure 7 alarm me to reduce or moderate alcohol consumption.	.931
In general, I think that the alcohol warning advertisement which addresses ‘others’ related issues is more helpful than others to reduce or moderate one’s alcohol consumption attitude.	.929
I think figure 7 strengthens my subjective norm toward alcohol reduction (moderation).	.919
How likely do you perceive information of figure 7?	.906
How much do you like figure 7?	.905
I think figure 7 is a good alcohol warning (moderation) message.	.888
I more likely to remember and recognize figure 7 than other figures.	.812

Extraction Method: Principal Component Analysis.

Table VI-26 Regression Analysis for ‘Belief and Evaluation’ and ‘Differential Attitude toward Alcohol Warning Messages that address ‘Self-related issues’

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.278 ^a	.077	.059	1.02190918

a. Predictor: (Constant), REGR factor score for belief and evaluation

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	4.446	1	4.446	4.257	.044 ^a
Residual	53.259	51	1.044		
Total	57.705	52			

a. Predictor: (Constant), REGR factor score for belief and evaluation

b. Dependent Variable: REGR factor score for differential attitude toward messages that address self

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.148	.140		-1.051	.298
REGR factor score for ‘belief and evaluation’	.297	.144	.278	2.063	.044

a. Dependent Variable: REGR factor score for differential attitude toward messages that address self

Table VI-27 Regression Analysis to Estimate the Effects of ‘Belief and Evaluation’ on ‘Differential Attitude toward Alcohol Warning Messages that address ‘Others-related issues’

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.355 ^a	.126	.109	.94120223

a. Predictor: (Constant), REGR factor score for belief and evaluation

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	6.515	1	6.515	7.355	.009 ^a
Residual	45.179	51	.886		
Total	51.694	52			

a. Predictor: (Constant), REGR factor score for belief and evaluation

b. Dependent Variable: REGR factor score for differential attitude toward messages that address others

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.194	.129		-1.498	.140
REGR factor score for ‘belief and evaluation’	.360	.133	.355	2.712	.009

a. Dependent Variable: REGR factor score for differential attitude toward messages that address others

e) Hypothesis Testing of H1e

Based on factor coefficients from factor analysis of attitude estimates (belief and evaluation), differential attitude toward alcohol warning messages that address ‘health-related issues’ (see table VI-1, and VI-28), regression analysis was conducted (see table VI-29). The results of the regression analysis found $p = .000$, $\beta = .522$ ($r\text{-square} = .272$) for the effects of belief and evaluation on differential attitude toward alcohol warning messages that address ‘health-related issues’. Results showed $p < .05$, thus, alternative hypotheses H1e was accepted.

H1e: *Attitude estimates significantly affect differential attitude toward alcohol warning messages that address ‘health-related issues’.* – **Accepted.**

Table VI-28 Factor Analysis for Alcohol Warning Messages that address ‘Health-related issues’

1) Total Variance

Component	Initial Eigenvalues	
	Total	% of Variance
1	8.458	84.580

Extraction Method: Principal Component Analysis

2) Component Matrix

Differential Attitude toward Image 8 (Alcohol Warning Messages that Address ‘Health-related issues’)	Component 1
I think figure 8 is informative and believable alcohol warning (moderation) messages.	.959
In general, I think that the alcohol warning advertisement which addresses ‘health’ related issues is more helpful than others to reduce or moderate one’s alcohol consumption attitude.	.953
How much do you think that figure 8 is effective or persuasive?	.946
I think figure 8 is effective tool for many people to have alcohol reduction (moderation) attitude.	.945
How much do you like figure 8?	.940
I think figure 8 is a good alcohol warning (moderation) message.	.938
I think figure 8 alarm me to reduce or moderate alcohol consumption.	.936
How likely do you perceive information of figure 8?	.897
I think figure 8 strengthens my subjective norm toward alcohol reduction or moderation.	.849
I more likely to remember and recognize figure 8 than other figures.	.825

Extraction Method: Principal Component Analysis

Table VI-29 Regression Analysis to Estimate the Effects of ‘Belief and Evaluation’ on ‘Differential Attitude toward Alcohol Warning Messages that address ‘Health-related issues’

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.522 ^a	.272	.258	.97041634

a. Predictor: (Constant), REGR factor score for belief and evaluation

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	17.966	1	17.966	19.078	.000 ^a
Residual	48.027	51	.942		
Total	65.993	52			

a. Predictor: (Constant), REGR factor score for belief and evaluation

b. Dependent Variable: REGR factor score for differential attitude toward messages that address health-related issues

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.170	.133		-1.272	.209
REGR factor score for 'belief and evaluation'	.598	.137	.522	4.368	.000

a. Dependent Variable: REGR factor score for differential attitude toward messages that address health-related issues

6.2.2.7 Hypothesis Testing of H2a, H2b, H2c, H2d, and H2e

a) Hypothesis Testing of H2a

Based on factor coefficients from factor analysis of estimates of subjective norm, attitude toward alcohol warning messages that address positive reinforcement, and attitude toward alcohol warning messages that address negative reinforcement (see table VI-5, VI-14 and VI-15), regression analysis was conducted (see table VI-30, and VI-31). The results of the regression analysis found $p = .001$, $\beta = .307$ ($r\text{-square} = .158$) for the effects of estimates of subjective norms on attitude toward alcohol warning messages that address positive reinforcement based on subjective norm, and $p = .000$, $\beta = .363$ ($r\text{-square} = .202$) for the effects of estimates of subjective norms on attitude toward alcohol warning messages that address negative reinforcement based on subjective nom. Thus, the both effects were significant, but the degree of effect with respect to the alcohol warning messages that address negative reinforcement was slightly higher than alcohol warning messages that address positive reinforcement. Alternative hypothesis H2a was supported.

H2a: *The effects of estimates of subjective norms on differential subjective norm are different depending on whether alcohol warnings address 'positive reinforcement' or 'negative*

reinforcement'. –**Accepted** (Both effects were significant, but degree of effects regarding negative reinforcement was slightly higher than positive reinforcement)

Table VI-30 Regression Analysis to Estimate the Effects of ‘Estimates of Subjective Norm’ on ‘Attitude toward Alcohol Warning Messages that address Positive Reinforcement based on Subjective Norm’

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.397 ^a	.158	.131	.93195146

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	15.621	3	5.207	5.995	.001 ^a
Residual	83.379	96	.869		
Total	99.000	99			

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

b. Dependent Variable: REGR factor score for attitude toward alcohol warning messages that address positive reinforcement based on subjective norm

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.005	.093		.049	.961
REGR factor score for ‘estimates of subjective norm’	.304	.093	.307	3.272	.001

a. Dependent Variable: REGR factor score for attitude toward alcohol warning messages that address positive reinforcement based on subjective norm

Table VI-31 Regression Analysis to Estimate the Effects of ‘Estimates of Subjective Norm’ on ‘Attitude toward Alcohol Warning Messages that address Negative Reinforcement based on Subjective Norm’

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.449 ^a	.202	.177	.90722897

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	19.986	3	6.662	8.094	.000 ^a
Residual	79.014	96	.823		
Total	99.000	99			

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

b. Dependent Variable: REGR factor score for ‘attitude toward alcohol warning messages that address negative reinforcement based on subjective norm

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.005	.091		.057	.955
REGR factor score for 'estimates of subjective norm'	.361	.091	.363	3.983	.000

a. Dependent Variable: REGR factor score for 'attitude toward alcohol warning messages that address negative reinforcement based on subjective norm'

b) Hypothesis Testing of H2b

Based on factor coefficients from factor analysis of attitude estimates (belief and evaluation), and differential attitude toward alcohol warning messages that address both positive and negative reinforcement (see table VI-5, and VI-18), regression analysis was conducted (see table VI-32). The results of regression analysis found $p = .004$, $\beta = .284$ ($r\text{-square} = .099$) for the effects of estimates of subjective norm on differential attitude toward alcohol warning messages that address both positive and negative reinforcement based on subjective norm. As already mentioned, the results of the regression analysis found $p = .001$, $\beta = .307$ ($r\text{-square} = .158$) for the effects of estimates of subjective norm on attitude toward alcohol warning messages that address only positive reinforcement based on subjective norm, and $p = .000$, $\beta = .363$ ($r\text{-square} = .202$) for the effects of estimates of subjective norm on attitude toward alcohol warning messages that address only negative reinforcement based on subjective norm. Thus, all effects were significant, but the degree of effect with respect to one-sided alcohol warning messages was slightly higher than two-sided alcohol warning messages that address both positive and negative reinforcement. Alternative hypothesis H2b was supported.

H2b: *The effects of estimates of subjective norms on differential subjective norm are different depending on whether alcohol warnings address 'one-sided message' or 'two-sided message'.*

– **Accepted** (All effects were significant, but the effects regarding one-sided alcohol warning messages are slightly higher than two-sided alcohol warning messages)

Table VI-32 Regression Analysis to Estimate the Effects of ‘Estimates of Subjective Norm’ on ‘Attitude toward Alcohol Warning Messages that address Both Positive and Negative Reinforcement based on Subjective Norm’

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.314 ^a	.099	.070	.96414054

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	9.691	3	3.230	3.475	.019 ^a
Residual	88.309	95	.930		
Total	98.000	98			

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

b. Dependent Variable: REGR factor score for attitude toward alcohol warning messages that address both positive and negative reinforcement based on subjective norm

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.000	.097		.001	.999
REGR factor score for ‘estimates of subjective norm’	.285	.098	.284	2.913	.004

a. Dependent Variable: REGR factor score for attitude toward alcohol warning messages that address both positive and negative reinforcement based on subjective norm

c) Hypothesis Testing of H2c

Based on factor coefficients from factor analysis of estimates of subjective norm, attitude toward alcohol warning messages from a public sector, and attitude toward alcohol warning messages from a private sector (see table VI-5, VI-20 and VI-21), regression analysis was conducted (see table VI-33, and VI-34). The results of the regression analysis found $p = .015$, $\beta = .245$ ($r\text{-square} = .079$) for the effects of estimates of subjective norm on attitude toward alcohol warning messages from a public sector, and $p = .000$, $\beta = .350$ ($r\text{-square} = .129$) for the effects of estimates of subjective norm on attitude toward alcohol warning messages from a private sector. Thus, both effects were significant, and the degree of effects with respect to alcohol warning messages from a private sector is slightly higher than

alcohol warning messages from a private sector. Hypothesis 1c can be supported, but there have some limitations to measure the effects on attitude toward alcohol warning messages from a private sector. As already mentioned, this is because alcohol warning messages from a private sector have not been widely exposed in Korea until now.

H2c: *The effects of estimates of subjective norms on differential subjective norm are different depending on whether alcohol warnings are from a public sector or a private sector.*

Table VI-33 Regression Analysis to Estimate the Effects of ‘Estimates of Subjective Norm’ on ‘Attitude toward Alcohol Warning Messages from a Public Sector’

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.281 ^a	.079	.050	.97466492

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	7.753	3	2.584	2.720	.049 ^a
Residual	90.247	95	.950		
Total	98.000	98			

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

b. Dependent Variable: REGR factor score for attitude toward alcohol warning messages from a public sector

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.002	.098		.020	.984
REGR factor score for ‘estimates of subjective norm’	.246	.099	.245	2.483	.015

a. Dependent Variable: REGR factor score for attitude toward alcohol warning messages from a public sector

Table VI-34 Regression Analysis to Estimate the Effects of ‘Estimates of Subjective Norm’ on ‘Attitude toward Alcohol Warning Messages from a Private Sector’

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.360 ^a	.129	.102	.94766057

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	12.684	3	4.228	4.708	.004 ^a
Residual	85.316	95	.898		
Total	98.000	98			

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

b. Dependent Variable: REGR factor score for attitude toward alcohol warning messages from a private sector

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.009	.095		.093	.926
REGR factor score for 'estimates of subjective norm'	.351	.096	.350	3.658	.000

a. Dependent Variable: REGR factor score for attitude toward alcohol warning messages from a private sector

d) Hypothesis Testing of H2d

Based on factor coefficients from factor analysis of estimates of subjective norms, attitude toward alcohol warning messages that address 'self-related issues', and attitude toward alcohol warning messages that addresses 'others-related issues' (see table VI-5, VI-24 and VI-25), regression analysis was conducted (see table VI-35, and VI-36). The results of the regression analysis found $p = .074$, $\beta = .181$ ($r\text{-square} = .045$) for the effects of estimates of subjective norm on attitude toward alcohol warning messages that address 'self-related issues', and $p = .000$, $\beta = .400$ ($r\text{-square} = .259$) for the effects of estimates of subjective norm on attitude toward alcohol warning messages that address 'others-related issues'. The effects on attitude toward alcohol warning messages that address 'self-related issues' were not significant while the effects on attitude toward alcohol warning messages that address 'others-related issues'. Thus, Hypothesis 2d is supported.

H2d: *The effects of estimates of subjective norms on differential subjective norm are different depending on whether alcohol warnings address 'self-related issues' or 'others-related issues'.* - **Accept**

Table VI-35 Regression Analysis to Estimate the Effects of ‘Estimates of Subjective Norm’ on ‘Attitude toward Alcohol Warning Messages that address ‘Self-related issues’

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.213 ^a	.045	.015	.99229623

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	4.458	3	1.486	1.509	.217 ^a
Residual	93.542	95	.985		
Total	98.000	98			

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

b. Dependent Variable: REGR factor score for attitude toward alcohol warning messages that address self-related issues

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.004	.100		.042	.966
REGR factor score for ‘estimates of subjective norm’	.181	.100	.181	1.806	.074

a. Dependent Variable: REGR factor score for attitude toward alcohol warning messages that address self-related issues

Table VI-36 Regression Analysis to Estimate the Effects of ‘Estimates of Subjective Norm’ on ‘Attitude toward Alcohol Warning Messages that address ‘Others-related issues’

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.509 ^a	.259	.236	.87419998

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	25.399	3	8.466	11.078	.000 ^a
Residual	72.601	95	.764		
Total	98.000	98			

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

b. Dependent Variable: REGR factor score for attitude toward alcohol warning messages that address others-related issues

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.005	.088		.056	.955
REGR factor score for 'estimates of subjective norm'	.402	.089	.400	4.529	.000

a. Dependent Variable: REGR factor score for attitude toward alcohol warning messages that address others-related issues

e) Hypothesis Testing of H2e

Based on factor coefficients from factor analysis of estimates of subjective norm, and attitude toward alcohol warning messages that address 'health-related issues' (see table VI-5, and VI-28), regression analysis was conducted (see table VI-37). The results of the regression analysis found $p = .011$, $\beta = .250$ ($r\text{-square} = .108$) for the effects of estimates of subjective norm on attitude toward alcohol warning messages that address 'health-related issues'. Results showed $p < .05$, thus, alternative hypotheses H2e was accepted.

H2e: *Estimates of subjective norms significantly affect attitude toward alcohol warning messages that address 'health-related issues' based on subjective norm. – Accepted*

Table VI-37 Regression Analysis to Estimate the Effects of 'Estimates of Subjective Norm' on 'Attitude toward Alcohol Warning Messages that address 'Health-related issues'

1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.328 ^a	.108	.079	.95948842

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

2) ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	10.541	3	3.514	3.817	.012 ^a
Residual	87.459	95	.921		
Total	98.000	98			

a. Predictor: (Constant), REGR factor score for estimates of subjective norm

b. Dependent Variable: REGR factor score for attitude toward alcohol warning messages that address others-related issues

3) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.001	.096		.006	.995
REGR factor score for 'estimates of subjective norm'	.251	.098	.250	2.579	.011

a. Dependent Variable: REGR factor score for attitude toward alcohol warning messages that address health-related issues

VII. Conclusion

7.1 Discussion

The proposed model for this study measured diverse effectiveness of alcohol warning (or moderation) messages. As mentioned earlier, this study measured 1) the relationship between attitude estimates concerning reduction or moderation of alcohol consumption and differential attitudes toward alcohol warning messages; 2) the relationship between estimates of subjective norms concerning reduction or moderation of alcohol consumption and differential subjective norm (i.e., attitude toward alcohol warning messages based on subjective norm); 3) the relationship between differential attitudes toward alcohol warning messages and differential intention to switch alcohol consumption attitude; 4) the relationship between differential subjective norm and differential intention to switch alcohol consumption attitude; 5) the difference between the effects of differential attitude on differential intention and the effect of differential subjective norm on differential intention; and 6) the relationship between differential intention to switch alcohol consumption attitude and behavioral change to reduce or moderate alcohol consumption.

The result of this study indicated that alcohol warning messages positively affected consumer attitudes toward reduction or moderation of alcohol consumption. The relationship between attitude estimates concerning reduction or moderation of alcohol consumption and differential attitudes toward alcohol warning messages was significantly positive, the relationship between estimates of subjective norms concerning reduction or moderation of

alcohol consumption and differential subjective norm (i.e., attitude toward alcohol warning messages based on subjective norm) was significantly positive, the relationship between differential attitudes toward alcohol warning messages and differential intention to switch alcohol consumption attitude was significantly positive, the relationship between differential subjective norm and differential intention to switch alcohol consumption attitude was significantly positive, and the relationship between differential intention to switch alcohol consumption attitude and behavioral change to reduce or moderate alcohol consumption was significantly positive. Also, the degree of effects of differential attitude on differential intention is higher than that of effects of differential subjective norm on differential intention.

Additionally, this study measured 1) the effects of belief and evaluation on differential attitude toward 8 types of alcohol warning messages; and 2) the effects of estimates of subjective norms on attitude toward 8 types of alcohol warning messages. The findings of this additional study indicated that the perception level of 8 types of alcohol warning messages was different depending on certain situations.

The effects of attitude estimates on attitude toward alcohol warning messages was different depending on whether alcohol warning messages address positive reinforcement or negative reinforcement, whether the alcohol warning messages address one-sided message or two-sided message, whether the alcohol warning messages are from a public sector or a private sector, and whether alcohol warning messages address self-related issues or others-related issues. Also, attitude estimates significantly affect attitude toward alcohol warning messages that address health-related issues. Through this test, this paper proved the effects of belief and evaluation on alcohol warning messages that address negative reinforcement, or alcohol warning messages that address health-related issues were more significant than others.

The effects of estimates of subjective norms on attitude toward alcohol warning messages were different depending on whether alcohol warning messages address positive

reinforcement or negative reinforcement, whether the alcohol warning messages that address one-sided message or two-sided message, whether the alcohol warning messages are from a public sector or a private sector, and whether alcohol warning messages address self-related issues or others-related issues. Also, estimate of subjective norm positively affect attitude toward alcohol warning messages that address health-related issues. With respect to the effects of estimates of subjective norms on attitude toward alcohol warning messages, this paper proved that the effects of estimates of subjective norm on attitude toward alcohol warning messages that address other-related issues were more significant than others.

Many of participants, however, perceived the exposure level of alcohol warning messages was low. Among those perceived, only 2% of respondents mentioned that they perceived the alcohol warning or moderation message with higher level. Given that alcohol warning messages positively affected consumer attitudes toward reduction or moderation of alcohol consumption, government agents or regarding parties need to broadly revise the current regulation toward alcohol consumption to enhance effectiveness. They should study various types of alcohol warning messages, and try to increase the exposure level of alcohol warning messages effectively. Overall, managerial implications for alcohol warning and advertising polices are significantly needed, as one of the most important long-term plan.

7.2 Limitation of Study

Despite these findings, there remain some limitations to this study. At first, the causal analysis was not conducted appropriately. Although this study adopted regression and factor analysis of multivariate statics, the relationship of causal analysis was vague. This issue should be considered in future research. Second, it was not clearly classified to measure the difference between the effects of alcohol moderation advertisements from a public and alcohol warning advertisements from a private. This is because alcohol moderation advertisements from a private are not widely exposed to respondents in Korea. Third, the

survey was conducted toward only people who currently live in Korea, so the findings of this study would not always be matched in other countries with different cultural backgrounds. In order to draw more general results, the survey should be conducted in various other nations in future studies. Fourth, this study applied qualitative research results from in-depth interview to examine attitudes toward alcohol warning messages while the purpose was not to test hypotheses. However, it would be also applied to investigate attitudes toward alcohol warning messages by increasing number of sample size and also by applying more in-depth approaches such as more detailed research questions. Therefore, comparing results from both qualitative and quantitative research might provide interesting and meaningful results. Lastly, sample size was small, so it was not easy to grasp average people's alcohol consumption behavior in Korea. For further studies, many of subjects and issues will be studied.

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