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Consumers' Optimistic Bias and Responses to Risk Disclosures in Direct-to-Consumer (DTC) Prescription Drug Advertising: The Moderating Role of Subjective Health Literacy

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I am submitting herewith a dissertation written by Hoyoung Ahn entitled "Consumers' Optimistic Bias and Responses to Risk Disclosures in Direct-to-Consumer (DTC) Prescription Drug Advertising: The Moderating Role of Subjective Health Literacy." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Communication and Information.

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ABSTRACT

Despite a substantial body of research in direct-to-consumer advertising (DTCA) for prescription drugs, what is missing from much of the existing discussion on DTCA disclosure is a focus on the roles of consumers' individual motivation and ability factors in processing risk disclosures. Guided by the Elaboration Likelihood Model (ELM) and the Motivation-Ability- Opportunity (MAO) framework, this research focuses on the roles played by individuals' optimistic bias as motivation and ones' subjective health literacy as ability to process and evaluate risk disclosures in DTCA. Specifically, this study examined whether the degree of optimistic bias affected consumers' risk disclosure processing in terms of their attention to risk disclosures, their perceived importance of risk disclosures, and their intentions to seek more risk information through alternative sources. Further, the study examined whether the relationship between the optimistic bias and the risk disclosure-related perceptions and intentions was moderated by consumers' subjective health literacy. By analyzing online survey data collected among the U.S. adult population (N= 404), the study revealed that: (a) consumers who showed a tendency to believe they were at lesser risk of experiencing side-effects of prescription drugs than their peers were less likely to pay attention to risk disclosures, less likely to perceive reading the risk disclosures as being important, and less likely to seek further information about a prescription drug's side-effects; (b) the relationship between optimistic bias and intentions to seek prescription drug risk information was stronger for consumers with high subjective health literary than for those with low subjective health literacy. In addition to theoretical implications, practical implications and recommendations are provided in light of a necessity to develop DTCA disclosure messages that communicate well with consumers.

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CHAPTER I
INTRODUCTION

In the United States, direct-to-consumer advertising (DTCA) for prescription drugs represents one of the fastest growing forms of pharmaceutical marketing (Liang & Mackey, 2011). The expenditure on DTCA increased over fivefold from around $800 million in 1996 to $4.8 billion in 2008 (Thaul, 2009). In 2008, DTCA was one of the biggest ad spending groups following automobiles (Nielsen Company, 2009), although the expenditure slipped to $4.1 billion in 2010 due to the economic recession (TNS Media Intelligence, 2011).

One of the main objectives of DTCA is to inform and to educate consumers about prescription drugs. Since 1990s, drug manufacturers have changed their marketing attention from physicians to consumers (IMS Health, 2003a). The increased commitment to DTCA has led consumers to be aware of drug advertising and gain more interest in DTC-promoted drugs and health conditions (Huh, DeLorme, & Reid, 2004). Also, drug companies have used DTC advertising as a promotional tool to increase a drug's sales. There is much evidence suggesting that frequent exposure to DTC advertising is often positively associated with consumer's increased attention to, and desire for, the advertised drug (Kravitz et al., 2005). Gregory J. Glover, representative of the Pharmaceutical Research and Manufacturers of America, testified in a congressional hearing that "Drug companies rely on DTC advertising to stimulate demand and to increase sales for the products" (Glover testimony, 2001, p. 5).

Another important goal of DTCA for manufacturers and advertising practitioners is to persuade consumers to talk more about drugs with their health professionals,

because patients need a doctor's prescription to purchase a DTC-promoted drug (Hood, 2009). For this reason, DTC advertising is designed to drive consumers to request doctors to prescribe drugs for them. There is evidence that this "pull" tactic to empower consumers has been effective. For instance, research shows that doctors are more likely to be asked to prescribe the advertised drug by consumers who are engaged with DTC advertising than by those who are less involved with DTC advertising (Kaiser Family Foundation, 2001b). Consumers tend to actively talk to physicians to request advertised drugs (Kravitz et al., 2005) and do not easily give up until obtaining the requested drug (Davis, 2000). The fact that DTCA is designed to promote a shared decision making process between consumers and doctors is a unique characteristic of prescription drugs as a product category (Menon, Deshpande, Perri III, & Zinkhan, 2003; Huh & Becker, 2005).

Researchers, policy makers, health professionals, and other stakeholders tend to have strong opinions about the social value of DTCA. Proponents point out that DTC advertising provides valuable medical information (Pfizer, 2001), motivates consumers to actively interact with physicians (Auton, 2004; Donohue, 2006; Calfee, 2002), educates individuals about health conditions, medications, symptoms, and treatments (Perri & Nelson, 1987; Sheffet & Kopp, 1990), and helps reduce the overall cost of prescription drugs (Calfee, 2002). On the other hand, opponents argue that DTCA has led consumers to purchase unnecessary drugs and therefore inflates healthcare costs (Peyrot, Alperstein, Doren, & Poli, 1998), forced people to ignore alternative treatment options with fewer side-effects, and negatively affected the doctor-patient interaction (Thaul, 2009; Findlay, 2001; Lexchin & Mintzes, 2002; Wolfe, 2002). They further argue that the complex

medical information and unbalanced presentation between promotional messages and warning information could confuse consumers and lead them to have misperceptions about health issues, which could also lead to request for unnecessary drugs (Bell, Wilkes, & Kravits, 2000; Young & Cline, 2005).

Risk Disclosures and FDA Regulations regarding 'Fair-Balance'

Prescription drugs are distinct from other consumer products. An inappropriate use of prescription drugs may lead consumers to experience serious, including life-threatening consequences on one's health. Therefore, since the late 1980s when pharmaceutical companies started advertising prescription drugs directly to consumers, drug ads are required by the Food and Drug Administration (FDA) to include both promotional claims and risk information (FDA, 1999). That is, DTCA is required to be a two-sided message. While the claims usually relate to the drug's benefit information, the risk disclosure section includes the medication risks and possible side-effects. The disclosure information is often presented as a brief summary (i.e., all of the risk information) in print ads and major statements (i.e., most important risks) with adequate provision (i.e., giving additional sources to find full drug-related information, including all risks) in broadcast ads (FDA, 2009).

The FDA requires that DTCA containing promotional benefits should disclose risk information, and keep a *balance* between the amount and amount of benefits and risks (Aikin, O'donoghue, Swasy, & Sullivan, 2011). According to the industry guideline drafted by the FDA, pharmaceutical companies should follow the fair-balance principle when advertising prescription drugs (Thaul, 2009). This means that the content and presentation of a drug's most important risks must be reasonably similar to the content

and presentation of its benefits. This does not mean that equal space must be given to risks and benefits in print ads, or equal time to risks and benefits in broadcast ads. The amount of time or space needed to present risk information will depend on the drug's risks and the way that both the benefits and risks are presented (FDA, 2009).

Further, the FDA emphasizes that the presentation of risks and benefits of drugs must be "understandable, accurate, and up-to-date" (Thaul, 2009). Similarly, in 2005, the Pharmaceutical Research and Manufacturers of America (PhRMA), a trade group that represents the pharmaceutical industry, introduced guidelines for DTC self-regulation, with focus on the four principles of "education, information, clarity" (Royne & Myers, 2008, p.64). The overall purpose of all these guidelines is to protect consumers from being misled or confused by DTCA information (Gareau, 2000).

The Current Issues in Risk Disclosures

Health professionals, researchers and consumer advocacy organizations have, however, found a number of violations of FDA guidelines for DTC advertising, and expressed concerns about their potential impact on consumer health (e.g., Kaphingst & DeJong, 2004; Wogalter, Dejoy, & Laughery, 1999; Royne & Myers, 2008). Researcher found that that the benefit information presented in print DTC ads often outweighs information about drug's side-effects (Aitken & Holt, 2000; Kopp & Bang, 2000; Lexchin & Mintzes, 2002) in light of prominence. In addition, although the FDA has recommended the use of audience-friendly language in DTC ads, studies report the textual information presented in DTC pharmaceutical materials is too technical and difficult for the general public to understand (e.g., Kaphingst & DeJong, 2004). Sheehan (2006) also argued that DTC advertisers tend to use controversial tactics, such as usage of

jargon to attenuate the accessibility of risk information, which can potentially mislead consumers to believe that the advertised drug is less harmful than it is. In terms of DTC TV commercials, research revealed that a popular way of promoting a drug is to depict its benefits with various overwhelming emotional appeals and narrative stories while risk information is relatively presented with dull and/or complex manner that is unlikely to draw attention from consumers (Frosch, Krueger, Hornik, Cronholm, & Barg, 2007).

Thus, the current practices of DTCA have potential to mislead consumers to receive insufficient risk information (Royne & Myers, 2008) and overestimate the positive effects of advertised drugs, and this could inhibit their informed choice about health problems (Kavadas, Katsanis, & LeBel, 2007). Further, it is possible that consumers' attitudes toward an advertised drug formed from this misperception could pressure physicians into prescribing inappropriate treatments and generate unnecessary discussion between consumers and doctors (Mackert, 2011).

What is more, it is important to note that there are certain consumers who are susceptible to the limitations in the current practice of risk disclosures in DTCA. The presence of risk disclosures in DTCA assumes that consumers are likely to have adequate ability to understand risk information and take it into consideration in their health decision-making (Calfee, 2002). Cox and his colleagues (Cox, Cox, & Mantel, 2010) further mentioned that "many models of heath care decision making can be classified as expectancy models, which imply that consumers are rational in their decision making and use a version of weighted sum model to process and use available information" (p. 31). However, consumers are not always rational in making their decisions (Rabin, 1998) and, further, their motivation and ability to process information could vary (e.g., Cacioppo &

Petty, 1984). Accordingly, the underlying assumption embedded in risk disclosures that consumers are rational enough to process and understand health information adequately and they are able to make sound healthcare decisions (e.g., Calfee, 2002) has yet to be tested.

Studied Areas

DTC advertising has impact on consumers' decisions about drugs, the relationship between doctors and patients and healthcare costs to some extent. Also, the constant arguments between supporters and critics of DTC advertising, the increased DTC ad spending and pharmaceutical manufactures' sales growth have led researchers to answer important questions regarding DTCA's effects. For the most part, research in DTCA has primarily focused on the ad category's effects on consumer's perceptions, attitudes and intention. Some DTCA research has also dealt with doctor-patient relationships.

Researchers' interest in risk disclosures in DTCA, centers around comparing the effects of varied formats (e.g., amount, length, specificity, etc.) of risk presentation on consumer response to such information (e.g., Morris, Mazis, & Brinberg, 1989; Tucker & Smith, 1987; Menon et al., 2003). For example, the study by Morris (1984) compared different formats in warning information in both print and TV ads. The study has provided a basis for researchers to investigate manipulation effects of risk disclosures on consumers' recall, attitudes, and behavioral intentions (Kopp & Bang, 2000). Morris, Brinberg, and Plimpton (1984) presented drug ads with varying amounts of benefit and risk information, various locations where risks are disclosed, and different sources (magazines vs. doctors' leaflet) to participants. Results suggested that the amount and placement of risk information and the source of such information all influenced

consumers' interpretation of the drug. Similarly, risk specificity, amount of risk information, and emphasis of risk information (Morris, Ruffner, & Klimberg, 1985) in TV ads were manipulated to examine how consumers evaluate commercials and drugs. The specificity and amount of risk information tended to influence consumers' attitudes toward the ads and their perceptions of the drug. In addition, completeness of risk information has been studied to investigate its relationship with consumers' perceptions of the drug's appeal and safety (Davis, 2000). Consumers rated drug ads with incomplete risk information more positively than those with a more complete presentation. Consumers' risk awareness and knowledge could be influenced by the length and specificity of risk information (Morris, Mazis, & Brinberg, 1989).

Understudied Areas

To date, research in DTCA disclosure effects has extensively focused on disclosure presentation (i.e., amount, format and vividness) on consumers' awareness and knowledge about the risks of drugs and attitudes toward the drug ads (e.g., Davis, 2007; Morris et al.,1989). Despite a substantial body of research, what is missing from much of the existing discussions on DTCA disclosure is a focus on the roles of consumers' individual characteristics in processing risk disclosures (Deshpande, 2004). Kavadas (2003) indicated that there is a lack of studies explaining the differences in consumers' processing of DTCA risk disclosures in light of audience characteristics. Celsi and Olson (1988) also pointed that most studies in consumers' information processing have focused on how they react to product attributes and how they form their brand attitudes while seldom dealing with consumer's motivation, abilities and opportunities to process the information. Hence, in a context of DTCA, it is important to examine how consumers'

information processing is influenced by their motivation and ability to process, specifically, risk information in DTCA.

The Objectives of the Study

The primary purpose of the current study is to examine the role of optimistic bias about the likelihood of experiencing side-effects of prescription drugs in influencing consumers' processing of, and responding to, risk disclosures in DTCA. Specifically, this study is designed to investigate whether the degree of optimistic bias affects consumers' risk disclosure processing in terms of their attention to risk disclosures, their perceived importance of risk disclosures, and their intentions to seek more risk information through alternative sources. The second objective is to examine whether the relationship between optimistic bias and consumers' processing and evaluation of risk disclosures in DTCA is moderated by their subjective health literacy.

Research suggests that people tend to mistakenly believe that they have lower chances of experiencing a negative event related to their health (Weinstein, 1980) and this kind of cognitive tendency could result in serious health problems (Sheer & Cline, 1994). However, relatively little attention has been paid to the self-positivity and its role in assessing risk disclosures of DTCA. Further, although several researchers (e.g., An & Muturi, 2011) have suggested that one's subjective health literacy is one of the important characteristics in consumer processing of DTCA, there has been a paucity of research discussing the moderating role of consumers' subjective health literacy. When it comes to understanding how consumers respond to DTCA and drug's risks and side-effects, it is important to examine how the ability moderates the effects of motivation in facilitating or inhibiting consumers from accessing, understanding, and acting on the given information.

CHAPTER II
THEORETICAL FRAMEWORK

Optimistic Bias as Motivation to Process Risk Disclosures

Research in health beliefs reveals that one's health-related perceptions can influence changes in health behavior (Block & Keller, 1998). Especially, the literature on health behavior shows that people who tend to be overconfident in their susceptibility to health risks would not be persuaded by advertisements that deliver specific health risks or treatment information (Roth, 2003).

In the DTCA context, one's willingness to process risk disclosure information could depend on the extent to which a viewer has subjective beliefs toward the drug's risks. In some cases, consumers could optimistically evaluate the negative effects of the risks on them. The self positivity is referred as the *optimistic bias*. The optimistic bias is defined as the illusion of invulnerability or the mistaken belief that negative outcomes or events will less likely occur to themselves than to their peers (Weinstein, 1980). Consumers' varying levels of optimism about their vulnerability to drug risks could underestimate the level of their health risks.

While one of the DTCA's goals is to make consumers to pay attention to risk disclosures, the extent of being *optimistic* or *pessimistic* could predict their level of attention to risk information because the subjective belief could either activate or de-activate their *motivation* to process risk information (Taylor & Brown, 1988; Weinstein, 1980). The persuasion literature (Petty, Cacciopo, & Schumann, 1983) suggests that individual motivational factors such as involvement can predict level of cognitive elaboration leading to persuasion. The literature defines *motivation* as "heightening

arousal so that inactive audiences are ready, willing, interested, or desire to process a message" (Hallahan, 2000, p. 466). Often it has been considered goal-driven arousal (Park & Mittal, 1985) or message processing goal (Andrews, 1988).

Some insights as to how motivation affects the processing goal can be also retrieved from the Motivation Opportunity and Ability (MOA) framework. The MOA framework posits that consumers' motivation, opportunity and ability are the antecedents to one's level of processing advertising information (Batra & Ray, 1986; Curry & Moutinho, 1993; Maclnnis, Moorman, & Jaworski, 1991; Poiesz & Robben,1996). Among them, motivation denotes an inner state of willingness to acquire or dispose information and it further serves as an activator of a goal-relevant behavior. Hence, those consumers who have high motivation to achieve a goal (e.g., processing an ad) are likely to devote more efforts to processing the ad, attempt to pay more attention to the information in the ad, and are more willing to comprehend and evaluate it analytically. Many researchers have also revealed that the level of consumer engagement with persuasive communication is associated with their level of information processing motivation and attention (Celsi & Olson, 1988; Petty & Cacioppo, 1986). For example, a low processing motivation represents a low chance of paying attention to a message (Hallahan, 2000).

From the discussion above, it is expected that consumers with a high level of optimism toward their likelihood of having negative outcomes from advertised drugs (e.g., side-effects) will have relatively low motivation to process information presented in risk disclosures due to the absence of a strong goal of seeking risk-related information. Also, those with high optimistic bias are not likely to attentively process the risk

information, so that they tend to avoid weighing their attentions to the risk information. Thus, the state of low motivation can prevent consumers from being willing to engage in a goal relevant activity (Roberts & Maccoby, 1973) and the unwillingness can lead them to believe that the drug's potential risks as insignificant and irrelevant. Reversely, consumers with relative pessimism about the drug's risks are expected to actively respond to the risk disclosures.

Moreover, Weinstein (1989) suggests that people who perceived that they had a lower risk of having a certain disease tend to be less willing to seek preventive or remedial intentions. In other words, optimistic bias plays a significant role of mitigating preventive or remedial health behaviors. Although the concept of optimistic bias has not been extensively integrated into DTCA research, Park and his colleagues (2012) made an initial effort in examining if more optimistically biased consumers are more likely to avoid seeking information about the health problem related to depression. They revealed similar results with Weinstein's study (1989) that there was a negative relationship between optimistic bias and intention to information-seeking. Based on the discussion above, it is hypothesized as follows.

> **H1:** Optimistic bias will be negatively associated with risk disclosure-related responses. More specifically, consumers with a lower level of optimistic bias about the likelihood of experiencing side-effects of prescription drugs are (a) more likely to pay attention to risk disclosures, (b) more likely to perceive that the risk disclosures are important to them, and (c) more likely to show intentions to seek further risk information through alternative sources than those with a high

optimistic bias about the likelihood of experiencing side-effects of prescription drugs.

Moderating Role of Subjective Health literacy as Ability to Process Risk Disclosures

The expectation that persons' optimistic bias about experiencing side-effects of prescription drugs could influence their evaluations and responses to DTCA's risk disclosures engenders the need to examine factors that may facilitate or inhibit such a relationship, because identifying such moderating components will shed light on better understanding how consumers with different levels of motivation and ability process DTCA disclosure differently. A substantial amount of research (Betmman & Park, 1980; Batra & Ray, 1986; Davis, 1973; Petty & Cacioppo, 1986; MacInnis & Jaworski, 1989, Zaltman & Dunca, 1977) proposes that differences in the degree to which one is able or incapable of processing information appropriately could adjust the magnitude of persuasion effects. Among potentially relevant variables, the present study focuses on the moderating role of subjective health literacy, because the literature suggests that the level of one's ability to process information can moderate the effects of motivation to process a message (MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986).

Subjective Health Literacy.

While the amount of DTCA in the U.S is growing every year, one of the major concerns is if DTCA's disclosure information can be properly understood by consumers who have relatively low *ability* to process health information. Surveys showed that 53% of adults in the US had "intermediate" health literacy, 22% had "basic" and 14% had "below basic" health literacy(Institute of Educational Sciences, 2006). In other words, about one-third of U.S. adults fall under the category of low health literacy (National

Center for Education Statistics, 2003). In this regard, much evidence has pointed out that DTCA print ads have a great amount of 'wordy and chaotic' style (Krisanits, 2005) and they tend to require high ability to read and understand the content of DTCA information (Kaphingst & Dejong, 2006). Coupled with the complex nature of medical information presented in DTCA, consumers with low ability to process health information are at risk because they are less able to comprehend the DTCA drug information. Further, this inability can cause unwillingness to understand the content of risk information and it can also lead them to make inappropriate drug-related health decisions. Young and Cline (2005) suggested that health literacy is one of the prior conditions necessary for consumers to comprehend the medical contents of ads. Ratzan and Parker (2006) also emphasized that health literacy is considered to be a tool to help consumers use medical information to make sound health decisions (Ratzan & Parker, 2006). Health literacy is defined as "the degree to which individuals have the *ability* to obtain, process, and understand basic health information and services needed to make appropriate health decisions" (Nielsen-Bohlman, Panzer, & Kindig, 2004, p. 2). In the MOA (Motivation, Opportunity, and Ability) framework, *ability* often refers to consumers' skills or proficiencies in interpreting a message and it is considered one of the important determents of advertising processing (Batra & Ray, 1986; Hallahan, 2000; MacInnis & Jaworski, 1989).

Of particular interest in this study is to examine the role of individuals' *subjective* health literacy in their processing risk disclosures in DTCA, not objective health literacy, because one's subjective perception is an important predictor of health behavioral intention (An, 2007; Rock, Ireland, Resnick, & McNeely, 2005). DeJoy (1999) stressed

that ‘person’s *subjective* evaluation of the situation (risk-embedded decision) is more important than the objective level of risk’ (p.190). Brucks (1985) also considered ones’ subjective ability to process information as a strong motivator of seeking information. Research shows that people tend to be overconfident in evaluating their health and they are less likely to perceive the risks to be personally relevant (i.e., Jaccard, Dodge, & Guilamo-Ramos, 2005; Weinstein, 1980). In this study, subjective health literacy is operationalized as how individuals perceive their ability in understanding and using medical information.

When it comes to explaining the relationship between one’s ability to process health information and its outcomes, research indicates that individuals’ health behaviors are directly related to one’s confidence in their ability to execute health behavior, often called self-efficacy (Bandura, 1986). The self-efficacy serves an important role in predicting various health behaviors (Conner & Norman, 1998). For instance, those who have low self-efficacy are only able to undertake undemanding tasks due to lowered competence whereas individuals who have high self-efficacy beliefs are better able to perform and handle more challenging behaviors (Berry & Howe, 2005). In line with consumers’ response to DTCA, self-efficacy is also considered as playing a significant role. Hoek and Maubach (2007) noted that self-efficacy in DTCA represents respondents’ ability to process and comprehend DTCA information, and their competence or motivation to communicate with their doctor about the advertised drug. Research indicated that those who have relatively low ability to processing health information are more likely to perceive associated-risks higher than those who have high health literacy (Ancker, & Jaufman, 2007) because of their lowered self-efficacy (Wagner, Semmler,

Good, & Wardle, 2009). Also, the MOA framework explains that consumers who have high ability are more likely to interpret an ad or product-related information efficiently and systematically because they tend to have "availability and accessibility of brand-relevant knowledge structures that provide the foundation for processing ability" (Maclnnis, Moorman, & Jaworski, 1991, p.34). For example, experts, those who have high ability to process product attributes, tend to better able to process more complex information than novices whose processing focus is limited to product benefits only (Tversky & Kahneman, 1973).

Researchers have begun recognizing the potential impact of DTCA risk information on consumers with inadequate health literacy (e.g., DeLorme & Huh, 2009; Kaphingst, Rudd, DeJong, & Daltroy, 2004; Wolf et al., 2005; Park & Ahn, 2012; Markert, 2011). Especially, An and Muturi (2011) examined consumer perceptions of DTCA and the role of subjective health literary. They interviewed 170 older adults to examine the relationship between subjective health literacy and the educational value of DTC ads. The study revealed that those with low subjective health literacy tended to evaluate negatively the effectiveness of delivering key medial components in DTCA. They argued that this tendency would be attributed to their limited ability to process DTCA information, which prevents them from sufficiently understanding the health information in DTCA.

Optimistic Bias and Subjective Health Literacy.

While one's motivation is a driving force of behavior, it can't lead the action without ability (Cummings & Schwab, 1973; Siemsen, Roth, & Balasubramanian, 2008). The Elaboration Likelihood Model (ELM) offers a comprehensive framework about

cognitive processing to understand the process of individuals' thinking about persuasive messages (Perloff, 2010). Basically, the ELM suggests that people's attitudes or judgments can be altered under various conditions of cognitive elaboration (high to low) (Petty & Cacciopo, 1984). Specifically, related to processing of advertising, the ELM directly posits that ability and motivation moderate the level of cognitive elaboration and the nature of persuasion that can occur along an elaboration continuum. Thus, motivation and ability collectively determine the amount of message elaboration (Petty, Cacioppo, & Schumann, 1983). If consumers are both motivated to process a message and are able to comprehend a given message, they are more likely to elaborate upon it leading to attitude formation or attitude change (persuasion). If consumers are either not motivated or unable to process a message, then peripheral cues in the advertising environment (e.g., color, layout) may influence attitude formation or persuasion. The central route (as opposed to the peripheral route), dominated by message argument processing, will be more effective in creating sustained persuasion (Cacioppo & Petty, 1984). This results from greater attention to the message and scrutiny of the main arguments of the given message (Andrew, 1988). If either motivation or ability or both is lacking, then, processing related to the main arguments for the use of a product as advertised is significantly decreased.

Additionally, previous consumer research has suggested that motivation and ability are important predictors of attitudinal and behavioral changes (Davis, 1973; Zaltman & Dunca, 1977; Petty & Cacioppo, 1986) and the components have a potential to greatly affect persuasion and resistance. MacInnis and Jaworski (1989) also indicated that "the impact of motivation on attention, processing capacity, operations, and their

associated levels of processing is moderated by processing ability and opportunity" (p.6). Petty and Cacioppo (1996) argued that attitudes shaped or altered under high elaboration conditions (central route) tend to reflect stronger temporal persistence and better resistance to the counter-persuasion attacks compared with attitudes shaped or changed under low elaboration condition reflecting a peripheral route (Haugtvedt & Petty, 1992). Research also stressed the interaction effects of ability and motivation in processing information. For examples, people who have relatively high motivation and high ability tend to show the highest information processing in terms of increased consumers' levels of attention to and better comprehension of advertisements (Betmman & Park, 1980; MacInnis & Jaworski, 1989; Maheswaran & Sternthal, 1990).

Based on the literature discussed, it is expected that consumers who have low optimistic bias (high motivation to process risk disclosures) and have high subjective health literacy (high ability to understand the content of risk disclosure) would pay more attention to the risk disclosures, more likely to perceive that the risk information is important to them, and more willing to search further information than the opposite groups. Thus, the discussion leads to the following prediction:

> **H2:** The optimistic bias for drug's side-effects and subjective health literacy will have an interaction on the extent of processing risk disclosures, such that the association between the optimistic bias and dependent variables will be more negative when consumers' level of the subjective health literacy is high than when the subjective health literacy is low.

CHAPTER III
METHOD

Sample

To recruit respondents from various demographic backgrounds, a nationwide survey was used through an online consumer survey panel. A convenience sample of 412 US consumers was initially obtained from a market research specialized firm, Zoomerang.com. Four surveys were removed because over 10% of the questionnaire items in the survey were not completed, resulting in a sample of 408 respondents. In this study, multiple regression analysis was used to test the proposed hypotheses. Before testing them, it is important to detect outliers and influential cases to meet the statistical assumptions of multiple regression. The Casewise Diagnostics detected four cases with Standardized Residual values over 3. Also, these four cases were judged as influential cases with values of Cook's distance that are greater than .0098 (4/408=4/sample size). Thus, the four cases were pulled out of the sample cases for the final sample size of n= 404.

The sample contained diverse demographic backgrounds. The average respondent age was 58 (*SD* = 10.9), ranging from 37 to 85. The sample was composed of 44.6% women and 55.4% men. In terms of age classification, 59.4% of the sample was mature adults (45-64) and 31.2% were older adults (65 or older) with only 9.4 % being younger adults (37-44). In terms of ethnicity, the majority (92.3%) were whites, followed by Asian (3.5%) and African Americans (2.2 %). All respondents reported they had used prescription drugs in their lives. Fifty nine percent of the respondents fell into an annual household income of $25, 000 to $99, 999 while one-fifth of the sample (20. 8%)

reported $25,000 or less. Nineteen and three tenths percent indicated $100,000 or more household income. In terms of education level, respondents had a college degree (27.0%) and graduate degree (18.6%). Of respondents 29.7% completed some college, but no degree and 7.9 % of respondents completed some graduate school, but no degree. Only two respondents indicated having less than a high school degree.

Procedure

A recruiting email provided by Zoomerang.com was sent to the members of the Zoomerang on-line panel. The members were asked to click the URL and they were invited to the log-on page of the survey. Initially, IRB (Institutional Review Board) was approved the voluntary trait of this study to fulfill participants' protections from any unethical approach (Appendix A). The consent was provided in the website. With their agreement upon the study, participants participated in the survey. The entire survey took about fifteen minutes to complete.

The survey began with an explanation of a "prescription drug" compared to over-the-counter drugs and examples of prescription medicine. Then, the instrument first measured respondents' personal experience with prescription drugs. It was measured by asking respondents, "Have you ever taken a prescription drug?" Respondents were asked to mark with "yes", "no", or "Don't' know". The purposed of the question was to screen out those who had never taken a prescription drug. The survey proceeded in the order of two independent variables such as optimistic bias about the likelihood of experiencing side-effects of prescription drugs, and subjective health literacy. Before measuring variables related to risk disclosures, sample of DTC ads and brief summaries were given in the survey. Among many DTC drug ads, Seroquel XR (depression medication) was

randomly chosen. There were two ad images about benefit claims of Seroquel XR and two pages of brief summaries about the drug's risks and side-effects. Each image was inserted in a small size, but respondents could zoom in by clicking the images. Every respondent was asked to see all of the ads. Also the following instructions were provided.

> "In a prescription drug magazine ad, health risks and side effects of the drug are presented in smaller print on separate pages commonly named "brief summary" or "important information." These "brief summaries" frequently occupy from one half to a full page, printed at the end of a multi-page magazine ad. We've provided an example of a prescription drug ad so you can understand the type of advertising we are exploring in this research study. Please be aware that the questions in this survey are NOT about this specific advertisement. This is ONLY an example of the basic format for various prescription drug ads and their brief summaries. As you answer the survey questions, please think about your own personal experiences with viewing magazine ads such as the one presented in our example".

Then, attention to risk disclosures, perceived importance of risk disclosures in making drug-related decision, intentions to seek more risk information through alternative sources and control variables including demographic variables were measured (Appendix B).

Measures

The instrument measured two independent variables (optimistic bias about the likelihood of experiencing side-effects of prescription drugs, and subjective health literacy) and three dependent variables (attention to the brief summary of risk disclosures,

the perceived importance of risk discourse in making drug-related decision, and intention to seek further information about drug's risks and side-effects) along with control variables.

Optimistic bias. Respondents rated their optimistic bias about the likelihood of experiencing side-effects of prescription drugs on a seven-point scale (1 = *far less likely*, 4 = *about the same likelihood*, 7 = *far more likely*) through Weinstein's (1987) item. Two items respectively dealing with minor and severe side-effects were developed. The question of optimistic bias about the likelihood of experiencing minor side-effects of prescription drugs was "Imagine that you take a prescription drug that you haven't tried yet, and saw advertised in a magazine. Then think of people your own age and gender. Compared with other people your age and gender, how would you rate your chances of experiencing minor side effects (such as drowsiness, dizziness, sleeping problems, minor fever, trouble swallowing, or itchiness) after taking the prescription drug?". The item of optimistic bias about the likelihood of experiencing severe side-effects of prescription drugs was "Imagine that you take a prescription drug that you haven't tried yet, and saw advertised in a magazine. Then think of people your own age and gender. Compared with other people your age and gender, how would you rate your chances of experiencing serious adverse reactions (such as respiratory tract infection, blurred vision, liver abnormalities, uncontrollable muscle movement, heart diseases, or thoughts of suicide) after taking the prescription drug?". Correlation analysis was performed to test the relationships between optimistic bias about the likelihood of experiencing minor and severe side-effects of prescription drugs. The analysis found that they were positively and significantly associated with each other (correlation coefficient = .65, P = .01). Thus,

responses to the two items were averaged to obtain a single index representing the extent of optimistic bias. Then, responses were reverse-coded, such that a high score stands for a strong optimistic (M = 4.40, SD = 1.16, α = .75).

Subjective health literacy. Respondents rated their subjective health literacy on a seven-item, 5-point scale (1= *never*, 3 = *sometimes*, 5 = *always*). The scales of two items dealing with confidence were anchored by '*not at all*' (1), '*somewhat*' (3) and '*extremely*' (5) (An & Muturi, 2011; Chew, Bradley, & Boyko, 2004).

1. How often are appointment slips written in a way that is easy to read and understand?

2. How often are medical forms difficult to understand and fill out?

3. How often do you have difficulty understanding written information your health care provider (like a doctor, nurse, or nurse practitioner) gives you?

4. How often do you have problems learning about your medical condition because of difficulty understanding written information?

5. How often do you have someone (like a family member, friend, hospital=clinic worker, or caregiver) help you read hospital materials?

6. How confident are you filling out medical forms by yourself?

7. How confident do you feel in following the instructions on the label of a medication bottle?

While majority of the items are worded negatively, responses to items representing positive ability or confidence (e.g., items 1, 6, and 7) were reverse-coded. Then, all items were reverse scored to be consistent with the other items' low to high

definition, such that a higher score indicates greater subjective health literacy (M = 4.05, SD = .64, α = .80).

Perceived attention to the risk disclosures. Respondents rated their levels of attention to the risk disclosures in DTC advertisements on a seven-point scale (1 = *not at all likely*, 7 = *very likely*) using the following question (Menon et al., 2003): "Imagine that you have a health problem and are reading a magazine ad for a prescription drug that treats the health problem, and you haven't tried it yet. How likely would you be to read the brief summary pages of the ad?" (M = 4.63, SD = 2.03).

The perceived importance of reading risk discourses. Respondents were asked to rate their beliefs in how much the risk information presented in DTC advertisements is important on a four-point scale (1 = *not important at all*, 2 = *not too important*, 3 = *somewhat important*, 4 = *very important*) using the following item (Delorme, Huh, & Reid, 2009): "When you see the ad, how important would it be to read the brief summary pages?" (M = 3.04, SD = .96).

Intention to seek further information about drug's risks and side-effects. Respondents rated the likelihood that they would be willing to engage in certain information-seeking behaviors regarding prescription drug's risks and side-effects. They rated the three statements, "I would like to learn more about the health risks and side effects of the drug", "When I come across other useful information about the health risks and side effects of the drug, I would like to retain it", and "I would like to use various alternative sources to get more information about the drug's health risks and side effects" on a seven-point scale (1 = *strongly disagree* , 4 = neither agree nor disagree, 7 = *strongly*

agree) (Huh, Delorme, & Reid, 2005). The three responses were averaged to construct a single index reflecting information-seeking behaviors (M = 5.50, SD = 1.17, α = .83).

Control variables

Several covariates that might confound the examined effects were also measured (Hair, Anderson, Tathan, & Black, 1998): skepticism toward DTC ad, familiarity with DTC ad, prior exposure to DTC ad and demographic variables. Those variables were indicated in previous studies that they have some external influences when examining consumers' perception and intentions to DTC ad (see An & Muturi, 2011; Huh, Delorme, & Reid, 2004; Park & Grow, 2007; Perri & Nelson, 1987). For example, the literature suggests that consumer's disbelief of advertising claims, often defined as advertising skepticism, is reported to affect advertising information processing (Obermiller & Spangenberg, 1998). Research found that skepticism is negatively associated with advertising responses such as attitude toward advertising, ad attentiveness, and ad informational usefulness (Obermiller, Spangenberg, & MacLachian, 2005). Similarly, Diehl, Mueller, and Terlutter (2007) demonstrated that consumers tend to disbelieve claims made in prescription drug advertising. While DTCA skepticism is defined as "the general tendency toward disbelief of advertising for prescription drugs" (Delorme et al., 2009, p. 296), research supports that more skeptical consumers exhibited less favorable attitude toward the source of health information (DeLorme et al., 2009) and less likely to consider DTC advertising important (Diehl et al., 2007). Respondents rated their levels of skepticism toward DTC ad on an eight-item, seven point scale (1 = *strongly disagree*, 7 = *strongly agree*) using the following questions (DeLorme et al., 2009): "Prescription drug advertising is truth well told," "Prescription drug ads generally present a true

product picture," "We can depend on getting the truth in most prescription drug advertising," "I am accurately informed by most prescription drug ads," "Prescription drug advertising is a reliable source of information," "Prescription drug advertising's aim is to inform the consumer," "Most prescription drug advertising provides consumers with essential information," and "Prescription drug advertising is informative." All items were reverse-coded, then averaged. Thus, higher values represent higher skepticism (M = 3.20, SD = .88, α = .95).

The literature suggests that consumers' evaluations of the advertised product are associated with their prior exposure to advertising (Menon & Raghubir, 2003) and their familiarity with advertising (Hawkins & Hock, 1992). Consumers can be exposed to DTC advertising through, not limited to, TV or Magazine or alternative information sources such as Internet or flyers. Thus, on a six-item, seven-point scale (1 = *never*, 7 = *very often)*, respondents rated their exposure to DTC advertising from various media outlets such as radio, newspapers, magazines, television, Internet, and other media sources including flyers, brochures, and outdoor by the question: In the past six months, how often have you seen, read, or heard prescription drug ads in each of the following media types? (Huh et al., 2005). The total DTC exposure index was an average point of six items (M = 3.44, SD = 1.42, α = .86).

Familiarity with DTC ads was measured on a six-item, seven-point scale (1 = *not at all familiar*, 7 = *extremely familiar*) by the following question: How familiar would you say you are with prescription drug ads in each of the following media types? Respondents also rated their familiarity with DTC advertising from various media outlets including radio, newspapers, magazines, television, Internet, and other media sources

such as flyers, brochures, and outdoor The total DTC familiarity index was an average point of six items (M = 3.11, SD = 1.47, α = .90).

Finally, demographic variables such as gender, age, education levels, and household income were measured and controlled as covariates.

Questionnaire Pretest

To identify questionnaire problems, a pretest was conducted with a convenience sample of thirty adults. The types of potential problems could be the understandability of the questionnaire content, overall meaning of the questions and instructions, formatting, measurement errors, and online survey navigation. Also, respondents were asked to provide any thoughts, questions, or comments that they have about the survey and/or their experience taking it. The average respondent age was 59. There were fourteen women and sixteen men in the sample. There were no critical problems with the questionnaire except minor grammatical mistakes. However, respondents' friendly instructions were added to the survey with minor grammatical editing.

CHAPTER IV
RESULTS

Demonstrating an Optimistic Bias and Subjective Health Literacy

Respondents indicated that they tended to have their own positivistic beliefs toward the drug's risks relative to the risk of their peers (M = 4.40, SD = 1.16). A one-sample t-test indicated that the mean 4.40 is significantly greater than the midpoint of the optimistic bias scale (4), t (403) = 7.01, $p < .001$. Thus, respondents perceived their risk of developing prescription drug's side effects in the future to be lower than that of their peers. On the measure of subjective health literacy, the mean rating of respondents (M = 4.05, SD = .64) was significantly greater than the midpoint of the scale (3), t (403) = 32.84, $p < .001$. This result indicates that respondents held relatively high subjective health literacy.

Hypotheses testing

In order to investigate hypothesis 1 and 2, a set of hierarchical multiple regression analyses were conducted. Prior to assessing the predictive power of optimistic bias and subjective health literacy, a set of covariates was entered as Block 1 and Block 2. Demographic variables such as gender, age, education and household income were first entered in Block 1. The other three covariates, skepticism toward DTC advertising, exposure to DTC advertisements, and familiarity with DTC advertisements, were secondly entered in Block 2. In Block 3, two independent variables were entered: optimistic bias about the likelihood of experiencing side-effects of prescription drugs and subjective health literacy. Finally, in Block 4, the interaction term between optimistic bias and subjective health literacy was entered. Prior to computing for the interaction

term, the two independent variables were mean-centered in order to diminish the level of multicollinearity (Aiken & West, 1991).

There are three dependent variables including a) perceived attention to risk disclosures, b) perceived importance of reading risk disclosures, and c) intentions to seek further drug's risk information through alternative sources. The three dependent variables were all significantly correlated each other (correlation between attention and intentions, $r = .53$, $p = .001$, correlation between importance of reading risk disclosures and intentions, $r = .54$, $p = .001$, and correlation between attention and importance of reading risk disclosures, $r = .74$, $p = .001$,).

Basically, multiple *R*s for regressions were all statistically significant across all dependent variables. In terms of the first dependent variable, the results of the regression showed that multiple R for regression was statistically significant, $F (10, 393) = 4.51$, $P < .001$, $R^2adj = .08$. Regarding the second dependent variable, perceived importance of reading risk disclosures, results indicated that multiple R for regression was statistically significant, $F (10, 393) = 5.50$, $P < .001$, $R^2adj = .10$. Finally, in respect to intentions to seek further risk information through alternative sources, results also showed that multiple R for regression was statistically significant, $F (10, 393) = 7.30$, $P < .001$, $R^2adj = .14$. All significant covariates such as gender, familiarity with DTCA, and skepticism toward DTCA were tested for potential interaction effects with significant independent variables. No interaction effects were found.

H1: Optimistic Bias and Risk Disclosure-related Responses

H1 predicted that optimistic bias would be negatively associated with risk disclosure-related responses: a) perceived attention to risk disclosures, b) perceived importance of reading risk disclosures, and c) intentions to seek further risk information through alternative sources. Regression results on the extent of optimistic bias are summarized in Table 1, and 2 based on the order of the dependant variables a), b), and c).

Table 1: *Hierarchical Regression on Attention to Risk Disclosures in DTC ads*

			Statistics		
Predictors	B	SED	β	Block ΔR^2	Block ΔF
Block 1				.03*	3.01*
Gender	.51	.20	.13*		
Age	.01	.01	.07		
Education	-.06	.08	-.04		
Household income	.04	.04	.06		
Block 2				.06**	8.43**
Skepticism toward DTCA	-.12	.11	-.05		
Exposure to DTCA	.11	.10	.08		
Familiarity with DTCA	.23	.10	.16*		
Block 3				.01	2.94
Subjective health literacy	.16	.16	.05		
Optimistic bias	-.21	.09	-.12*		
Block 4				.00	.36
Subjective health literacy × Optimistic bias	-.11	.12	-.05		

Note. *$p < .05$ (two-tailed). **$p < .01$ (two-tailed). Adjusted $R^2 = .08$ ($N = 404$)

Table 2: *Hierarchical Regression on Importance of Reading Risk Disclosures in DTC ads to Consumers*

				Statistics	
Predictors	B	SED	β	Block ΔR^2	Block ΔF
Block 1				.04**	4.22**
Gender	.31	.09	.16**		
Age	.01	.00	.09		
Education	.02	.04	.03		
Household income	.02	.02	.04		
Block 2				.07**	10.26**
Skepticism toward DTCA	-.14	.05	-.13**		
Exposure to DTCA	.01	.05	.02		
Familiarity with DTCA	.13	.05	.19**		
Block 3				.01	2.73
Subjective health literacy	.10	.08	.07		
Optimistic bias	-.09	.04	-.11*		
Block 4				.00	.35
Subjective health literacy × Optimistic bias	-.03	.06	-.03		

Note. *$p < .05$ (two-tailed). **$p < .01$ (two-tailed). Adjusted $R^2 = .10$ ($N = 404$)

Overall, optimistic bias contributed significantly to the prediction of all three dependent variables. In terms of the first dependent variable, perceived attention to risk disclosures (H1-a), the results of the regression showed that optimistic bias tended to reduce the level of attention to risk disclosures, as a higher degree of optimistic bias about the likelihood of experiencing drug's risks and side-effects was associated with a

lower level of attention to DTCA's risk disclosures ($\beta = -.12$, $p < .05$). Regarding the second dependent variable, perceived importance of reading risk disclosures (H1-b), results indicated that optimistic bias was negatively associated with the level of importance of reading risk disclosures ($\beta = -.11$, $p < .05$). Finally, in respect to intentions to seek further risk information through alternative sources (H1-c), results also supported the prediction that optimistic bias was also apt to reduce the level of willingness to find more information related to risks and side-effects of prescription drugs ($\beta = -.15$, $p < .01$).

Moderation of the Effect of Optimistic Bias on Risk Disclosure-related Responses by Subjective Health Literacy

H2 predicted that optimistic bias about the likelihood of experiencing side-effects of prescription drugs and subjective health literacy would have an interaction on the extent of processing risk disclosures, such that the association between the optimistic bias and dependent variables would be more negative when consumers' level of the subjective health literacy is high than when the subjective health literacy is low.

As Table 3 indicates, optimistic bias and subjective health literacy did not have a significant interaction effect on perceived attention to risk disclosures (H2-a) and on perceived importance of reading risk disclosures (H2-b). However, they had a significant interaction on intentions to seek further risk information through alternative sources (H3-c).

Table 3: *Hierarchical Regression on Intention for Risk Information-Seeking*

			Statistics		
Predictors	B	SED	β	Block ΔR^2	Block ΔF
Block 1				.06**	6.22**
Gender	.44	.11	.19**		
Age	.01	.01	.06		
Education	-.05	.05	-.05		
Household income	.03	.02	.06		
Block 2				.06**	8.20**
Skepticism toward DTCA	.16	.06	.09		
Exposure to DTCA	.10	.06	.12		
Familiarity with DTCA	.10	.06	.13		
Block 3				.03**	7.81**
Subjective health literacy	.24	.09	.13**		
Optimistic bias	-.15	.05	-.15**		
Block 4				.01*	4.22*
Subjective health literacy × Optimistic bias	-.14	.07	-.10*		

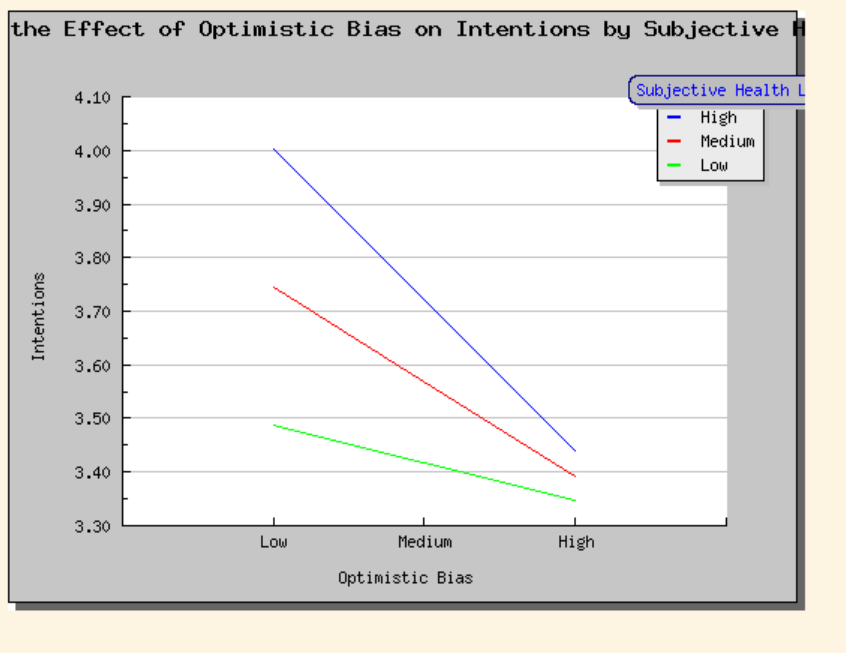
Note. *p < .05 (two-tailed). **p < .01 (two-tailed). Adjusted R^2 = .14 (N = 404)

In terms of perceived attention to risk disclosures (H2-a), the results of the regression showed that the association between optimistic bias and the extent of attention to risk disclosures, was not moderated by subjective health literacy (β = -.05, p > .05). Regarding perceived importance of reading risk disclosures (H2-b), results also indicated a negative association, but did not attain statistical significance (β = -.03, p > .05).

However, with respect to intentions to seek further drug's risk information (H2-c), results supported the interaction effect ($\beta = -.10$, $p < .05$). The negative association suggested that optimistic bias' contribution to intentions for information-searching turned more negative as respondents' subjective health literacy grew stronger.

To further illustrate the pattern of the moderating effect, a simple slope test was conducted. Basically, this analysis explains as to each simple slope is statistically different from zero (Aiken & West, 1991; Cohen & Cohen, 1983). Figure 1 portrays the pattern of the interaction. The figure shows the main effect variable (optimistic bias) along the X-axis, and the moderating variable (subjective health literacy), displayed with three lines designated as high, medium, and low.

Figure 1: Moderation of the Effect of Optimistic Bias on Risk Disclosure-related Responses by Subjective Health Literacy



This analysis revealed that the slopes for the high level of subjective health literacy ($\beta = -.24$, t (400) = -3.86, $p < .000$) and the medium level of subjective health literacy ($\beta = -.15$, t (400) = -3.38, $p < .000$) were statistically significant in the association between optimistic bias and the intentions to search more information. In contrast, the slope for the low level of subjective health literary was not significant in the association ($\beta = -.09$, t (400) = -3.38, $p = .35$). Glancing at the significant patterns of the negative slopes (high and medium) of the regression lines indicates that the higher subjective health literacy, the higher association between optimistic bias and the intentions to seek prescription drug risk information. Turning to the respondents with lower subjective health literacy, the association between optimistic bias and the intentions to seek prescription drug risk information decreased and became non-significant. It means that there is no effect of optimistic bias on the intentions especially for the respondents with low health literary.

CHAPTER V
DISCUSSION OF FINDINGS

Although the effects of persuasive communication can be achieved from various sources of influence, the present study focused on the role of optimistic bias about the likelihood of experiencing side-effects of prescription drugs and subjective health literacy in the consumer processing of risk disclosures in DTCA. Specifically, this study examined how consumers' optimistic bias influenced their attention to risk disclosures, their perceived importance of reading risk disclosures, and their intention to seek information about the risks and side-effects of prescription drugs. Further, the current study examined whether the relationship between the optimistic bias and the risk disclosure related perceptions and intentions was moderated by consumers' subjective health literacy. Findings of the study have theoretical and practical implications in light of message strategies for risk disclosures in DTCA.

Optimistic Bias

As predicted, the study revealed that consumers who showed a tendency to believe they were at lesser risk of experiencing side-effects of prescription drugs than their peers were less likely to pay attention to DTCA's risk disclosures, less likely to perceive reading risk disclosures as being important, and less likely to seek further information about drugs' side-effects. In other words, willingness to process risk disclosures depended on the extent to which a viewer has his/her own positivistic or pessimistic beliefs toward the drug's risks relative to the risk of their peers. This finding is consistent with the literature in health beliefs suggesting that one's health-related perceptions can influence chances of health behavior (Block & Keller, 1998). As the

optimistic bias is considered as a strong antecedent of intentions for health behavior (Park, Ju, & Kim, forthcoming), the high optimism and the resulting low-motivation to process health information may inhibit consumers from processing and understanding important health information sufficiently. It is important to note that consumers with high optimistic bias for drug-risks could believe that they were invulnerable to drugs' side-effects and would pay minimal attention to drug risk information in DTCA, which could be essential to informed decision making on health issues.

Further, the results give a clue that people who tend to be overconfident in their susceptibility to health risks would not be affected by advertisements which convey specific health risks or provide treatment information (Roth, 2003). In other words, what determines the efficacy of persuasive manipulations is consumers' motivation to process health information. From this perspective, it will be critical for DTC practitioners to come up with risk disclosure message strategies which reduce target audience's illusion of invulnerability—that they have a lower likelihood of experiencing health risks and side-effects of prescription drugs than their peers.

The Moderating Role of Subjective Health Literacy

The current study also revealed that the relationship between the optimistic bias and the intentions to seek prescription drug risk information was stronger for consumers with high subjective health literary than for those with low health literacy. This pattern was not statistically significant for perceived attention and perceived importance variables. In fact, an additional regression analysis indicated that the subjective health literacy did not contribute significantly to perceived attention to risk disclosures ($\beta = .05$, $p > .05$), and perceived importance of reading disclosures ($\beta = .07$, $p > .05$), although

each regression analysis showed that subjective health literacy was positively associated with the level of attention and the degree of importance of reading risk disclosures.

One possible interpretation of this insignificant effect is that the main interest of the current study was confined to a sample with some degree of prescription drug experience. However, it is possible that the degree of prescription drug use could affect consumers' DTC ad information processing. Research found that consumers' prior experience with products is positively associated with their level of attention to advertising and advertising information processing (e.g., Brucks, 1985; Menon et al., 2003). In fact, about half of Americans are currently using prescription drugs and people that reported taking more than one prescription medication in the past month has gradually increased from 43.5 % to 48.3% through 1999 to 2008 (National Health and Nutrition Examination Survey, 2010). In other words, it is likely that those consumers with different level of prescription drug experience (e.g., heavy users vs. light users) will perceive risk information differently. In this regard, it is necessary to account for varying levels of prescription drug usage into consumers' processing of DTCA risk disclosures. Thus, as a future study, it is important to explore how consumers' prescription drug usage affects the risk-disclosure information processing mechanism.

Another possible explanation is related to the items of the subjective health literacy used in this study. Because the measure deals with one's general ability to process health information, the items have been too broad to the specific context of consumer processing of risk information. Accordingly, future research should consider modifying the items of subjective health literacy in light of DTCA disclosure.

Further, the current study revealed an interaction effect that the higher subjective health literacy, the stronger relationship between the optimistic bias and the intentions to seek prescription drug risk information. When consumers' subjective health literacy was high their low optimistic bias (high motivation to process information presented in risk disclosures) linked to an increased desire for information search related to drug's risks and side-effects. The finding is consistent with the prediction made by MAO framework and ELM that the consumers' motivation and ability have a positive association with their levels of information processing (MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986). However, the interaction effect was contingent upon the degree of the subjective health literacy. The interaction effect was not seen for those who have relatively low subjective health literacy. For those who had low subjective health literacy the optimism toward drug's side-effects did not significantly enhance their intention to seek further information about drug's risks and side-effects. This pattern suggests that one's subjective ability to process health information could inhibit them from seeking to understand the given drug disclosures.

Theoretical and Practical Implications

The current study has theoretical implications for DTCA and DTCA disclosure research. Because DTCA is designed to promote a shared decision making process between consumers and doctors (Huh & Becker, 2005), which is a unique characteristic of the advertising category, it is critical to consider consumers' motivation to inquire about health risks and side-effect of advertised drugs via alternative sources and their perceived ability to understand the content of information presented in the risk disclosures. However, the literature has largely neglected such important audience factors

as motivation and ability to process risk disclosures in DTCA (Kavada, 2003; Deshpande, 2004) while a great amount of DTCA studies in risk disclosures tends to focus on examining the effects of various formats (amount, length, specificity) of risk disclosures on audience responses to such information (e.g., Morris et al., 1989). While the social psychology literature has considered the role of the optimistic bias in a variety of areas such as accidents (McKenna, 1993), crime, (Perloff & Fetzer, 1986) and depression (Kuiper, MacDonald, & Derry, 1983), to the best of the author's knowledge, the current research is the first empirical study to incorporate the concept of optimistic bias in the context of DTCA disclosure. Thus, this study has theoretical implications for DTCA and DTCA disclosure by inviting a variety of research avenues in terms of optimistic bias and its application to DTCA. Additionally, the current study revealed the role of subjective health literacy in moderating the effects of optimistic bias on consumers' information seeking intent in the context of DTCA. Thus, this research not only adds an important aspect to the optimistic bias to the literature, but also it sheds light on better understanding how consumers with varying levels of motivation and ability process DTCA disclosure differently.

The current study has also practical implications for DTCA practitioners, FDA regulators and policy makers. Specifically, this study can contribute to the development of effective and creative disclosure message strategies tailored to consumers with different levels of optimistic bias about drug-related side-effects and various degrees of subjective health literacy.

The present study revealed that a low processing motivation and low processing ability reflected a low chance of gaining attention to a disclosure message. Further this

study found the moderating role of subjective health literacy in reducing the effects of optimistic bias for drug's side-effects on the intention to seek further information about drug's risks and side-effects. These findings imply that consumer's willingness to engage in information seeking behaviors regarding drug's side-effects is not only a function of their positivistic tendency toward drug's risks but also a function of their subjective health literacy. There are great concerns that consumers with low health literacy are less likely to obtain, process, and act on information in the current practice of DTC prescribing drug ads (Kaphingst, Rudd, Dejong, & Daltroy, 2005) due to the conventional style of DTC ads where the proportion of drug benefit claims often outweighs the side-effect information, emotional appeals dominantly deliver the merits of drugs, and risk is portrayed through technical terms (Roth, 2003). The study's finding lends support to such concerns and further suggests that it is important for DTCA marketers to acknowledge that these situations might lead consumers with low subjective health literacy to become reluctant to exert their high motivation to process risk-disclosure information. Thus, it is important for DTCA practitioners to develop risk-disclosure messages tailored to those consumers with relatively low subjective health literacy and high optimistic bias toward prescription drugs' side-effects.

Then, how can DTCA practitioners create a risk disclosure message that reduces the optimism toward drugs' risks and alleviates the problems with consumers with low health literacy? Also, is there any new approach of breaking down the old and conventional style of DTC ads?

One of the possible ways is to design a corrective risk disclosure message which directly challenges the mistaken belief that drug-related risks could be more prevalent to

others than me. Another way is to place an instruction in front of the health benefit claims of the DTC ads. As a form of forewarning (Apsler & Sears, 1968; Petty & Cacioppo, 1986; McCroskey, 1968; Papageorgis, 1968), the instruction could include a short introductory message that acknowledges consumers' general optimism toward prescription drugs, such as the following: "*you may think that you will never experience prescription drug side-effects. However, everyone's body is different, and not all drugs provide ideal benefits for everyone".* Prior research in cognition and perception suggests that a salient factor in a message draws an attentional focus (Taylor & Thompson, 1982) and the maintained activation causes information processing motivation (Hallahan, 2000). Thus, the type of instruction might serve to draw attention from message recipients, especially those who have relatively high optimistic bias about the likelihood of experiencing the side-effects of advertised drugs or those who have low health literacy. Also even after being exposed to the drug benefit claims, it continues in motivating them to process drug-related risk information which is typically presented at the end of the DTC ads. In contrast, for those with a pessimistic bias about experiencing side-effects of prescription drugs, an introductory message could be modified to state that "*Providing you with risk information in this ad does not necessarily mean that you would develop the side-effects after you take the drug. Like everything, a drug could have two sides: merits and risks.*"

DTCA practitioners can also make variations of the suggested instruction content and associated disclosure presentation formats. However, on a practical level it would be challenging for DTCA advertisers to know if the target audience has an optimistic bias or not, or adequate health literacy or not. In this case, the question is how would advertisers

know which introductory message to use, when would it be idealistic to send the messages and via what types of media outlets. One possible way is to survey the distribution of US citizens' degree of optimistic bias toward a prescription drug's risks and side-effects and their level of health literacy toward risk disclosures. Then, for instance, the recommended message could be distributed to the regions or states where a relatively higher density of those individual factors exists.

In terms of individualized warning disclosure, new technology such as the QR (Quick Response) code could also be a factor. For example, magazine readers could scan the QR code on a page of a DTC ad in a magazine via their smart phones. Then, the smart phone could ask if the reader is generally optimistic or pessimistic toward drug's side-effects. Or the code could have the potential to allow readers to pull information related to the side-effects of the advertised prescription drug in easy to read language. Such methods might provide strategic directions regarding which type of disclosure message works most effectively to activate the audience's attention to risk disclosures in DTCA, to adjust individuals' illusion about their own risks relative to the risk of others, and to break down the conventional style of the current DTC ads. Additionally, it is worth noting that much remains to be empirically tested about how these introductory messages could be applied in various media outlets and about how consumers will react to these messages.

Also, one might call to question the practical implementation of the suggested message approaches in the context of *promotional* DTCA because some DTCA advertisers may be reluctant to communicate with consumers specifically about additional explanations of drugs' risks more than the amount of risk information required

by FDA. Nevertheless, there are alternative forms of DTC ads: 1) Reminder ads that only include the name of drug's brand without health problems, risk disclosures or benefits. 2) Help seeking ads that, which are exempt from the name of drug's brand and drug's risks, include only health issues or the disease. If necessary, on the one hand, the pharmaceutical industry and practitioners could consider running the proposed messages (they could be modified in different ways) via those alternatives. On the other hand, because the FDA does not require the industry to carry risk information in those two types of ads, they could develop new type of educational DTC ads which are primarily intended to reduce consumer's misperceptions (optimism/pessimism) or to how to find more tailored information via alternative sources. By doing so, DTCA advertisers could gain long-term credibility as well as promote the public's long term health.

The focus of the current study was geared toward consumers' individual factors and their influences on consumer processing of, and response to, risk disclosures in DTCA. While Ryone and Myers (2008) stressed that the attention of DTCA research should be given to exploring the nature of DTCA disclosure from *consumers' perspectives* and to providing *consumer-oriented policies*, research in DTCA disclosure has largely focused on the amount or format of the risk disclosures and its impacts on consumers without considering consumers' unique individual characteristics. In addition, based on the emerging research trend in DTCA disclosure format studies, it is generally acknowledged that sticking to the rule of FDA guidelines (e.g., fair balance between promotional message and side-effects information; plain language, etc.) are sensible when it is seen from the lens of FDA's consumer safety policy; however, we should bear in mind that it is more important for policy-makers, FDA, DTC advertising makers, and

drug manufacturers to understand the concept of "fair-balance" from the perspective of *consumer*'s main interest and their true needs. Specially, it is important to note that providing a full range of information about a drug's benefits and risks is *not* always advantageous, especially for those who have low subjective health literacy.

For example, with respect to easy-to-read risk disclosures, some researchers pointed that "the lack of explicitness or usage of vagueness of terms in most consumer product warnings is that manufacturers avoid them because of the belief that explicit warnings will deter people from purchasing their product, compared to a competitors' product with a less explicit warning" (Wogalter, Dejoy, & Laughery, 1999, p.154). On the other hand, it is indispensable to acknowledge that language in risk disclosures is impacted by legal liability issues and the wording might be such as to avoid liability rather than any particular intent of advertising creatives to deceive or discount the information. In either case (risk disclosures with more audience friendly language vs. risk disclosures with technical terms), one more issue to be considered is that those who with low health literacy may be lost in the wave of the lengthy risk information (e.g., if the benefit claims and side-effects information in a DTC print ad are overly long), not because of indecipherable terms, but because of information overload. Researchers pointed out that the traditional practices of print DTC ads, which contain excessively long and complex side-effects, are not always favored by consumers (Aikin, O'Donoghue, Swasy, & Sullivan, 2011). Recent studies (Duke, Friedlin & Ryan, 2011; Liang & Mackey, 2009) also indicated that the presence of over-warning can induce information overloading not only to consumers but also even physicians. Thus, the instructional message for consumers with low health literacy could add the following statement,

"*Please try to read the risk information provided at the end. If you can't fully understand it, please remember to ask your doctor about the drug's potential risk."* Hence, the topic of this investigation is pertinent to policymakers and FDA regulators in that they could reevaluate the current practice of DTCA disclosure from the consumers' perspectives.

CHAPTER VI
LIMITATIONS AND SUGGESTSION FOR FUTURE RESEARCH

Like other research, this study has a number of conceptual limitations. First of all, the current study mainly focused on the role of optimistic bias only about the likelihood of experiencing risks and side-effects of prescription drugs. However, one may argue that this study did not capture the full picture of optimistic biases toward DTC advertising due to the absence of optimistic bias toward certain diseases such as diabetes, or depression. A future study should deal with both dimensions in estimating optimistic bias toward a certain disease and the self- positivity about the prescription drug's risks and side-effects for the disease simultaneously.

In addition, this study did not examine the underlying or intertwined factors of the optimistic bias. The social psychology literature stresses that the optimistic bias is not a sole construct. Rather, many other layers could be involved with it such as emotion or mood (Helweg-Larsen & Shepperd, 2001). Also, it could generate different effects depending on the respondents' personal health condition, health sensitivity, or the degree of reliance on their physicians. For example, research found that the insertion of photos of a similar person in an anti-drunk driving ad tended to reduce respondents' optimistic bias toward a depressing outcome (Riesenberg, 2005). Thus, a future study should find out various factors which influence the likelihood and magnitude of the optimistic bias, especially related to DTC ads processing. Moreover, while the current study did not cover what drives the optimism or how it is composed in various situations, a qualitative in-depth interview could handle with those issues.

A future study could also touch upon the relationship between consumers with high optimistic bias experiencing side-effects of DTC drugs and consumers who have been suffering from substance abuse. Research indicates that millions of U.S. citizens have been involved in drug abuse (World Health Organization, 2009). Further, a report by Substance Abuse and Mental health Services Administration (2005) showed that about 52 million people (about 20 percent of people in the U.S.), especially common in younger age groups, have experienced prescription drug abuse, which is the use of a prescription medication for reasons other than intended when prescribed. Teenagers often share prescription drugs for a various purposes, such as losing weight, getting high or enhanced studying, which has a potential to lead serious outcomes including addition, or even worse, death by overdose. It is important to note that "risk behavior is linked to perceptions of relative risk perception; people will engage in risky behavior if they perceive they are at relative lesser risk than other people" (Helweg-Larsen, & Shepperd, 2001, p.91). Those who have relative high optimistic bias toward drugs in general may be more likely to consider taking illicit drugs, which can result in serious outcomes. Thus, a future study may empirically test if the association is valid and further investigate possible ways to solve this issue.

This study attempted to understand persuasion processes guided by the MOA-framework and the ELM, mainly focusing on the moderated effects on motivation and ability. However, one of the supplementary determinants in information processing guided by the MOA model is opportunity (Andrews, 1988; Batra & Ray, 1986; Curry & Moutinho, 1993; MacInnis & Jaworski, 1989; MacInnis et al., 1991). While the ELM tends to subsume the notion of opportunity under the ability component, it should be

noted that the MOA-framework makes explicit distinction between motivation, opportunity and ability (Poiesz & Robben, 1996). Also, the utilization of two components (motivation/ability) is relatively favored in the studies of advertising and persuasion literature without 'priori theoretical or meta-theoretical reasons' (Poiesz & Robben, 1996, p. 231). Although it can be assumed that opportunity is almost a media planning variable (getting the message out there to the right people and giving them enough time to process it centrally), it is important to examine the role of opportunity in context of message availability, message repetition, and message variation. Schumann and his colleagues (Schumann, Kotowski, Ahn, & Haugtvedt, 2012) stressed the necessity of empirically testing how message reoccurring experiences (opportunity) can serve to understanding consumers' information processing. Derived from the MOA-framework (Motivation, Opportunity, and Ability), future studies should test the role of moderators (motivation and ability) under the availability of sufficient 'opportunity' to comprehensively understand the nature of the persuasion process, preferably in an experimental setting.

DTC ads for prescription drugs are required to include risk disclosure information when speaking of a drug's potential benefits, thus forming a mandatory two-sided message. Admittedly, DTC ads tend to maintain complex medical information specifically in the risk disclosures (Young & Cline, 2005). Information processing theory suggests that individuals who are naturally willing to engage in effortful cognitive activity are more likely to attend to and scrutinize complex messages (Cacioppo & Petty, 1982). Need for cognition (NFC), referred as the extent to which individuals have inner motivation for cognitively challenging tasks, can affect individuals' DTC advertising message processing. Considering the complex nature of DTC messages and their formats,

consumers could have different responses to the DTC ad benefit messages and risk disclosures depending on the consumers' level of need for cognition. Thus, future research should take into account this important motivational variable in light of various dimensions of consumer cognitive activity.

According to the National Health and Nutrition Examination Survey (Centers for Disease Control and Prevention, 2010), not only are almost half of Americans prescription drug users, but also there is a considerable increase in the percentage of Americans using prescription drugs in the U.S over the last 10 years. For instance, those who took at least one or more prescription medication in the past month have been steadily increasing from 43.5 % in 1999 to 48.3% in 2008. Also, the survey reported that the 76 percent of older Americans (over 60 years old) are likely to take two or more prescription drugs while 37 percent of the group tends to take five or more prescription drug. In this case, it is not difficult to surmise that there are differences between heavy and light prescription drug users in terms of their level of attention to risk disclosures in DTCA and intention to search for further information related to a drug's side-effects. Research indicated that consumers who have used prescription drugs on a regular base were less likely to pay attention to risk disclosures in magazines (Menon et al., 2003). Furthermore, Menon and his colleagues suggested that consumers' increased use of prescription drugs might have led them to believe that their knowledge about their prescription drug goes beyond what they can get from the risk disclosures in DTCA. The literature in consumer research also suggested that consumer product experience is associated with advertising information processing (e.g., Brucks, 1985; Park & Lessig, 1981). Thus, in addition to the level of optimistic bias and subjective health literacy, there

still could be variances across one's experience with prescription drugs which could affect the attention to risk disclosures or information seeking behavior. Future researchers should consider testing the role of one's usages of prescription drugs in processing DTCA risk disclosures.

Methodologically, this study has some limitations. First of all, this study analyzed survey data and provided correlational interpretations. These alluded causal relationships, however, may limit the explanation of causality (Meehl & Waller, 2002). Future research should be conducted in an experimental setting to be able to account for sufficient causal interpretations. For instance, to examine if the introductory risk disclosure could activate respondents' attention to prescription drug's side-effects and motivating them to process the risk information, the suggested message treatment "*you may think that you will never experience prescription drug side-effects. However, everyone's body is different, and not all drugs provide ideal benefits for everyone"* could be presented to those in an experimental group. The message treatment should not be given to those in a control group while all other conditions are identical. Throughout this type of research method, a relatively strong interpretation for causality could be achieved.

Although the high response rate of 22% (total delivery: 1800) seems promising on the quality and outlets of the instruments, another potential limitation is that online sample cannot represent the attributes of general population. In this study, the sample was mainly composed of older people with an online questionnaire. It might be true that the same is somewhat biased by better educated, more affluent, and more forward thinking individuals. Thus, the research findings should be replicated with more representative samples.

In this study, the items of the subjective health literacy were borrowed from the existing literature (An & Muturi, 2011). However, it is possible that the measures did not precisely capture the nature of subjective healthy ability to understand and process risk disclosure information in DTCA. For example, the items such as filling out medial forms or understanding to take two pills ad day by doctor's instructions may be different from attention to complex side-effect information of prescription drugs. Hence, the direct application of the subjective health literacy to the study of DTCA and DTCA disclosure should be made with caution. Future researchers might consider developing subjective health literacy items, especially geared to the DTC advertising condition. For example, the following types of scale modification could be made: 1. How often are the directions and instructions on the brief summary pages difficult to understand? 2. How often are the specific health risks and side-effects information on the brief summary pages difficult to understand? 3. How often are the numbers, probability and statistics presented in the brief summary pages difficult to understand? 4. When reading the brief summary pages, how helpful do you find tables and graphs that are part of the drug's information? 5. When reading the brief summary pages, how helpful do you find words ("it rarely happens") that are part of the drug's information? 6. When reading the brief summary pages, how helpful do you find numbers ("there's a 1% chance") that are part of the drug's information? 7. How often do you have someone (like your health care provider) help you read the health risks and side effects information on brief summary pages?

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APPENDIX

Appendix A- Consent Form

* Prescription drugs and prescription drug advertisements:

Thank you for your willingness to participate in this study. Your participation will help researchers better understand the thoughts, feelings, and opinions Americans have about a variety of health issues and health information. The information you provide will be confidential and anonymous. The researcher has no means or intention to reveal your personal identity or connect your responses with your personal identity at any stage of the project, including data collection, analysis, and reporting of the survey results. In addition, Zoomerang does not represent the principal investigator in any way, and will not misrepresent your responses to serve the researcher's agenda. There are no anticipated risks for study participants. However, if you do not wish to answer a question, you may skip it. If you wish to quit the project at any time, simply close the survey web site. If you have questions about the study or the procedures, you may contact the researcher, Anthony Ahn, at 103 Communications Building, Knoxville, TN 37996, by phone at 865-974-8007, or by e-mail at hahn5@utk.edu. If you have any questions about your rights as a participant, contact Research Compliance Services at 865-974-3466. You must be 18 or older to participate. Participation in this survey is completely voluntary, but if you participate, you will earn ZoomPoints. It takes approximately 18-20 minutes to complete the survey. By completing the survey, you provide your consent to participate. If you stop midway through the survey and close the survey web site, the partially submitted data will remain in the principal investigator's survey account. If you wish to, you can re-enter the survey and finish it as long as the survey project is still available. Thank you for the invaluable help you are providing by participating in this research study.

1. **Are you 18 years of age or older?**

- Yes
- No

2. **I have read the above informed consent, and provide my consent to participate in this study.**

- Yes
- No

Appendix B- Questionnaire

Unlike over-the-counter drugs such as aspirin or vitamins, you need a doctor's prescription to buy a prescription drug. Examples of prescription medicine include drugs used to treat diabetes, depression, arthritis, heart disease, osteoporosis, hypertensions, allergies, cholesterol, asthma, and birth control, among others. To promote prescription drugs, pharmaceutical companies often place their ads in media outlets used by consumers like you, such as newspapers, magazines, television, and Internet. The primary focus of this survey is on your thoughts and feelings about consumer-directed prescription drug advertising. The survey is not designed to judge your opinions about this issue, so there are no right or wrong answers to the following questions.

3. **Have you ever taken a prescription drug?**

- ○ Yes
- ○ No
- ○ Don't know

****

Imagine that you take a prescription drug that you haven't tried yet, and saw advertised in a magazine.

4. **Then think of people your own age and gender. <u>Compared with other people your age and gender</u>, how would you rate <u>your</u> chances of experiencing <u>minor side effects</u> (such as drowsiness, dizziness, sleeping problems, minor fever, trouble swallowing, or itchiness) after taking the prescription drug?**

far less likely	less likely	slightly less likely	about the same likelihood	slightly more likely	more likely	far more likely
○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7

5. **<u>Compared with other people your age and gender</u>, how would you rate <u>your</u> chances of experiencing <u>serious adverse reactions</u> (such as respiratory tract infection, blurred vision, liver abnormalities, uncontrollable muscle movement, heart diseases, or thoughts of suicide) after taking the prescription drug?**

far less likely	less likely	slightly less likely	about the same likelihood	slightly more likely	more likely	far more likely
○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7

Here, I would like to ask you how much you understand medical information and instructions you might see around the hospital. Check the scale that best represents your response to each statement.

6. **How often are appointment slips written in a way that is easy to read and understand?**

never	occasionally	sometimes	often	always
1	2	3	4	5

7. **How often are medical forms difficult to understand and fill out?**

never	occasionally	sometimes	often	always
1	2	3	4	5

8. **How often do you have difficulty understanding written information your healthcare provider (like a doctor, nurse, or nurse practitioner) gives you?**

never	occasionally	sometimes	often	always
1	2	3	4	5

9. **How often do you have problems learning about your medical condition because of difficulty understanding written information?**

never	occasionally	sometimes	often	always
1	2	3	4	5

10. **How often do you have someone (like a family member, friend, hospital-clinic worker, or caregiver) help you read hospital materials?**

never	occasionally	sometimes	often	always
1	2	3	4	5

11. **How confident are you filling out medical forms by yourself?**

not at all	a little bit	somewhat	quite a bit	extremely
1	2	3	4	5

12. **How confident do you feel in following the instructions on the label of a medication bottle?**

not at all	a little bit	somewhat	quite a bit	extremely

1 2 3 4 5

In a prescription drug magazine ad, health risks and side effects of the drug are presented in smaller print on separate pages commonly named "brief summary" or "important information." These "brief summaries" frequently occupy from one half to a full page, printed at the end of a multi-page magazine ad.

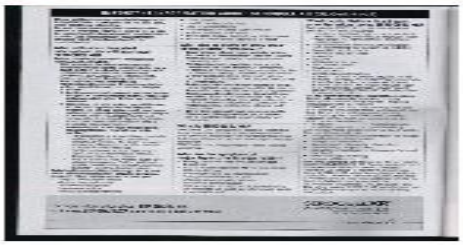
We've provided an example of a prescription drug ad so you can understand the type of advertising we are exploring in this research study. Please be aware that the questions in this survey are NOT about this specific advertisement. This is ONLY an example of the basic format for various prescription drug ads and their brief summaries.

As you answer the survey questions, please think about your own personal experiences with viewing magazine ads such as the one presented in our example.

13. **Please take a moment to view the following images. You can zoom in by clicking the images.**

An example of a prescription drug ad

An example of a prescription drug ad



An example of the brief summary

An example of the brief summary

Imagine that you have a health problem and are reading a magazine ad for a prescription drug that treats the health problem, and you haven't tried it yet.

****

15. **When you see <u>the brief summary pages</u>, how much attention do you think you would pay to <u>the health risks and side effects information on the pages</u>?**

no attention						very much attention
○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7

****

16. **When you see the ad, how important would it be to read <u>the brief summary pages</u>?**

not important at all	not too important	somewhat important	very important
○ 1	○ 2	○ 3	○ 4

****

Imagine that you have a health problem and have just read <u>the brief summary pages</u> of a prescription drug ad that treats the condition, and you haven't tried it yet.
The following statements represent actions you may take after seeing the ad. How much do you agree with each statement?

17. **I would like to learn more about the health risks and side effects of the drug.**

strongly disagree	disagree	somewhat disagree	neither agree nor disagree	somewhat agree	agree	strongly agree
○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7

18. **When I come across other useful information about the health risks and side effects of the drug, I would like to retain it.**

strongly disagree	disagree	somewhat disagree	neither agree nor disagree	somewhat agree	agree	strongly agree
○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7

19. **I would like to use various alternative sources to get more information about the drug's health risks and side effects.**

strongly disagree	disagree	somewhat disagree	neither agree nor disagree	somewhat agree	agree	strongly agree
○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7

****

20. **In the past six months, <u>how often</u> have you seen, read, or heard prescription drug ads in each of the following media types?**

	never			occasionally			very often
Prescription drug ads in radio	○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7
Prescription drug ads in newspapers	○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7
Prescription drug ads in magazines	○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7
Prescription drug ads in television	○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7
Prescription drug ads in the Internet	○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7
Prescription drug ads in other media (flyers, brochures, outdoor, etc.)	○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7

****

21. **<u>How familiar</u> would you say you are with prescription drug ads in each of the following media types?**

	not at all familiar			moderately familiar			very familiar
Prescription drug ads in radio	1	2	3	4	5	6	7
Prescription drug ads in newspapers	1	2	3	4	5	6	7
Prescription drug ads in magazines	1	2	3	4	5	6	7
Prescription drug ads in television	1	2	3	4	5	6	7
Prescription drug ads in the Internet	1	2	3	4	5	6	7
Prescription drug ads in other media (flyers, brochures, outdoor, etc.)	1	2	3	4	5	6	7

****

22. **For each statement, please check a box to indicate your agreement.**

	strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
Prescription drug advertising is truth well told.	1	2	3	4	5
Prescription drug ads generally present a true product picture.	1	2	3	4	5
We can depend on getting the truth in most prescription drug	1	2	3	4	5

advertising.

I am accurately informed by most prescription drug ads.	1	2	3	4	5
Prescription drug advertising is a reliable source of information.	1	2	3	4	5
Prescription drug advertising's aim is to inform the consumer.	1	2	3	4	5
Most prescription drug advertising provides consumers with essential information.	1	2	3	4	5
Prescription drug advertising is informative.	1	2	3	4	5

****

23. **Your gender is**

- Male
- Female

24. **Your age is** _____

25. **Do you consider yourself...?**

- White
- Black
- African American
- Asian or Pacific Islander
- Native American or Alaskan native

- Mixed racial background
- Not sure

26. **What is the highest level of education you have completed?**

- Less than high school
- Completed some high school
- High school graduate or equivalent
- Completed some college, but no degree
- College graduate (e.g., B.A., A.B., B.S.)
- Completed some graduate school, but no degree
- Completed graduate school
- Not sure
- Decline to answer

27. **Have you ever had a health-related job?**

- Yes, currently
- Yes, in the past
- No

28. **Think back over the past few months; how many times have you taken prescription drugs?**

- None
- Once per week
- Twice per week
- 3 to 5 times per week
- 6 to 9 times per week
- 10 or more times per week

29. **What is your annual household income?**

- Less than $14,999
- $15,000 to $24,999
- $25,000 to $34,999

- $35,000 to $49,999
- $50,000 to $74,999
- $75,000 to $99,999
- $100,000 to $124,999
- $125,000 to $149,999
- $150,000 to $199,999
- $200,000 to $249,999
- $250,000 or more
- Not sure
- Decline to answer

30. **Is English your first language?**

- Yes
- No
- Not sure

VITA

Hoyoung (Anthony) Ahn was born in Seoul, Korea, in December 11, 1978, son to Seung-Kwon Ahn and Jung-Sook Won. He majored in mathematics, later transferred to Hong-Ik University where he earned a Bachelor of Business in Advertising and Public relations. Before coming to the U.S., he worked as an account manager in search engine advertising and Internet advertising industries using Google and the Overture network. He also served for the National Health Insurance Corporation, as public service personnel. In 2008, he earned a Master's degree in Mass Communications with a concentration in Advertising from the University of Georgia. At the University of Tennessee, he majored in Advertising and minored in Statistics. During his time in the Ph.D. program, he worked as a teaching assistant for advertising courses and served as research assistant for communication and information related projects. Also, he served as instructor-of-record for an undergraduate Principles of Advertising course. His passion for research focuses on advertising message strategies, persuasion and resistance, and health communication. He was the recipient of 2011 Dean’s top graduate student research award. In 2012, Hoyoung completed his Ph.D. in Communication and Information. Currently, he teaches Advertising and Promotions as an assistant professor in Communication Department at Southern Connecticut State University.