

CONSUMER RESPONSES TO PRESCRIPTION AND NON-PRESCRIPTION DRUG
ADVERTISING: AN APPLICATION OF THE CONSUMER SOCIALIZATION
FRAMEWORK

by

MINA LEE

(Under the Direction of Karen King)

ABSTRACT

The purpose of this study is to compare consumers' responses to prescription and non-prescription drug advertising and examine where the differences originate by testing two proposed models; one model is based on the modified hierarchy-of-effects model, and the other is based on the consumer socialization framework.

A total of 819 adults, age 18 or older, who had taken any prescription drugs in the last six months, participated in an online survey, and 461 applicable surveys were used in the data analysis.

The research found:

- Over 80% reported that they have seen an advertisement for Rx drugs during the last six months, whereas 74% reported that they have seen an advertisement for OTC drugs during the last six months. Respondents reported that they were exposed to prescription drug advertising more often than non-prescription drug advertising.
- There was no significant difference between consumers' perceptions of prescription and non-prescription drug advertising in terms of information utility, trust, skepticism, and

the perceived importance, except for attitude. However, consumers held more positive attitudes toward non-prescription drug advertising than toward prescription drug advertising.

- The majority of respondents engaged in at least one behavior after they were exposed to drug advertising. Respondents engaged in more extensive information searches triggered by non-prescription drug advertising than prescription drug advertising. For both prescription and non-prescription drug advertising, the Internet was the most common source for searching for more information about the drug or their health.
- The perceived amount of attention paid to drug advertising, the amount of exposure to mass media sources for obtaining drug information, and the number of non-prescription drugs taken on a regular basis were most consistently found to be significant predictors of behavioral outcomes of drug advertising. Involvement with drugs and perceived drug safety were the most consistently found to be significant predictors of attitudinal outcomes of drug advertising.

The importance of these findings in relation to the relevant literature and implications of the results were discussed, followed by suggestions for future research.

INDEX WORDS: Direct-to-Consumer Prescription Drug Advertising, Over-the-Counter Non-Prescription Drug Advertising, Pharmaceutical Advertising, Advertising Effects, Hierarchy-of-Effects Model, Consumer Socialization Framework

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DEDICATION

This dissertation is dedicated to a loving God,
to my mother in heaven,
and to my dearest husband, Kyongseok Kim.

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CHAPTER 1

INTRODUCTION TO THE RESEARCH

The pharmaceutical industry has grown dramatically over the past decade and, with its continued proliferation, has spent billions of dollars on advertising prescription medicines and over-the-counter drugs. The two major pharmaceutical sectors, prescription drugs and over-the-counter drugs, are different in nature; prescription drugs are only available with a doctor's prescription, whereas over-the-counter drugs can be bought without a doctor's prescription. Despite the key difference between prescription and over-the-counter drugs and the growing importance of over-the-counter drug advertising driven by market trends, the scholarly focus has concentrated on direct-to-consumer prescription drug advertising. Little is understood regarding consumers' responses to over-the-counter drug advertising and its influences on their decision making processes. Thus, the purpose of this study is to compare consumers' responses to direct-to-consumer prescription drug advertising and over-the-counter drug advertising and to examine where the differences originate by testing two proposed models; one model is based on the modified hierarchy-of-effects model, and the other is based on the consumer socialization framework. A self-report online survey was conducted with 461 adults, age 18 or older, who had taken any prescription drugs in the last six months. This study will shed light on the previously understudied subjects and provide useful implications for marketers, medical professionals, and public policy makers regarding the differences in consumers' attitude toward and their ad-prompted behaviors regarding DTCA and OTCA.

This chapter presents background information on the two important pharmaceutical sectors, prescription medicines and over-the-counter drugs. Definitions of the two pharmaceutical sectors are provided along with their expenditures for advertising, market trends, and the roles of and controversies surrounding pharmaceutical advertising. This chapter will also discuss the purpose of the current study.

Background

Definition of Prescription Drugs and Non-prescription Over-the-Counter Drugs

There are two major players in the pharmaceutical industry: prescription (hereafter Rx) drugs and non-prescription over-the-counter (hereafter OTC) drugs. The Food and Drug Act (FDA) defines Rx and OTC drugs as follows (FDA, 2011).

Rx drugs are:

- Prescribed by a doctor
- Bought at a pharmacy
- Prescribed for and intended to be used by one person
- Regulated by FDA through the New Drug Application (NDA) process. This is the formal step a drug sponsor takes to ask that the FDA consider approving a new drug for marketing in the United States. An NDA includes all animal and human data and analyses of the data, as well as information about how the drug behaves in the body and how it is manufactured.

OTC drugs are:

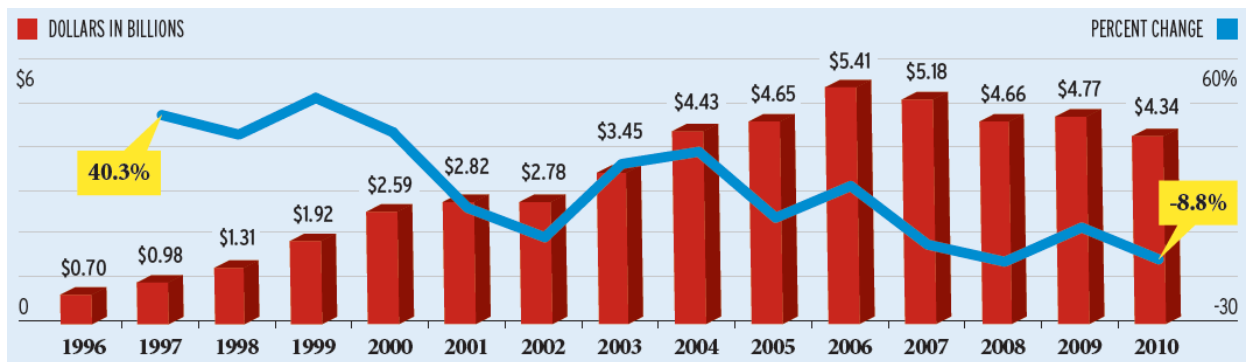
- Drugs that do NOT require a doctor's prescription
- Bought off-the-shelf in stores
- Regulated by FDA through OTC drug monographs. OTC drug monographs are a kind of "recipe book" covering acceptable ingredients, doses, formulations, and labeling. Monographs will continually be updated adding additional ingredients and labeling as needed. Products conforming to a monograph may be marketed without further FDA clearance, while those that do not, must undergo a separate review and approval through the "New Drug Approval System."

DTC and OTC Advertising Expenditures

The pharmaceutical industry is one of the major advertiser categories in the United States. Pharmaceuticals ranked 10th in 2008 and 2009 in terms of ad expenditures (Kantar Media, 2011). Out of the total amount spent on advertising by pharmaceutical companies in 2008 (\$7.2 billion, Ad \$ Summary, 2010), OTC drug manufacturers spent \$2.98 billion (OTC Perspectives, 2009a), whereas Rx drug manufacturers spent \$4.7 billion (Kantar Media, 2011; as cited in *Advertising Age*, 2011). Since 1997, when the regulation on direct-to-consumer prescription drug advertising (hereafter DTCA) on TV was loosened (a full disclosure of the brief summary was required in TV ads before 1997), ad spending on Rx drugs has increased and reached a peak (\$5.4 billion) in 2006 (*Advertising Age*, 2011, see Figure 1); however, DTCA spending has decreased since 2007, mainly because of the economic recession. Over-the-counter non-prescription drug advertising (hereafter OTCA) spending also decreased from \$3.2 billion in 2007 to \$2.98 billion in 2008 (OTC perspectives, 2009a) and decreased 10% in the first three quarters of 2009 compared to the same period in 2008 (OTC perspectives, 2009b). This decrease in spending on pharmaceutical products, however, reflects the general trend of the overall advertising industry's decreased spending because of the economy.

Before 1997, most pharmaceutical advertising dollars were spent on print media (*Advertising Age*, 2011). After the regulation on television DTCA was attenuated, the focus in terms of advertising spending has moved to television. For both DTCA and OTCA, television is the medium that received the highest amount of disbursements for advertising, followed by magazines. In 2010 (*Advertising Age*, 2011), as shown in Figure 2, expenditures on DTCA was highest for TV (54.7%, combining expenditures on network TV, cable TV, syndicated TV, and spot TV), followed by magazines (32.5%), newspapers (7.1%), and the Internet (4.7%). Likewise,

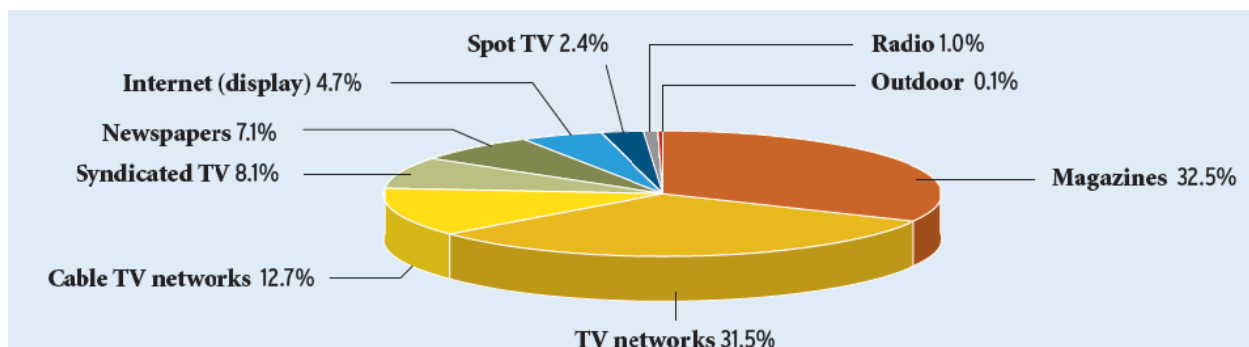
in 2008 (OTC Perspective, 2009a; as cited in DeLorme, Huh, Reid, & An, 2010b), spending on OTCA was highest for TV (65%, combining expenditures on network TV, cable TV, syndicated TV, and spot TV), followed by national magazines (23%), spot radio (3%), and Spanish language network TV (3%) (See Table 1).



Note: Totals are for 17 measured media: network TV, spot TV, cable TV networks, Spanish-language TV networks, syndicated TV, consumer magazine, Sunday magazine, Spanish-language magazine, newspaper, national newspaper, Spanish-language newspaper, national spot radio, local radio, outdoor and internet display (excluding search and broadband video).

Source: Kantar Media (2011; quoted from *Advertising Age*, 2011, p. 5)

Figure 1. DTC Advertising Spending: 1996 to 2010



Note: See Figure 1 for notes on measured media.

Source: Kantar Media (2011; quoted from *Advertising Age*, 2011, p. 9)

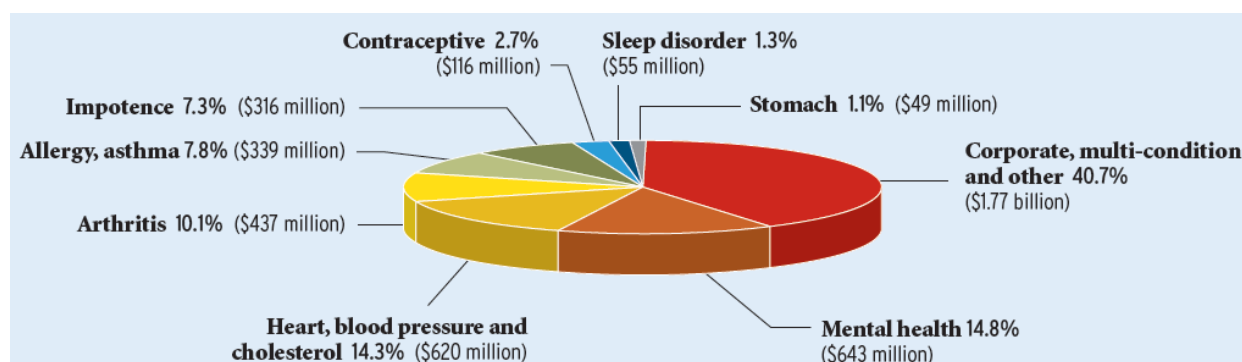
Figure 2. DTC Advertising Spending by Media in 2010

Table 1. OTC Drug Advertising Spending by Media in 2008

	2007	2008	Change	% change
Network TV (28%)	954,416,000	834,549,000	- 119,867,000	- 14.40
National magazines (23%)	691,534,000	684,741,000	- 6,753,000	- 1.00
Cable TV (22%)	861,535,000	668,254,000	- 193,281,000	- 28.90
Syndicated TV (8%)	222,516,000	242,030,000	195,140,001	8.10
Spot TV (7%)	149,655,000	206,276,000	56,621,000	27.40
Spot radio (3%)	100,341,000	99,037,000	- 1,304,000	- 1.30
Spanish lang. net TV (3%)	86,804,000	76,947,000	- 9,857,000	- 12.80
Free standing insert coupon (2%)	49,122,000	58,425,000	9,303,000	15.90
Network radio (2%)	62,696,000	48,429,000	- 14,267,000	- 29.50
National Sunday supplement (1%)	25,568,000	29,676,000	4,108,000	13.80
Other ^a (1%)	34,513,000	32,968,000	- 1,545,000	- 4.70
Total	3,238,706,000	2,981,337,000	- 257,369,000	- 8.60

Note:^a Other includes local newspapers, Spanish cable TV, outdoor, national newspapers, local magazines, and local Sunday supplements

Source: OTC Perspective (2009a; quoted from DeLorme et al., 2010b, p. 214)



Note: Conditions listed are based on Kantar Media Classifications for prescription drugs and pharmaceutical houses.
Source: Kantar Media (2011; quoted from *Advertising Age*, 2011, p. 7)

Figure 3. DTC Advertising Expenditures by Category in 2010

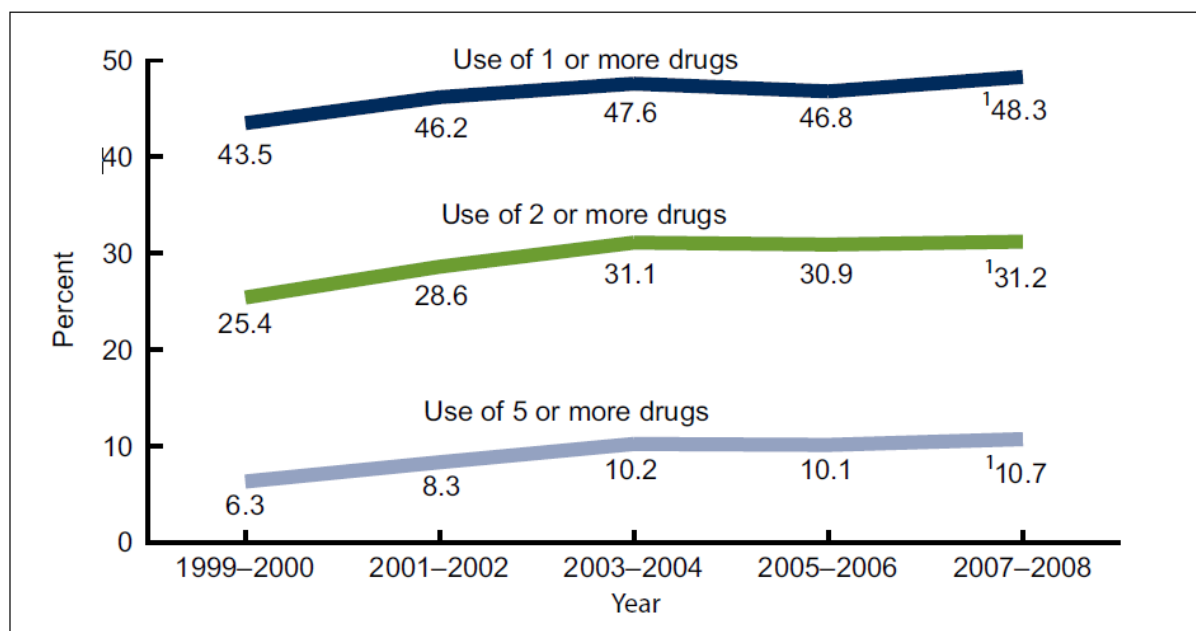
According to Kantar Media (2011), the top five most advertised Rx brands in 2010 were Lipitor (\$272 million), Cialis (\$220.6 million), Cymbalta (\$206 million), Advair (\$200.5 million), and Abilify (\$155.7). As shown in Figure 3, mental health, heart disease, arthritis, allergy and asthma were the categories that usurped a large proportion of DTCA spending (Kantar Media,

2011; as cited in *Advertising Age*, 2011). The top five OTC brands in terms of advertising spending in 2010 (Kantar Media, 2011) were Advil (\$101 million), Mucinex (\$ 82.4 million), Claritin (\$79.3 million), Zyrtec (\$75.3 million), and Aleve (\$55.7 million).

Rx and OTC Drug Market Trends

Although the advertising expenditures for both DTCA and OTCA have decreased in the last 5 years, the pharmaceutical industry has thrived in terms of sales. In 2008, consumers spent \$16.8 billion on OTC drugs and \$234.1 billion on Rx drugs, while the pharmaceutical industry spent \$2.98 billion on advertising OTC drugs and \$4.7 billion on advertising Rx drugs (DeLorme et al., 2010b; Gu, Dillon, & Burt, 2010; Kantar Media, 2011; as cited in *Advertising Age*, 2011; OTC perspectives 2009a). In 2010, consumers spent approximately \$259 billion on Rx drugs, while the pharmaceutical industry spent \$4.3 billion on advertising Rx drugs (Kantar Media, 2011; as cited in *Advertising Age*, 2011). Studies found that drug advertising contributed to an increase of drug sales to some extent. For example, for every dollar spent on DTCA in 2000, the return's estimation was \$4.20 in sales (Kaiser Family Foundation, 2003).

As shown in Figure 4, the percentage of people who take Rx drugs has increased over the decade (Gu et al., 2010). About half of (48.3%) American consumers were found to use at least 1 or more prescription drugs in 2008 (Gu et al., 2010). The most commonly used types of Rx drugs were cholesterol lowering drugs, heart disease related drugs, and anti-depressants (Gu et al., 2010). The results of their study indicate that older people, females, and those who have regular places for health care and have health insurance were more likely to use prescription drugs.



¹Significant linear trend from 1999-2000 through 2007-2008.

Note: Age adjusted by direct method to the year 2000's projected U.S. population.

Source: CDD/NCHS, National Health and Nutrition Examination Survey. (quoted from Gu et al., 2010, p. 1)

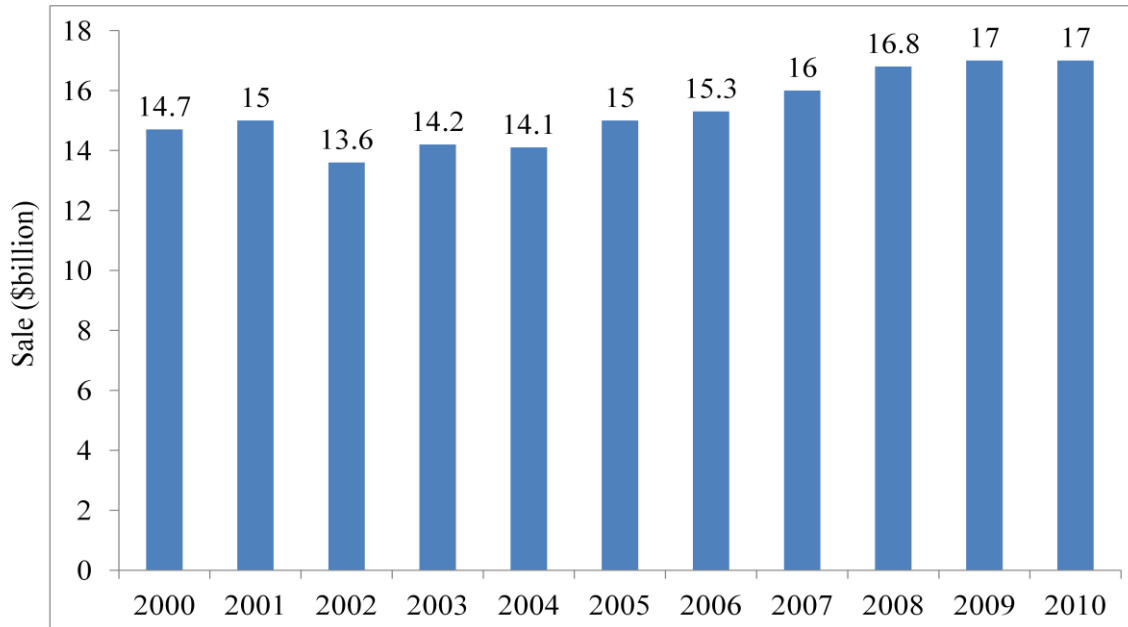
Figure 4. Trends in the Percentage of Persons Using Rx Drugs, 1999-2008

As shown in Figure 5, consumers' use of OTC drugs has increased from 2004 to 2010 (Consumer Healthcare Products Association, 2012). "As a rule, OTC drug sales have been fairly recession proof and sales' peaks and valleys have been minimal" (DeLorme et al., 2010b, p. 210). According to *Mintel Reports* (2010), about half of Americans (47%) were currently taking OTC drugs, and the most commonly used type of OTC medicines were pain relievers and cold and allergy medicines.

It is estimated that growth in the OTC drug market will continue in the near future due to trends in the drug market (DeLorme et al., 2010b):

First, self-medication is growing and OTC drugs provide a convenient and inexpensive way to treat minor and ordinary health problems. Second, Rx-to-OTC switching is not likely to abate, making more medications available without a prescription. Third, the use

of OTC medications is encouraged by medial gatekeepers (e.g., HMOs, insurance companies) as a cost-saving treatment option to expensive prescription drugs. Fourth, health literacy is likely to increase, especially as use of the internet as a source of self-medication information expands. (p. 211)



Note: Excludes Wal-Mart OTC sales.

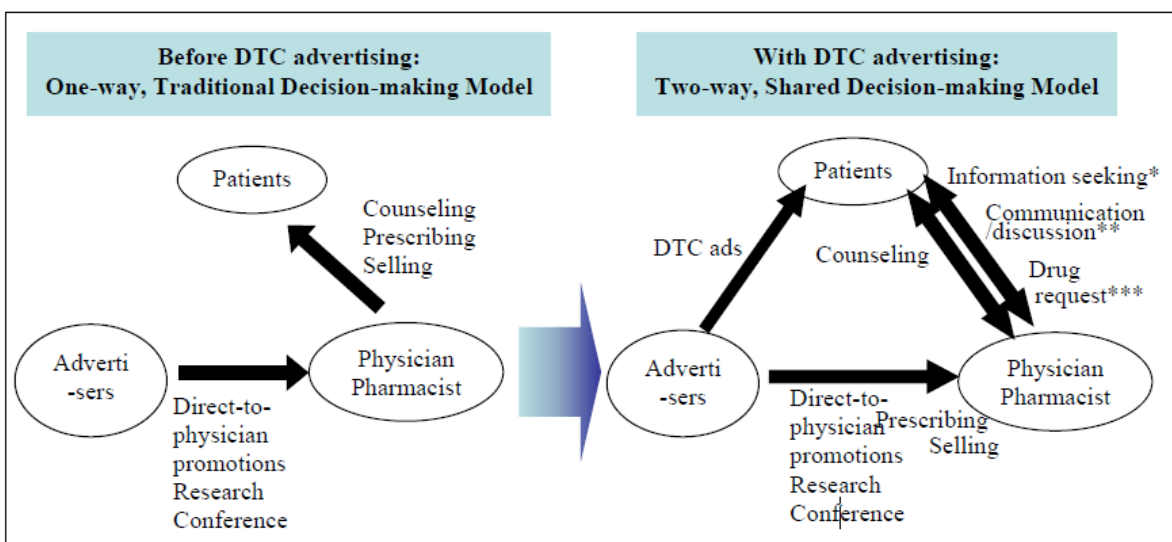
Source: Consumer Healthcare Products Association (2012)

Figure 5. OTC Drug Retail Sales

The Roles of DTCA and OTCA

DTCA is considered to play a key role in shifting the traditional one-way healthcare decision making process to a two-way, shared decision-making process (Deshpande, Menon, Perri III, & Zinkhan, 2004). Deshpande et al. (2004) argued that:

The process of shared decision-making is characterized by the equal involvement of the patient in the decision-making process. The information transfer in this process is bi-directional, involving both the physician education of the patient about the disease and therapeutic outcomes and the patient's expression of therapeutic preferences (Charles et al., 2002)... In the course of this process, both physician and patient weigh the risks and benefits of the therapeutic options under consideration, and they reach a collaborative decision (Charles et al., 2002). This process may lead to increased patient satisfaction (due to the interaction between patient and physician), increased knowledge of the disease and therapeutic options, and better treatment outcomes such as compliance and adherence to drug dosage regimens. (p. 501)



*Information seeking: seeking further information from media and interpersonal sources.

**Communication/discussion: talking with a doctor or a pharmacist about the advertised drug or ad-conveyed health conditions and treatments

***Drug request: asking a doctor to prescribe the advertised drug or change an existing prescription

Source: Huh (2003, p. 4)

Figure 6. The Impact of DTCA on a Shift in Decision-Making

As shown in Figure 6, before DTCA entered the market, pharmaceutical companies mainly promoted their products to physicians and pharmacists, and healthcare decision making

was solely driven by physicians. Now, with DTCA, pharmaceutical companies can directly advertise their products to consumers; thus, consumers are empowered with information through DTCA, and they and their physicians together make decisions about their healthcare, for example, which drug they should take, if any. Intense debates have continued surrounding the positive and negative effects of DTCA. Table 2 summarized these arguments against and for DTCA.

Table 2. Arguments Against and For DTCA

Claimed benefits of DTCA	Claimed harmful effects of DTCA
(1) Patient education – informed patients are more involved in their healthcare	(1) Marketing is for profit not consumer education and health
(2) Tackling under-treatment	(2) Leads patients to pressure their doctors to prescribe unnecessary or inappropriate drugs
(3) Improved economic value of healthcare	(3) Misleads patients if advertisement is unbalanced in disclosing benefits versus side-effects
(4) Improved drug treatment compliance	(4) Damages the doctor/patient relationship
(5) Improved physician/patient relationship	(5) Increases pressure on doctor visits and workload of physicians
	(6) Medicalises conditions common to human existence and ageing
	(7) Increased patient risk from new drugs
	(8) Leads to increased drug budget costs
	(9) Diverts funds from research and development

Source: Auton (2004, p. 6)

Pharmaceutical companies aim to achieve several purposes through OTCA (DeLorme et al., 2010b): “promote self-medication; increase awareness of health conditions and symptoms; communicate OTC product advantages (e.g., ingredients and functions); and influence self-treatment purchase by positioning OTC drugs as the best relief solutions” (p. 213). OTCA can either directly or indirectly (through interpersonal moderators) influence consumer behavior

(DeLorme et al., 2010b). DeLorme et al. (2010b) argued that the direct influence of OTCA is limited; thus, understanding the indirect influence of OTCA, which might prompt communication between healthcare professionals and consumers, is important.

The current study aims to understand both DTCA and OTCA effects in terms of how exposure to DTCA and OTCA influences consumers' attitude toward and behavioral outcomes of DTCA and OTCA and what kind of audience factors can influence the process. Because of the characteristic of Rx drugs (consumers are not final decision makers), only indirect influences of DTCA are examined as behavioral outcomes (e.g., communication with doctors, friends or relatives, and pharmacists and information searches triggered by DTCA). On the other hand, for OTC drugs, both direct and indirect influences of OTCA are examined in this study; for example, purchase behaviors prompted by OTCA are considered to be direct effects of OTCA, whereas communication with doctors, friends or relatives, and pharmacists and information searches triggered by OTCA are considered to be indirect effects of OTCA.

Purpose of the Current Study

The rise of self-medication and the growing number of previous Rx drugs changing to OTC drugs place importance on investigating the effects of OTCA, an understudied area of pharmaceutical marketing. Little is understood regarding how OTCA influences the consumer decision making processes. Although different models were developed to examine DTCA's effects (e.g., Huh & Becker, 2005; Menon, Deshpande, Zinkhan, & Perri III, 2004), these models were not used to examine OTCA's effects. Moreover, the key difference between Rx and OTC drugs calls for researchers' attention. The major difference between Rx and OTC drug purchase behaviors is that for OTC drugs, consumers are the final decision makers, whereas they are not the final decision makers for Rx drugs since they have to acquire prescriptions from medical

professionals for Rx drugs. Consumers may respond differently to DTCA and OTCA and engage in different purchase behaviors because of this difference. Despite the key difference between Rx and OTC drugs, most of the previous research on pharmaceutical advertising did not pay attention to this possible difference, only providing a fragmented picture of the consumer processing of drug advertising. Few studies compared consumer responses to DTCA and OTCA (Diehl, Mueller, & Terlutter, 2007, 2008), and these studies focused mainly on advertising skepticism.

Thus, the current study will compare consumers' responses to DTCA and OTCA and examine where the differences, if any, originate by testing two proposed models based on a thorough review of the literature (see Figure 16 (p. 29) and Figure 18 (p. 52) for the proposed models); one model is based on the modified hierarchy-of-effects model, and the other is based on the consumer socialization framework.

The specific objectives of the current study are:

1. to determine if the two proposed models are meaningful for understanding both DTCA and OTCA; to determine which model more adequately explains the effects of DTCA and OTCA on attitudinal and behavioral outcomes;
2. to determine if consumers' levels of exposure to, their perceptions of, and attitude toward DTCA and OTCA are different. If so, to examine where these differences originate by identifying out significant predictors that influence the process;
3. to determine the differences in the magnitude and characteristics of the effects of DTCA and OTCA on behavioral outcomes by examining the indirect effects of DTCA and both the direct and indirect effects of OTCA;

4. to determine if any audience characteristics (demographic and health-related characteristics) influence how much advertising consumers are exposed to and how they respond to OTCA and DTCA.

Dissertation Chapters and Organization

This chapter has provided an overview of the pharmaceutical industry and advertising, as well as the purpose of the current study. Chapter 2 illustrates the models that have been used in studying responses to DTCA, proposes two models based on the previous models and theoretical frameworks, summarizes empirical findings related to the models, and presents hypotheses and research questions based on the literature review. In Chapter 3, the research method will be detailed including the sampling method, survey procedures, and questionnaire construction and measures. Chapter 4 presents the results and findings from the analysis of the collected data. Chapter 5 provides a summary and discussion of key findings, implications of the findings, and recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

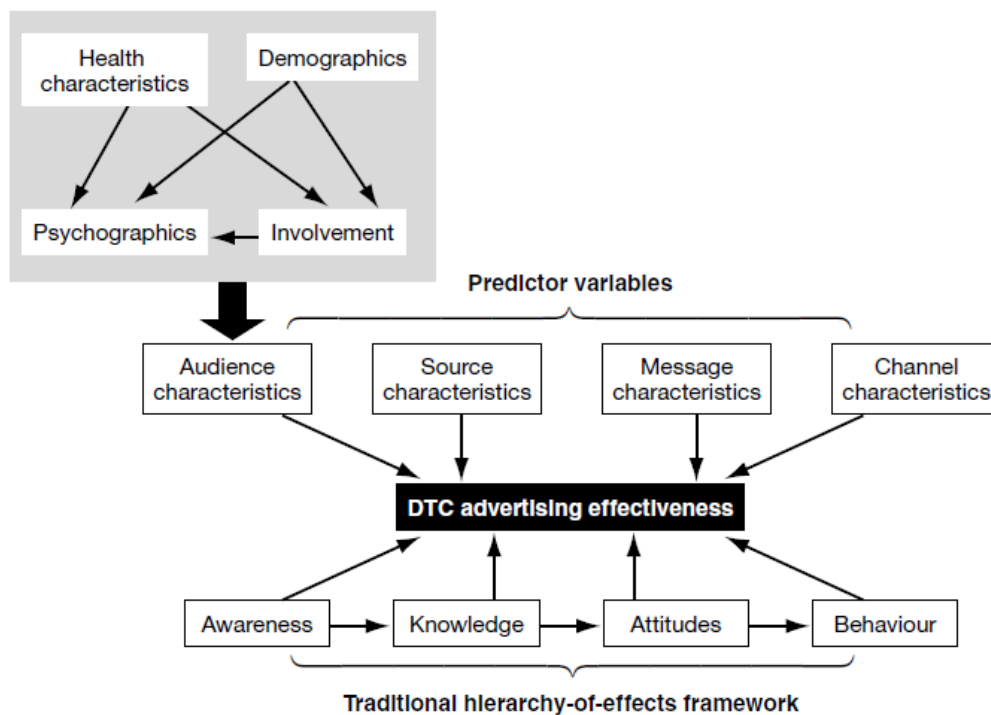
Published research on over-the-counter non-prescription drug advertising (OTCA) is scarce. Scholarly focus has been on direct-to-consumer prescription drug advertising (DTCA) because of the tremendous increase in DTCA spending since 1997, when the FDA's regulation was loosened on DTCA on television (DeLorme et al., 2010b; Huh & Becker, 2005). A review of the OTCA literature revealed that only 24 studies have examined OTCA since the mid-1970s, whereas more than 160 DTCA studies have been published in the past 12 years (DeLorme et al., 2010b).

Researchers have examined the message content of DTCA and OTCA, consumer responses and message effects, and economic effects of DTCA and OTCA. Extensive reviews of the previous research on DTCA and OTCA are available (e.g., DeLorme, Huh, Reid, & An, 2010b, 2011b). The focus of this study is on consumers' responses to DTCA and OTCA and factors influencing their responses. Thus, this chapter reviews the literature on DTCA and OTCA by (1) describing previous models which lay out factors influencing consumer responses to DTCA, (2) proposing two models that will be tested in this study, and (3) describing components of the proposed models and summarizing relevant previous findings. The present study focuses on consumer responses to DTCA and OTCA in general at an aggregate level, not specific to individual ads. Since the focus of existing literature was on DTCA, findings regarding consumer responses to DTCA are mainly summarized in the following sections; findings pertaining to OTCA are mentioned when available.

Models of DTCA Effects

Previous studies have used various theoretical frameworks such as the hierarchy-of-effects model, the attitude toward advertising model, third-person effect, the theory-of-planned behavior, cultivation theory, and the consumer socialization model to explain how DTCA works. Some of the studies proposed complex models for the context of DTCA based on these theoretical frameworks, and these are introduced in this section.

Models Based on the Hierarchy-of-Effects Model



Source: Menon et al. (2004, p. 110)

Figure 7. A Comprehensive Model of DTC Advertising Effectiveness

Menon et al. (2004) proposed a comprehensive model of DTC advertising effectiveness (see Figure 7). This model presents four predictors of DTC advertising effectiveness, such as audience characteristics, source characteristics, messages characteristics, and channel characteristics (see Table 3), and several indicators of DTC advertising effectiveness based on

the hierarchy-of-effects framework. They suggest that information searches, drug inquiries and request behaviors, and compliance and refill behaviors are primary indicators of the effectiveness of DTC advertising. Even though this model provides a comprehensive list of factors influencing DTC advertising effectiveness and suggests outcome measures of DTC advertising effectiveness, this model focuses on traditional advertising media and does not cover Internet advertising or social media. Moreover, the model has not been empirically tested. Harker and Harker (2007) summarized existing evidence that supports the model suggested by Menon et al. (2004).

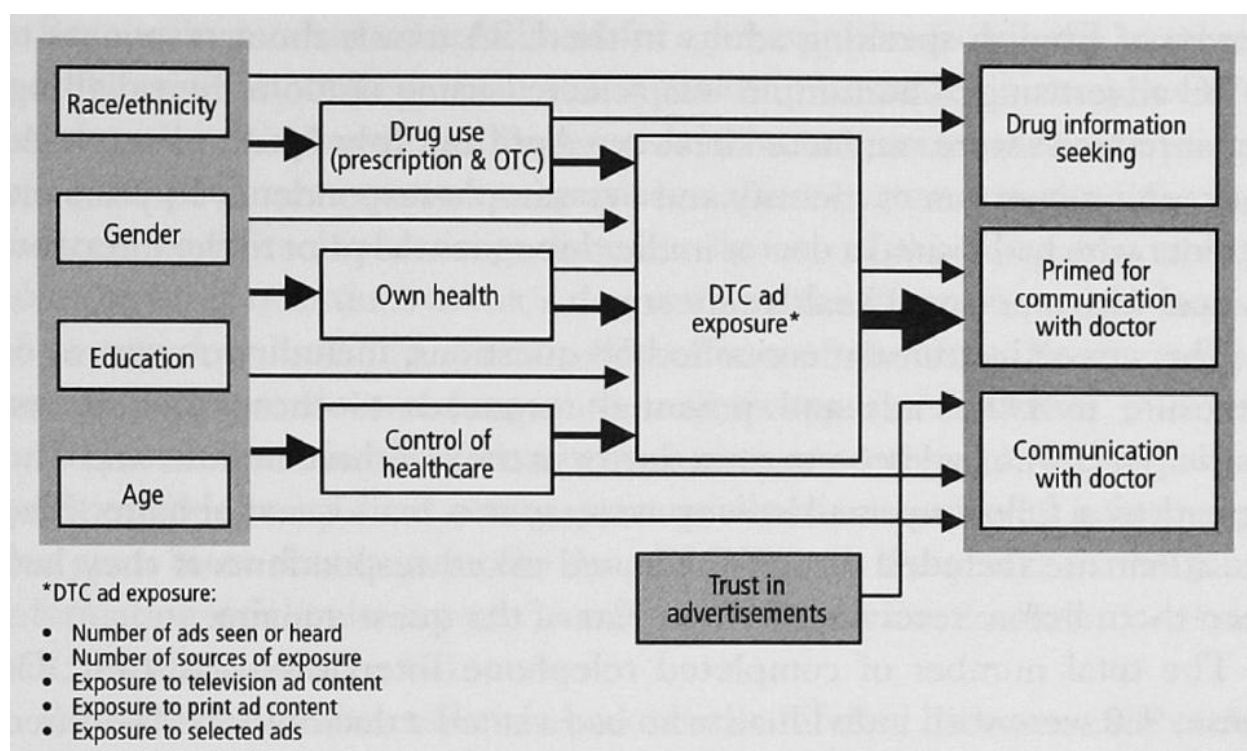
Table 3. Predictors of DTC Advertising Effectiveness

Source characteristics
<ul style="list-style-type: none"> • Source: FDA vs. manufacturer; prescription pamphlets vs. DTC ads • Endorser: celebrity endorsers; experts vs. ‘man on the street’
Message characteristics
<ul style="list-style-type: none"> • Format: integrated vs. segregated risk and benefit information, simple vs. technical • Length • Specificity: general vs. specific • Exposure: single vs. repeated • Message appeals
Channel characteristics
<ul style="list-style-type: none"> • Media: broadcast vs. print vs. internet • Mode: audio vs. video vs. dual mode
Audience characteristics
<ul style="list-style-type: none"> • Demographics: age, gender, race, education, income, marital status, geographic location, healthcare coverage, coverage for prescription drugs • Healthcare expertise: healthcare profession, prescription drug knowledge • Involvement: health involvement, motivation to process, need for cognition, ad relevance • Health characteristics: diagnoses, chronic vs. acute illness, prescription drug utilisation • Psychographics: trust in physician, trust in media, attitudes towards prescription drugs

Source: Menon et al. (2004, p. 104)

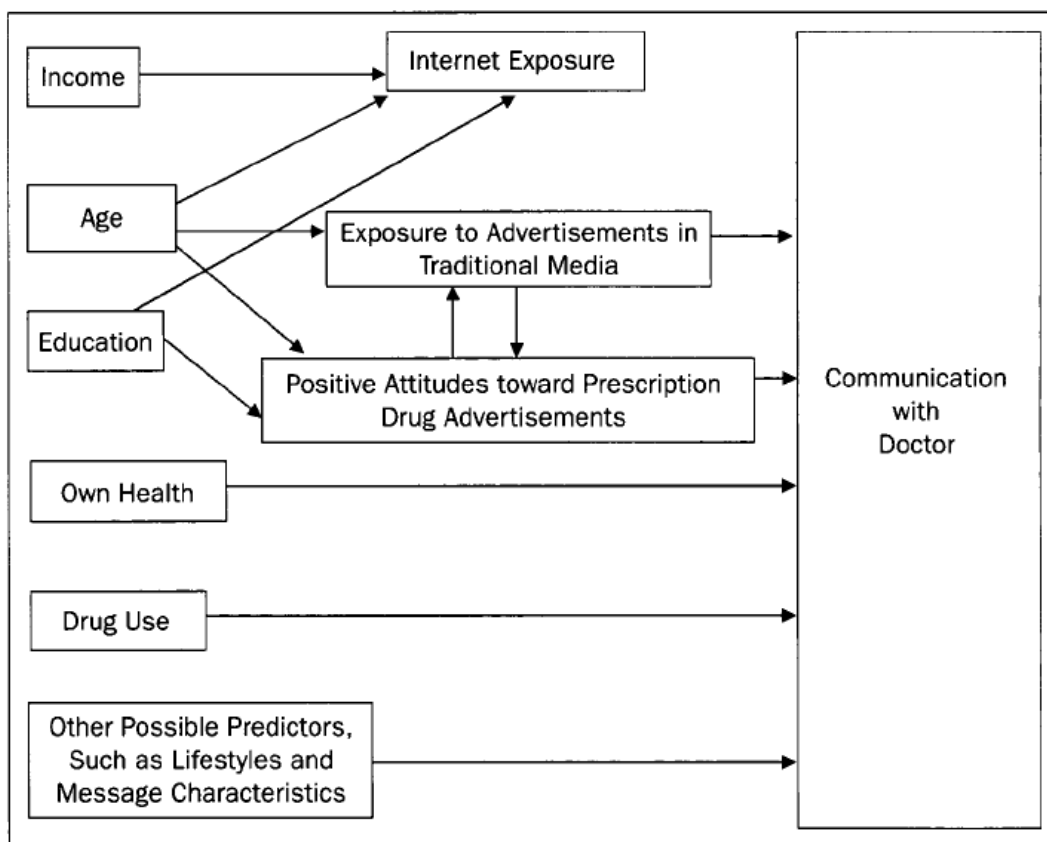
Huh and Becker (2005) tested a model derived from the hierarchy-of-effects model and past research on the effects of DTC advertising (see Figure 8). The model suggests exposure to DTC ads and trust in ads as predictors of behaviors related to DTC advertising, such as drug

information seeking, primed for communication with doctors (being ready to communicate with the doctor), and communication with doctors. Demographic variables and health status related variables, such as drug use, were entered as predictors of exposure to DTC ads. They analyzed the data gathered by the FDA's Center for Drug Evaluation and Research (sample size N=343) and supported the model overall, except for consumers' trust in advertisements; this variable was not related to any key variable in the model. The researchers presumed that the lack of relationship was because of the weak measurement of consumers' trust in ads. They suggested that future research should include a more comprehensive set of attitude measures and other outcome variables, such as communication with pharmacists or with friends.



Source: Huh & Becker (2005, p. 449)

Figure 8. Paths of DTC Advertising Effects



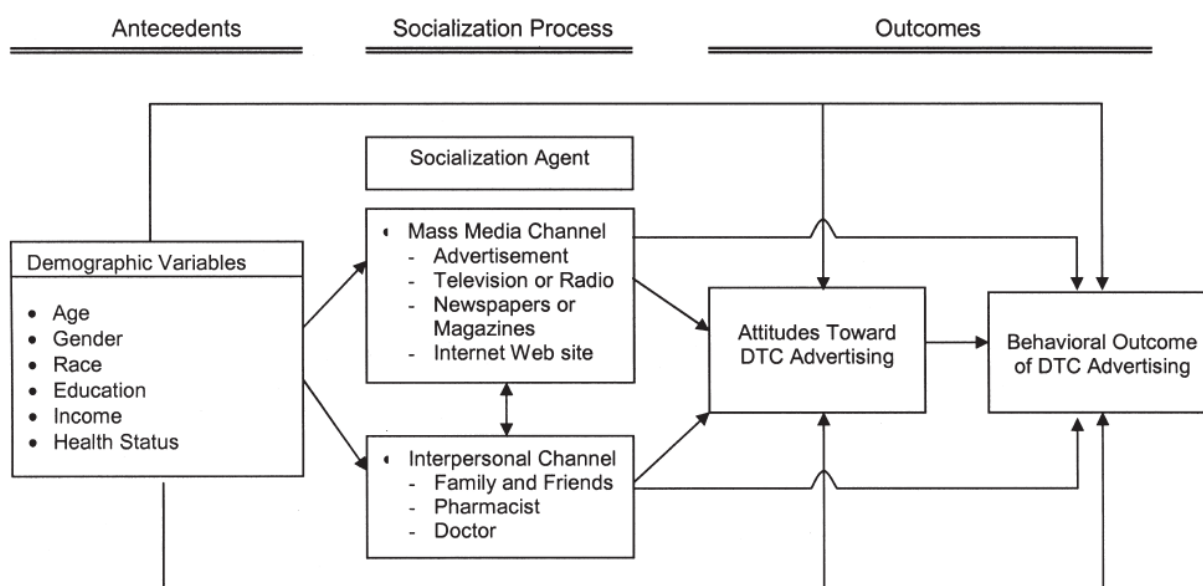
Source: Yuan (2008, p. 36)

Figure 9. DTC Advertising Effectiveness Model

Yuan (2008) proposed that (1) demographic variables, such as age, education, race, gender, and income, and health-related variables, such as healthcare coverage and drug use, predict exposure to drug advertisements; (2) demographic variables, health related variables, and exposure to drug advertisements predict attitude toward DTCA; and (3) demographic variables, health related variables, exposure to drug advertisements, and attitude toward DTCA predict communication with doctors (see Figure 9). Yuan analyzed the data from the study “Public Health Impact of Direct-to-Consumer Advertising of Prescription drugs, July 2001-January 2002” gathered by Harris Interactive (N=3000) and found that not all demographic variables and health-related variables predict the outcome variables in the same way. For example, among

demographic variables, only age and education were significant predictors of attitude toward DTCA. The study found that exposure to ads and attitude toward DTCA predicted each other. They also found that attitude toward DTCA, drug use, health status, and exposure to ads were predictors of communication with doctors. The findings of this study have limited explanatory power because of small adjusted R squares (below 20) and the weak measurement of ad exposure and attitude toward advertising variables. Also, behavior was measured in terms of communication with doctors only.

Models Based on the Consumer Socialization Model



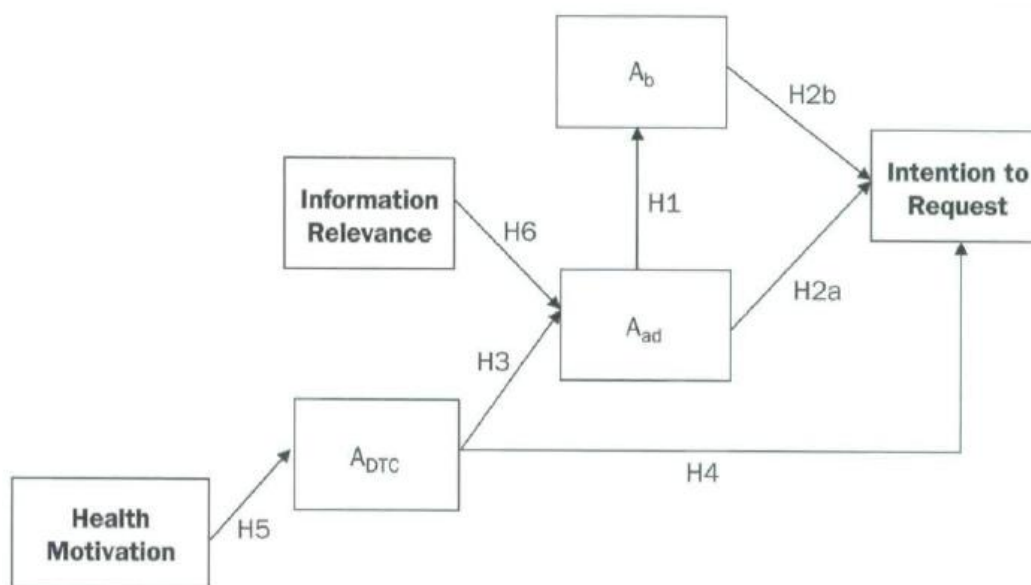
Source: Lee et al. (2007, p. 111; adapted from Moschis & Churchill, 1978)

Figure 10. A Conceptual Model of Consumer Socialization and Attitude Toward Direct-to-Consumer (DTC) Advertising and Behavioral Outcome

Lee, Salmon, and Paek (2007) suggested a model of consumer socialization and attitude toward DTCA and behavioral outcome (see Figure 10). Demographic variables, such as age, gender, race, education, income, and health status, were predicted to influence socialization agents, such as the use of interpersonal channels and mass media channels as health information

sources. Consumers' reliance on interpersonal and mass media channels was predicted to influence attitude toward DTCA and, consequently, the behavioral outcomes of DTCA. They analyzed nationally representative survey data gathered by Inter-University Consortium for Political and Social Research (ICPSR) (N=2563). The major findings of this study were that consumers' use of mass media channels influenced behavioral outcomes of DTCA through their use of interpersonal channels and attitude toward DTCA. However, their behavior measure was limited to communication with doctors, not including communication with pharmacists or friends or relatives and information seeking behaviors. They also did not examine health-related characteristics other than health status that might influence the socialization process.

Models Based on the Attitude-Toward-the-Advertisement Model



Source: Hausman (2008, p. 43)

Figure 11. Model of DTC Advertising

Hausman (2008) modified the Attitude-Toward-the-Advertisement model and suggested a model that examined the influence of one's attitude toward advertising on the attitude toward

the advertised brand and on the intention to request a prescription for an advertised drug (see Figure 11). The model suggests that (1) health motivation influences attitude toward DTCA (A_{DTC}), (2) A_{DTC} and consumers' perceptions of the relevance of the information provided in an advertisement influence attitude toward the specific DTC advertisement (A_{ad}), and (3) A_{ad} directly and indirectly (through attitude toward the brand) influences the intention to request an advertised drug. This model was tested and supported by surveys using two different samples (one included 178 Hispanic participants, and the other included a 277 member consumer panel) and using ads for drugs with varying degrees of disease severity (life threatening and non-life-threatening diseases). This study was meaningful because the model was tested across samples and different drug types, but the outcome measure was limited to the intention to request an advertised drug instead of actual drug request behavior and communication with doctors.

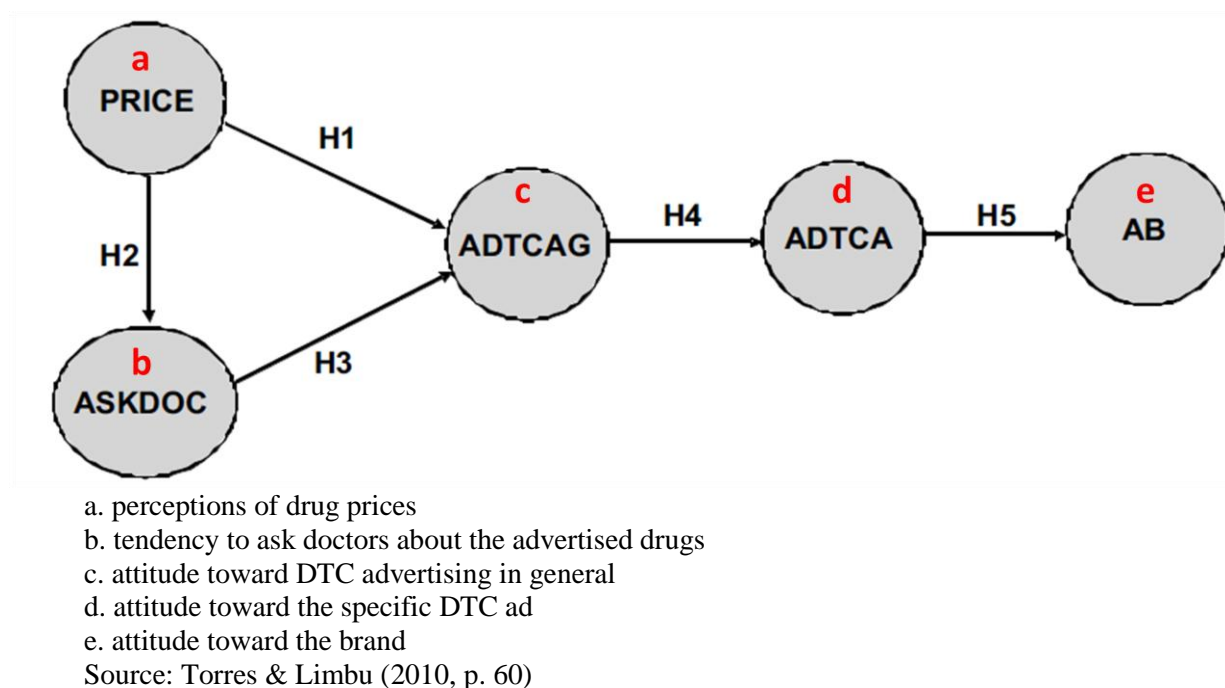
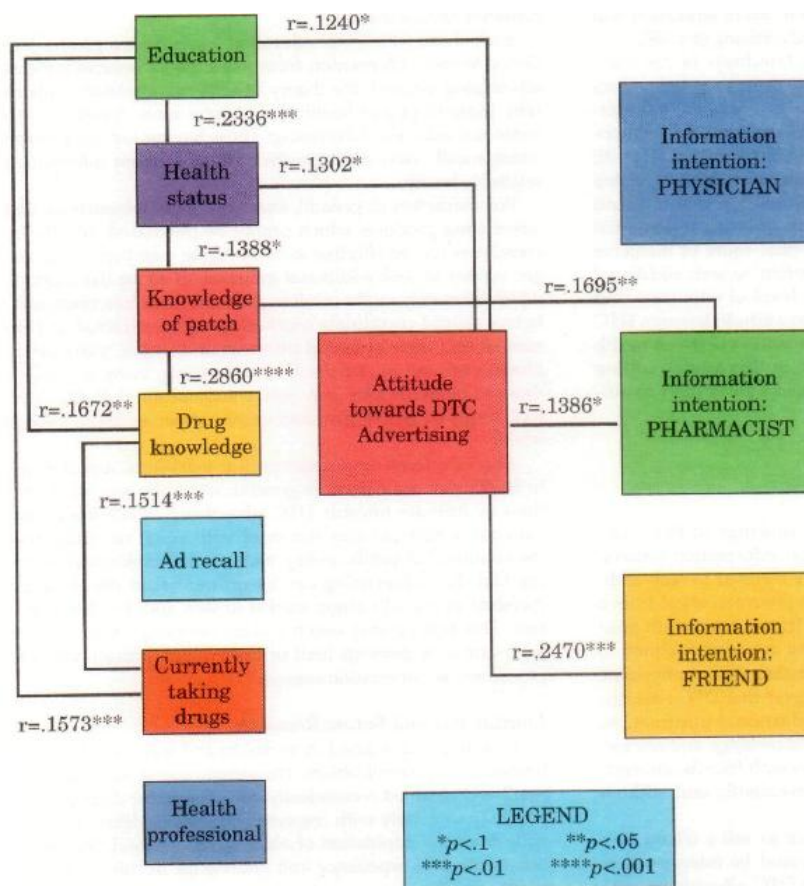


Figure 12. Theoretical Framework

Torres and Limbu (2010) suggested another model based on the attitude-toward-the-advertisement model (see Figure 12). They hypothesized that (1) consumers' perceptions of drug prices do not influence their attitude toward DTCA in general and their tendency to ask doctors about the advertised drugs, (2) consumers' tendencies to ask doctors about an advertised drug influence their attitude toward DTCA in general, and (3) consumers' attitude toward DTCA in general influence their attitude toward the specific DTC ad and, consequently, their attitude toward the brand. Two-hundred and four adult patients, who were having trouble sleeping, were shown an ad for a fictitious sleep aid drug and surveyed while they were waiting for their doctors' appointments. From findings of the surveys, they supported their suggested relationships in the model. In this study, how respondents' attitude toward DTCA, toward a specific DTC ad, and the brand influence the behavioral outcomes was not examined.

Other Models

Williams and Hensel (1995) conducted a survey using a convenience sample of adults age 59 and older (N=132) and suggested a model based on their findings from the survey (see Figure 13). They found that consumers with less education and poorer health showed more positive attitude toward DTCA, and consumers with more positive attitude toward DTCA had higher intentions of seeking information from a pharmacist or a friend rather than a physician.

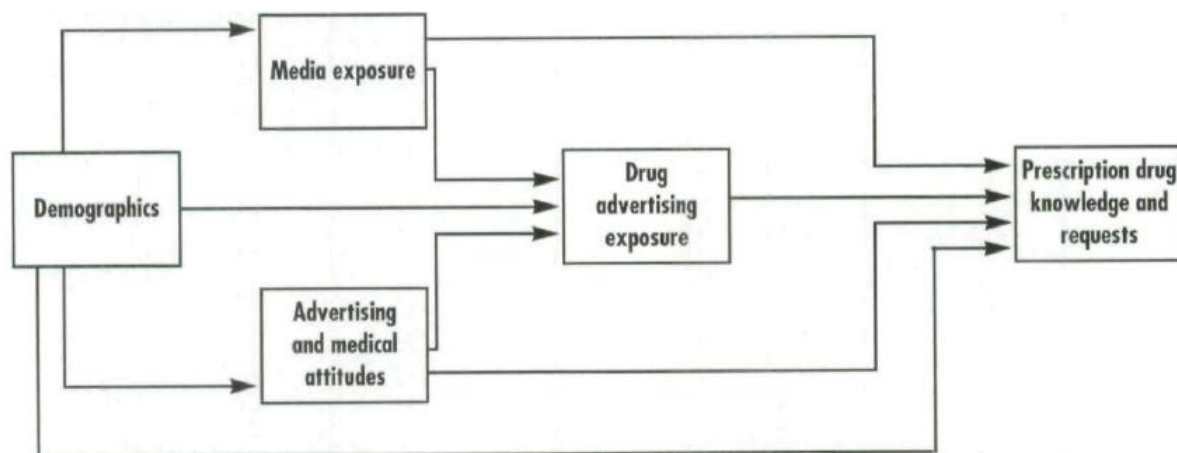


Source: Williams & Hensel (1995, p. 39)

Figure 13. Path Analytic Relationships

Peyrot, Alperstein, Van Doren, and Poli (1998) suggested a causal model of Rx drug knowledge and requests (see Figure 14). This model includes four predictors that influence Rx drug knowledge and Rx drug request behavior: demographics, media exposure, attitude toward DTCA, and awareness of DTCA. They proposed that demographic variables can influence other factors and the dependent variables (Rx drug knowledge and request behavior); media exposure and attitude toward DTCA can influence exposure to DTCA and the dependent variables; and exposure to DTCA can influence the dependent variables. To measure the Rx drug knowledge, they asked how many advertised drugs the respondent recognized. To measure the Rx drug

request behavior, respondents were asked if they had ever requested an advertised Rx drug. Their findings generally supported the model.

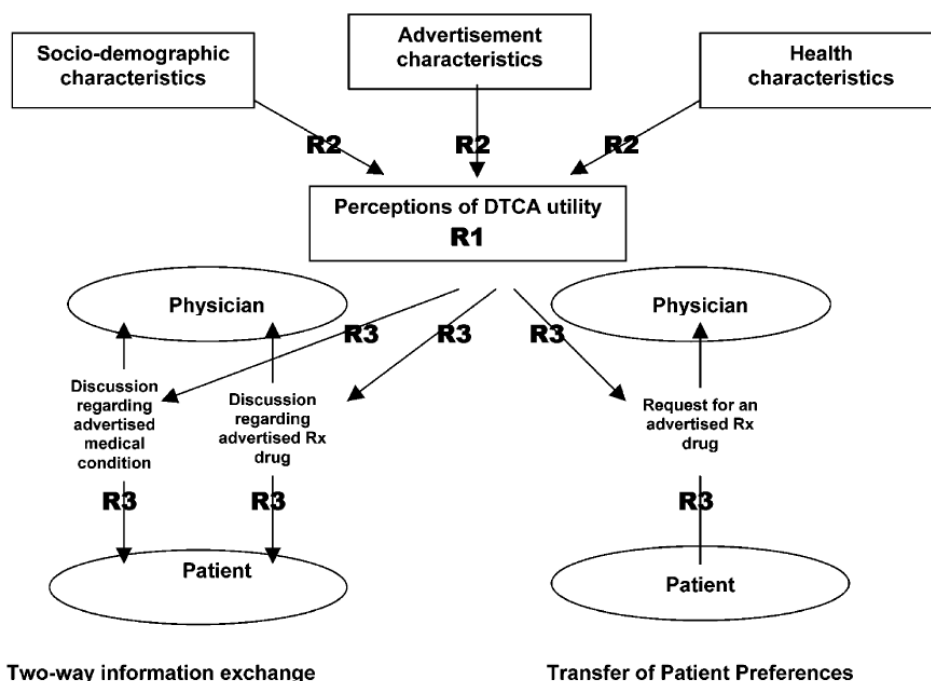


Source: Peyrot et al. (1998, p. 30)

Figure 14. Causal Model of Prescription Drug Knowledge and Requests

Deshpande et al. (2004) proposed a model that examines the role of consumers' perceptions of DTCA utility in their health care decision making process and factors influencing their perceptions of DTCA utility (see Figure 15). Their model suggests that (1) consumers' socio-demographic characteristics (age, gender, race, and education), health characteristics (number of illnesses and amount of drug utilization), and advertisement characteristics (levels of exposure to DTC ads, perceptions about drug risk and benefit information, and clarity of the ads) influence their perceptions of DTCA utility for health care decision making; and (2) consumers' perceptions of DTCA utility influence their use of ad information in their health care decision making. By analyzing secondary data (Princeton Survey Research Associates for Prevention Magazine's 1999 study) with a sample of 1,205 consumers, they found that (1) females and consumers in poorer health perceived DTCA to be more useful in their health care decision making than their counterparts; (2) consumers' perceptions of the quality of risk and benefit

information and the clarity of DTC ads were significant predictors of their opinions of DTCA utility in their decision making; and (3) consumers who have more positive perceptions of DTCA utility were more likely to utilize DTC ads in their decision making processes than their counterparts.



Source: Deshpande et al. (2004, p. 502)

Figure 15. Schematic Representation of the Impact of Direct-to-Consumer Advertising (DTCA) on a Shared Decision Making Model

Implication of Previous DTCA Models

The major findings from the models reviewed are that (1) exposure to DTCA, perceptions of the DTCA utility in health care decision making, and attitude toward DTCA are main predictors of the behavioral outcomes of DTCA, such as communication with doctors, requests of an advertised drug, and information seeking behaviors; (2) exposure to DTCA and attitude toward DTCA predict each other; and (3) various demographic variables and health-related characteristics influence these relationships.

These previous models are meaningful in that they provided several possible mechanisms through which consumers respond to DTCA. However, these models also have limitations. First, these models showed limited explanatory power (R square range: 0.027-0.393, mostly below .20), which means there are other factors that should be addressed in explaining attitudinal and behavioral outcomes. Second, methodologically, since most of previous models used secondary data to test and support their models, some of the measures were not suitable for testing the models (e.g., the measurement of trust in ads in Huh and Becker's study, 2005). Third, previous models were not tested using multiple measures for important variables. For example, behavioral outcomes were mostly limited to communication with doctors and information seeking. Communication with pharmacists, friends or relatives, which can influence consumers' decision making processes, was disregarded. Finally, these models were specific to DTCA contexts. None of these models were modified for and tested in the OTC drug advertising context.

Present Models

The present study proposes two models that aim to provide a more comprehensive picture of how DTCA and OTCA work. The characteristics and merits of these models and how they are tested are:

- (1) Maximizes explanatory power: In order to maximize the explanatory power, the present models include significant variables that are found to influence attitudinal and behavioral outcomes based on previous studies. In other words, a more comprehensive set of predictors of outcome variables is included in the models based on a thorough literature review.
- (2) Uses multiple measures: The present models use multiple measurement items to measure each variable in the model (e.g., exposure, attitude, and ad-prompted behavior).

(3) Includes an OTC drug advertising context: The present model will be adapted to and tested in the context of OTC drug advertising, another important segment of pharmaceutical advertising.

(4) Compares two models: Two proposed models will be compared in terms of their explanatory power.

The mechanisms through which consumers respond to DTCA and OTCA will be explained by two distinct models in the present study: one based on the modified Hierarchy-of-Effects model and the other based on the Consumer Socialization framework. The next sections describe the two proposed models and derive research questions and hypotheses based on previous research.

Model 1 A Proposed Model of DTC and OTC Advertising Effects

Model 1 was developed based on previous models by Huh and Becker (2005), Menon et al. (2004), and Yaun (2008). These models applied the Hierarchy-of-Effects model in the DTC drug advertising context. The Hierarchy-of-Effects model was one of the earlier theoretical efforts to understand how advertising works for brands and products (Vakratsas & Ambler, 1999). The Hierarchy-of-Effects model was first presented by Lavidge and Steiner (1961). The model suggests that consumers may move up a series of steps during their purchase decision making: unaware of the existence of the product or service → aware of its existence → knowing what the product has to offer → having favorable attitude toward the product → developing a preference over all other possibilities → having the conviction that the purchase would be wise → product purchase. Lavidge and Steiner (1961) argue that:

The various steps are not necessarily equidistant. In some instances the ‘distance’ from awareness to preference may be very slight, while the distance from preference to

purchase is extremely large. In other cases, the reverse may be true. Furthermore, a potential purchaser sometimes may move up several steps simultaneously. (p. 60)

These steps can be further categorized into the three functions of advertising: (1) cognition (awareness and knowledge), (2) affection (liking and preference), and (3) conation (conviction and purchase). Researchers applied this model to several different advertising contexts. In the context of DTCA, the behavioral outcome measure (purchase) should be adapted, because consumers are not final decision makers in obtaining Rx drugs. Thus, previous studies measured communication with doctors or pharmacists including drug inquiries and drug requests, and information seeking as behavioral outcome measures of DTCA. There are several factors specific to the DTCA context that are found or assumed to influence the hierarchy-of-effects process, such as source, message, channel, and audience characteristics (see Table 3, Menon et al., 2004). Previous studies on DTCA effects mainly examined audience characteristics, such as demographics and health characteristics.

The present model (see Figure 16) suggests: (1) demographic variables influence health related characteristics, exposure to DTCA and OTCA, attitudinal outcomes, and behavioral outcomes; (2) health related characteristics predict exposure to DTCA and OTCA, attitudinal outcomes, and behavioral outcomes; (3) exposure to DTCA and OTCA predicts attitudinal outcomes and behavioral outcomes; (4) attitudinal outcomes predict behavioral outcomes. The following sections will present components of the first model and relationships between components. The components of this model are based on the most commonly reported cognitive, attitudinal, and behavioral responses to DTCA and audience factors influencing the process. Under each component, previous findings will be summarized and based on these findings, hypotheses and research questions will be presented.

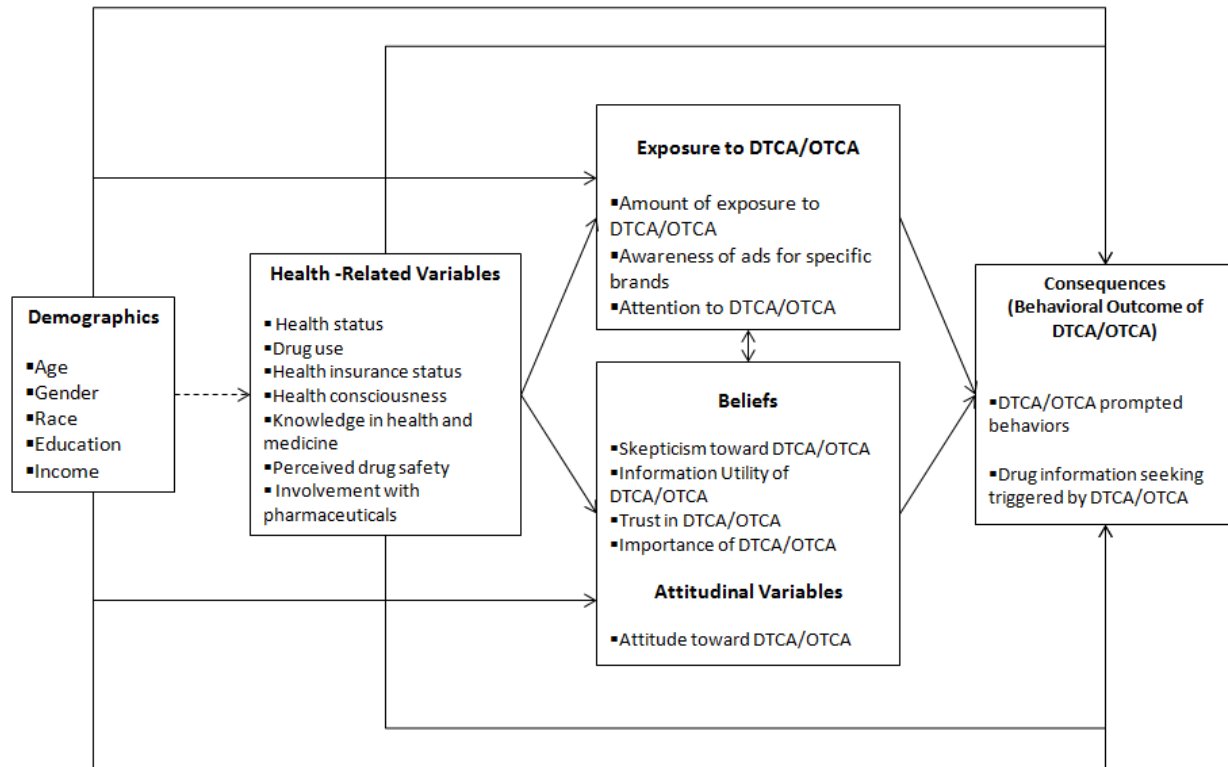


Figure 16. A Proposed Model of Paths of DTCA/OTCA Effects

Model Components

Audience Characteristics

In the proposed model, audience characteristics include demographics (age, gender, race, education, and income) and health-related characteristics (health status, drug use, health insurance status, health consciousness, knowledge about health and medicine, perceived drug safety, and involvement with pharmaceuticals).

Previous studies found that audience characteristics influence exposure to, attitude toward, and behavioral outcomes of DTCA, either directly or indirectly (e.g., Alperstein & Peyrot, 1993; An, 2007; DeLorme, Huh, & Reid, 2006b, 2009; Deshpande et al., 2004; Diehl, Terlutter, Chan, & Mueller, 2010; Everett, 1991; Gönül, Carter, & Wind, 2000; Hausman, 2008; Huh & Becker, 2005; Huh, DeLorme, & Reid, 2012; Huh, DeLorme, Reid, & Kim, forthcoming; Krezmien, Wanzer, Servoss, & LaBelle, 2011; Lee & Begley, 2010; Lee et al., 2007; Mehta & Purvis, 2003; Menon, Deshpande, Perri III, & Zinkhan, 2002; Mintzes et al., 2003; Perri & Dickson, 1988; Perri & Nelson, 1987; Peyrot et al., 1998; Schommer, Singh, & Hansen, 2005; Spake & Joseph, 2007; Williams & Hensel, 1995; Yuan, 2008). The magnitude and direction of the influence of each audience characteristic on the outcome variables are various, but findings are inconclusive. Previous studies reported contradictory findings regarding the influence of audience factors on consumer responses to DTCA. For example, Huh and Becker (2005) found that demographic variables significantly influenced one's health-related characteristics, exposure to DTCA, and behavioral outcomes of DTCA, such as drug information seeking and communication with doctors; older respondents were more likely to be in poorer health and use a greater number of Rx drugs and a lesser number of OTC drugs; females were more likely to use a greater number of Rx drugs; non-whites were in poorer health and used a lesser number of OTC drugs than whites; younger, better educated, and non-white respondents were more likely to be exposed to DTCA; non-whites and women tended to seek information about Rx drugs; younger and non-white respondents tended to communicate with their doctors. On the other hand, Peyrot et al. (1998) found that whites, females, and better educated people were more likely to request the advertised Rx drugs. Lee and Begley (2010) found that non-whites (Hispanics and African Americans) were less likely to be exposed to DTCA and more positive about DTCA.

With regard to attitude toward DTCA, Williams and Hensel (1995) found that those better educated, those in better health, and younger respondents hold less positive attitude toward DTCA. On the other hand, other studies found that younger respondents were more likely to hold positive attitude toward DTCA (e.g., Gönül et al., 2000; Yuan, 2008).

The influence of health-related characteristics on consumers' responses was examined mainly in terms of drug use and health status. For example, Spake and Joseph (2007) found that those who have chronic health conditions were more likely to have positive perceptions of DTCA. Schommer et al. (2005) found that consumers who take a larger number of drugs were more likely to seek additional information about advertised Rx drugs. The influence of some other health-related audience characteristics on consumers' responses to DTCA were examined to a lesser extent: health consciousness (Diehl et al., 2007), perceived knowledge in health and medicine (An, 2007; An, Jin, & Brown, 2009), involvement with medicines (Diehl et al., 2007; Perri & Dickson, 1988), and perceived drug safety (Menon et al., 2002). The current study will also explore the roles of these understudied health-related characteristics (in addition to demographics and other more commonly examined health-related characteristics) in consumers' responses to DTCA and OTCA.

Cognition

Attention and Awareness

Previous DTCA studies typically measured consumers' awareness of DTCA or exposure to DTCA, rather than their attention to DTCA for this stage. Menon et al. (2004) argued that this might be because most studies were surveys rather than experimental research. They also mentioned that:

Moreover, DTC ads provide extensive product attribute information. Consequently, measurement of consumers' attention to the ad may be a difficult proposition. These issues preclude the accurate measurement of the extent and nature of consumer attention to the DTC ad. However, it is possible that attention to certain components of the ad may be predictive of how effectively the ad communicates that informational component. (p. 97)

Advertising awareness should be considered in terms of awareness of advertising in general and awareness of specific ads (Menon et al., 2004; Sutherland & Friedman, 2000). In regards to consumers' awareness of DTCA at an aggregate level, previous studies found DTCA awareness levels (e.g., have seen or heard DTCA in the past 12 months) to be as high as 80% or more (Aikin, Swasy, & Braman, 2004; Axelrod & Moore, 2004; Friedman & Gould, 2007), and the awareness levels have increased over the past two decades (Calfee, 2002). Perri and Nelson (1987) found the DTCA awareness level to be 12.2%. Alperstein and Peyrot (1993) found that the DTCA awareness level was 35%. According to FDA's survey results (Aikin et al., 2004), awareness went up from 72% (1999) to 81% (2002). A 2004 Harris Interactive Poll reported an 85% DTCA awareness level (Axelrod & Moore, 2004), and most recently, Friedman and Gould (2007) found a 96% consumer awareness of DTCA among the adult population. With regard to the various media type, the FDA (Aikin et al., 2004) reported that, in 2002, the DTCA awareness level was highest for television ads (97%), followed by magazine ads (75%), ads in a grocery store or pharmacy (41%), ads in a newspaper (32%), ads on the radio (31%), ads in a letter, flyer or announcement respondents got in the mail (22%), and ads on the Internet (16%).

On the other hand, awareness of specific DTC ads was found to vary by specific brands. *Prevention Magazine* (2004) reported that awareness of DTC ads ranged from 52% (Singulair) to

89% (Viagra). Mintzes et al. (2003) found the awareness of ads for seven different DTC drugs from 12.2% (Evista) to 89.5% (Viagra). Dehpande (2004) found the awareness of ads for five birth control medications from 5.9% (Seasonale) to 54.7% (OrthoTricyclen).

In order to examine the relationship between advertising spending, brand-level advertising awareness, and advertising content, Roth (2003) analyzed advertising awareness data (conducted by Market Measures Inc. between 1996-1999), media spending data (6 months media spending computed for each brand prior to collecting the advertising awareness data), and the content analysis of 208 unique DTC ads placed in general news, sports, women's, and health magazines between 1992 and 2000 (*Newsweek, People, Sports Illustrated, Ladies Home Journal, Better Homes and Gardens, Health, Fitness, and Prevention*). He found that (1) the average percentage of awareness across 143 DTC ads was 30.51% (SD=18.83%) and the awareness of ads was not significantly different between ads for chronic and non-chronic disease; and (2) media spending, the use of emotion-laden transformational messages, and not including disease information tended to increase advertising awareness of DTC brands.

Based on these previous studies, the present model includes the perceived amount of exposure to DTCA/OTCA, awareness of ads for specific brands, and attention paid to DTCA/OTCA as exposure to DTCA/OTCA variables. Previous studies identified several predictors and consequences of DTCA exposure. Table 4 summarizes these relationships. In sum, the proposed model in this study will include demographics (age, race, gender, education, and income) and health related characteristics (drug use, health insurance status, health status, involvement with pharmaceuticals, health consciousness, etc.) as predictors of exposure to DTCA/OTCA, and attitudinal and behavioral outcomes as consequences of DTCA/OTCA exposure. Exposure to and attitude toward DTCA/OTCA can predict each other.

Table 4. Summary of Antecedents and Consequences of DTCA Exposure

Antecedents	DTCA exposure	Consequences
age (+)	Perri & Nelson (1987)	
exposure to print media (+), being a regular prescription drug user(+), education (+), income (+), age (-), attitude (physicians should be the sole source of information, advertising would weaken the physician-patient relationship) (-)	Alperstein & Peyrot (1993)	
media exposure (+), attitude toward prescription drug advertising (+), high occupational status (+), being whites (+)	Peyrot et al. (1998)	-drug knowledge (+) -drug request (+)
	Deshpande et al. (2004)	-no significant influence of level of ad exposure on opinions of ad utility
-age (-) , education (+), perceived health (+), drug use (+) -education was the strongest predictor of DTC ad exposure.	Huh & Becker (2005)	-drug information seeking (+), -primed for communication with doctor (+), -actual communication with doctor(+)
-education (+), age (-), household income (+) → exposure to internet websites' health care information -attitude toward DTCA (+), age (+) → exposure to ads in traditional media	Yuan (2008)	-exposure to ads in traditional media (+)→ attitude toward prescription drug ads, communication with doctor -exposure to internet websites (+)→ communication with doctor
Hispanics and African Americans (-)	Lee & Begley (2010)	

Knowledge and Comprehension

Knowledge and comprehension are related to consumers' understanding of the information in the ads. Knowledge and comprehension can be measured specific to each ad. For example, an experimental study (Morris, Brinberg, & Plimpton, 1984) manipulated the source of drug information (leaflet vs. magazine ad), amount of risk and benefit information (high vs. low),

and placement of risk information (integrated with the promotional theme vs. placed in separate paragraphs) for the two treatment drugs (acne and back pain) and measured several dependent variables including knowledge about the drug (measured by a True-False test). From the experiment with 256 students, he found that participants who viewed high risk material had better knowledge scores for the acne remedy, whereas subjects who viewed high benefit material showed better knowledge scores for the back pain drug.

One survey (Williams & Hensel, 1995) measured older adults' (59 and older) knowledge about Rx drugs that treat heart problems ("Which of the following medicines are used to treat heart problems?") and found that respondents with accurate drug knowledge are more likely to have higher education and take Rx drugs, but drug knowledge was not directly related to the outcome measures in the survey (attitude toward DTCA and information seeking intentions). Other survey studies have measured drug knowledge in terms of the number of advertised drugs that consumers recognize (Alperstein & Peyrot, 1993; Peyrot et al., 1998), but this is not a precise measure of knowledge, rather a measure of exposure.

Since the present study pertains to DTC and OTC advertising in general at an aggregate level rather than dealing with specific ads, knowledge will be addressed in terms of general health and medicine knowledge. An and An et al. (An, 2007, 2008; An, Jin, & Brown, 2009) measured consumers' perceived knowledge of health and medicine in their studies and the most notable finding from these studies regarding knowledge was that perceived knowledge of health and medicine moderated the relationship between attitude toward DTCA and drug inquiry and request intentions; only among those who have better knowledge in health and medicine, attitude toward DTCA were positively related to drug inquiry and request intentions (An, 2007). Because perceived knowledge of health and medicine was not significantly related to outcome variables

in other studies, the influence of health and medicine knowledge on the outcome behavioral variables will be addressed as a research question rather than a hypothesis.

Affection

Attitude toward advertising is classified into two concepts: attitude toward advertising in general (at an aggregate level) and attitude toward a specific ad (at the brand level). Attitude toward advertising in general predicts attitude toward the ad, and attitude toward the ad predicts attitude toward the brand (MacKenzie & Lutz, 1989). These relationships have been found in the context of DTCA (Hausman, 2008; Torres & Limbu, 2010). However, since the scope of the current study does not cover attitude toward the ad and brand, the following review will focus on consumer evaluations of DTCA and OTCA at aggregate levels.

Consumers' evaluations of DTCA at an aggregate level has been measured in terms of consumers' global attitude toward DTCA (e.g., Alperstein & Peyrot, 1993; Diehl et al., 2007, 2008; Herzenstein, Misra, & Posavac, 2004; Huh, DeLorme, & Reid, 2004a, 2004b, 2006; Lee et al., 2007; Menon, Deshpande, Perri III, & Zinkhan, 2003; Williams & Hensel, 1995; Perri & Nelson, 1987; Peyrot et al., 1998), consumers' attitude to print DTCA (e.g., Mehta & Purvis, 2003), consumers' skepticism toward DTCA and OTCA (e.g., DeLorme, Huh, & Reid, 2009; Diehl et al., 2007, 2008, 2010; Huh et al., 2012), consumers' perceptions of the utility of DTC ads in their decision making process (e.g., Deshpande et al., 2004; Huh et al., 2012), the credibility of DTCA by media type (e.g., Huh et al., 2004b), the believability of information in DTCA (e.g., Beltramini, 2006), and the importance of advertising as a source of health information (e.g., DeLorme, Huh, & Reid, 2006a; Diehl et al., 2007; Huh et al., 2004b; Kim & King, 2009).

These attitudinal measures can be further classified into three groups: one focusing on cognitive aspects of attitude, one focusing on affective aspects of attitude, and the other comprised of both cognitive and affective items in the measurement. The proposed models in the current study include variables measuring cognitive and affective aspects of attitude toward DTCA and OTCA separately. Variables that pertain to cognitive aspects of attitude are skepticism toward DTCA and OTCA, information utility of DTCA and OTCA, perceived trust in DTCA and OTCA, and the importance of DTCA and OTCA as health information sources; variables that pertain to affective aspects of attitude are attitude toward DTCA and OTCA in general.

The following sections summarize the findings regarding cognitive aspects of attitude toward DTCA in the proposed model. Studies using measures comprising both cognitive and affective items on the same scale will not be reviewed in detail, because those measures are not the focus of this study. Measuring cognitive and affective aspects of attitude separately will give a clearer picture of consumers' evaluations of DTCA and OTCA, rather than using a measure including both aspects.

Cognitive Aspects of Attitude

Skepticism toward Advertising

A widely adopted definition of *skepticism toward advertising in general* is “the tendency toward disbelief of advertising claims” (Obermiller & Spangenberg, 1998, p. 160). Advertising skepticism is conceptually different from a general attitude toward advertising (Obermiller & Spangenberg, 1998). “One consumer can be skeptical, but still like DTCA; a second consumer may not like DTCA, but exhibit no skepticism toward the advertising form (Obermiller &

Spangenberg, 1998)” (DeLorme et al., 2009, p. 296). Advertising skepticism is also different from trust in advertising in general (DeLorme et al., 2009), which will be discussed later. Based on the persuasion knowledge hypothesis (Friestad & Wright, 1994), Obermiller and Spangenberg (1998) perceived advertising skepticism as

a socially learned psychological state that develops and changes over time as part of persuasion knowledge about advertising (i.e., knowledge of persuasion strategies influences response to advertising). As a psychological state, advertising skepticism was reasoned to be shaped by the same factors that shape persuasion knowledge (e.g., folk wisdom, conversations, media commentary, and exposures), but especially by the antecedents: individual-specific characteristics (e.g., age, education, self-esteem, personality trait of general cynicism), marketplace experiences, types of advertised products, and ad-specific elements (Obermiller & Spangenberg, 1998). They argued that advertising skepticism is a moderator of the persuasive effects of advertising and thus a key construct for studying ad effects (Obermiller & Spangenberg, 1998). (DeLorme et al., 2009, pp. 295-296)

Several studies (DeLorme, Huh, & Reid, 2009, 2010a; Diehl et al., 2007, 2008, 2010; Huh et al., 2012) examined consumer skepticism in the context of pharmaceutical advertising. Diehl et al. (2007, 2008, 2010) reported findings from the same survey in three different articles. They found that levels of OTCA and DTCA skepticism were neutral ($M=2.44$ for OTCA; $M=2.41$ for DTCA, on a 5-point scale, a higher score indicated a higher level of skepticism), skepticism toward advertising in general was positively related to skepticism toward DTCA and OTCA respectively, and the level of skepticism toward pharmaceutical advertising was found to be lower than the level of skepticism toward advertising in general. The attitude toward

pharmaceutical advertising, however, was more negative than the attitude toward advertising in general. Respondents showed more negative attitude toward DTCA than toward OTCA, but the levels of skepticism toward DTCA and OTCA were not significantly different. Women were less skeptical about both advertising in general and pharmaceutical advertising than men. Negative relationships were found between skepticism toward pharmaceutical advertising and (1) involvement with pharmaceutical advertising, (2) satisfaction with the informational content of and comprehensibility of ads, and (3) the importance of advertising as a source of health information.

DeLorme et al. (2009) examined the relationship between DTCA skepticism and information seeking behaviors. They found that (1) consumers' levels of DTCA skepticism were neutral, (2) among various consumer demographic and health-related characteristics, only the level of education significantly predicts the level of DTCA skepticism (higher education results in higher levels of skepticism), (3) DTCA skepticism was negatively associated with the perceived usefulness of advertising as a Rx drug information source, and (4) DTCA skepticism did not influence the use of advertising and interpersonal information sources when consumers search for information on Rx drugs.

Some studies examined sub-cultural differences in consumer skepticism toward DTCA. DeLorme et al. (2010a) found that skepticism toward DTCA was neutral ($M=3.0$ on a 5-point scale, a higher score indicated a higher level of skepticism), and white Americans ($M=3.22$) expressed higher skepticism toward DTCA than Hispanics ($M=2.56$). On the other hand, Huh et al. (2012) found that there was no sub-cultural difference in DTCA skepticism between caucasian Americans ($M=4.65$ on a 7-point scale, a higher score indicated a higher level of skepticism) and Korean Americans ($M=4.32$).

Overall, previous studies on skepticism show that the levels of consumers' skepticism toward DTCA and OTCA are quite neutral, but none of these studies systematically examined a more comprehensive list of possible antecedents and behavioral outcomes of DTCA and OTCA skepticism. Thus, the current study will investigate (1) the influence of possible antecedents, such as demographics, health related characteristics, and exposure to DTCA and OTCA, on the level of consumers' skepticism toward DTCA and OTCA and (2) possible consequences of skepticism, such as communication with doctors or pharmacists, friends or relatives, drug requests, and information seeking behaviors.

Information Utility of DTCA and OTCA

Some studies examined consumers' perceptions of the information utility of DTCA in their decision making processes. Deshpande et al. (2004) found that (1) consumers have positive opinions of DTCA's information utility (M=2.5 on a 4-point scale, a higher score indicated a higher level of information utility), (2) consumers' perceptions of the quality of risk and benefit information and the clarity of the ad predicted consumers' perceptions of the utility of DTCA, (3) consumers in poorer health and females had more positive opinions of DTCA's utility in their health care decision making than their counterparts (race, age, education, ad exposure, and drug use were not found to be significant predictors of information utility), and (4) consumers were more likely to use DTCA in their health care decision making (e.g., talking to doctors about advertised drugs and medical conditions, requesting prescriptions of advertised drugs) when they perceived greater usefulness of DTCA.

Huh et al. (2004a) found that (1) consumers' perceived information utility was somewhat negative (M=3.86 on a 7-point scale, a higher score indicated a higher level of information utility), (2) older consumers (M=4.18) perceived information utility of DTCA more positively

than younger consumers ($M=3.69$), (3) consumers' attitude toward DTCA and Rx drug use were positive predictors of their perceptions of DTCA's information utility, and (4) regardless of age, perceived information utility of DTCA was positively correlated with health care decision making behaviors.

Sub-cultural differences in perceptions of the information utility of DTCA are reported in DeLorme et al. (2010a) and Huh et al. (forthcoming). DeLorme et al. (2010a) found that (1) consumers were negative toward the usefulness of DTCA (mean range: 1.42 to 2.97 on a 5-point scales across different media, a higher score indicated a higher level of usefulness), and (2) Hispanics were more positive about the usefulness of DTCA than white Americans across all media types (newspaper, magazine, radio, TV, and the Internet ads). On the other hand, Huh et al. (forthcoming) found that (1) consumers' perceptions of the information utility of DTCA were negative (summed mean of perceived usefulness of all six DTCA types=3.01 on a 7-point scale, a higher score indicated a higher level of usefulness), (2) Korean Americans were more positive about the information utility of DTCA (for newspaper, TV, and the Internet ads) than white Americans, and (3) regardless of ethnicity, drug brand websites were most highly evaluated in terms of their usefulness, followed by TV DTCA, and the Internet DTCA was perceived to be the least useful.

Overall, previous studies on DTCA's information utility found that the consumers have neutral to negative perceptions of the usefulness of DTCA. Some predictors (e.g., age, gender, race, Rx drug use, health status, and attitude toward DTCA) and behavioral outcomes of DTCA's information utility were found from these previous studies. The proposed model of the current study will examine other possible predictors of DTCA's information utility, such as health consciousness and involvement with pharmaceuticals, in addition to these established relationships.

Trust in DTCA and OTCA

Soh, Reid, and King (2009) developed a scale that examines trust in advertising. They defined the concept of *trust in advertising* as “confidence that advertising is a reliable source of product/service information and willingness to act on the basis of information conveyed by advertising” (p. 86). Their definition of trust in advertising consists of cognitive, emotional, and behavioral dimensions. They perceived trust in advertising as conceptually different from advertising credibility (they perceive advertising skepticism as the same construct, but in the opposite direction, as advertising credibility) and attitude toward advertising in general; trust in advertising is a multi-dimensional concept that is more comprehensive than the other two concepts. From their validation processes of the scale, they found that the Ad Trust scale indeed consists of three dimensions: (1) cognitive (perception of reliability and usefulness of advertising), (2) affective (affect toward advertising), and (3) behavioral dimensions (willingness to rely on advertising). The cognitive dimension was the most salient dimension that has more explanatory power of the construct. They pointed out that they did not find sufficient discriminate validity between Ad Trust and related variables such as attitude toward advertising

in general and advertising credibility. In order to reduce overlap between these variables, the current model uses the cognitive dimension of the Ad Trust scale.

The applicability of the sub dimension (cognitive dimension) of the Ad Trust scale was noted by Soh et al. (2009):

Certainly, greater confidence could be placed in research on trust in media conveying DTC (direct-to-consumer) drug advertising (e.g., Huh, DeLorme, and Reid 2004a; Menon et al. 2002) if a validated trust measure had been used in the studies... The developed measure might also provide subscales that would be of practical use in situations where use of the full scale would be inappropriate or impractical. (p. 86)

Some studies have examined trust related variables such as credibility and believability of DTCA. Huh et al. (2004b) examined DTCA's credibility by the various media types in which the ads were placed. They defined *credibility* as "the degree to which the consumer sees the source or medium as conveying trustworthy, believable, accurate, or expert information" (p. 37). From a survey of older consumers (N=472), they found that the overall credibility of DTCA was neutral (M=3.98, on a 7-point scale, a higher score indicated a higher level of credibility) and that the attitude toward DTCA and DTCA familiarity were the most significant predictors of the perceived credibility of DTCA across various media types. Age, media use, and DTC ad recognition were other predictors of DTCA's credibility in some of the media types.

Beltramini (2006) examined consumer believability of DTCA "to assess the extent to which respondents perceived them as a truthful representation of the balance of information relative to product performance claims" (p. 339). The author found that consumer believability of DTCA was a significant predictor of behavioral outcomes, such as respondents' likelihood of

seeking additional information on the advertised drugs and their likelihood of asking their doctors for prescriptions for the advertised drugs.

Some studies have examined trust in different sources of Rx drug information and found that consumers' trust in online Rx drug information is predicted by trust in Rx drug information from traditional mass media sources including DTCA (Huh et al., 2005; Menon et al., 2002). Also, consumers with greater trust in online Rx drug information and caucasians reported they were more likely to go online to search for information on an advertised drug after they were exposed to DTCA (Menon et al., 2002).

These studies provide some evidence that consumers' perception of the truthfulness of DTCA can influence behavioral outcomes (information seeking and drug request intention) and can be predicted by variables such as attitude toward DTCA and DTCA familiarity. The present model will use the cognitive dimensions of the Ad Trust scale to better measure the conceptual meaning of trust in DTCA and OTCA. Possible antecedents and outcomes will be examined in relation to trust in DTCA and OTCA.

Importance of DTCA and OTCA

A review of the literature revealed that four studies (DeLorme et al., 2006a; Diehl et al., 2007; Huh et al., 2004b; Kim & King, 2009) have examined the role of the importance of DTCA and OTCA in the health decision making process. First, Huh et al. (2004b) found that the perceived importance of DTCA as a source of health information was a significant predictor (in a positive direction) of the perceived informativeness of TV and radio DTC ads, but it was not a predictor of the perceived credibility. Second, DeLorme et al. (2006a) found that the perceived importance of DTCA negatively predicted the third-person effects. As previously reviewed, Diehl et al. (2007) found that the importance of advertising in the decision-making process for

medications was negatively related to skepticism toward DTCA and OTCA. Finally, Kim and King (2009) found that when consumers make decisions about medicines, professional sources and Internet sources were perceived more important for Rx drugs than for OTC drugs, whereas mass media and interpersonal sources were more important for OTC drugs than Rx drugs.

In sum, these studies provide a look at the role of the perceived importance of DTCA and OTCA in consumers' decision making processes. The perceived importance of DTCA and OTCA was related to some other evaluative variables, such as the informativeness of the DTCA, the third-person effect, and skepticism of DTCA and OTCA. However, little is understood regarding other possible antecedents of the perceived importance of DTCA and OTCA, such as demographics, health related characteristics, and DTCA and OTCA exposure, as well as the possible behavioral outcomes, such as communication with doctors, pharmacists, friends or relatives, and drug requests or purchase behaviors. Thus, the current study will examine these relationships to better understand the role of the perceived importance of DTCA and OTCA in consumers' decision making processes.

Affective Aspects of Attitude

Attitude toward DTCA and OTCA in General

As mentioned above, previous research on the attitude toward DTCA includes studies using measures focusing on cognitive and affective aspects of attitude respectively and measurements comprising both aspects. This section will provide a review of studies focusing on affective aspects of attitude. In this research, *attitude toward advertising in general* is defined as “a learned predisposition to respond in a consistently favorable or unfavorable manner toward advertising in general” (MacKenzie & Lutz, 1989, pp. 53-54).

In several studies, Huh, DeLorme, and Reid (2004a, 2004b, 2004c) examined the relationship between attitude toward DTCA and related variables, such as information utility, perceived credibility, and support for regulation. They found that consumers' attitude toward DTCA predicted their perceptions of DTCA's information utility for both the older and younger groups (Huh et al., 2004a); attitude toward DTCA was a significant predictor of the perceived credibility of DTCA regardless of the media type (Huh et al., 2004b); and consumers' attitude toward DTCA was a predictor (in a negative direction) of consumers' support for the regulation of DTCA (Huh et al., 2004c).

As previously reviewed, Diehl et al. (2007, 2008) found that consumers' attitude toward DTCA was more negative than OTCA ($M=3.06$ for OTCA, $M=2.81$ for DTCA, on a 5-point scale, higher values indicated more positive attitude). Attitude toward advertising in general was more positive than attitude toward DTCA and OTCA, respectively ($M=3.27$ for attitude toward advertising in general). These mean differences were statistically significant. Also, attitude toward DTCA and OTCA were negatively correlated with skepticism toward DTCA and OTCA respectively.

Overall, previous research on attitude toward DTCA and OTCA shows that consumers' attitude toward DTCA were related to consumers' cognitive evaluations of DTCA, such as the information utility of, credibility of, and skepticism toward DTCA, as well as the regulatory support for DTCA. Considering the importance of attitude in the advertising context, the current study will examine a more comprehensive list of antecedents and consequences of attitude toward DTCA and OTCA presented in the proposed model.

Conation: Behavioral Outcome

The present model examines behavioral outcomes of DTCA in terms of communication with doctors (drug inquiry, medical condition inquiry, and drug request), communication with pharmacists and friends or relatives, and DTCA prompted information seeking behaviors. Previous research provides ample evidence of behavioral outcomes prompted by DTCA exposure; exposure to DTCA predicted communication with doctors (e.g., Huh & Becker, 2005; Yuan, 2008), drug request behaviors (e.g., Peyrot et al., 1998), and the propensity to seek information about drugs (e.g., Aikin et al., 2004; Huh & Becker, 2005). The current study will examine other behavioral outcomes, such as communication with pharmacists and friends or relatives, which have not been measured as much as communication with doctors and drug request behaviors. Behavioral outcomes of OTCA have not been extensively examined. Adapting variables from the DTCA studies, the behavioral outcomes of OTCA will be examined in terms of communication with doctors, pharmacists, and friends or relatives, OTCA prompted drug purchases, and OTCA prompted information seeking behaviors.

Existing literature lays out several antecedents of DTCA and OTCA prompted behaviors, which are presented in the earlier sections. The current model will examine a more comprehensive list of possible antecedents of behavioral outcomes: demographic variables, health related characteristics, exposure to DTCA and OTCA, and attitudinal outcomes.

Model 1 Hypotheses and Research Questions

After reviewing the literature, the following hypotheses and research questions were established based on the first proposed model.

RQ1. What are the differences in consumers' exposure, beliefs, attitude, and behavioral outcomes regarding DTCA and OTCA?

RQ2: Will health-related characteristics be predicted by a consumer's demographic characteristics?

H1: A consumer's demographic characteristics and health-related characteristics will predict: (a) the perceived amount of exposure to DTCA,

(b) the awareness of ads for specific Rx brands,

(c) attention to DTCA,

(d) the perceived amount of exposure to OTCA,

(e) the awareness of ads for specific OTC brands, and

(f) attention to OTCA.

H2a: The perceived amount of exposure to and attention paid to DTCA are positively related to the beliefs and attitude toward DTCA.

H2b: The perceived amount of exposure to and attention paid to OTCA are positively related to the beliefs and attitude toward OTCA.

H3: A consumer's demographic characteristics, health-related characteristics, and exposure to DTCA will predict:

(a) skepticism toward DTCA,

(b) the perceived information utility of DTCA,

(c) the perceived trust in DTCA,

(d) the perceived importance of DTCA, and

(e) attitude toward DTCA in general.

H4: A consumer's demographic characteristics, health-related characteristics, and exposure to OTCA will predict:

- (a) skepticism toward OTCA,
- (b) the perceived information utility of OTCA,
- (c) the perceived trust in OTCA,
- (d) the perceived importance of OTCA, and
- (e) attitude toward OTCA in general

H5: A consumer's demographic characteristics, health-related characteristics, exposure to DTCA, and the attitudinal outcomes of DTCA will predict:

- (a) DTCA prompted behaviors and
- (b) drug information seeking triggered by DTCA

H6: A consumer's demographic characteristics, health-related characteristics, exposure to OTCA, and the attitudinal outcomes of OTCA will predict:

- (a) OTCA prompted behaviors and
- (b) drug information seeking triggered by OTCA.

RQ3: What are the strongest predictors of exposure to DTCA and OTCA, attitudinal and behavioral outcomes of DTCA and OTCA? Are there differences between DTCA and OTCA in terms of factors influencing consumers' exposure to DTCA and OTCA and attitudinal and behavioral outcomes of DTCA and OTCA?

Model 2 A Proposed Model of Consumer Socialization and Effects of DTCA and OTCA

Consumer socialization is defined as “processes by which young people acquire skills, knowledge, and attitudes relevant to their functioning as consumers in the marketplace” (Ward, 1974, p. 2). Even though the definition and earlier empirical evidence focused on children, adolescents, and young adults, recent research describes consumer socialization as a process that continues throughout one's lifetime (Choi & La Ferle, 2004; Lee et al., 2007). Moschis and

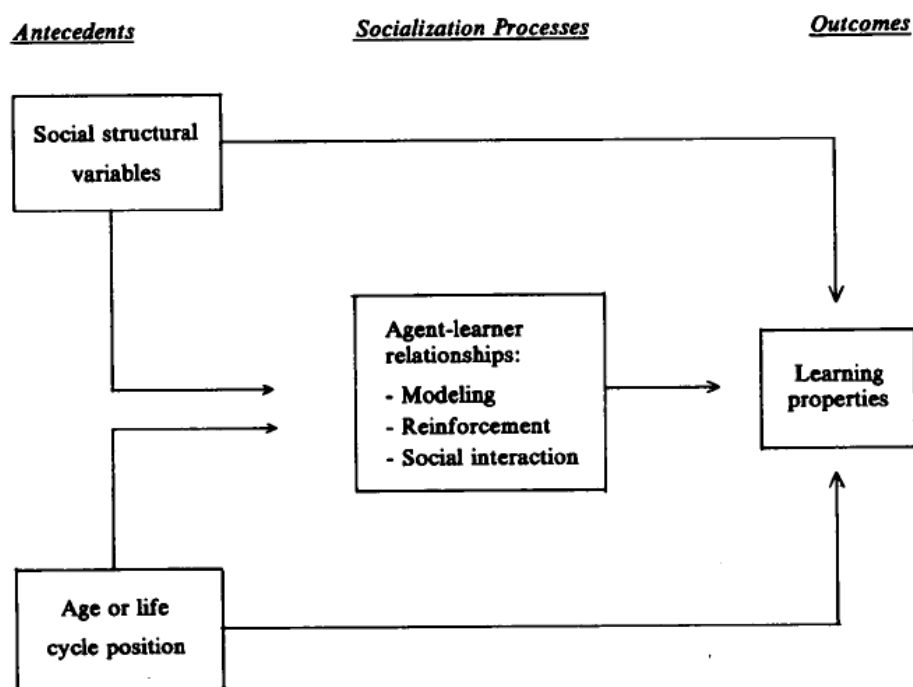
Churchill (1978) proposed a conceptual model of consumer socialization, which includes antecedents, the socialization process, and outcomes (see Figure 17). They viewed consumer learning “not only as a cognitive-psychological process of adjustment to one's environment but also as a social process” (Moschis & Churchill, 1978, p. 600). Their argument was based on two models of human learning, the cognitive development model and the social learning model. The cognitive development model views “learning as a cognitive-psychological process of adjustment to one's environment, emphasizing the interaction of personal and environmental factors” (p. 599), whereas the social learning model emphasizes “sources of influence – commonly known as ‘socialization agents’ – which transmit norms, attitudes, motivations, and behaviors to the learner; socialization is assumed to be taking place during the course of the person's interaction with these agents in various social settings” (Moschis & Churchill, 1978, p. 600). Interpersonal channels and mass media are perceived as two major socialization agents in the advertising context (Lee et al., 2007; Moschis & Churchill, 1978). “Through these socialization agents, individuals learn how to feel about and behave toward a specific object in a specific context” (Lee et al., 2007, p. 109). Previous studies primarily examined the role of these socialization agents in the consumer socialization process for children or young adults (e.g., Bush, Smith, & Martin, 1999; Choi & La Ferle, 2004; Mangleburg & Bristol, 1998; Moschis & Churchill, 1978).

Given its prevalence in society, advertising is considered one of the major socialization agents. The relevance of advertising to the consumer socialization context is well noted by scholars:

Advertising continually presents typical images of product users and usage situations that might provide a basis for reality construction (Pollay 1986). Young consumers’

consumption choices and preferences, in turn, would be influenced by those images consciously or unconsciously. That is, unlike interpersonal socialization agents such as parents, teachers and peers, advertisements are omnipresent and provide plenty of product/brand information while also conveying desired consumption-related symbols and meanings. The prevalent and repetitive consumption-related ideas and images appearing in media, and advertising in particular, result in cumulative effects over the long run. (Choi & La Ferle, 2004, p. 483)

In DTCA and OTCA contexts, interpersonal channels, mass media, and specialized medical materials are the sources of medicine information that may influence consumers' learning process of DTCA and OTCA and consumers' development of attitude and beliefs regarding DTCA and OTCA.



Source: Moschis & Churchill (1978, p. 600)

Figure 17. A Conceptual Model of Consumer Socialization

The second proposed model (see Figure 18) suggests: (1) demographic variables influence health related characteristics, exposure to socialization agents, attitudinal outcomes, and behavioral outcomes; (2) health related characteristics predict exposure to socialization agents, attitudinal outcomes, and behavioral outcomes; (3) exposure to socialization agents predict attitudinal outcomes and behavioral outcomes: (4) and attitudinal outcomes predict behavioral outcomes. The following sections will present components of the second model, relationships between components, and relevant findings. Based on these findings, hypotheses and research questions will be presented.

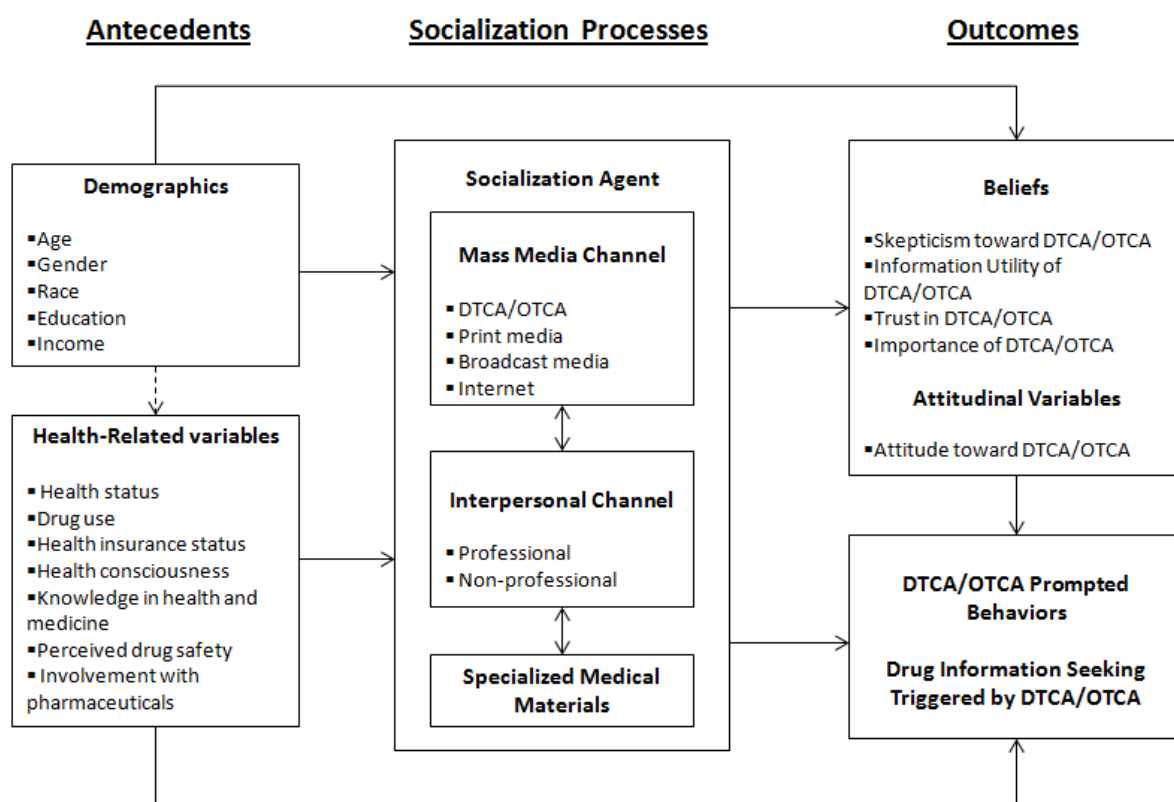


Figure 18. A Proposed Model of Consumer Socialization and DTCA and OTCA Effects

Model Components

Antecedents

Studies have shown the influence of demographic variables on the socialization process. For example, one study (Lee et al., 2007) directly applied the Consumer Socialization approach to the context of DTCA. They examined the influence of demographic variables (age, gender, race, education, income, and health status) on the socialization process and behavioral outcomes and found that (1) females relied more on mass media and interpersonal channels for health information than males, (2) age, education, and income were all negatively related to attitude toward DTCA, and (3) consumers in poorer health were more likely to get health information from interpersonal channels and talk to their doctors about the advertised drugs.

The current model will examine a more complete list of antecedents such as demographics (age, race, gender, education, and income) and health related characteristics (drug use, health insurance status, health status, involvement with pharmaceuticals, health consciousness, etc.), as well as their influences on the socialization process.

Socialization Processes

As previously mentioned, studies have emphasized the importance of interpersonal channels and mass media as socialization agents in an advertising context. Most commonly used indicators of socialization processes in an advertising context were communication with family and friends and exposure to mass media (e.g., amount of television viewing) (e.g., Bush et al., 1999; Choi & La Ferle, 2004; Mangleburg & Bristol, 1998).

The importance of the socialization role of mass media and interpersonal sources for pharmaceutical products was also documented. Kim and King (2009) found that professional interpersonal sources (physicians and pharmacists) are considered the most important

information sources for both Rx and OTC drugs. Non-professional interpersonal (friends and family) and mass media sources (newspaper/TV/magazine/radio advertising, newspaper/magazine articles) were more important for OTC drugs than Rx drugs, whereas the Internet was considered a more important source for Rx drugs than OTC drugs.

In the context of DTCA, Lee et al. (2007) examined the influence of socialization agents on the perceptions of and behavioral outcomes of DTCA. They included mass media and interpersonal channels as socialization agents. However, their measures of socialization agents were not specific to a DTCA context (“how often do you get information about health care from...?”). In order to capture the socialization process in the contexts of DTCA and OTCA, the current model includes the amount of exposure to mass media and measures asking how often consumers obtain Rx and OTC drug information from mass media channels, interpersonal sources, and specialized medical materials, respectively.

Outcomes

In an advertising context, skepticism and attitude toward advertising were examined as outcomes of the socialization process. Previous studies found that the amount of television viewing and communication with parents and peers about consumption-related activities were positive predictors of consumers’ attitude toward advertising (e.g., Bush et al., 1999). The amount of television viewing and the type of communication with parents were found to influence adolescents’ skepticism toward advertising (Mangleburg & Bristol, 1998).

In the DTCA context, attitude toward DTCA and communication with doctors were examined as outcomes of the socialization process. As previously reviewed, Lee et al. (2007) found that (1) consumers who get health information from mass media (ads in mass media, TV/radio not including ads, newspapers/magazines not including ads) and interpersonal channels

(family/friends, doctors, and pharmacists) were more likely to have positive attitude toward DTCA; (2) consumers' attitude toward DTCA positively influenced their communication with doctors; and (3) consumers who get health information from interpersonal channels were more likely to talk to their doctors about the advertised drugs.

In this study, it is expected that, in addition to consumers' attitude and skepticism toward DTCA and communication with doctors, other variables related to consumers' cognitive evaluations of DTCA and OTCA (e.g., the utility of and trust in DTCA) and ad prompted behaviors (e.g., information seeking behaviors) will also be predicted by the socialization process. Thus, the current model includes a more comprehensive list of variables of consumer attitudinal outcomes (skepticism toward DTCA and OTCA, information utility of DTCA and OTCA, perceived trust in DTCA and OTCA, the importance of DTCA and OTCA as health information sources, and attitude toward DTCA and OTCA in general) and behavioral outcomes (e.g., communication with doctors, pharmacists and friends or relatives, drug request, DTCA/OTCA prompted information seeking, OTCA prompted drug purchases).

Model 2 Hypotheses and Research Questions

Based on the theoretical overview and empirical findings, the following hypotheses and research questions are presented regarding the second proposed model.

RQ4. What are the differences between DTCA and OTCA in terms of the perceived amount of consumers' exposure to socialization agents?

H7: A consumer's demographic characteristics and health-related characteristics will predict (a) the perceived amount of exposure to mass media and how often they obtain Rx drug information from:

- (b) mass media sources,
- (c) professional interpersonal sources,
- (d) non-professional interpersonal sources, and
- (e) specialized medical materials

H8: A consumer's demographic characteristics and health-related characteristics will predict how often they obtain OTC drug information from:

- (a) mass media sources,
- (b) professional interpersonal sources,
- (c) non-professional interpersonal sources, and
- (d) specialized medical materials.

H9: There will be positive correlations between consumers' levels of exposure to different socialization agents.

H10: A consumer's demographic characteristics, health-related characteristics, and perceived amount of exposure to socialization agents will predict:

- (a) skepticism toward DTCA,
- (b) the perceived information utility of DTCA,
- (c) the perceived trust in DTCA,
- (d) the perceived importance of DTCA, and
- (e) attitude toward DTCA in general.

H11: A consumer's demographic characteristics, health-related characteristics, and perceived amount of exposure to socialization agents will predict:

- (a) skepticism toward OTCA,
- (b) the perceived information utility of OTCA,

- (c) the perceived trust in OTCA,
- (d) the perceived importance of OTCA, and
- (e) attitude toward OTCA in general.

H12 A consumer's demographic characteristics, health-related characteristics, perceived amount of exposure to socialization agents and attitudinal outcomes of DTCA will predict:

- (a) DTCA prompted behaviors and
- (b) drug information seeking triggered by DTCA

H13: A consumer's demographic characteristics, health-related characteristics, perceived amount of exposure to socialization agents and attitudinal outcomes of OTCA will predict:

- (a) OTCA prompted behaviors and
- (b) drug information seeking triggered by OTCA.

RQ5. Are there differences between DTCA and OTCA in terms of factors influencing the consumer socialization process?

CHAPTER 3

RESEARCH METHODS

Questionnaire Construction and Measures

A questionnaire was constructed based on measures from previous DTCA studies. A total of 47 questions were included in the questionnaire. The questionnaire had three major sections: questions related to Rx drug advertising, OTC drug advertising, and demographic and general health-related questions.

The questionnaire was pretested with a convenience sample of 63 undergraduate and graduate students in advertising classes. Each student participated in a self-administered online survey with the reward of extra-credit. They were asked to provide information on how long it took for them to finish the questionnaire and if there was any problems or errors in the survey. Pretest participants indicated that it took about 20 minutes, on average, for them to complete the survey. From the pretest, no major problems were detected; however, based on comments from the participants, a minor wording change was made.

The final questionnaire began with a consent form explaining the purpose of the study, general instructions, confidentiality issues, and the potential benefits and risks of taking the survey. Once participants agreed to participate, a screening question (In the last 6 months, have you taken a prescription drug, that is a drug you can only get with a doctor's prescription?) was asked and only those who qualified were directed to the first section of the survey. To minimize error based on the order of the questionnaire, half of the respondents were directed to the Rx drug section first, and the other half was directed to the OTC drug section first. The Rx drug

section began with a definition of Rx drugs: “a prescription drug is a drug that you can only get with a doctor’s prescription from a pharmacist.” The OTC drug section also began with a definition of OTC drugs: “a non-prescription drug is a drug that you can buy over the counter at a drug store or a pharmacy without a doctor’s prescription; vitamins and nutritional supplements are NOT non-prescription drugs.” The Rx drug section was shown to every participant (who was already screened through the screening question), whereas the OTC drug section was answered by only those who had taken a OTC drug in the last six months. Of the 461 respondents, 399 respondents indicated that they had taken a OTC drug in the last six months; this meant these 399 participants had taken both a Rx drug and a OTC drug in the last six months. The remaining 62 respondents had only taken Rx drugs in the last six months.

The following sections provide a list of measures used to address the hypotheses and research questions. Parts 1 and 2 of the survey questionnaire included variables related to prescription and non-prescription drugs, and Part 3 included health-related variables, media exposure, socialization agents, skepticism/attitude toward advertising in general, and demographics. The final version of the questionnaire is attached in the appendix.

Parts 1 and 2: Prescription and Non-prescription Drugs

Drug Use

Both the Rx and OTC drug sections began with questions about the participants’ use of Rx and OTC drugs. For the Rx drug section “In the last 6 months, have you taken a prescription drug?” was asked, and for the OTC drug section “In the last 6 months, have you taken a non-prescription drug NOT including vitamins or nutritional supplements?” was asked. “Yes” and “No” were two response options for these questions. Another question inquiring about the number of drugs currently taken on a regular basis was also asked: “Approximately how many

different prescription (non-prescription) drugs are you currently taking on a regular basis?” with response options of “0,” “1,” “2,” “3,” “4,” “5,” “6,” and “7 or more.” These items were adapted from questions used in Huh (2003) and Huh et al., (2012).

Perceived Drug Safety

The next question asked about participants’ perception of Rx and OTC drug safety. Each was measured with one semantic differential item (1=very unsafe to 7= very safe, on a 7-point scale). This question was adapted from Menon et al. (2002).

Involvement with Pharmaceuticals

Involvement is defined as “a person's perceived *importance* of the object based upon inherent needs, values, and interests.”(1995, Mittal, p.666). To measure involvement with Rx and OTC drugs in general, a reduced version of Zaichkowsky’s Personal Involvement Inventory (appeared in Mittal, 1995) was used (five items on a 7-point semantic differential scale). This reduced version has been validated and has shown a high reliability (e.g., Mittal, 1995). The five items include (1) Important–Unimportant, (2) Of no concern–Of concern to me, (3) Means a lot to me–Means nothing to me, (4) Matters to me–Does not matter, and (5) Significant–Insignificant. These items were reversed coded except the second one in order to indicate the higher values as more involvement with pharmaceuticals.

Exposure to DTCA/OTCA

Exposure to DTCA/OTCA was measured in terms of DTCA/OTCA awareness, the perceived amount of exposure, awareness of ads for specific brands, and attention paid to DTCA/OTCA. First, participants were asked about their awareness of DTCA/OTCA: “In the past 6 months, have you seen, read, or heard any advertisements for prescription drugs (non-prescription drugs)?” Second, the perceived amount of exposure to DTCA/OTCA across

different media types was measured by asking “In the past 6 months, how often did you see, read, or hear any advertisements for prescription drugs (non-prescription drugs) in any of the following ways?” (1=never to 5=very often, 5-point scale). The six different media types listed were “on television, on the radio, in a magazine, in a newspaper, on the Internet, and in a letter, flyer, or announcement in the mail.” “In any other media sources” was also added; however, no major category emerged through an initial examination of the responses on this item. Thus, for both Rx and OTC drug sections, the mean of exposure to the six media types was calculated and included in the analysis process. Third, awareness of ads for specific brands was asked: “In the past 6 months, have you seen, read, or heard any advertisements for the following brands?” For both Rx and OTC drug sections, seven brands, including five real brands and two fake brands, were listed alphabetically. The five real Rx drug brands (Abilify, Advair, Cymbalta, Lipitor, and Plavix) were selected from the top ten most advertised Rx drugs in terms of media spending (Kanter Media, 2011) and the five real OTC drugs (Advil, Aleve, Claritin, NyQuil, and Zyrtec) were selected from the top ten most advertised OTC drugs (Kanter Media, 2011). Two fake brands were added to each list in order to control for guessing (Lypaca and Trelopax for the Rx drug section; Dollsam and Marmax for the OTC drug section). Response options included “Yes,” “No,” and “Do not know the brand.” Pretest results indicated that most respondents answered either “No” or “Do not know the brand” to the two fake brands for both Rx and OTC. Fourth, attention paid to DTCA/OTCA was measured with three statements on a 7-point scale (1=strongly disagree to 7=strongly agree). The three statements were:

1. Ads for prescription drugs (non-prescription drugs) catch my interest.
2. Ads for prescription drugs (non-prescription drugs) are boring. (Reverse-coded)
3. I pay close attention to ads for prescription drugs (non-prescription drugs).

Measures and formats of exposure variables were taken and revised from Deshpande et al., 2004, Duncan and Nelson (1985), Huh (2003), Huh and Becker (2005), and Mintzes et al. (2003).

Skepticism toward DTCA/OTCA

Skepticism toward DTCA/OTCA was measured with seven statements on a 7-point scale (1=strongly disagree to 7= strongly agree). The original 9-item scale of skepticism toward advertising was developed by Obermiller and Spangenberg (1998) and has been used in the pharmaceutical advertising context (Dieh et al., 2007, 2008, 2010). The current study adopted a reduced version (seven items) of the scale (Huh et al., 2012). The seven statements were:

1. We can depend on getting the truth in most prescription (non-prescription) drug advertising.
2. Prescription (non-prescription) drug advertising's aim is to inform the consumer.
3. Prescription (non-prescription) drug ads generally present a true product picture.
4. Prescription (non-prescription) drug advertising is a reliable source of information.
5. I am accurately informed by most prescription (non-prescription) drug ads.
6. Most prescription (non-prescription) drug advertising provides consumers with essential information.
7. Prescription (non-prescription) drug advertising is informative.

These items were reversed coded in order to indicate the higher values as showing more skepticism.

The Perceived Information Utility of DTCA/OTCA

Adopting a measure from Deshpande et al. (2004), the perceived information utility of DTCA/OTCA was measured with three items on a 7-point scale (1=strongly disagree to 7= strongly agree). The three statements were:

1. Prescription (non-prescription) drug ads allow people to be more involved with their health care.
2. Prescription (non-prescription) drug ads help people make their own decisions about prescription medicines.
3. Prescription (non-prescription) drug ads educate people about the risks and benefits of prescription medicines.

Attitude toward DTCA/OTCA in General

Attitude toward DTCA/OTCA in general was measured with four 7-point semantic differential items focusing on affective aspects of attitude. The four items were Bad–Good, Unpleasant–Pleasant, Unfavorable–Favorable, Positive–Negative (reverse-coded). These items were adapted from Huh (2003) and Muehling (1987).

The Perceived Importance of DTCA/OTCA

Adopting a question from Huh (2003), the perceived importance of DTCA/OTCA was measured with the question “How would you rate the importance of prescription (non-prescription) drug advertising as a source of health information to you? By importance, I mean how essential is prescription (non-prescription) drug advertising to your mental and physical well-being.” A 7-point semantic differential scale was used (Not at all important–Extremely important).

The Perceived Trust in DTCA/OTCA

The Perceived Trust in DTCA/OTCA was measured with 13 items on a 7-point scale (1=strongly disagree to 7=strongly agree). The two cognitive dimensions (reliability and usefulness) of the Ad Trust scale were adopted (Soh et al., 2009). The nine items for the reliability dimension include Truthful, Clear, Reliable, Dependable, Accurate, Credible,

Complete, Factual, and Honest. The four items for the usefulness dimension include Useful, Valuable, Good, and Helps people make the best decisions.

DTCA/OTCA Prompted Behaviors

Revised from Huh (2003), DTCA/OTCA prompted behaviors were measured with six statements. Participants were asked “After seeing, reading or hearing ads for prescription(non-prescription) drugs, have you done any of the following? Please check all that apply.” Four statements used for both DTCA and OTCA sections include:

1. I have talked with my doctor about an advertised prescription (non-prescription) drug.
2. I have talked with my friends or relatives about an advertised prescription (non-prescription) drug.
3. I have talked with my pharmacist about an advertised prescription (non-prescription) drug.
4. I have searched for more information about an advertised prescription (non-prescription) drug.

Two statements specific to DTCA were adapted from Huh (2003) and Deshpande et al. (2004). These statements are:

1. I have talked with a doctor about medical condition, illness, or other health concern of my own that I had not discussed with a doctor before.
2. I have asked my doctor to prescribe an advertised prescription drug.

Two statements specific to OTCA were adapted from de Gregorio and Sung (2010). The items they used measured behaviors related to product-placement. Among their five items, two statements were applicable to the OTCA context, and these statements are:

1. I have looked for a non-prescription drug brand in the store after seeing it on an advertisement.
2. I have started using a non-prescription drug brand after seeing it on an advertisement.

At the end of the list of response statements, “Something else. Please specify.” was added. No major additional categories were found through the data cleaning process. Thus, a summated index was computed, and it ranged from 0 to 6.

Drug Information Seeking Triggered by DTCA/OTCA

Drug information seeking behavior triggered by DTCA/OTCA was measured with the question: “Has an ad for a prescription (non-prescription) drug ever caused you to look for more information, for example, about the drug or about your health?” Those who answered “Yes” to the question were asked about their extensiveness of information search: “If an ad for a prescription (non-prescription) drug has ever caused you to look for more information, where or how have you looked for more information about the drug or about your health? Please choose all that apply.” The response options include: in a reference book, in a magazine, in a newspaper, on the Internet, by asking a friend, relative or neighbor, by calling the 1-800 number in the ad, by talking to a pharmacist, by talking to your doctor, by talking to a nurse, by talking to a doctor other than your own doctor, by making an appointment with a doctor, and by doing something else (Please specify). For the OTCA section, “by looking at the product label” emerged through examination of responses on the last option. Responses to the two questions were combined, and the summated scores for the extensiveness of the information search were computed for both the DTCA and OTCA sections (the summated score range: 0 to 11 for DTCA, 0 to 12 for OTCA). The question and response options are adopted from Huh and Becker (2005).

Part 3: Health-Related Variables, Media Exposure, Socialization Agents, Skepticism/Attitude toward Advertising in General, and Demographics

Health Insurance Status

Health insurance status was measured using two questions “Are you currently covered by any form of health insurance?” and “Does your health insurance provide at least some coverage for medicines?” Yes and No were listed as response options for both questions.

Member of Healthcare Professionals

Respondents were asked “Are you or any of your immediate family members healthcare professionals (e.g., doctor, nurse, pharmacist, etc.)?” Those who answered either they or their immediate family members were healthcare professionals were excluded from the final analysis.

Health Consciousness

Health consciousness is defined as “the degree to which health concerns are integrated into a person’s daily activities” (Jayanti & Burns, 1998, p. 10). Health consciousness was measured with five statements on a 5-point scale (1= strongly disagree to 5=strongly agree). These statements were adopted from Dutta-Bergman’s health orientation scale (2004): health orientation includes four dimensions and one of the dimensions was health consciousness. The five statements were:

1. Living life in the best possible health is very important to me.
2. Eating right, exercising, and taking preventive measures will keep me healthy for life.
3. My health depends on how well I take care of myself.
4. I actively try to prevent disease and illness.
5. I do everything I can to stay healthy.

Knowledge in Health and Medicine

Participants' perceived knowledge about health and medicine was measured with a question ("How knowledgeable would you say you are about health and medicine?") using a 5-point semantic differential scale (not at all knowledgeable—extremely knowledgeable). This question was adapted from An (2007).

Health Status

Health status was measured with several questions. First, respondents were asked "Overall, how would you describe your health?" with response options from poor, fair, good, very good, to excellent. Then, respondents were asked about their chronic medical conditions: "Are you afflicted with any chronic medical conditions?" If they said "Yes" to this question, they were further asked about the length of time they have been afflicted with any chronic condition: "Please estimate the length of time you have been afflicted with any chronic medical condition. (If you have more than one chronic medical condition, please think about the most serious condition and answer the question.)" They were given options from less than one year, 1 to 3 years, more than 3 years to 5 years, more than 5 years to 7 years, more than 7 years to 9 years, to more than 9 years. Finally, they were asked about the perceived seriousness of the medical condition using two statements on a 7-point scale (1=strongly disagree to 7=strongly agree). The two statements adapted from Kim (2005) were:

1. The medical condition that I have is serious.
2. Any changes in my health caused by the medical condition should be taken seriously.

Media Exposure

The amount of exposure to mass media was measured with an open-ended question asking the respondents to write hours per week spent reading newspapers, reading magazines,

watching television, listening to the radio, and using the Internet, respectively. The summated score of hours used for mass media was computed and included in the analysis.

Socialization Agents

In order to measure consumers' exposure to socialization agents, respondents were asked to indicate how often they get information about prescription drugs and non-prescription drugs respectively (on a scale of 1=never to 5=very often) from; (1) mass media including print media (e.g., newspaper stories, magazine articles), broadcast media (e.g., television news stories, radio news stories), prescription/non-prescription drug advertising (e.g., newspaper ads, magazine ads, TV commercials, radio commercials), Internet advertising (e.g., Internet ads, drug brand websites), and non-advertising Internet sources (e.g., health-related websites such as WebMD), ; (2) specialized medical materials (e.g., printed materials from drug companies, printed materials from pharmacies, package labels, professional medical publications), ; and (3) interpersonal channels including non-professional interpersonal sources (e.g., family, friends) and professional interpersonal sources (e.g., doctors, pharmacists). The measure and format were adapted from Lee et al. (2007) and DeLorme, Huh, and Reid (2011a).

Skepticism toward Advertising in General

Just like skepticism toward DTCA/OTCA, skepticism toward advertising in general was measured with seven statements adopted from Huh et al. (2012).

Attitude toward Advertising in General

Attitude toward advertising in general was measured with four 7-point semantic differential items adapted from Huh (2003) and Muehling (1987).

Demographics

Age was measured with an open-ended question. Gender, race, education, and income were measured with close-ended questions.

Sample and Procedure

An online panel sample of adults age 18 or older who have taken any Rx drugs in the last 6 months was purchased at www.qualtrics.com. 4,667 individuals viewed the invitation including the screening question asking whether or not they had taken a Rx drug in the past 6 months. Among those, 1,599 individuals were qualified for the current study. A total of 819 adults initiated a self-report online survey during a seven-day period, and 539 responses were complete. The adjusted response rate was 51.22%. While the sample of participants was initially drawn from the panel to reflect the balance of males and females found in the population, final responses were not weighted by any demographic variables.

Among these 539 responses, 78 responses were from those who indicated either they or at least one immediate family member were healthcare professionals. Because the purpose of the current study is examining consumers' responses to DTCA and OTCA, these responses were not included in the final data analysis. After the deletion, 461 useable surveys remained.

CHAPTER 4

RESULTS

In this chapter, the characteristics of the survey respondents will be described in terms of demographic and health-related characteristics. Then, the description of the composite measures and the reliability of the measures will be provided. Finally, the results will be presented in relation to the hypotheses and research questions for the two proposed models, respectively.

Sample Characteristics

Demographics

Table 5 depicts the descriptive statistics of respondents' demographic characteristics. The findings from Table 5 are: (1) about half of the respondents were female; (2) 83.3 % of the respondents were white or Caucasian; (3) at least 42.3 % of the respondents had graduated college; (4) 39.3 % of the respondents indicated that their household income was \$55,000 or higher; and (5) the mean age of respondents was 49.8 (median=51).

Health-Related Characteristics

Table 6 and Table 7 depict the descriptive statistics of respondents' health-related characteristics. First, Table 6 displays descriptive statistics of the responses to the items that were asked in Part 3 of the questionnaire: health insurance status, health status, health consciousness, and knowledge about health and medicine. Second, descriptive statistics of the number of drugs currently taken on a regular basis, perceived drug safety, and involvement with drugs are in Table 7. As indicated in the Methods section, only those who answered that they had taken an OTC drug in the last six months answered the OTC drug section. Thus, the number of

respondents for the Rx drug sections (N=461) and OTC drug sections (N=399) was different; in other words, 89.6% of Rx drugs users were also OTC drug users. A composite mean score was calculated when multiple items were used for a variable; reliability tests were performed, and all health-related variables achieved an acceptable alpha level ($\alpha > .75$).

Table 5. Characteristics of Respondents (Demographics)

	Frequency	Percent	Mean	SD.
Gender				
Male	227	49.2		
Female	234	50.8		
Total	461	100		
Age			49.8	15.593
Race				
White/Caucasian	384	83.3		
Black/African American	46	10		
Asian	12	2.6		
Native American/American Indian	2	.4		
Native Hawaiian/Pacific Islander	0	0		
Multi/Biracial	10	2.2		
Other	5	1.1		
Choose not to answer (Missing)	2	.4		
Total	461	100		
Education				
8 th grade or less	1	.2		
Attended high school	8	1.7		
High school graduate	101	21.9		
Some college	155	33.6		
College graduate	110	23.9		
Some graduate school	24	5.2		
Grad/professional degree	61	13.2		
Choose not to answer (Missing)	1	.2		
Total	461	100		
Income				
Less than \$15,000	50	10.8		
\$15,000-\$34,999	112	24.3		
\$35,000-\$54,999	105	22.8		
\$55,000-\$74,999	80	17.4		
\$75,000 or more	101	21.9		
Do not know/not sure (Missing)	2	.4		
Choose not to answer (Missing)	11	2.4		
Total	461	100		

Table 6. Characteristics of Respondents (Health-Related Characteristics 1)

	Frequency	Percent	Mean	SD.	Cronbach's Alpha
Health insurance					
Health insurance provide coverage for medicines	404	87.6			
No medicine coverage	11	2.4			
Do not have health insurance	46	10			
Total	461	100			
Health status					
Poor (1)	18	3.9			
Fair (2)	103	22.3			
Good (3)	187	40.6			
Very Good (4)	129	28.0			
Excellent (5)	24	5.2			
Total	461	100	3.08	.929	
Chronic medical condition					
Yes	295	64			
No	166	36			
Total	461	100			
Length of time afflicted with condition					
Less than one year	6	2			
1 to 3 years	44	14.9			
More than 3 years to 5 years	47	15.9			
More than 5 years to 7 years	39	13.2			
More than 7 years to 9 years	17	5.8			
More than 9 years	142	48.1			
Total	295	100			
Seriousness of medical condition (N=295) (1-Strongly disagree, 7- Strongly agree)					
The medical condition that I have is serious.			5.27	1.574	
Any changes in my health caused by the medical condition should be taken seriously.			5.84	1.401	
Composite mean			5.56	1.347	.777
Health consciousness (N=461) (1-Strongly disagree, 5-Strongly agree)					
Living life in the best possible health is very important to me.			4.45	.780	
Eating right, exercising, and taking preventive measures will keep me healthy for life.			4.15	.907	
My health depends on how well I take care of myself.			4.33	.805	
I actively try to prevent disease and illness.			4.16	.912	
I do everything I can to stay healthy.			3.87	.963	
Composite mean			4.19	.717	.877
Knowledge in health and medicine (N=461) (1-Not at all knowledgeable, 5-Extremely knowledgeable)					
			3.62	.819	

As can be seen in Table 6, with regard to health insurance status, most respondents (87.6%) reported that they have health insurance that provides at least some coverage for medicines. With regard to health status, almost three-fourths (73.8%) of the respondents considered that they are in good health ($M=3.08$, 1=poor, 5=excellent), even though 64 % of the respondents reported that they are afflicted with chronic medical conditions. Of these 295 respondents who are afflicted with chronic medical conditions, almost one-half (48.1%) reported having the chronic medical conditions more than nine years, and most of them considered their conditions to be serious (seriousness of medical condition: 2-item composite $M=5.56$, 1=Strongly disagree, 7=Strongly agree, higher scores indicated more serious medical conditions). In terms of health consciousness, most respondents agreed that living a healthy life is important, and they try to stay healthy (5-item composite $M=4.19$, 1=Strongly disagree, 5=Strongly agree, a higher score indicated a higher level of health consciousness). In terms of their knowledge of health and medicine, respondents indicated that they are knowledgeable about health and medicine ($M=3.62$, 1=Not at all knowledgeable, 5=Extremely knowledgeable).

As shown in Table 7, most respondents (98.3%) reported that they were currently taking at least one or more Rx drugs on a regular basis, whereas over 90% of respondents (91.2%) were taking at least one or more OTC drugs on a regular basis. With regard to perceived drug safety, most respondents agreed that Rx and OTC drugs are safe ($M=5.45$ for Rx drugs, $M=5.61$ for OTC drugs, 1=very unsafe-7=very safe). Respondents' level of involvement with both Rx ($M=6.00$) and OTC drugs ($M=5.44$) was quite high.

Table 7. Characteristics of Respondents (Health-Related Characteristics 2)

	Frequency	Percent	Mean	SD.	Cronbach's Alpha
Drug use					
Prescription drug use					
Yes	461	100			
Number of prescription drugs taking on a regular basis					
0	8	1.7			
1	89	19.3			
2	89	19.3			
3	78	16.9			
4	58	12.6			
5	46	10			
6	31	6.7			
7 or more	62	13.4			
Total	461	100	3.43	2.055	
Non- prescription drug use					
Yes	399	86.6			
No	62	13.4			
Total	461	100			
Number of non-prescription drugs taking on a regular basis					
0	35	8.8			
1	166	41.6			
2	132	33.1			
3	38	9.5			
4	15	3.8			
5	7	1.8			
6	2	.5			
7 or more	4	1			
Total	399	100	1.70	1.190	
Perceived drug safety (1=very unsafe-7=very safe)					
Prescription drugs (N=461)			5.45	1.273	
Non-prescription drugs (N=399)			5.61	1.257	
Involvement with prescription drugs (7-point) (N=461)					
Important–Unimportant (R)			6.3	1.039	
Of no concern–Of concern to me			5.48	1.724	
Means a lot to me–Means nothing to me (R)			5.92	1.315	
Matters to me–Does not matter (R)			6.12	1.190	
Significant–Insignificant (R)			6.17	1.18	
Composite mean			6.00	1.018	.836
Involvement with non-prescription drugs (7-point) (N=399)					
Important–Unimportant (R)			5.77	1.332	
Of no concern–Of concern to me			4.78	1.754	
Means a lot to me–Means nothing to me (R)			5.40	1.389	
Matters to me–Does not matter (R)			5.61	1.263	
Significant–Insignificant (R)			5.61	1.275	
Composite mean			5.44	1.133	.861

Table 8. T-tests Results for Health-Related Characteristics

	Prescription Drugs (N=399)	Non- prescription Drugs(N=399)	Mean difference	<i>df</i>	<i>t-value</i>	<i>p-value</i>
Number of drugs taking on a regular basis	3.37	1.70	1.667	398	15.947	.000
Perceived drug safety	5.44	5.61	.175	398	2.553	.011
Involvement with drugs	6.01	5.44	.572	398	10.241	.000

Paired *t*-tests were performed to examine differences in the number of drugs currently taken on a regular basis, perceived drug safety, and involvement with drugs between Rx and OTC drugs. As shown in Table 8, the differences pertaining to the amount of use of and consumers' perceptions of Rx and OTC drugs were all statistically significant at $p < .05$; on average, respondents took a greater number of Rx drugs than OTC drugs, perceived OTC drugs to be safer than Rx drugs, and were more involved with Rx drugs than OTC drugs. These *t*-tests were performed with respondents who indicated that they have taken both Rx and OTC drugs in the last six months. Thus, the mean scores presented in Table 8 (regarding the Rx drug variables only) are slightly different from the mean scores from Table 7 (the mean scores for the OTC drug variables stayed the same). Additional *t*-tests were performed to see if there was any difference in responses to the number of Rx drugs currently taken on a regular basis, perceived Rx drug safety, and involvement with Rx drugs between those who have taken both Rx and OTC drugs in the last six months (N=399) and those who have taken only Rx drugs in the last six months (N=62). No statistically significant differences were found. Thus, the slight differences in mean scores between Tables 7 and 8 are not problematic.

Reliability of Measures and Statistical Approaches

Before testing the hypotheses and research questions, composite measures and summated indices of exposure to DTCA and OTCA, social agents, attitudinal variables, and behavioral outcomes were created.

Exposure to DTCA and OTCA

Table 9. Reliability of Exposure to DTCA and OTCA

	Mean	SD.	Cronbach's Alpha
Amount of exposure to DTCA (N=371) (1=Never, 5=Very often)			
Television	4.47	.892	
Radio	2.09	1.262	
Magazine	3.25	1.339	
Newspaper	2.30	1.256	
Internet	2.83	1.348	
Letter, flyer, announcement in the mail	1.95	1.182	
Composite Mean	2.81	.814	.748
Amount of exposure to OTCA (N=341) (1=Never, 5=Very often)			
Television	4.35	.904	
Radio	2.14	1.249	
Magazine	3.04	1.319	
Newspaper	2.34	1.272	
Internet	2.79	1.297	
Letter, flyer, announcement in the mail	2	1.153	
Composite mean	2.78	.821	.768
Attention to DTCA (N=371) (1=strongly disagree to 7= strongly agree)			
Ads for prescription drugs catch my interest.	3.99	1.742	
Ads for prescription drugs are boring. (R)	3.90	1.738	
I pay close attention to ads for prescription drugs.	3.76	1.805	
Composite mean	3.88	1.437	.749
Attention to OTCA (N=341) (1=strongly disagree to 7= strongly agree)			
Ads for non-prescription drugs catch my interest.	4.08	1.623	
Ads for non-prescription drugs are boring. (R)	4.20	1.580	
I pay close attention to ads for non-prescription drugs.	3.72	1.700	
Composite mean	4	1.356	.773

As mentioned in Chapter 3, exposure to DTCA and OTCA was measured using multiple items: amount of exposure to DTCA and OTCA, awareness of ads for specific brands, and attention paid to DTCA and OTCA. First, by calculating a summated mean score of the amount of exposure to six different media types, a composite measure was created for the amount of exposure to DTCA and OTCA, respectively (range: 1=Never, 5=Very often). Second, an index score of the awareness of ads for the five real Rx drug brands was created by summing the number of Rx brands that the respondents reported that they had seen, read, or heard advertisements for. An index score of the awareness of ads for the five real OTC drug brands was also calculated in the same way. Third, a summated mean score of attention paid to DTCA and OTCA (respectively) was computed. As shown in Table 9, the Cronbach's alpha levels for the amount of exposure to DTCA and OTCA and attention paid to DTCA and OTCA were acceptable ($\alpha > .70$).

Over 80% reported that they have seen an advertisement for Rx drugs, whereas 74% reported that they have seen an advertisement for OTC drugs, in the last six months. As shown in Table 9, television was by far the medium respondents reported they were exposed to most often for both DTCA and OTCA, followed by magazines and the Internet. The summated scores indicate that participants perceived that they were exposed to DTCA and OTCA moderately (M=2.814 for DTCA, M=2.777 for OTCA, 1=Never, 5=Very often). The perceived levels of attention paid to DTCA and OTCA were moderate (M=3.884 for DTCA, M=4, OTCA, 1=strongly disagree to 7= strongly agree).

As shown in Table 10, respondents indicated that among the five real brands, they have seen, read, or heard ads for the average of about four brands, for both DTCA and OTCA (summated index=3.97 for DTCA, summated index=4.25 for OTCA). Most of the respondents

(93%-97%) reported that they either have not seen or heard any ads for the fake brands or did not know the fake brands.

Table 10. Awareness of Ads for Specific Brands

	Yes	No	Do not know the brand	Summated Index
	Frequency (Percent)	Frequency (Percent)	Frequency (Percent)	Mean (SD)
Awareness of ads for specific brands (DTCA)				
Abilify	295 (79.5)	50 (13.5)	26 (7)	
Advair	270 (72.8)	78 (21)	23 (6.2)	
Cymbalta	322 (86.8)	32 (8.6)	17 (4.6)	
Lipitor	324 (87.3)	43 (22.6)	4 (1.1)	
Plavix	263 (70.9)	81(21.8)	27 (7.3)	
Summated Index (Range: 1 to 5, N=371)				3.97 (1.245)
Lypaca	25 (6.7)	132 (35.6)	214 (57.7)	
Trelopax	12 (3.2)	124 (33.4)	235 (63.3)	
Awareness of ads for specific brands (OTCA)				
Advil	299 (87.7)	42 (12.3)	0 (0)	
Aleve	305 (89.4)	36 (10.6)	0 (0)	
Claritin	287 (84.2)	52 (15.2)	0 (0)	
NyQuil	306 (89.7)	35 (10.3)	0 (0)	
Zyrtec	251 (73.6)	73 (21.4)	17 (3.7)	
Summated Index (Range: 1 to 5, N=341)				4.25 (1.144)
Dollsam	16 (4.7)	124 (36.4)	201 (58.9)	
Marmax	13 (3.8)	119 (34.9)	209 (61.3)	

Beliefs and Attitudinal Variables

Variables related to consumers' beliefs and attitude regarding DTCA and OTCA were measured with multiple items: skepticism toward DTCA and OTCA, the perceived information utility of DTCA and OTCA, the perceived trust in DTCA and OTCA, the perceived importance of DTCA and OTCA, and attitude toward DTCA and OTCA in general.

Table 11. Reliability of Beliefs and Attitudinal Measures

	Mean	SD.	Cronbach's Alpha
Skepticism toward DTCA (1=strongly disagree to 7= strongly agree) (N=371)			
We can depend on getting the truth in most prescription (non-prescription) drug advertising. (R)	4.10	1.629	
Prescription drug advertising's aim is to inform the consumer. (R)	3.55	1.811	
Prescription drug ads generally present a true product picture. (R)	3.91	1.606	
Prescription drug advertising is a reliable source of information. (R)	3.88	1.686	
I am accurately informed by most prescription drug ads. (R)	4.07	1.690	
Most prescription drug advertising provides consumers with essential information. (R)	3.64	1.629	
Prescription drug advertising is informative. (R)	3.45	1.565	
Composite Mean	3.80	1.495	.961
Skepticism toward OTCA (1=strongly disagree to 7= strongly agree) (N=341)			
We can depend on getting the truth in most non-prescription drug advertising. (R)	4.18	1.569	
Non-prescription drug advertising's aim is to inform the consumer. (R)	3.75	1.651	
Non-prescription drug ads generally present a true product picture. (R)	3.87	1.483	
Non-prescription drug advertising is a reliable source of information. (R)	4.06	1.611	
I am accurately informed by most non-prescription drug ads. (R)	4.09	1.571	
Most non-prescription drug advertising provides consumers with essential information. (R)	3.77	1.498	
Non-prescription drug advertising is informative. (R)	3.65	1.540	
Composite Mean	3.91	1.394	.958
Perceived Information Utility of DTCA (1=strongly disagree, 7=strongly agree) (N=371)			
Prescription drug ads allow people to be more involved with their health care.	4.64	1.578	
Prescription drug ads help people make their own decisions about prescription medicines.	4.44	1.644	
Prescription drug ads educate people about the risks and benefits of prescription medicines.	4.68	1.656	
Composite mean	4.59	1.491	.905
Perceived Information Utility of OTCA (1=strongly disagree, 7=strongly agree) (N=341)			
Non-prescription drug ads allow people to be more involved with their health care.	4.51	1.742	
Non-prescription drug ads help people make their own decisions about prescription medicines.	4.74	1.738	
Non-prescription drug ads educate people about the risks and benefits of prescription medicines.	4.26	1.805	
Composite mean	4.50	1.453	.876
Perceived Importance of DTCA (1=Not at all important, 7=Extremely important) (N=371)	4.38	1.875	
Perceived Importance of OTCA (1=Not at all important, 7=Extremely important) (N=341)	4.50	1.702	

Table 11. Reliability of Beliefs and Attitudinal Measures (Continued)

	Mean	SD.	Cronbach's Alpha
Perceived Trust in DTCA (1=strongly disagree, 7=strongly agree)			
Reliability dimension			
Truthful	4.27	1.584	
Clear	4.36	1.610	
Reliable	4.24	1.607	
Dependable	4.23	1.607	
Accurate	4.26	1.575	
Credible	4.33	1.620	
Complete	3.78	1.709	
Factual	4.39	1.637	
Honest	4.20	1.601	
Composite Mean (N=371)	4.23	1.500	.980
Usefulness dimension			
Useful	4.68	1.696	
Valuable	4.53	1.703	
Good	4.43	1.661	
Helps people make the best decisions	4.41	1.746	
Composite Mean (N=371)	4.51	1.593	.953
Final composite mean (Reliability and Usefulness combined)	4.31	1.494	.983
Perceived Trust in OTCA (1=strongly disagree, 7=strongly agree)			
Reliability dimension			
Truthful	4.19		
Clear	4.48		
Reliable	4.26		
Dependable	4.27		
Accurate	4.23		
Credible	4.27		
Complete	3.83		
Factual	4.28		
Honest	4.17		
Composite Mean (N=341)	4.22	1.373	.975
Usefulness dimension			
Useful	4.69		
Valuable	4.45		
Good	4.44		
Helps people make the best decisions	4.50		
Composite Mean (N=341)	4.52	1.472	.954
Final composite mean (Reliability and Usefulness combined)	4.31	1.378	.981
Attitudes toward DTCA in General (1 to 7) (N=371)			
Bad–Good	4.58	1.810	
Unpleasant–Pleasant	4.26	1.644	
Unfavorable–Favorable	4.56	1.716	
Positive–Negative (reverse-coded)	4.61	1.710	
Composite Mean	4.50	1.564	.930
Attitudes toward OTCA in General (1 to 7) (N=341)			
Bad–Good	4.91		
Unpleasant–Pleasant	4.67		
Unfavorable–Favorable	4.81		
Positive–Negative (reverse-coded)	4.83		
Composite Mean	4.80	1.258	.908

As shown in Table 11, composite measures were created for these items and reliability of these multiple items achieved an acceptable alpha level ($\alpha > .85$). Respondents showed somewhat neutral levels of skepticism toward DTCA and OTCA (composite $M=3.80$ for DTCA, composite $M=3.91$ for OTCA, 7-point scale, a higher score indicates a higher level of skepticism). With regard to information utility, respondents agreed that DTCA and OTCA were useful in consumers' healthcare decision making (composite $M=4.59$ for DTCA, composite $M=4.50$ for OTCA). Their perceived trust in DTCA and OTCA were moderate in terms of the reliability dimension (composite $M=4.23$ for DTCA, composite $M=4.22$ for OTCA) and usefulness dimension (composite $M=4.51$ for DTCA, composite $M=4.52$ for OTCA). Participants also agreed that DTCA and OTCA are important sources of health information ($M=4.38$ for DTCA, $M=4.50$ for OTCA). With regard to attitude, respondents expressed moderately positive attitude toward DTCA and OTCA (composite $M=4.50$ for DTCA, composite $M=4.80$ for OTCA). Overall, respondents showed moderately positive perceptions of DTCA and OTCA. The mean differences between DTCA and OTCA will be examined in the following sections when the hypotheses and research questions are addressed.

Table 12. Summated Scores of Behavioral Outcomes

	Frequency (Percent)	Summated Index (SD)
DTCA Prompted Behaviors (N=371)		
I have talked with my doctor about an advertised prescription drug.	186 (50.1)	
I have talked with my friends or relatives about an advertised prescription drug.	96 (25.9)	
I have talked with my pharmacist about an advertised prescription drug.	71 (19.1)	
I have talked with a doctor about medical condition, illness, or other health concern of my own that I had not discussed with a doctor before.	87 (23.5)	
I have asked my doctor to prescribe an advertised prescription drug.	56 (15.1)	
I have searched for more information about an advertised prescription drug.	119 (32.1)	
Summated Index (0 to 6)		1.66 (1.474)
OTCA Prompted Behaviors (N=341)		
I have talked with my doctor about an advertised non-prescription drug.	122 (35.8)	
I have talked with my friends or relatives about an advertised non-prescription drug.	103 (30.2)	
I have talked with my pharmacist about an advertised non-prescription drug.	75 (22)	
I have looked for a non-prescription drug brand in the store after seeing it on an advertisement.	147 (43.1)	
I have started using a non-prescription drug brand after seeing it on an advertisement.	80 (23.5)	
I have searched for more information about an advertised non-prescription drug.	91(26.7)	
Summated Index (0 to 6)		1.81 (1.465)
Drug Information Seeking Triggered by DTCA (N=371)		
in a reference book	30 (8.1)	
in a magazine	19 (5.1)	
in a newspaper	7 (1.9)	
on the Internet	186 (50.1)	
by asking a friend, relative or neighbor	43 (11.6)	
by calling the 1-800 number in the ad	21 (5.7)	
by talking to a pharmacist	53 (14.3)	
by talking to your doctor	131 (35.3)	
by talking to a nurse	24 (6.5)	
by talking to a doctor other than your own doctor	8 (2.2)	
by making an appointment with a doctor	18 (4.9)	
Summated Index (0 to 11)		1.46 (1.741)
Drug Information Seeking Triggered by OTCA (N=341)		
in a reference book	30 (8.8)	
in a magazine	23 (6.7)	
in a newspaper	9 (2.6)	
on the Internet	146 (42.8)	
by asking a friend, relative or neighbor	46 (13.5)	
by calling the 1-800 number in the ad	15 (4.4)	
by talking to a pharmacist	55 (16.1)	
by talking to your doctor	84 (24.6)	
by talking to a nurse	20 (5.9)	
by talking to a doctor other than your own doctor	7 (2.1)	
by making an appointment with a doctor	7 (2.1)	
by looking at the product label	4 (1.2)	
Summated Index (0 to 12)		1.31 (1.794)

Behavioral Outcomes

Behavioral outcomes that were examined in this study were DTCA and OTCA prompted behaviors and drug information seeking triggered by DTCA and OTCA. With regard to DTCA and OTCA prompted behaviors, respondents were shown a list of ad prompted behaviors and asked, “After seeing, reading or hearing ads for prescription (non-prescription) drugs, have you done any of the following? Please check all that apply.” Thus, a summated index of checked items was calculated for DTCA and OTCA prompted behaviors respectively. As can be seen in Table 12, out of the six behaviors listed in the questionnaire, respondents engaged in at least one or two behaviors after seeing, reading or hearing ads for Rx and OTC drugs (index M=1.66 for DTCA, index M=1.81 for OTCA). With regard to DTCA, after being exposed to DTCA, 82.2% engaged in at least one behavior; more than half of the respondents reported talking with their doctors about the advertised Rx drug (50.1%), followed by searching for more information about the drug (32.1%), talking with friends or relatives about the drug (25.9%), and talking with a doctor about medical conditions, illness, or other health concerns (23.5%). On the other hand, after being exposed to OTCA, 86.2% engaged in at least one behavior; 43.1% of the respondents reported looking for the advertised OTC drug brand in the store, followed by talking with their doctors about the drug (35.8%), talking with friends or relatives about the drug (30.2%), and searching for more information about the drug (26.7%).

In terms of drug information seeking triggered by DTCA and OTCA, respondents were first asked if an ad for a Rx (OTC) drug ever caused them to look for more information, and if they said yes to this question, they were directed to the next question asking where or how they have looked for more information about the drug or about their health. A list of information sources was presented, and they were asked to “choose all that apply.” The number of sources

respondents used in searching for more information was computed as a summated index. Those who answered “No” to the first question were coded as 0 when the summated index was created. Thus, the summated index could range between 0 to 11 for DTCA and 0 to 12 for OTCA, but the maximum number of information sources respondents actually used was 8 for DTCA and 9 for OTCA. Table 12 presents the frequency and percent of each information source checked by the respondents. After being exposed to DTCA and OTCA, more than half of the respondents looked for more information from at least one source (56.1% for DTCA, 50.4% for OTCA; index $M=1.46$ for DTCA, index $M=1.31$ for OTCA). For both DTCA and OTCA, the Internet was the most common source for searching for more information about the drug or their health, followed by their doctors, pharmacists, and friends, relatives or neighbors.

Socialization Agents

The amount of exposure to socialization agents was indicated by media exposure (hours of media use per week) and the frequency of drug information respondents obtain from different sources. First, the total hours of media use per week was computed by summing the hours spent using each medium (newspapers, magazines, television, radio, and the Internet). Two respondents showed invalid numbers for the television and the Internet items, and these two responses were excluded from the calculation of the summated score. As shown in Table 13, respondents used mass media for about 30 hours per week on average. Second, respondents were asked how often they get information about Rx and OTC drugs from different sources (1=never, 5=very often). Responses to print media, broadcast media, drug advertising, Internet advertising, and non-Internet advertising were combined and comprised the “mass media” item. The reliability scores were acceptable for the mass media items of both DTCA and OTCA ($\alpha > .75$).

As can be seen in Table 13, respondents indicated that professional interpersonal sources, such as doctors and pharmacists, are the sources that they most often consulted for information about Rx drugs, followed by specialized medical materials, mass media, and non-professional interpersonal sources. Professional interpersonal sources were also the leading identified by participants as sources of information about OTC drugs, followed by mass media, non-professional interpersonal sources, and specialized medical materials.

Table 13. Reliability of Amount of Exposure to Socialization Agents

Media exposure (Hours of media use per week)	Mean	SD.	Cronbach's Alpha
Reading newspapers (N=461)	2.40	3.571	
Reading magazines (N=461)	1.75	2.864	
Watching television (N=459)	21.01	16.077	
Listening to the radio (N=461)	5.72	8.696	
Using the Internet (N=459)	20.71	16.295	
Total hours of media use per week (N=459)	30.66	20.026	
How often get information about prescription drugs from: (1-Never, 5-Very often, N=461)			
Mass Media			
Print media	2.36	1.152	
Broadcast media	3	1.324	
Prescription drug advertising	3.17	1.282	
Internet advertising	2.46	1.283	
Non-advertising internet sources	2.7	1.271	
Composite mean	2.74	.938	.796
Professional interpersonal sources	3.56	1.132	
Non-professional interpersonal sources	2.45	1.109	
Specialized medical materials	2.75	1.275	
How often get information about non- prescription drugs from: (1-Never, 5-Very often, N=461)			
Mass Media			
Print media	2.55	1.248	
Broadcast media	2.88	1.326	
Non-prescription drug advertising	3.08	1.283	
Internet advertising	2.43	1.250	
Non-advertising internet sources	2.45	1.261	
Composite mean	2.68	.981	.829
Professional interpersonal sources	3	1.216	
Non-professional interpersonal sources	2.62	1.191	
Specialized medical materials	2.47	1.177	

Model 1 Hypotheses and Research Questions

A Comparison of Consumer Responses to DTCA and OTCA (RQ1)

As I mentioned earlier, questions about the exposure to, beliefs of, attitude toward, and behavioral outcomes of DTCA were asked to those participants who had taken a Rx drug in the last six months and had also been exposed to DTCA in the last six months. On the other hand, questions about the exposure to, beliefs of, attitude toward, and behavioral outcomes of OTCA were asked to those who had been exposed to OTCA, which included both participants who had taken and had not taken OTC drugs in the last six months. Among the 341 individuals who had been exposed to OTCA, 311 respondents had also taken OTC drugs in the last six months. Before comparing the mean scores of responses to the DTCA and OTCA questions, a set of *t*-tests were performed to examine the differences between those who had taken OTC drugs in the last six months and those who had not. As shown in Table 14, these preliminary *t*-tests revealed that there were some differences between OTC drug users and non-users regarding the exposure, beliefs, attitude, and behavioral outcomes: those who had taken OTC drugs in the last six months paid more attention to OTCA, showed lower levels of skepticism toward OTCA, perceived higher levels of OTCA's information utility, perceived more trust in OTCA both in terms of reliability and usefulness, expressed more positive attitude toward OTCA in general, and engaged more in OTCA prompted behaviors than those who had not taken OTC drugs in the last six months.

In order to make equivalent comparisons, only those who had been exposed to DTCA and OTCA and had taken both Rx and OTC drugs (N=285) were compared in terms of exposure, beliefs, attitude, and behavioral outcomes. As seen in Table 15, respondents reported that they were exposed to DTCA ($M= 2.87, SD =.80$) more than OTCA ($M= 2.80, SD =.81$), $t(284)= -$

.2111, $p < .05$; the number of brands which they had seen, read, or heard ads for were higher for OTC drugs ($M = 4.30$, $SD = 1.06$) than Rx drugs ($M = 4.06$, $SD = 1.18$), $t(284) = 3.599$, $p < .001$; their attitude was significantly more positive toward OTCA ($M = 4.84$, $SD = 1.27$) than DTCA ($M = 4.55$, $SD = 1.59$), $t(284) = 4.057$, $p < .001$; and respondents engaged in more extensive information searches triggered by DTCA ($M = 1.55$, $SD = 1.76$) than OTCA ($M = 1.35$, $SD = 1.80$), $t(284) = -2.376$, $p < .05$.

Table 14. T-tests between OTC Drug Users and Non-users

	Users (N=311)	Non-users (N=30)	Mean difference	df	t-value	p-value
Amount of exposure to OTCA	2.78	2.78	.000	34.560	-.004	.996
Awareness of ads for specific brands(OTCA)	4.25	4.20	.051	34.107	.220	.827
Attention to OTCA	4.06	3.40	.660	339	2.567	.011
Skepticism toward OTCA	3.84	4.63	.795	35.355	-3.121	.004
Information utility of OTCA	4.55	3.97	.586	339	2.122	.035
Trust in OTCA (Reliability)	4.30	3.44	.858	339	3.317	.001
Trust in OTCA (Usefulness)	4.60	3.68	.919	34.409	3.214	.003
Trust in OTCA (Combined)	4.39	3.51	.877	339	3.381	.001
Importance of OTCA	4.59	3.60	.985	339	3.064	.002
Attitudes toward OTCA in general	4.86	4.23	.625	339	2.622	.009
OTCA prompted behavior	1.87	1.20	.671	339	2.414	.016
OTCA triggered information search	1.34	.97	.374	339	1.091	.276

Table 15. Paired T-tests for Exposure, Beliefs, Attitudes, and Behavioral Outcomes (DTCA vs. OTCA)

	DTCA (N=285)	OTCA (N=285)	Mean difference	df	t-value	p-value
Amount of exposure to DTCA/OTCA	2.87	2.80	.066	284	-2.111	.036
Awareness of ads for specific brands (DTCA/OTCA)	4.06	4.30	.242	284	3.599	.000
Attention to DTCA/OTCA	3.99	4.05	.060	284	.855	.393
Skepticism toward DTCA/OTCA	3.73	3.84	.112	284	-1.616	.107
Information utility of DTCA/OTCA	4.55	4.55	.094	284	-1.300	.195
Trust in DTCA/OTCA (Reliability)	4.26	4.28	.022	284	.324	.746
Trust in DTCA/OTCA (Usefulness)	4.54	4.60	.054	284	.686	.493
Trust in DTCA/OTCA (Combined)	4.35	4.38	.032	284	-.461	.645
Importance of DTCA/OTCA	4.45	4.55	.102	284	1.067	.287
Attitudes toward DTCA/OTCA in general	4.55	4.84	.283	284	4.057	.000
DTCA/OTCA-prompted behavior	1.81	1.89	.081	284	1.062	.289
DTCA/OTCA triggered information search	1.55	1.35	.200	284	-2.376	.018

Additionally, the skepticism and attitude toward DTCA and OTCA were compared with the skepticism and attitude toward advertising in general. There was no difference between

consumers' skepticism toward pharmaceutical advertising and advertising in general. Consumers' skepticism toward DTCA ($M= 3.80$, $SD =1.49$) was not significantly different from their skepticism toward advertising in general ($M= 3.90$, $SD =1.49$), $t(370)=- 1.901$, $p=.058$.

Consumers' skepticism toward OTCA ($M= 3.91$, $SD =1.39$) was not significantly different from their skepticism toward advertising in general ($M= 3.87$, $SD =1.53$), $t(340)= .629$, $p=.530$. On the other hand, consumers' attitude toward OTCA ($M= 4.80$, $SD =1.26$) was significantly higher than their attitude toward advertising in general ($M= 4.67$, $SD =1.49$), $t(340)= 2.374$, $p=.018$. The respondents' attitude toward advertising in general ($M= 4.62$, $SD =1.50$) was significantly higher than their attitude toward DTCA ($M= 4.50$, $SD =1.56$), $t(370)= -1.985$, $p=.048$. The results indicate that the level of skepticism toward DTCA, OTCA, and advertising in general tend not to be strongly skeptical, but respondents were more positive about OTCA than advertising in general and more positive about advertising in general than DTCA.

An Assumption Check for Regression Analyses

Research Question 2 and Hypothesis 1, 3-8, and 10-13 were examined through a set of hierarchical multiple regression and simultaneous multiple regression analyses. To detect any statistical violations of multiple regression assumptions, such as normality, linearity, and homoscedasticity, a preliminary regression analysis was conducted for the DTCA and OTCA models separately. First, the residual scatterplots were examined, and the examination of the plots revealed no violation of normality, linearity, and homoscedasticity. The Casewise Diagnostics revealed several outliers with standardized residuals greater than 3. Excluding these outliers did not significantly influence the results of the study, thus, these cases were not excluded in the final data analysis. To detect multicollinearity, Variance Inflation Factor (VIF) statistics in the Coefficients Tables were assessed; some of the variables in the beliefs and

attitude block had VIF values higher than 4 (skepticism toward DTCA and OTCA, the perceived information utility of DTCA and OTCA, and the perceived trust in DTCA and OTCA- reliability and usefulness dimension) which indicated multicollinearity among these independent variables. Finding high correlations among these variables is presumed, because these variables comprise the cognitive aspect of attitude. After the two variables (reliability and usefulness) which comprise the cognitive dimension of the Ad Trust scale are combined and entered as one variable (Cronbach's alpha=.983 for DTC Ad Trust, Cronbach's alpha=.981 for OTC Ad Trust), VIF values for skepticism toward DTCA and OTCA, the perceived information utility of DTCA and OTCA and Ad Trust became significantly lower (VIF range before: 4-12=> after: 4-6). Thus, Ad Trust as a combined variable (for DTCA and OTCA respectively) is used for the subsequent analyses.

Predictors of Health-Related Characteristics (RQ2)

In order to answer Research Question 2, which concerns predicting health-related characteristics, simultaneous multiple regression analyses were conducted for health-related characteristics (health status, health consciousness, knowledge about health and medicine, number of Rx drugs taken on a regular basis, number of OTC drugs taken on a regular basis, perceived Rx drug safety, perceived OTC drug safety, involvement with Rx drugs, and involvement with OTC drugs, respectively). Five demographic variables (age, gender, race, education, and income) were entered simultaneously as predictor variables. Gender and race were dummy coded: females and whites were coded as the response (target) group, whereas males and other races (non-whites) were coded as the control (reference) group.

Table 16. Multiple Regression Results for Predictors of Health-Related Characteristics

	Beta								
	Health status	Health consciousness	Health knowledge	# of Rx drugs taken	# of OTC drugs taken	Rx drug safety	OTC drug safety	Involve ment with Rx	Involve ment with OTC
Age	-.113*	.081	.089	.435***	.145	.104*	.130*	.272***	.160**
Gender (female)	-.038	.029	-.067	-.051	-.028	-.013	-.085	.001	-.039
Race (White)	.024	-.019	-.012	-.052	-.049	.036	.087	.026	.013
Education	.082	-.053	.106*	-.011	.018	.111*	.023	-.002	-.113*
Income	.265***	.079	.061	-.158***	.043	.007	.058	-.031	.003
R²	.113***	.012	.031*	.223***	.021	.028*	.040**	.083***	.041**
Adj. R²	.103	.000	.020	.215	.008	.017	.027	.072	.028
df	5	5	5	5	5	5	5	5	5
MS	8.816	.542	1.889	84.270	2.295	4.056	4.941	7.640	4.051
F-value	11.220	1.043	2.849	25.365	1.654	2.513	3.188	7.953	3.247
P-value	.000	.392	.015	.000	.145	.029	.008	.000	.007
N	447	447	447	447	390	447	390	447	390

#p<.10, *P<.05, **P<.01, ***P<.001

As shown in Table 16, income ($\beta=.265$, $p<.001$) and age ($\beta= -.113$, $p<.05$) were significant predictors of one's perceived health status ($R^2=. 113$, $F(5,441)=11.220$, $p<.001$), and education ($\beta=.106$, $p<.05$) was a significant predictor of knowledge about health and medicine ($R^2=. 031$, $F(5,441)=2.849$, $p<.05$). These results indicate that respondents who earned more and were younger were likely to perceive themselves in better health, and those who had higher levels of education were likely to think they were more knowledgeable about health and medicine. With regard to drug use, only the number of Rx drugs taken on a regular basis (not the number of OTC drugs taken on a regular basis) was predicted by age ($\beta= .435$, $p<.001$) and income ($\beta= -.158$, $p<.001$), ($R^2=.223$, $F(5,441)= 25.365$, $p<.001$); this indicates that those who were older and earned less took a larger number of Rx drugs on a regular basis. With regard to perceived drug safety, education ($\beta=.111$, $p<.05$) and age ($\beta=.104$, $p<.05$) were significant predictors of Rx drugs' perceived safety ($R^2= .028$, $F(5,441)= 2.513$, $p<.05$), whereas only age ($\beta=.130$, $p<.05$) was a significant predictor of OTC drugs' perceived safety ($R^2=.04$, $F(5,441)=$

3.188, $p < .01$); older respondents perceived both Rx and OTC drugs safer than younger respondents, whereas better educated respondents perceived Rx drugs safer than less educated. In terms of involvement with pharmaceuticals, age ($\beta = .272$, $p < .001$) was a significant predictor of involvement with Rx drugs ($R^2 = .083$, $F(5,441) = 7.953$, $p < .001$), whereas age ($\beta = .160$, $p < .01$) and education ($\beta = -.113$, $p < .05$) were significant predictors of involvement with OTC drugs ($R^2 = .041$, $F(5,441) = 3.247$, $p < .01$); older people had higher levels of involvement with both Rx and OTC drugs, and less educated respondents were more involved with OTC drugs.

Predictors of Exposure Variables (H1a-f)

In order to test Hypothesis 1a-f, which concerns predicting exposure to DTCA and OTCA, three sets of hierarchical regression analyses were conducted for both DTCA and OTCA respectively. For each analysis, demographic variables (age, gender, race, education, and income) were entered in the first block as co-variates, and health-related characteristics (health status, chronic condition, health insurance status, health consciousness, knowledge about health and medicine, drug use, involvement with pharmaceuticals, and perceived drug safety) were entered in the second block. Perceived amount of exposure to DTCA/OTCA, awareness of ads for specific Rx/OTC drug brands, and attention paid to DTCA/OTCA were entered as dependent variables.

Table 17. Hierarchical Regression Results for Predictors of DTCA Exposure

		Beta		
		Amount of exposure to DTCA	Awareness of ads for Rx brands	Attention to DTCA
Model1	Age	-.164**	.085	-.056
	Gender (female)	-.104#	.005	-.002
	Race (White)	-.044	.000	.002
	Education	-.016	.087	-.115#
	Income	.043	-.011	-.017
	R ²	.049**	.014	.017
Model2	Health status	-.147*	-.038	-.062
	Chronic condition	-.004	.102	-.042
	Health insurance status	.008	-.010	.033
	Health consciousness	.033	-.112#	.126*
	Knowledge about health and medicine	.233***	-.024	.176**
	# of Rx drugs taken on a regular basis	-.007	.076	-.002
	# of OTC drugs taken on a regular basis	.108#	-.053	.118*
	Involvement with Rx	.027	.119#	.218***
	Perceived Rx drug safety	.097#	-.084	.093#
	R ² change	.091***	.058*	.160***
	Total explained variance (R ²)	.140***	.072#	.176***
	Total explained variance (Adj. R ²)	.100***	.029#	.138***

#p<.10, *P<.05, **P<.01, ***P<.001

N=318

Predictors of the Perceived Amount of Exposure to DTCA (H1a)

Table 17 presents predictors of exposure to DTCA. In predicting the perceived amount of exposure to DTCA (H1a), the first set of demographic variables significantly accounted for the exposure to DTCA, with age ($\beta = -.164$, $p < .01$) being a significant predictor ($R^2 = .049$, $F(5,312) = 3.218$, $p < .01$). When the second block was entered, age ($\beta = -.226$, $p < .001$) still remained significant in explaining the perceived amount of exposure to DTCA. The set of health-related characteristics accounted for a significant proportion of the perceived amount of exposure to DTCA after controlling for the effects of demographic variables (R^2 change = .091, $F(9,303) = 3.569$, $p < .001$). Health status ($\beta = -.147$, $p < .05$) and knowledge about health and medicine ($\beta = .233$, $p < .001$) were stronger predictors than other health-related characteristics. Overall, the full regression equation explained about 14% of the variance of the perceived amount of

exposure to DTCA ($R^2=.140$, $F(14,303)= 3.529$, $p<.001$). This indicates that respondents who were younger, in poorer health, and perceived themselves to be more knowledgeable about health and medicine were more likely to report that they were exposed to DTCA more often.

Predictors of the Awareness of Ads for Specific Rx Brands (H1b)

As shown in Table 17, in predicting the awareness of ads for specific Rx drug brands (H1b), the first block (demographics) and the full regression equation did not significantly explain the variance of the awareness of ads for Rx drug brands.

Predictors of the Awareness of Ads for Attention to DTCA (H1c)

Table 17 shows that in predicting attention paid to DTCA (H1c), demographic variables did not explain a significant amount of the variance of the attention to DTCA. However, the second set of variables accounted for a significant proportion of the attention paid to DTCA (R^2 change = .160, $F(9,303)= 6.522$, $p<.001$). Health consciousness ($\beta= .126$, $p<.05$), knowledge about health and medicine ($\beta= .176$, $p<.01$), number of OTC drugs taken on a regular basis ($\beta= .118$, $p<.05$), and involvement with Rx drugs ($\beta= .218$, $p<.001$) were significant predictors of the attention paid to DTCA. When the second set of variables were entered, age ($\beta= -.150$, $p<.05$) and education ($\beta= -.145$, $p<.01$) became significant predictors. The full regression equation explained 17.6% of the variance ($R^2=.176$, $F(14,303)= 4.635$, $p<.001$). The results indicate that the more one is involved with Rx drugs and conscious about their health, has knowledge about health and medicine, and takes more OTC drugs, the more one is likely to pay attention to DTCA.

Predictors of the Perceived Amount of Exposure to OTCA (H1d)

Table 18 shows predictors of exposure to OTCA. In predicting the perceived amount of exposure to OTCA (H1d), among the demographic variables, age ($\beta= -.129$, $p<.05$) and income ($\beta= .160$, $p<.01$) were found significant ($R^2=.068$, $F(5,298)= 4.362$, $p<.01$). When the health-

related characteristics were entered, age ($\beta = -.163, p < .05$) and income ($\beta = .162, p < .01$) were still significant predictors. The second set of variables explained a significant proportion of the amount of exposure to OTCA after controlling for the effects of demographic variables (R^2 change = .109, $F(9,289) = 4.260, p < .001$). Knowledge about health and medicine ($\beta = .280, p < .001$) and the number of OTC drugs taken on a regular basis ($\beta = .132, p < .05$) were significant predictors. The full regression equation explained 17.7% of the variance ($R^2 = .177, F(14,289) = 4.450, p < .001$). Those who are more knowledgeable about health and medicine, are younger, take more OTC drugs on a regular basis, and earn more reported that they have seen, read, or heard OTCA more frequently.

Table 18. Hierarchical Regression Results for Predictors of OTCA Exposure

		Beta		
		Amount of exposure to OTCA	Awareness of ads for OTC brands	Attention to OTCA
Model1	Age	-.129*	-.068	-.107
	Gender (female)	-.068	-.073	.014#
	Race (White)	-.083	-.004	-.027
	Education	-.032	.063	-.102#
	Income	.160**	-.024	.045
	R^2	.068**	.014	.025
Model2	Health status	-.020	-.033	-.036
	Chronic condition	-.033	.105	-.010
	Health insurance status	-.057	-.005	.022
	Health consciousness	.024	-.024	.102#
	Knowledge about health and medicine	.280***	.034	.198**
	# of OTC drugs taken on a regular basis	.132*	.098	.112*
	# of Rx drugs taken on a regular basis	.058	.094	-.128#
	Involvement with OTC	-.026	-.033	.189**
	Perceived OTC drug safety	-.016	.012	.133*
	R^2 change	.109***	.042	.177***
	Total explained variance (R^2)	.177***	.056	.202***
	Total explained variance (Adj. R^2)	.137***	.010	.163***

$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

N=304

Predictors of the Awareness of Ads for Specific OTC Brands (H1e)

Regarding the awareness of ads for OTC drug brands, the first block (demographics), the second block (health-related characteristics) after controlling for the first block, and the full regression equation did not significantly explain the variance of the awareness of ads for OTC drug brands.

Predictors of the Awareness of Ads for Attention to OTCA (H1f)

As shown in Table 18, in regards to the attention paid to OTCA, demographic variables did not explain a significant proportion of the variable. Health-related characteristics accounted for a significant amount of the variance in the attention paid to OTCA (R^2 change = .177, $F(9,289) = 7.121, p < .001$). Knowledge about health and medicine ($\beta = .198, p < .01$), number of OTC drugs taken on a regular basis ($\beta = .112, p < .05$), involvement with OTC drugs ($\beta = .189, p < .01$), and perceived OTC drug safety ($\beta = .133, p < .05$) were significant predictors of the attention paid to OTCA. The full regression model explained 20.2% of the variance ($R^2 = .202, F(14,289) = 5.214, p < .001$). The results indicate that those who are knowledgeable about health and medicine, are more involved with OTC drugs, take a greater number of OTC drugs, and perceive OTC drugs to be safe are more likely to pay attention to OTCA.

Table 19. Correlation between Exposure and Attitudinal Variables for DTCA

	Amount of exposure to DTCA	Awareness of ads for Rx brands	Attention to DTCA
Skepticism to DTCA	-.141**	.012	-.661**
Information utility of DTCA	.131*	.006	.619**
Trust in DTCA (Reliability)	.113*	.005	.580**
Trust in DTCA (Usefulness)	.131*	.006	.624**
Trust in DTCA (Combined)	.122*	.005	.608**
Importance of DTCA	.254**	-.020	.661**
Attitude toward DTCA	.119*	.003	.612**

**<.01, *<.05

N=371

Relationship between Exposure and Attitudinal Responses (H2a-b)

In order to examine the relationships between exposure and attitudinal variables, correlation analyses were conducted for H2a-b. As can be seen in Table 19 (H2a), exposure to DTCA in terms of the perceived amount of exposure to DTCA and attention paid to DTCA were correlated with all five attitudinal variables (skepticism toward DTCA, the perceived information utility of DTCA, the perceived trust in DTCA, the perceived importance of DTCA, and attitude toward DTCA in general). The amount of exposure to DTCA was negatively correlated with skepticism toward DTCA ($r = -.141, p < .01$) and positively correlated with the information utility of DTCA ($r = .131, p < .05$), trust in DTCA ($r = .122, p < .05$), the perceived importance of DTCA ($r = .254, p < .01$), and the attitude toward DTCA ($r = .119, p < .05$). The attention paid to DTCA was negatively correlated with skepticism toward DTCA ($r = -.661, p < .01$) and positively correlated with the information utility of DTCA ($r = .619, p < .01$), trust in DTCA ($r = .608, p < .01$), the perceived importance of DTCA ($r = .661, p < .01$), and the attitude toward DTCA ($r = .612, p < .01$). Relationships between the attention paid to DTCA and attitudinal variables were stronger

than relationships between the amount of exposure to DTCA and attitudinal variables. There was no correlation between the awareness of ads for specific Rx brands and the five attitudinal variables for DTCA.

Additionally, correlation analyses between the exposure to DTCA variables and the exposure to socialization agents for acquiring Rx drug information were conducted. The perceived amount of exposure to DTCA was positively correlated with the perceived amount of exposure to mass media sources ($r = .535, p < .01$), exposure to professional interpersonal sources ($r = .179, p < .01$), exposure to non-professional interpersonal sources ($r = .311, p < .01$), and exposure to specialized medical materials ($r = .431, p < .01$). The awareness of ads for specific Rx brands was positively correlated with hours of media use per week ($r = .122, p < .05$). The attention paid to DTCA was positively correlated with the perceived amount of exposure to mass media sources ($r = .500, p < .01$), exposure to professional interpersonal sources ($r = .148, p < .01$), exposure to non-professional interpersonal sources ($r = .325, p < .01$), and exposure to specialized medical materials ($r = .345, p < .01$).

Table 20. Correlation between Exposure and Attitudinal Variables for OTCA

	Amount of exposure to OTCA	Awareness of ads for OTC brands	Attention to OTCA
Skepticism to OTCA	-.154**	.071	-.606**
Information utility of OTCA	.154**	-.047	.539**
Trust in OTCA (Reliability)	.143**	-.014	.571**
Trust in OTCA (Usefulness)	.131*	.001	.568**
Trust in OTCA (Combined)	.142**	-.009	.581**
Importance of OTCA	.219**	-.056	.584**
Attitude toward OTCA	.117*	-.015	.602**

**<.01, *<.05

N=341

Table 20 shows (H2b) that exposure to OTCA in terms of the perceived amount of exposure to OTCA and attention paid to OTCA were correlated with all five attitudinal variables (skepticism toward OTCA, the perceived information utility of OTCA, the perceived trust in OTCA, the perceived importance of OTCA, and the attitude toward OTCA in general). The perceived amount of exposure to OTCA was negatively correlated with skepticism toward OTCA ($r = -.154, p < .01$) and positively correlated with the information utility of OTCA ($r = .154, p < .01$), trust in OTCA ($r = .142, p < .01$), the perceived importance of OTCA ($r = .219, p < .01$), and the attitude toward OTCA ($r = .117, p < .05$). The attention paid to OTCA was negatively correlated with skepticism toward OTCA ($r = -.606, p < .01$) and positively correlated with the information utility of OTCA ($r = .539, p < .01$), trust in OTCA ($r = .581, p < .01$), the perceived importance of OTCA ($r = .584, p < .01$), and the attitude toward OTCA ($r = .602, p < .01$). Just like DTCA, relationships between the attention paid to OTCA and attitudinal variables were stronger than relationships between the perceived amount of exposure to OTCA and attitudinal variables. There was no correlation between the awareness of ads for specific OTC brands and the five attitudinal variables for OTCA.

Additionally, correlation analyses between the exposure to OTCA variables and the exposure to socialization agents for acquiring OTC drug information were conducted. The perceived amount of exposure to OTCA was positively correlated with the perceived amount of exposure to mass media sources ($r = .595, p < .01$), exposure to professional interpersonal sources ($r = .224, p < .01$), exposure to non-professional interpersonal sources ($r = .341, p < .01$), and exposure to specialized medical materials ($r = .403, p < .01$). The awareness of ads for specific OTC brands was positively correlated with the perceived amount of exposure to mass media sources ($r = .114, p < .05$). The attention paid to OTCA was positively correlated with the

perceived amount of exposure to mass media sources ($r = .458, p < .01$), exposure to professional interpersonal sources ($r = .208, p < .01$), exposure to non-professional interpersonal sources ($r = .297, p < .01$), and exposure to specialized medical materials ($r = .280, p < .01$).

Hierarchical regression analyses were conducted in order to examine if the attitudinal variables actually account for a significant variance in the exposure variables. When the five attitudinal variables were entered as a third block, after the effects of demographics and health-related characteristics were controlled for, the R squares significantly increased for the perceived amount of exposure to and attention paid to DTCA and OTCA (no significant difference was found for the awareness of ads for Rx and OTC brands). Regarding the perceived amount of exposure to DTCA, the third block of attitudinal variables explained a significant amount of the variance (R^2 change = .043, $F(5,298) = 3.172, p < .01$), with the perceived importance of DTCA ($\beta = .270, p < .01$) being significant. The full regression model explained 18.4% of the variance ($R^2 = .184, F(19,298) = 3.528, p < .001$). The perceived amount of exposure to OTCA was also explained by the attitudinal variables, after controlling for the audience factors (R^2 change = .036, $F(5,284) = 2.563, p < .05$), with the full equation model being significant ($R^2 = .213, F(19,284) = 4.042, p < .001$).

More notable changes were found regarding the attention paid to DTCA and OTCA. When the third block of attitudinal variables was entered, it explained an additional 36% of the variance of the attention paid to DTCA (R^2 change = .360, $F(5,298) = 46.225, p < .001$), with skepticism toward DTCA ($\beta = -.325, p < .01$) and the perceived importance of DTCA ($\beta = .358, p < .001$) being significant. The full regression equation explained 53.6% of the variance ($R^2 = .536, F(19,298) = 18.245, p < .001$). In regards to the attention paid to OTCA, the third block of attitudinal variables explained an additional 30.9% of the variance (R^2 change = .309, $F(5,284) =$

35.927, $p < .001$), with skepticism toward OTCA ($\beta = -.301$, $p < .01$), the perceived importance of OTCA ($\beta = .258$, $p < .001$), and the attitude toward OTCA ($\beta = .304$, $p < .001$) being significant. The full regression equation explained 51.1% of the variance ($R^2 = .511$, $F(19,284) = 14.276$, $p < .001$). These results indicate that the more one holds a positive perception of drug advertising, the more one is likely to pay attention to drug advertising.

Table 21. Hierarchical Regression Results for Predictors of Beliefs of and Attitudes toward DTCA

		Beta				
		Skepticism toward DTCA	Information utility of DTCA	Trust in DTCA	Importance of DTCA	Attitude toward DTCA
Model 1	Age	.093	-.107#	-.114#	-.138*	-.060
	Gender (female)	-.026	.085	.032	-.011	.011
	Race (White)	-.024	.033	.009	-.014	.037
	Education	.129*	-.108#	-.154**	-.172**	-.124*
	Income	.041	-.072	-.079	-.067	-.108#
	R ²	.028	.038*	.047*	.056**	.036*
Model 2	Health status	.044	-.054	-.044	-.117#	-.048
	Chronic condition	-.002	.025	-.019	-.036	-.046
	Health insurance status	-.044	.008	.014	.054	.100#
	Health consciousness	-.136*	.102#	.179**	.079	.142*
	Knowledge about health and medicine	-.143*	.090	.086	.118*	.056
	# of Rx drugs taken on a regular basis	.087	-.128#	-.020	-.008	-.035
	# of OTC drugs taken on a regular basis	-.093#	.111*	.036	.053	.044
	Involvement with Rx	-.246***	.273***	.237***	.239***	.260***
	Perceived Rx drug safety	-.184**	.165**	.182**	.167**	.176**
	R ² change	.185***	.156***	.175***	.139***	.162***
Model 3	Amount of exposure to DTCA	.022	.006	-.039	.113*	.016
	Awareness of ads for brands	.028	-.006	.017	-.062	-.012
	Attention to DTCA	-.581***	.559***	.536***	.571***	.529***
	R ² change	.276***	.258***	.233***	.297***	.233***
	Total explained variance (R ²)	.489***	.453***	.455***	.492***	.430***
	Total explained variance (Adj. R ²)	.460	.422	.424	.464	.398

$p < .10$, * $P < .05$, ** $P < .01$, *** $P < .001$
N=318

Predictors of Attitudinal Outcomes (H3-4)

In order to test Hypothesis 3-4, five sets of hierarchical regression analyses were conducted for both DTCA and OTCA respectively. For each analysis, three blocks of predictor variables were entered; demographic variables (age, gender, race, education, and income) were entered in the first block, health-related characteristics (health status, chronic condition, health insurance status, health consciousness, knowledge about health and medicine, drug use, involvement with pharmaceuticals, and perceived drug safety) were entered in the second block, and variables related to exposure to DTCA and OTCA (perceived amount of exposure to DTCA/OTCA, awareness of ads for specific Rx/OTC drug brands, and attention paid to DTCA/OTCA) were entered in the third block. Each analysis was conducted to predict skepticism toward DTCA and OTCA, the perceived information utility of DTCA and OTCA, the perceived trust in DTCA and OTCA, the perceived importance of DTCA and OTCA, and attitude toward DTCA and OTCA in general.

Predictors of Skepticism toward DTCA (H3a)

Table 21 presents predictors of the beliefs of and attitude toward DTCA. In predicting skepticism toward DTCA (H3a), the first set of predictors, demographic variables, did not explain a significant proportion. The set of health-related characteristics accounted for a significant amount of the dependent variable (R^2 change = .185, $F(9,303) = 7.918$, $p < .001$). Involvement with Rx drugs ($\beta = -.246$, $p < .001$), perceived Rx drug safety ($\beta = -.184$, $p < .01$), knowledge about health and medicine ($\beta = -.143$, $p < .05$), and health consciousness ($\beta = -.136$, $p < .05$) were all significant predictors of skepticism toward DTCA. Involvement with Rx drugs ($\beta = -.123$, $p < .05$) and perceived Rx drug safety ($\beta = -.130$, $p < .01$) remained significant predictors when the third block was entered. The third set of predictors related to the exposure to DTCA

also explained a significant amount of skepticism toward DTCA, after controlling for the effects of demographic and health-related characteristics (R^2 change = .276, $F(3,300)= 53.907$, $p<.001$). Attention paid to DTCA ($\beta=-.581$, $p<.001$) was the strongest predictor of the three variables measuring exposure to DTCA. Overall, the full regression equation explained about 48.9% of the variance of skepticism toward DTCA ($R^2=.489$, $F(17,300)= 16.878$, $p<.001$). The full regression model (when all variables are considered together) indicates that people who were more involved with Rx drugs, who perceived Rx drugs to be safe, and who were more likely to pay attention to DTCA were less skeptical about DTCA.

Predictors of the Perceived Information Utility of DTCA (H3b)

As shown in Table 21, with regard to the perceived information utility of DTCA (H3b), the first set of predictors, demographic variables, explained a small, but significant proportion of the utility of DTCA ($R^2=.038$, $F(5,312)= 2.484$, $p<.05$). Age ($\beta= -.107$, $p=.076$) and education ($\beta= -.108$, $p=.065$) were predictors of the information utility of DTCA, with p -values approaching significance. When the second set of predictors were entered, age ($\beta= -.167$, $p<.01$) and education ($\beta= -.139$, $p<.05$) still remained significant in predicting the information utility of DTCA. The set of health-related characteristics contributed significantly to the prediction of the information utility of DTCA, after controlling for the effects of demographic variables (R^2 change = .156, $F(9,303)= 6.541$, $p<.001$). Involvement with Rx drugs ($\beta= .273$, $p<.001$), perceived Rx drug safety ($\beta= .165$, $p<.01$), and number of OTC drugs taken on a regular basis ($\beta= .111$, $p<.05$) made a statistically significant contribution to the prediction of the information utility of DTCA. When the third block was entered, involvement with Rx drugs ($\beta= .152$, $p<.01$), perceived Rx drug safety ($\beta= .112$, $p<.05$), and number of Rx drugs taken on a regular ($\beta= -.127$, $p<.05$) basis remained significant in predicting the information utility of DTCA. The set of

exposure variables significantly explained the information utility of DTCA, after controlling for the effects of the demographic and health-related characteristics (R^2 change = .258, $F(3,300)=47.261, p<.001$), with attention paid to DTCA ($\beta= .559, p<.001$) being the strongest predictor of the three. Overall, the full regression equation explained about 45.3% of the variance of the perceived information utility of DTCA ($R^2=.453, F(17,300)=14.625, p<.001$). The final regression model indicates that consumers with higher levels of involvement with Rx drugs, higher levels of perceived Rx drug safety, and higher levels of attention paid to DTCA valued the information utility of DTCA more.

Predictors of the Perceived Trust in DTCA (H3c)

Table 21 shows that in predicting the perceived trust in DTCA (H3c), the first set of demographic variables accounted for a small, but significant amount of trust in DTCA ($R^2 =.047, F(5,312)= 3.085, p<.01$), with education being the strongest predictor ($\beta= -.154, p<.01$), and age being next ($\beta= -.114, p=.056$). When the second block of health-related characteristics was entered, age ($\beta= -.201, p<.01$) and education ($\beta= -.185, p<.01$) still remained significant in explaining trust in DTCA. The second set of health-related characteristics contributed significantly to the prediction of trust in DTCA, after controlling for the effects of demographic variables (R^2 change = .175, $F(9,303)= 7.582, p<.001$). Involvement with Rx drugs ($\beta= .237, p<.001$), perceived Rx drug safety ($\beta= .182, p<.01$), and health consciousness ($\beta= .179, p<.01$) were stronger in predicting trust in DTCA than other health-related characteristics. These three variables (Involvement with Rx drugs, $\beta= .119, p<.05$; perceived Rx drug safety, $\beta= .137, p<.01$; health consciousness, $\beta= .114, p<.05$) and age ($\beta= -.130, p<.05$) and education ($\beta=-.110, p<.05$) still remained significant even when the third block was entered. The third set of exposure variables accounted for a significant amount of trust in DTCA, after controlling for the effects of

demographic and health-related variables (R^2 change = .233, $F(3,300)= 42.647$, $p<.001$), with attention paid to DTCA ($\beta= .536$, $p<.001$) being the strongest of the three exposure variables. Overall, the full regression equation explained about 45.5% of the variance of the perceived trust in DTCA ($R^2=.455$, $F(17,300)= 19.452$, $p<.001$). The results of the final regression equation indicate that respondents with higher levels of involvement with Rx drugs, higher levels of perceived Rx drug safety, and higher levels of attention paid to DTCA and who are more health conscious, younger, and less educated were more likely to have higher levels of trust in DTCA.

Predictors of the Perceived Importance of DTCA (H3d)

As shown in Table 21, in predicting the perceived importance of DTCA (H3d), the first set of demographic variables accounted for a small, but significant amount of the perceived importance of DTCA ($R^2 = .056$, $F(5,312)= 3.085$, $p<.01$), with education ($\beta= -.172$, $p<.01$) being the strongest predictor and age ($\beta= -.138$, $p<.05$) being next. The next set of health-related characteristics explained a significant proportion of the importance of DTCA, after controlling for the effects of demographic variables (R^2 change = .139, $F(9,303)= 5.836$, $p<.001$). Involvement with Rx drugs ($\beta= .239$, $p<.001$), perceived Rx drug safety ($\beta= .167$, $p<.01$), and knowledge about health and medicine ($\beta= .118$, $p<.05$) were stronger in predicting the importance of DTCA than other health-related characteristics. Age ($\beta= -.122$, $p<.05$), education ($\beta= -.105$, $p<.05$), involvement with Rx drugs ($\beta= .119$, $p<.05$), and perceived Rx drug safety ($\beta= .098$, $p<.05$) remained significant when the third block of exposure variables were entered. The third set of exposure variables accounted for a significant amount of the importance of DTCA, after controlling for the effects of demographic and health-related variables (R^2 change = .297, $F(3,300)= 58.487$, $p<.001$), with attention paid to DTCA ($\beta= .571$, $p<.001$) being the strongest of the three exposure variables. Overall, the full regression equation explained about

49.2% of the variance of the perceived importance of DTCA ($R^2=.492$, $F(17,300)=17.123$, $p<.001$). The results of the final regression equation indicate that respondents with higher levels of involvement with Rx drugs, higher levels of perceived Rx drug safety, and higher levels of attention paid to DTCA and who are younger and less educated were more likely to consider DTCA to be an important source of health information.

Predictors of Attitude toward DTCA (H3e)

Table 21 shows that in predicting attitude toward DTCA (H3e), the first set of demographic variables accounted for a small, but significant amount of the attitude toward DTCA ($R^2=.036$, $F(5,312)=2.300$, $p<.05$), with education ($\beta=-.124$, $p<.05$) being the strongest predictor and income ($\beta=-.108$, $p=.070$) being next. The next set of health-related characteristics explained a significant proportion of the attitude toward DTCA, after controlling for the effects of demographic variables (R^2 change $=.162$, $F(9,303)=6.787$, $p<.001$). Involvement with Rx drugs ($\beta=.260$, $p<.001$), perceived Rx drug safety ($\beta=.176$, $p<.01$), and health consciousness ($\beta=.142$, $p<.05$) were stronger in predicting attitude toward DTCA than other health-related characteristics. Income ($\beta=-.115$, $p<.05$), involvement with Rx drugs ($\beta=.146$, $p<.01$), and perceived Rx drug safety ($\beta=.125$, $p<.01$) remained significant when the third block of exposure variables were entered. The third set of exposure variables accounted for a significant amount of the attitude toward DTCA, after controlling for the effects of demographic and health-related variables (R^2 change $=.233$, $F(3,300)=40.835$, $p<.001$), with attention paid to DTCA ($\beta=.529$, $p<.001$) being the strongest of the three exposure variables. Overall, the full regression equation explained about 43% of the variance of attitude toward DTCA ($R^2=.430$, $F(17,300)=13.318$, $p<.001$). The results of the final regression equation indicate that respondents with lower levels of income, higher levels of involvement with Rx drugs, higher levels of perceived Rx drug safety,

and higher levels of attention to DTCA were more likely to have a positive attitude toward DTCA.

Table 22. Hierarchical Regression Results for Predictors of Beliefs of and Attitudes toward OTCA

		Beta				
		Skepticism toward OTCA	Information utility of OTCA	Trust in OTCA	Importance of OTCA	Attitude toward OTCA
Model 1	Age	.107#	-.040	-.103#	-.127*	.021
	Gender (female)	.037	.030	.015	.013	.043
	Race (White)	-.033	.019	.033	.079	.041
	Education	.087	-.118#	-.094	-.148*	-.112#
	Income	.039	.014	-.028	-.061	.031
	R ²	.019	.016	.019	.026*	.016
Model 2	Health status	-.031	.042	.054	-.064	-.057
	Chronic condition	.041	.001	.010	-.100#	.020
	Health insurance status	-.040	-.012	.021	.022	.056
	Health consciousness	-.133*	.195**	.153**	.120*	.200***
	Knowledge about health and medicine	-.112#	.029	.085	.184**	.068
	# of OTC drugs taken on a regular basis	.015	-.056	.031	.035	.001
	# of Rx drugs taken on a regular basis	.033	-.037	.037	.024	-.066
	Involvement with OTC	-.199**	.235***	.205**	.274***	.295***
	Perceived OTC drug safety	-.166**	.154**	.169**	.124*	.186**
	R ² change	.157***	.172***	.177***	.215***	.242***
Model 3	Amount of exposure to OTCA	-.043	.090	.028	.061	-.003
	Awareness of ads for brands	.094#	-.061	-.040	-.079#	-.036
	Attention to OTCA	-.535***	.460***	.469***	.483***	.533***
	R ² change	.240***	.191***	.181***	.201***	.225***
	Total explained variance (R ²)	.416***	.378***	.377***	.457***	.484***
	Total explained variance (Adj. R ²)	.381	.341	.340	.425	.453

#p<.10, *P<.05, **P<.01, ***P<.001

N=304

Predictors of Skepticism toward OTCA (H4a)

Table 22 displays predictors of beliefs of and attitude toward OTCA. In regards to skepticism toward OTCA (H4a), the first set of predictors, demographic variables, did not explain a significant proportion of skepticism toward OTCA. The second set of health-related characteristics accounted for a significant amount of skepticism toward OTCA (R^2 change = .157, $F(9,289)= 6.111, p<.001$), with involvement with OTC drugs ($\beta= -.199, p<.01$), perceived OTC drug safety ($\beta= -.166, p<.01$), and health consciousness ($\beta= -.133, p<.05$) being significant predictors of skepticism toward OTCA. Involvement with OTC drugs ($\beta= -.096, p=.068$) and perceived OTC drug safety ($\beta= -.096, p=.051$) remained significant predictors when the third block was entered. The third set of predictors related to the exposure to OTCA also explained a significant amount of skepticism toward OTCA, after controlling for the effects of health-related characteristics (R^2 change = .240, $F(3,286)= 39.195, p<.001$). Attention paid to OTCA was ($\beta= -.535, p<.001$) the strongest predictor of the three variables measuring exposure to OTCA. Overall, the full regression equation explained about 41.6% of the variance of skepticism toward OTCA ($R^2=.416, F(17,286)= 11.985, p<.001$). The results of the final regression equation indicate that people who were more involved with OTC drugs, who perceived OTC drugs to be safe, and who were more likely to attend to OTCA were less skeptical about OTCA.

Predictors of the Perceived Information Utility of OTCA (H4b)

As can be seen in Table 22, in predicting the perceived information utility of OTCA (H4b), the first set of predictors, demographic variables, did not explain a significant proportion. The second block of health-related characteristics contributed significantly to the prediction of the information utility of OTCA (R^2 change = .172, $F(9,289)= 6.779, p<.001$). Involvement with OTC drugs ($\beta=.235, p<.001$), perceived OTC drug safety ($\beta= .154, p<.01$), and health

consciousness ($\beta = .195, p < .01$) made a statistically significant contribution to the prediction of the information utility of OTCA. When the third block was entered, involvement with OTC drugs ($\beta = .149, p < .01$), health consciousness ($\beta = .145, p < .01$), the number of OTC drugs taken on a regular basis ($\beta = -.114, p < .05$), and perceived OTC drug safety ($\beta = .095, p = .063$) remained significant in predicting the information utility of OTCA. The set of exposure variables significantly explained the information utility of OTCA, after controlling for the effects of the demographic and health-related characteristics (R^2 change = .191, $F(3,286) = 29.306, p < .001$), with attention paid to OTCA ($\beta = .460, p < .001$) being the strongest predictor of the three. Overall, the full regression equation explained about 37.8% of the variance of the perceived information utility of OTCA ($R^2 = .378, F(17,286) = 13.505, p < .001$). The results of the final regression equation indicate that consumers with higher levels of involvement with OTC drugs, higher levels of perceived OTC drug safety, and higher levels of attention paid to OTCA, and who are more health conscious and take less OTC drugs value the information utility of OTCA more.

Predictors of the Perceived Trust in OTCA (H4c)

As shown in Table 22, in predicting the perceived trust in OTCA (H4c), the first set of demographic variables did not account for a significant amount of trust in OTCA. The second set of health-related characteristics contributed significantly to the prediction of trust in OTCA (R^2 change = .177, $F(9,289) = 7.078, p < .001$). Involvement with OTC drugs ($\beta = .205, p < .01$), perceived OTC drug safety ($\beta = .169, p < .01$), and health consciousness ($\beta = .153, p < .01$) were stronger in predicting trust in OTCA than other health-related characteristics. These three variables (involvement with OTC drugs, $\beta = .116, p < .05$; perceived OTC drug safety, $\beta = .108, p < .05$; and health consciousness, $\beta = .104, p < .05$) and age ($\beta = -.122, p < .05$) remained significant when the third block was entered. The third set of exposure variables accounted for a significant

amount of trust in OTCA, after controlling for the effects of demographic and health-related variables (R^2 change = .181, $F(3,286)= 27.688$, $p<.001$), with attention paid to OTCA ($\beta= .469$, $p<.001$) being the strongest of the three exposure variables. Overall, the full regression equation explained about 37.7% of the variance of the perceived trust in OTCA ($R^2=.377$, $F(17,286)= 10.188$, $p<.001$). The results of the final regression equation indicate that respondents with higher levels of involvement with OTC drugs, higher levels of perceived OTC drug safety, and higher levels of attention paid to OTCA, and who were more health conscious and younger were more likely to have higher levels of trust in OTCA.

Predictors of the Perceived Importance of OTCA (H4d)

Table 22 shows that in predicting the perceived importance of OTCA (H4d), the first set of demographic variables accounted for a small, but significant amount of the perceived importance of OTCA ($R^2=.026$, $F(5,298)= 2.617$, $p<.05$), with education ($\beta= -.148$, $p<.05$) and age ($\beta= -.127$, $p<.05$) being significant predictors, which remained significant when the second block was entered. The next set of health-related characteristics explained a significant proportion of the importance of OTCA, after controlling for the effects of demographic variables (R^2 change = .215, $F(9,289)= 9.268$, $p<.001$). Involvement with OTC drugs ($\beta= .274$, $p<.001$), knowledge about health and medicine ($\beta= .184$, $p<.01$), perceived OTC drug safety ($\beta= .124$, $p<.05$), and health consciousness ($\beta= .120$, $p<.05$) were stronger in predicting the importance of OTCA than other health-related characteristics. Age ($\beta= -.131$, $p<.05$), race (white) ($\beta= .099$, $p<.05$), and involvement with OTC drugs ($\beta= .182$, $p<.001$) were significant when the third block of exposure variables were entered ($p<.05$). The third set of exposure variables accounted for a significant amount of the importance of OTCA, after controlling for the effects of demographic and health-related variables (R^2 change = .201, $F(3,286)= 35.263$, $p<.001$), with

attention paid to OTCA ($\beta = .483, p < .001$) being the strongest of the three exposure variables ($p < .05$). Overall, the full regression equation explained about 45.7% of the variance of the perceived importance OTCA ($R^2 = .457, F(17,286) = 14.178, p < .001$). The results of the final regression equation indicate that respondents with higher levels of involvement with OTC drugs and higher levels of attention paid to OTCA, and younger and white respondents were more likely to consider OTCA to be an important source of health information.

Predictors of Attitude toward OTCA (H4e)

As shown in Table 22, in predicting attitude toward OTCA (H4e), the first set of demographic variables did not account for a significant amount of the attitude toward OTCA. The second block of health-related characteristics explained a significant proportion of attitude toward OTCA (R^2 change = .242, $F(9,289) = 10.496, p < .001$). Involvement with OTC drugs ($\beta = .295, p < .001$), health consciousness ($\beta = .200, p < .001$), and the perceived OTC drug safety ($\beta = .186, p < .01$) were stronger in predicting attitude toward OTCA than other health-related characteristics, which remained significant when the third block was entered (involvement with OTC drugs, $\beta = .192, p < .001$; health consciousness, $\beta = .146, p < .01$; and the perceived OTC drug safety, $\beta = .116, p < .05$). The third set of exposure variables accounted for a significant amount of attitude toward OTCA, after controlling for the effects of demographic and health-related variables (R^2 change = .225, $F(3,286) = 41.594, p < .001$), with attention paid to OTCA ($\beta = .533, p < .001$) being the strongest of the three exposure variables. Overall, the full regression equation explained about 48.4% of the variance of attitude toward OTCA ($R^2 = .484, F(17,286) = 15.772, p < .001$). The results of the final regression equation indicate that respondents with higher levels of involvement with OTC drugs, higher levels of perceived OTC drug safety, higher levels of

attention paid to OTCA, and higher levels of health consciousness were more likely to have positive attitude toward OTCA.

Predictors of Behavioral Outcomes (H5-6)

In order to test H5-6 about examining predictors of behavioral outcomes, two sets of hierarchical regression analyses were conducted for both DTCA and OTCA respectively. For each analysis, demographic variables (age, gender, race, education, and income) were entered in the first block, health-related characteristics (health status, chronic condition, health insurance status, health consciousness, knowledge about health and medicine, drug use, involvement with pharmaceuticals, and perceived drug safety) were entered in the second block. Variables related to exposure to DTCA and OTCA (perceived amount of exposure to DTCA/OTCA, awareness of ads for specific Rx/OTC drug brands, and attention paid to DTCA/OTCA) were entered in the third block, and variables related to beliefs and attitudes (skepticism toward DTCA/OTCA, the perceived information utility of DTCA/OTCA, the perceived trust in DTCA/OTCA, the perceived importance of DTCA/OTCA, and attitudes toward DTCA/OTCA in general) were entered in the fourth block. Dependent variables included the summated indices of DTCA and OTCA prompted behaviors and the summated indices of number of sources used for drug information search triggered by DTCA and OTCA.

Predictors of DTCA Prompted Behaviors (H5a)

Table 23 provides a list of predictors of DTCA prompted behaviors and information search triggered by DTCA. In predicting DTCA prompted behaviors (H5a), the first set, demographic variables, did not explain a significant proportion. The second block, health-related characteristics, accounted for a significant amount of the dependent variable (R^2 change = .160, $F(9,303) = 6.560, p < .001$). Knowledge about health and medicine ($\beta = .178, p < .01$), number of

OTC drugs taken on a regular basis ($\beta = .166, p < .01$), and involvement with Rx drugs ($\beta = .156, p < .05$) were significant predictors. The third set of predictors related to exposure to DTCA also explained a significant amount of DTCA prompted behaviors, after controlling for the effects of demographic and health-related characteristics (R^2 change = .190, $F(3,300) = 30.264, p < .001$), with the perceived amount of exposure to DTCA ($\beta = .248, p < .001$) and attention paid to DTCA ($\beta = .358, p < .001$) being significant predictors. The fourth block, belief and attitude variables, also accounted for DTCA prompted behaviors, after controlling for the effects of demographic, health-related characteristics, and DTCA exposure variables (R^2 change = .028, $F(5,295) = 2.798, p < .05$), with perceived information utility ($\beta = .213, p < .05$) and importance of DTCA being ($\beta = .156, p < .05$) significant predictors. Overall, the full regression equation explained 40% of the variance of DTCA prompted behaviors ($R^2 = .400, F(22,295) = 8.937, p < .001$), with Rx ($\beta = .124, p < .05$) and OTC ($\beta = .100, p < .05$) drug use, amount of exposure to ($\beta = .224, p < .001$) and attention to DTCA ($\beta = .256, p < .001$), and perceived utility ($\beta = .213, p < .05$) and importance of DTCA ($\beta = .156, p < .05$) being significant. The results of the final regression equation indicate that respondents with a greater amount of exposure to DTCA, who use a greater number of Rx and OTC drugs, who are more likely to pay attention to DTCA, and who perceive higher levels of information utility and importance of DTCA were more likely to engage in behaviors prompted by DTCA.

Table 23. Hierarchical Regression Results for Predictors of Behavioral Outcomes of DTCA

		Beta	
		DTCA prompted behaviors	Information search triggered by DTCA
Model1	Age	-.096	-.138*
	Gender (female)	-.082	-.065
	Race (White)	-.047	-.040
	Education	.003	-.029
	Income	-.045	-.093
	R ²	.022	.034#
Model2	Health status	.015	-.131*
	Chronic condition	.069	-.009
	Health insurance status	.010	.002
	Health consciousness	.070	.127*
	Knowledge about health and medicine	.178**	.089
	# of Rx drugs taken on a regular basis	.114	.116
	# of OTC drugs taken on a regular basis	.166**	.172**
	Involvement with Rx drugs	.156*	.129*
	Perceived Rx drug safety	.004	.070
	R ² change	.160***	.139***
Model3	Amount of exposure to DTCA	.248***	.287***
	Attention to DTCA	.358***	.336***
	Awareness of ads for brands	.054	.020
	R ² change	.190***	.192***
Model4	Skepticism toward DTCA	.187	.330*
	Perceived information utility of DTCA	.213*	.159
	Perceived trust in DTCA	-.026	.030
	Perceived importance of DTCA	.156*	.057
	Attitude toward DTCA	.031	.133
	R ² change	.028*	.024*
	Total explained variance (R ²)	.400***	.389***
	Total explained variance (Adj. R ²)	.355	.343

#p<.10, *P<.05, **P<.01, ***P<.001
N=318

Predictors of Drug Information Seeking Triggered by DTCA (H5b)

As shown in Table 23, in predicting information search triggered by DTCA (H5b), the first set, demographic variables, did not explain a significant proportion. The second block, health-related characteristics, accounted for a significant amount of the dependent variable (R^2 change = .139, $F(9,303) = 5.646$, $p < .001$), with health status ($\beta = -.131$, $p < .05$), health

consciousness ($\beta = .127, p < .05$), number of OTC drugs taken on a regular basis ($\beta = .172, p < .01$), and involvement with Rx drugs ($\beta = .129, p < .05$) being significant predictors. The third set, exposure variables, also explained a significant amount of information search triggered by DTCA, after controlling for the effects of demographic and health-related characteristics (R^2 change = .192, $F(3,300) = 30.222, p < .001$), with the perceived amount of exposure to DTCA ($\beta = .287, p < .001$) and attention paid to DTCA ($\beta = .336, p < .001$) being significant predictors. The fourth block, beliefs and attitudes variables, also accounted for information search triggered by DTCA, after controlling for the effects of demographic, health-related characteristics, and DTCA exposure variables (R^2 change = .024, $F(5,295) = 2.305, p < .05$), with skepticism toward DTCA ($\beta = .330, p < .001$) being a significant predictor. Overall, the full regression equation explained 38.9 % of the variance of information search triggered by DTCA ($R^2 = .389$, $F(22,295) = 8.521, p < .001$), with age ($\beta = -.155, p < .01$), OTC drug use ($\beta = .109, p < .05$), amount of exposure to ($\beta = .272, p < .001$) and attention to DTCA ($\beta = .320, p < .001$), and skepticism toward DTCA ($\beta = .330, p < .001$) being significant. The results of the full regression model indicate that respondents with a greater amount of exposure to DTCA, who are younger, who use a greater number of OTC drugs, who are more likely to pay attention to DTCA, and who perceive higher levels of skepticism toward DTCA are more likely to use a greater number of sources when searching for Rx drug information triggered by DTCA.

Table 24. Hierarchical Regression Results for Predictors of Behavioral Outcomes of OTCA

		Beta	
		OTCA prompted behaviors	Information search triggered by OTCA
Model1	Age	-.076	-.128*
	Gender (female)	-.024	-.005
	Race (White)	-.048	-.037
	Education	.046	.062
	Income	.051	.072
	R ²	.019	.036#
Model2	Health status	.055	.003
	Chronic condition	.057	-.010
	Health insurance status	-.041	-.036
	Health consciousness	.033	.098#
	Knowledge about health and medicine	.159**	.242***
	# of OTC drugs taken on a regular basis	.168**	.171**
	# of Rx drugs taken on a regular basis	.079	.113
	Involvement with OTC drugs	.132*	.012
	Perceived OTC drug safety	.043	.023
	R ² change	.134***	.149***
Model3	Amount of exposure to OTCA	.128*	.224***
	Attention to OTCA	.295***	.259***
	Awareness of ads for brands	.066	.089#
	R ² change	.110***	.141***
Model4	Skepticism toward OTCA	-.063	.000
	Perceived information utility of OTCA	.046	.082
	Perceived trust in OTCA	-.094	-.073
	Perceived importance of OTCA	.081	.043
	Attitude toward OTCA	.003	.030
	R ² change	.007	.005
	Total explained variance (R ²)	.270***	.331***
	Total explained variance (Adj. R ²)	.213	.279

#p<.10, *P<.05, **P<.01, ***P<.001
N=304

Predictors of OTCA Prompted Behaviors (H6a)

Table 24 provides a list of predictors of OTCA prompted behaviors and information search triggered by OTCA. In predicting OTCA prompted behaviors (H6a), the first set, demographic variables, did not explain a significant proportion. The second block, health-related characteristics, accounted for a significant amount of the dependent variable (R^2 change = .134,

$F(9,289)= 5.091, p<.001$), with knowledge about health and medicine ($\beta= .159, p<.01$), number of OTC drugs taken on a regular basis ($\beta= .168, p<.01$), and involvement with OTC drugs ($\beta= .132, p<.05$) being significant predictors. The third set, predictors related to the exposure to OTCA, also explained a significant amount of OTCA prompted behaviors, after controlling for the effects of demographic and health-related characteristics (R^2 change = .110, $F(3,286)= 14.265, p<.001$), with the perceived amount of exposure to OTCA ($\beta= .128, p<.05$) and attention paid to OTCA ($\beta= .295, p<.001$) being significant predictors. The fourth block, beliefs and attitudes variables, did not account for OTCA prompted behaviors, after controlling for the effects of demographic, health-related characteristics, and OTCA exposure variables (R^2 change = .007, $F(5,281)= .524, p = .758$). Overall, the full regression equation explained 27% of the variance of OTCA prompted behaviors ($R^2=.270, F(22,281)= 4.730, p<.001$), with OTC drug use ($\beta= .121, p<.05$), and amount of exposure to ($\beta= .119, p=.054$) and attention to OTCA ($\beta= .243, p<.01$) being significant predictors. The results of the full regression model indicate that respondents with greater amount of exposure to OTCA, who use a greater number of OTC drugs and who are more likely to pay attention to OTCA are more likely to engage in behaviors prompted by OTCA.

Predictors of Drug Information Seeking Triggered by OTCA (H6b)

As can be seen in Table 24, in predicting information search triggered by OTCA (H5b), the first set, demographic variables, did not explain a significant proportion. The second block, health-related characteristics, accounted for a significant amount of the dependent variable (R^2 change = .149, $F(9,289)= 5.887, p<.001$), with knowledge about health and medicine ($\beta= .242, p<.001$) and number of OTC drugs taken on a regular basis ($\beta= .171, p<.01$) being significant predictors. The third set, exposure variables, also explained a significant amount of information search triggered by OTCA, after controlling for the effects of demographic and health-related

characteristics (R^2 change = .141, $F(3,286)= 19.955$, $p<.001$), with the perceived amount of exposure to OTCA ($\beta= .224$, $p<.001$) and attention paid to OTCA ($\beta= .259$, $p<.001$) being significant predictors. The fourth block, beliefs and attitudes variables, did not account for information search triggered by OTCA, after controlling for the effects of demographic, health-related characteristics, and OTCA exposure variables (R^2 change = .005, $F(5,281)= .409$, $p=.842$). Overall, the final regression equation explained 33.1 % of the variance of information search triggered by OTCA ($R^2=.331$, $F(22,281)= 6.327$, $p<.001$), with age ($\beta= -.131$, $p<.05$), knowledge about health and medicine ($\beta= .128$, $p<.05$), OTC drug use ($\beta= .114$, $p<.05$), Rx drug use ($\beta= .126$, $p=.061$), and amount of exposure to ($\beta= .217$, $p<.001$) and attention to OTCA ($\beta= .218$, $p<.01$) remaining significant. The results of the final regression equation indicate that respondents with a greater amount of exposure to OTCA, who are more likely to pay attention to OTCA, who are younger, who use a greater number of OTC and Rx drugs, and who are more knowledgeable about health and medicine are more likely to use a greater number of sources when searching for OTC drug information triggered by OTCA.

A Comparison of Predictors of Exposure, Attitudinal, and Behavioral Outcomes between DTCA and OTCA (RQ3)

In regards to the perceived amount of exposure to DTCA and OTCA, knowledge about health and medicine (+) was the strongest predictor for both DTCA and OTCA, followed by age (-). Health status (-) was another predictor of the perceived amount of exposure to DTCA, whereas income (+) and the number of OTC drugs taken on a regular basis (+) were other predictors of the perceived amount of exposure to OTCA.

Regarding awareness of ads for Rx and OTC brands, no statistically significant predictors ($p<.05$) were found. When looking at the attention paid to DTCA and OTCA, involvement with

drugs (+) and knowledge about health and medicine (+) were the two strongest predictors for both DTCA and OTCA, followed by the number of OTC drugs taken on a regular basis (+). Health consciousness (+) was another predictor of the attention paid to DTCA, whereas perceived OTC drug safety (+) was another predictor of attention paid to OTCA.

The attention paid to DTCA and OTCA was the strongest predictor of all five attitudinal variables, and involvement with drugs, perceived drug safety, and health consciousness were the next strongest predictors. Education was another significant predictor for beliefs of and attitude toward DTCA. The results indicate that consumers who pay attention to drug advertising, are more involved with drugs, are more health conscious, and perceive drugs to be safe are more likely to hold positive perceptions of drug advertising.

In regards to DTCA and OTCA prompted behaviors, attention paid to DTCA (+) and to OTCA (+) was the strongest predictor, and the perceived amount of exposure to DTCA and OTCA, the number of OTC drugs taken on a regular basis (+), and knowledge about health and medicine (+) were also found significant predictors. The perceived utility (+) and importance of DTCA (+) were other significant predictors of consumers' DTCA related behaviors. The set of demographics did not significantly explain the variance of DTCA and OTCA prompted behaviors.

Looking at information search, the attention paid to (+) and amount of exposure to (+) DTCA and OTCA, age (-), and the number of OTC drugs taken on a regular basis (+) were the predictors of drug information seeking behaviors triggered by DTCA and OTCA. The difference came from the finding that the number of sources consumers use for Rx information searches after watching DTCA was mostly explained by the skepticism toward DTCA(+); on the other hand, consumers' knowledge about health and medicine (+) influenced their OTC drug

information searches. Regardless of drug type, consumers' perceived exposure amount and attention paid to advertising influenced their search behaviors. Also, those who were younger and had used more OTC drugs were more likely to use a greater number of sources to search for drug information because of drug advertising they had seen, read, or heard.

Model 2 Hypotheses and Research Questions

A Comparison of the Perceived Amount of Consumers' Exposure to Socialization Agents between DTCA and OTCA (RQ4)

RQ4 asked if there is any difference in the amount of exposure to socialization agents between DTCA and OTCA. Paired *t*-tests were conducted for informational sources about Rx and OTC drugs (on a scale of 1-never to 5-very often): mass media sources, professional interpersonal sources, non-professional interpersonal sources, and specialized medical materials. As shown in Table 25, all the pairs of comparisons were statistically significant. The results indicate that consumers get information from mass media (Rx $M= 2.74$, $SD =.94$; OTC $M= 2.68$, $SD =.98$), $t(460)= 2.271$, $p<.05$), professional interpersonal sources (Rx $M= 3.56$, $SD =1.13$; OTC $M= 3.00$, $SD =1.22$), $t(460)= 11.858$, $p<.001$, and specialized medical materials (Rx $M= 2.75$, $SD =1.28$; OTC $M= 2.47$, $SD =1.18$), $t(460)= 5.183$, $p<.001$, more often for Rx drugs than OTC drugs, whereas they get information from non-professional interpersonal sources more often for OTC drugs than Rx drugs (Rx $M= 2.45$, $SD =1.11$; OTC $M= 2.62$, $SD =1.19$), $t(460)= 5.183$, $p<.001$.

Table 25. T-tests Results for Amount of Exposure to Socialization Agents

	Prescription Drugs (N=461)	Non- prescription Drugs(N=461)	Mean difference	df	t-value	p-value
Mass media sources	2.74	2.68	.063	460	2.271	.024
Professional interpersonal sources	3.56	3.00	.568	460	11.858	.000
Non- professional interpersonal sources	2.45	2.62	.165	460	-4.302	.000
Specialized medical materials	2.75	2.47	.278	460	5.183	.000

Predictors of the Perceived Amount of Exposure to Mass Media (H7a)

In order to test H7a about examining predictors of hours of media use per week, a hierarchical regression analysis was conducted. Demographic variables (age, gender, race, education, and income) were entered in the first block as co-variates, and health-related characteristics (health status, chronic condition, health insurance status, health consciousness, knowledge about health and medicine, Rx and OTC drug use, involvement with Rx and OTC drugs, and perceived Rx and OTC drug safety) were entered in the second block. As can be seen in table 26, the first set, demographic variables, significantly accounted for hours of media use ($R^2=.074$, $F(5,383)= 6.077$, $p<.001$), with age ($\beta= .255$, $p<.001$) being a significant predictor. When the second block was entered, age ($\beta= .236$, $p<.001$) still remained significant. The second block, health-related characteristics, did not account for a significant proportion of hours of mass media use, after controlling for the effect of demographic variables (R^2 change =.030, $F(11,372)= 1.126$, $p=.339$), although OTC drug use ($\beta= -.116$, $p<.05$) and involvement with OTC ($\beta= .136$, $p<.05$) were significant predictors. Overall, the full regression equation explained about

10.3% of the variance of hours of media use ($R^2=.103$, $F(16,372)= 2.680$, $p<.001$). The results of the final regression equation indicate that respondents who were older, who take fewer OTC drugs on a regular basis, and who are more involved with OTC drugs spent more hours on using mass media per week.

Predictors of Socialization Agents (H7b-8d)

In order to test H7b-8d about examining predictors of the perceived amount of exposure to socialization agents for acquiring drug information, four sets of hierarchical regression analyses were conducted for both DTCA and OTCA respectively. For each analysis, demographic variables (age, gender, race, education, and income) were entered in the first block as co-variates, and health-related characteristics (health status, chronic condition, health insurance status, health consciousness, knowledge about health and medicine, drug use, involvement with pharmaceuticals, and perceived drug safety) were entered in the second block. Perceived amount of exposure to mass media, professional interpersonal sources, non-professional interpersonal sources, and specialized medical materials were entered as dependent variables.

Predictors of the Perceived Amount of Exposure to Mass Media Sources for Obtaining Rx Drug Information (H7b)

Table 26 provides a list of predictors of amount of exposure to consumer socialization agents for acquiring Rx drug information. In predicting the frequency of obtaining Rx drug information from mass media sources (H7b), the first set, demographic variables, significantly accounted for the exposure to mass media sources ($R^2=.031$, $F(5,384)= 2.453$, $p<.05$), with age ($\beta= -.153$, $p<.01$) being a significant predictor. When the second block was entered, age ($\beta= -.229$, $p<.001$) remained significant in explaining the perceived amount of exposure to mass

media sources. The set of health-related characteristics accounted for a significant proportion of the perceived amount of exposure to mass media sources, after controlling for the effects of demographic variables (R^2 change = .143, $F(9,375)= 7.189$, $p<.001$). Knowledge about health and medicine ($\beta= .264$, $p<.001$), number of OTC drugs taken on a regular basis ($\beta= .126$, $p<.01$), health status ($\beta= -.116$, $p<.05$), and involvement with Rx drugs ($\beta= .114$, $p<.05$) were stronger predictors than other health-related characteristics. Overall, the full regression equation explained about 17.4% of the variance of the perceived amount of exposure to mass media sources ($R^2=.174$, $F(14, 375)= 5.625$, $p<.001$). The results of the final regression equation indicate that respondents who were younger, in poorer health, who perceived themselves to be more knowledgeable about health and medicine, and who were more involved with Rx drugs and took a greater number of OTC drugs were more likely to report that they obtained Rx drug information from mass media sources more frequently.

Predictors of the Perceived Amount of Exposure to Professional Interpersonal Sources for Obtaining Rx Drug Information (H7c)

As shown in Table 26, in predicting the frequency of obtaining Rx drug information from professional interpersonal sources (H7c), the first set, demographic variables, did not significantly account for the exposure to professional interpersonal sources. The second block, health-related characteristics, accounted for a significant proportion of the perceived amount of exposure to professional interpersonal sources (R^2 change = .095, $F(9,375)= 4.447$, $p<.001$). Health status ($\beta= -.165$, $p<.01$), involvement with Rx drugs ($\beta= .129$, $p<.05$), and perceived Rx drug safety ($\beta= .107$, $p<.05$) were stronger predictors than other health-related characteristics. Overall, the full regression equation explained about 11.1% of the variance of the perceived amount of exposure to professional interpersonal sources ($R^2=.111$, $F(14,375)= 3.342$, $p<.001$).

The results indicate that respondents who were in poorer health, who were more involved with Rx drugs and who perceived Rx drugs to be safe were more likely to report that they obtained Rx drug information from professional interpersonal sources more frequently.

Predictors of the Perceived Amount of Exposure to Non-Professional Interpersonal Sources for Obtaining Rx Drug Information (H7d)

Table 26 shows that in predicting the frequency of obtaining Rx drug information from non-professional interpersonal sources (H7d), the first set, demographic variables, significantly accounted for the exposure to non-professional interpersonal sources ($R^2=.088$, $F(5,384)= 7.388$, $p<.001$), with age ($\beta= -.311$, $p<.001$) being a statistically significant predictor. When the second block was entered, age ($\beta= -.325$, $p<.001$) still remained significant. The second block, health-related characteristics, accounted for a significant proportion of the perceived amount of exposure to non-professional interpersonal sources (R^2 change =.043, $F(9,375)= 2.043$, $p<.05$). Knowledge about health and medicine ($\beta= .123$, $p<.05$) and number of OTC drugs taken on a regular basis ($\beta= .113$, $p<.05$) were stronger predictors than other health-related characteristics. Overall, the full regression equation explained 13% of the variance of the perceived amount of exposure to non-professional interpersonal sources ($R^2=.130$, $F(14,375)= 4.016$, $p<.001$). The results indicate that respondents who are younger, report being more knowledgeable about health and medicine, and take a greater number of OTC drugs on a regular basis are more likely to obtain Rx drug information from non-professional interpersonal sources more frequently.

Table 26. Multiple Regression Results for Predictors of Exposure to Socialization Agents (DTCA)

		Beta				
		Mass media sources	Professional interpersonal sources	Non-professional interpersonal sources	Specialized medical materials	Hours of media use per week
Model 1	Age	-.153**	.112*	-.311***	-.071	.255***
	Gender (female)	.037	.019	-.002	.040	-.089#
	Race (White)	-.030	-.011	.063	.000	-.026
	Education	-.045	.032	.029	-.040	-.078
	Income	.026	-.047	-.048	-.061	.017
	R ²	.031*	.016	.088***	.012	.074***
Model 2	Health status	-.116*	-.165**	-.049	-.091	.029
	Chronic condition	-.068	.017	-.074	.034	.047
	Health insurance status	-.001	.046	.042	.015	-.002
	Health consciousness	.077	.041	.026	.031	-.085
	Knowledge about health and medicine	.264***	.033	.123*	.207***	.029
	# of Rx drugs taken on a regular basis	.002	.125#	-.054	.131*	.062
	# of OTC drugs taken on a regular basis	.126**	.006	.113*	.112*	-.116*
	Involvement with Rx drugs	.114*	.129*	.042	.034	-.048
	Perceived Rx drug safety	.054	.107*	.075	.037	.041
	Involvement with OTC drugs	n.a.				.136*
	Perceived OTC drug safety	n.a.				-.071
	R ² change	.143***	.095***	.043*	.110***	.030
	Total explained variance (R ²)	.174***	.111***	.130***	.122***	.103***
	Total explained variance (Adj. R ²)	.143	.078	.098	.090	.065

#p<.10, *P<.05, **P<.01, ***P<.001

N=390

Predictors of the Perceived Amount of Exposure to Specialized Medical Materials for Obtaining Rx Drug Information (H7e)

As shown in Table 26, in predicting the frequency of obtaining Rx drug information from specialized medical materials (H7e), the first set, demographic variables, did not significantly account for the exposure to specialized medical materials. However, when the second block was entered, age ($\beta = -.195, p < .01$) became a significant predictor. The second block, health-related characteristics, accounted for a significant proportion of the perceived amount of exposure to specialized medical materials (R^2 change = .110, $F(9,375) = 5.219, p < .001$). Knowledge about health and medicine ($\beta = .207, p < .001$) and number of Rx ($\beta = .131, p < .05$) and OTC drugs taken on a regular basis ($\beta = .112, p < .05$) were stronger predictors than other health-related characteristics. Overall, the full regression equation explained about 12.2% of the variance of the perceived amount of exposure to specialized medical materials ($R^2 = .122, F(14,375) = 3.736, p < .001$). The results of the final regression equation indicate that respondents who are younger, who report being more knowledgeable about health and medicine, and who take a greater number of Rx and OTC drugs on a regular basis were more likely to obtain Rx drug information from specialized medical materials more frequently. It is also possible that those who visit their doctors or pharmacists more often might be more likely to get Rx drug information from specialized medical materials more often; however, this possibility has not been examined in the current study.

Predictors of the Perceived Amount of Exposure to Mass Media Sources for Obtaining OTC Drug Information (H8a)

Table 27 provides a list of predictors of amount of exposure to consumer socialization agents for acquiring OTC drug information. In predicting the frequency of obtaining OTC drug

information from mass media sources (H8a), the first set, demographic variables, did not significantly account for the exposure to mass media sources. However, age ($\beta = -.151, p < .01$) became a significant predictor when the second block was entered. The set of health-related characteristics accounted for a significant proportion of the perceived amount of exposure to mass media sources, after controlling for the effects of demographic variables (R^2 change = .148, $F(9,375) = 7.398, p < .001$). Knowledge about health and medicine ($\beta = .236, p < .001$), involvement with OTC drugs ($\beta = .171, p < .01$), health status ($\beta = -.120, p < .05$), health insurance status ($\beta = .115, p < .05$), number of OTC drugs taken on a regular basis ($\beta = .112, p < .05$), and perceived OTC drug safety ($\beta = -.111, p < .05$) were stronger predictors than other health-related characteristics. Overall, the full regression equation explained about 16.4% of the variance of the perceived amount of exposure to mass media sources ($R^2 = .164, F(14,375) = 5.243, p < .001$). The results of the final regression equation indicate that respondents who were younger, were in poorer health, were more involved with OTC drugs, took a greater number of OTC drugs on a regular basis, perceived themselves to be more knowledgeable about health and medicine, had some medicine coverage by health insurance, and perceived OTC drugs to be less safe were more likely to report that they obtained OTC drug information from mass media sources more frequently.

Predictors of the Perceived Amount of Exposure to Professional Interpersonal Sources for Obtaining OTC Drug Information (H8b)

As can be seen in Table 27, in predicting the frequency of obtaining OTC drug information from professional interpersonal sources (H8b), the first set, demographic variables, did not significantly account for the exposure to the professional interpersonal sources. The second block, health-related characteristics, accounted for a significant proportion of the

perceived amount of exposure to professional interpersonal sources (R^2 change = .074, $F(9,375)=3.357$, $p<.01$). Health insurance status ($\beta= .138$, $p<.01$) and knowledge about health and medicine ($\beta= .122$, $p<.05$) were stronger predictors than other health-related characteristics. Overall, the full regression equation explained about 8.5% of the variance of the perceived amount of exposure to professional interpersonal sources ($R^2=.085$, $F(14,375)= 2.496$, $p<.01$). The results of the final regression equation indicate that respondents who have health insurance with medicine coverage and who are more knowledgeable about health and medicine are more likely to report that they obtain OTC drug information from professional interpersonal sources more frequently.

Predictors of the Perceived Amount of Exposure to Non-Professional Interpersonal Sources for Obtaining OTC Drug Information (H8c)

As shown in Table 27, in predicting the frequency of obtaining OTC drug information from non-professional interpersonal sources (H8c), the first set of demographic variables significantly accounted for the exposure to non-professional interpersonal sources ($R^2 = .075$, $F(5,384)= 6.203$, $p<.001$), with age ($\beta= -.264$, $p<.001$) being a statistically significant predictor. When the second block was entered, age ($\beta= -.270$, $p<.001$) still remained significant. The second block of health-related characteristics accounted for a significant proportion of the perceived amount of exposure to non-professional interpersonal sources (R^2 change = .045, $F(9,375)= 2.134$, $p<.05$). Health consciousness ($\beta= .097$, $p=.071$) and involvement with OTC drugs ($\beta= .099$, $p=.072$) were stronger predictors than other health-related characteristics. Overall, the full regression equation explained about 12% of the variance of the perceived amount of exposure to non-professional interpersonal sources ($R^2=.120$, $F(14,375)= 3.646$, $p<.001$). The results indicate that respondents who are younger, more conscious about their health, and more

involved with OTC drugs are more likely to obtain OTC drug information from non-professional interpersonal sources more frequently.

Table 27. Multiple Regression Results for Predictors of Exposure to Socialization Agents (OTCA)

		Beta			
		Mass media sources	Professional interpersonal sources	Non-professional interpersonal sources	Specialized medical materials
Model 1	Age	-.092#	.070	-.264***	-.091#
	Gender (female)	-.008	-.048	.031	.014
	Race (White)	-.042	.015	-.013	-.051
	Education	-.037	.014	.027	-.057
	Income	.033	-.055	.014	-.003
	R ²	.015	.012	.075***	.017
Model 2	Health status	-.120*	-.024	-.014	-.023
	Chronic condition	-.064	-.062	-.089	-.025
	Health insurance status	.115*	.138**	.055	.103*
	Health consciousness	.077	.058	.097#	-.007
	Knowledge about health and medicine	.236***	.122*	.077	.270***
	# of OTC drugs taken on a regular basis	.112*	.053	.046	.104*
	# of Rx drugs taken on a regular basis	-.020	.115#	-.016	.007
	Involvement with OTC drugs	.171**	.074	.099#	.141**
	Perceived OTC drug safety	-.111*	-.005	-.056	-.117*
	R ² change	.148***	.074**	.045*	.131***
	Total explained variance (R ²)	.164***	.085**	.120***	.148***
	Total explained variance (Adj. R ²)	.132	.051	.087	.116

#p<.10, *P<.05, **P<.01, ***P<.001

N=390

Predictors of the Perceived Amount of Exposure to Specialized Medical Materials for Obtaining OTC Drug Information (H8d)

Table 27 shows that in predicting the frequency of obtaining OTC drug information from specialized medical materials (H8d), the first set of demographic variables did not significantly account for the exposure to specialized medical materials. However, when the second block was entered, age ($\beta = -.148, p < .01$) became a significant predictor. The second block of health-related characteristics accounted for a significant proportion of the perceived amount of exposure to specialized medical materials (R^2 change = .131, $F(9,375) = 6.400, p < .001$). Knowledge about health and medicine ($\beta = .270, p < .001$), involvement with OTC drugs ($\beta = .141, p < .01$), perceived OTC drug safety ($\beta = -.117, p < .05$), the number of OTC drugs taken on a regular basis ($\beta = .104, p < .05$), and health insurance status ($\beta = .103, p < .05$) were stronger predictors than other health-related characteristics. Overall, the full regression equation explained about 14.8% of the variance of the perceived amount of exposure to specialized medical materials ($R^2 = .148, F(14,3075) = 4.649, p < .001$). The results indicate that respondents who are younger, who report being more knowledgeable about health and medicine, who are more involved with OTC drugs, who perceive OTC drugs to be less safe, who take a greater number of OTC drugs on a regular basis, and who have health insurance with medicine coverage were more likely to obtain OTC drug information from specialized medical materials more often.

Relationships between Consumers' Exposure to Different Socialization Agents (H9)

In order to examine the relationships among consumers' exposure to different socialization agents, correlation analyses were conducted for H9. As shown in Table 28, statistically significant positive correlations ($p < .01$) were found among the levels of exposure to different socialization agents for obtaining Rx information: exposure to mass media sources,

professional interpersonal sources, non-professional interpersonal sources, and specialized medical materials (correlation r range: .140 to .503). Similarly, as seen in Table 29, positive correlations ($p < .01$) were found among the levels of exposure to different socialization agents for obtaining OTC information (correlation r range: .243 to .539).

Table 28. Correlation between Amount of Exposure to Socialization Agents (Rx)

	Mass media sources	Professional interpersonal sources	Non-professional interpersonal sources	Specialized medical materials
Mass media hours used	.053	.120*	-.003	.016
Mass media sources		.140**	.503**	.494**
Professional interpersonal sources			.249**	.410**
Non-professional interpersonal sources				.350**

**<.01, *<.05

N=459

Table 29. Correlation between Amount of Exposure to Socialization Agents (OTC)

	Mass media sources	Professional interpersonal sources	Non-professional interpersonal sources	Specialized medical materials
Mass media hours used	.140**	.128**	-.037	.061
Mass media sources		.243**	.530**	.539**
Professional interpersonal sources			.404**	.427**
Non-professional interpersonal sources				.453**

**<.01, *<.05

N=459

Predictors of Attitudinal Outcomes (H10-11)

In order to test Hypothesis H10-11, five sets of hierarchical regression analyses were conducted for both DTCA and OTCA respectively. For each analysis, three blocks of predictor variables were entered; demographic variables (age, gender, race, education, and income) were entered in the first block, health-related characteristics (health status, chronic condition, health insurance status, health consciousness, knowledge about health and medicine, drug use, involvement with pharmaceuticals, and perceived drug safety) were entered in the second block, and variables related to the amount of exposure to socialization agents (hours spent using mass media sources per week and the perceived amount of exposure to mass media, professional interpersonal sources, non-professional interpersonal sources, and specialized medical materials for obtaining Rx and OTC drugs) were entered in the third block. Skepticism toward DTCA and OTCA, the perceived information utility of DTCA and OTCA, the perceived trust in DTCA and OTCA, the perceived importance of DTCA and OTCA, and the attitude toward DTCA and OTCA in general were entered as the dependent variables for each analysis, respectively.

Table 30. Hierarchical Regression Results for Predictors of Beliefs of and Attitudes toward DTCA. Applying the Consumer Socialization Framework.

		Beta				
		Skepticism toward DTCA	Information utility of DTCA	Trust in DTCA	Importance of DTCA	Attitude toward DTCA
Model 1	Age	.093	-.107#	-.114#	-.138*	-.060
	Gender (female)	-.026	.085	.032	-.011	.011
	Race (White)	-.024	.033	.009	-.014	.037
	Education	.129*	-.108#	-.154**	-.172**	-.124*
	Income	.041	-.072	-.079	-.067	-.108#
	R ²	.028	.038*	.047*	.056**	.036*
Model 2	Health status	.044	-.054	-.044	-.117#	-.048
	Chronic condition	-.002	.025	-.019	-.036	-.046
	Health insurance status	-.044	.008	.014	.054	.100#
	Health consciousness	-.136*	.102#	.179**	.079	.142*
	Knowledge about health and medicine	-.143*	.090	.086	.118*	.056
	# of Rx drugs taken on a regular basis	.087	-.128#	-.020	-.008	-.035
	# of OTC drugs taken on a regular basis	-.093#	.111*	.036	.053	.044
	Involvement with Rx drugs	-.246***	.273***	.237***	.239***	.260***
	Perceived Rx drug safety	-.184**	.165**	.182**	.167**	.176**
	R ² change	.185***	.156***	.175***	.139***	.162***
Model 3	Hours of media use	.030	-.026	-.034	-.038	-.036
	Mass media sources	-.331***	.395***	.334***	.318***	.352***
	Professional interpersonal sources	.025	.022	.009	.051	.015
	Non-professional interpersonal sources	-.105#	.100#	.105#	.118#	.103#
	Specialized medical materials	-.009	-.017	-.039	.010	-.003
	R ² change	.121***	.158***	.113***	.132***	.134***
	Total explained variance (R ²)	.334***	.353***	.335***	.327***	.331***
	Total explained variance (Adj. R ²)	.292	.311	.293	.285	.289

#p<.10, *P<.05, **P<.01, ***P<.001
N=318

Predictors of Skepticism toward DTCA (H10a)

Table 30 presents predictors of the beliefs of and attitude toward DTCA. The results for the first and second blocks are the same as the results for the first and second blocks reported in

the earlier section regarding Hypothesis 3a-e. Thus, the statistics will be provided only for the third block and results from the full regression model will be described in detail. In predicting skepticism toward DTCA (H10a), the first set of predictors, demographic variables, did not explain a significant proportion. The second block of health-related characteristics accounted for a significant amount of the dependent variable, after controlling for the effects of demographic variables, with involvement with Rx drugs, perceived Rx drug safety, knowledge about health and medicine, and health consciousness being significant predictors of skepticism toward DTCA. Education ($\beta = .147, p < .01$), involvement with Rx drugs ($\beta = -.215, p < .001$), and perceived Rx drug safety ($\beta = -.162, p < .01$) remained significant predictors when the third block was entered. The third set of predictors, related to the exposure to socialization agents, also explained a significant amount of skepticism toward DTCA, after controlling for the effects of demographic and health-related characteristics (R^2 change = .121, $F(5,298) = 10.848, p < .001$). The amount of exposure to mass media sources for obtaining Rx drug information ($\beta = -.331, p < .001$) was the strongest predictors of skepticism toward DTCA. Overall, the full regression equation explained about 33.4% of the variance of skepticism toward DTCA ($R^2 = .334, F(19,298) = 7.882, p < .001$). The results of the final regression equation indicate that people who have lower levels of education, have higher levels of involvement with Rx drugs, perceive Rx drugs to be safe, and obtain Rx drug information from mass media sources more often were less skeptical about DTCA.

Predictors of the Perceived Information Utility of DTCA (H10b)

As shown in Table 30, in predicting the information utility of DTCA (H10b), the first set of predictors, demographic variables, explained a small, but significant proportion of the utility of DTCA, with age and education being significant predictors of the information utility of DTCA

with p-values approaching significance ($p < .10$). The set of health-related characteristics contributed significantly to the prediction of the information utility of DTCA, after controlling for the effects of demographic variables, with involvement with Rx drugs, perceived Rx drug safety, and number of OTC drugs taken on a regular basis being significant predictors of the information utility of DTCA. When the third block was entered, the number of Rx drugs taken on a regular basis ($\beta = -.135, p < .05$) emerged as a significant predictor, and education ($\beta = -.116, p < .05$), involvement with Rx drugs ($\beta = .229, p < .001$), and perceived Rx drug safety ($\beta = .135, p < .01$) remained significant in predicting the information utility of DTCA. The third block of socialization agents significantly explained the information utility of DTCA, after controlling for the effects of the demographic and health-related characteristics (R^2 change = .158, $F(5,298) = 14.548, p < .001$), with the amount of exposure to mass media sources for obtaining Rx drug information ($\beta = .395, p < .001$) being significant. Overall, the full regression equation explained about 35.3% of the variance of the perceived information utility of DTCA ($R^2 = .353, F(19,298) = 8.547, p < .001$). The results indicate that consumers with higher levels of involvement with Rx drugs, higher levels of perceived Rx drug safety, and lower levels of education, and who take less Rx drugs on a regular basis and obtain Rx drug information from mass media sources more often valued the information utility of DTCA more.

Predictors of the Perceived Trust in DTCA (H10c)

Table 30 shows that in predicting trust in DTCA (H10c), the first set of demographic variables accounted for a small, but significant amount of trust in DTCA, with education ($p < .05$) being the strongest predictor and age ($p < .10$) being next. The second set of health-related characteristics contributed significantly to the prediction of trust in DTCA, after controlling for the effects of demographic variables, with involvement with Rx drugs, perceived Rx drug safety,

and health consciousness being significant predictors of trust in DTCA. These three variables and education ($\beta = -.169, p < .01$) still remained significant (involvement with Rx drugs, $\beta = .203, p < .001$; perceived Rx drug safety, $\beta = .158, p < .01$; and health consciousness, $\beta = .122, p < .05$) even when the third block was entered. The third block of socialization variables accounted for a significant amount of trust in DTCA, after controlling for the effects of demographic and health-related variables (R^2 change = .113, $F(5,298) = 10.150, p < .001$), with the frequency of obtaining Rx drug information from mass media sources ($\beta = .334, p < .001$) being significant. Overall, the full regression equation explained about 33.5% of the variance of the perceived trust in DTCA ($R^2 = .335, F(19,298) = 7.917, p < .001$). The results of the final regression equation indicate that respondents with higher levels of involvement with Rx drugs, higher levels of perceived Rx drug safety, and higher levels of health consciousness, and lower levels of education and who obtain Rx drug information from mass media sources more often were more likely to have higher levels of trust in DTCA.

Predictors of the Perceived Importance of DTCA (H10d)

As seen in Table 30, in predicting the perceived importance of DTCA (H10d), the first set of demographic variables accounted for a small, but significant amount of the perceived importance of DTCA, with education and age being significant. The next set of health-related characteristics explained a significant proportion of the importance of DTCA, with involvement with Rx drugs, perceived Rx drug safety, and knowledge about health and medicine being significant, after controlling for the effects of demographic variables. Education ($\beta = -.182, p < .001$), involvement with Rx drugs ($\beta = .198, p < .01$), and perceived Rx drug safety ($\beta = .136, p < .01$) remained significant when the third block was entered. The third set of socialization variables accounted for a significant amount of the importance of DTCA, after controlling for the

effects of demographic and health-related variables (R^2 change = .132, $F(5,298)= 11.667$, $p<.001$), with the frequency of obtaining Rx drug information from mass media sources ($\beta= .318$, $p<.001$) being significant. Overall, the full regression equation explained about 32.7% of the variance of the perceived importance of DTCA ($R^2=.327$, $F(19,298)= 7.634$, $p<.001$). The results indicate that respondents with higher levels of involvement with Rx drugs, higher levels of perceived Rx drug safety, and lower levels of education, and who obtain Rx drug information from mass media sources more often were more likely to consider DTCA to be an important source of health information.

Predictors of Attitude toward DTCA (H10e)

As shown in Table 30, in predicting the attitude toward DTCA (H10e), the first set of demographic variables accounted for a small, but significant amount of the attitude toward DTCA, with education being the strongest predictor ($p<.05$) and income being next ($p<.10$). The next set of health-related characteristics explained a significant proportion of the attitude toward DTCA, after controlling for the effects of demographics, with involvement with Rx drugs, perceived Rx drug safety, and health consciousness significant in predicting the attitude toward DTCA. Education ($\beta= -.137$, $p<.01$), income ($\beta= -.114$, $p<.05$), involvement with Rx drugs ($\beta= .221$, $p<.001$), and perceived Rx drug safety ($\beta= .149$, $p<.01$) remained significant, and medicine costs covered ($\beta= .108$, $p<.05$) emerged significant when the third block of exposure variables were entered. The third set of socialization variables accounted for a significant amount of the attitude toward DTCA, after controlling for the effects of demographic and health-related variables (R^2 change = .134, $F(5,298)= 11.954$, $p<.001$), with the frequency of obtaining Rx drug information from mass media sources ($\beta= .352$, $p<.001$) being significant. Overall, the full regression equation explained about 33.1% of the variance of attitude toward DTCA ($R^2=.331$,

$F(19,298)= 7.776, p<.001$). The results of the final regression equation indicate that respondents with lower levels of income, lower levels of education, higher levels of involvement with Rx drugs, and higher levels of perceived Rx drug safety and who have health insurance with medicine coverage and obtain Rx drug information from mass media sources more often were more likely to have a positive attitude toward DTCA.

Predictors of Skepticism toward OTCA (H11a)

Table 31 displays predictors of attitudinal outcomes of OTCA. The results for the first and second blocks are the same as the results for the first and second blocks reported in the earlier section regarding Hypothesis 4a-e. Thus, the statistics will be provided only for the third block and results from the full regression model will be described in detail. In regards to skepticism toward OTCA (H11a), the first set of predictors, demographic variables, did not explain a significant proportion of skepticism toward OTCA. The second set of health-related characteristics accounted for a significant amount of skepticism toward OTCA, with involvement with OTC drugs, perceived OTC drug safety, and health consciousness being significant predictor. Involvement with OTC drugs ($\beta= -.150, p<.01$) and perceived OTC drug safety ($\beta= -.180, p<.01$) remained significant when the third block was entered. The third set of socialization variables also explained a significant amount of skepticism toward OTCA, after controlling for the effects of health-related characteristics (R^2 change =.098, $F(5,284)= 7.693, p<.001$), with the frequency of obtaining OTC drug information from mass media sources ($\beta= -.334, p<.001$) being significant. Overall, the full regression equation explained about 27.4% of the variance of skepticism toward OTCA ($R^2=.274, F(19,284)= 5.648, p<.001$). The results indicate that people who were more involved with OTC drugs, who perceived OTC drugs to be safe, and who obtained OTC drug information from mass media sources often were less skeptical about OTCA.

Table 31. Hierarchical Regression Results for Predictors of Beliefs of and Attitudes toward OTCA. Applying the Consumer Socialization Framework.

		Beta				
		Skepticism toward OTCA	Information utility of OTCA	Trust in OTCA	Importance of OTCA	Attitude toward OTCA
Model 1	Age	.107#	-.040	-.103#	-.127*	.021
	Gender (female)	.037	.030	.015	.013	.043
	Race (White)	-.033	.019	.033	.079	.041
	Education	.087	-.118#	-.094	-.148*	-.112#
	Income	.039	.014	-.028	-.061	.031
	R ²	.019	.016	.019	.042*	.016
Model 2	Health status	-.031	.042	.054	-.064	-.057
	Chronic condition	.041	.001	.010	-.100#	.020
	Health insurance status	-.040	-.012	.021	.022	.056
	Health consciousness	-.133*	.195**	.153**	.120*	.200***
	Knowledge about health and medicine	-.112#	.029	.085	.184***	.068
	# of OTC drugs taken on a regular basis	.015	-.056	.031	.035	.001
	# of Rx drugs taken on a regular basis	.033	-.037	.037	.024	-.066
	Involvement with OTC drugs	-.199**	.235***	.205**	.274***	.295***
	Perceived OTC drug safety	-.166**	.154**	.169**	.124*	.186**
	R ² change	.157***	.172***	.177***	.215***	.242***
Model 3	Hours of media use	-.009	.045	-.014	-.093#	-.023
	Mass media sources	-.334***	.377***	.377***	.301***	.290***
	Professional interpersonal sources	-.071	.090	.139*	.034	.050
	Non-professional interpersonal sources	.041	-.061	-.091	.071	.038
	Specialized medical materials	-.021	.061	.019	.070	.025
	R ² change	.098***	.142***	.123***	.124***	.092***
	Total explained variance (R ²)	.274***	.330***	.319***	.380***	.351***
	Total explained variance (Adj. R ²)	.226	.285	.274	.339	.307

#p<.10, *P<.05, **P<.01, ***P<.001
N=304

Predictors of the Perceived Information Utility of OTCA (H11b)

Table 31 shows that in predicting the information utility of OTCA (H11b), the first set of predictors, demographic variables, did not explain a significant proportion of the variance. The second block of health-related characteristics contributed significantly to the prediction of the information utility of OTCA, with involvement with OTC drugs, perceived OTC drug safety, health consciousness ($p < .05$), and the number of OTC drugs taken on a regular basis ($< .10$) being significant predictors of the information utility of OTCA; all four remained significant when the third block was entered (involvement with OTC drugs, $\beta = .174$, $p < .01$; perceived OTC drug safety, $\beta = .171$, $p < .01$; health consciousness, $\beta = .147$, $p < .01$; and the number of OTC drugs taken on a regular basis, $\beta = -.107$, $p < .05$). The set of socialization variables significantly explained the information utility of OTCA, after controlling for the effects of the demographic and health-related characteristics (R^2 change = .142, $F(5, 284) = 12.066$, $p < .001$), with the frequency of obtaining OTC drug information from mass media sources being significant ($\beta = .377$, $p < .001$). Overall, the full regression equation explained about 33% of the variance of the perceived information utility of OTCA ($R^2 = .330$, $F(19, 284) = 7.353$, $p < .001$). The results of the final regression equation indicate that consumers with higher levels of involvement with OTC drugs, higher levels of perceived OTC drug safety, and higher levels of health consciousness, and who take a fewer number of OTC drugs and obtain OTC drug information from mass media sources more often valued the information utility of OTCA more.

Predictors of the Perceived Trust in OTCA (H11c)

As shown in Table 31, in predicting trust in OTCA (H11c), the first set of demographic variables did not account for a significant amount of trust in OTCA. The second set of health-related characteristics contributed significantly to the prediction of trust in OTCA, with

involvement with OTC drugs, perceived OTC drug safety, and health consciousness being significant predictors of trust in OTCA. Involvement with OTC drugs ($\beta = .156, p < .01$), perceived OTC drug safety ($\beta = .181, p < .01$), and age ($\beta = -.150, p < .05$) remained significant when the third block was entered. The third set of socialization variables accounted for a significant amount of trust in OTCA, after controlling for the effects of demographic and health-related variables (R^2 change = .123, $F(5,284) = 10.273, p < .001$), with the frequency of obtaining OTC drug information from mass media ($\beta = .377, p < .001$) and professional interpersonal sources ($\beta = .139, p < .05$) being significant. Overall, the full regression equation explained about 31.9% of the variance of the perceived trust in OTCA ($R^2 = .319, F(19,284) = 7.014, p < .001$). The results indicate that respondents with higher levels of involvement with OTC drugs, higher levels of perceived OTC drug safety, and who are younger and obtain OTC drug information from mass media and professional interpersonal sources more often were more likely to have higher levels of trust in OTCA.

Predictors of the Perceived Importance of OTCA (H11d)

As seen in Table 31, in predicting the perceived importance of OTCA (H11d), the first set of demographic variables accounted for a small, but significant amount of the perceived importance of OTCA, with education and age being significant predictors. The next set of health-related characteristics explained a significant proportion of the importance of OTCA, after controlling for the effects of demographic variables, with involvement with OTC drugs, knowledge about health and medicine, perceived OTC drug safety, and health consciousness being significant predictors. Education ($\beta = -.134, p < .01$), involvement with OTC drugs ($\beta = .221, p < .001$), and perceived OTC drug safety ($\beta = .146, p < .01$) remained significant when the third block of exposure variables were entered. The third set of socialization variables accounted for a

significant amount of the importance of OTCA, after controlling for the effects of demographic and health-related variables (R^2 change = .124, $F(5,284)= 11.339$, $p<.001$), with the frequency of obtaining OTC drug information from mass media sources being significant ($\beta= .301$, $p<.001$). Overall, the full regression equation explained about 38% of the variance of the perceived importance of OTCA ($R^2=.380$, $F(19,284)= 9.174$, $p<.001$). The results of the final regression equation indicate that respondents with lower levels of education, higher levels of involvement with OTC drugs, and higher levels of perceived OTC drug safety, and who obtain OTC drug information from mass media sources more often were more likely to consider OTCA to be an important source of health information.

Predictors of Attitude toward OTCA (H11e)

Table 31 shows that in predicting the attitude toward OTCA (H11e), the first set of demographic variables did not account for a significant amount of the attitude toward OTCA. The second block of health-related characteristics explained a significant proportion of the attitude toward OTCA, with involvement with OTC drugs, health consciousness, and perceived OTC drug safety being significant predictors of the attitude toward OTCA, which remained significant (involvement with OTC drugs, $\beta= .246$, $p<.001$; health consciousness, $\beta= .151$, $p<.01$; and perceived OTC drug safety, $\beta= .203$, $p<.001$) when the third block was entered. The third set of socialization variables accounted for a significant amount of the attitude toward OTCA, after controlling for the effects of demographic and health-related variables (R^2 change = .092, $F(5,284)= 8.069$, $p<.001$), with frequency of obtaining OTC drug information from mass media sources ($\beta= .290$, $p<.001$) being significant. Overall, the full regression equation explained about 35.1% of the variance of attitude toward OTCA ($R^2=.351$, $F(19,284)= 8.081$, $p<.001$). The results indicate that respondents with higher levels of involvement with OTC drugs, higher levels

of perceived OTC drug safety, and higher levels of health consciousness, and who obtain OTC drug information from mass media sources more often were more likely to have a positive attitude toward OTCA.

Predictors of Behavioral Outcomes (H12-13)

In order to test H12-13 about examining predictors of behavioral outcomes, two sets of hierarchical regression analyses were conducted for both DTCA and OTCA respectively. For each analysis, demographic variables (age, gender, race, education, and income) were entered in the first block, health-related characteristics (health status, chronic condition, health insurance status, health consciousness, knowledge about health and medicine, drug use, involvement with pharmaceuticals, and perceived drug safety) were entered in the second block, variables related to the amount of exposure to socialization agents (hours spent using mass media sources per week and the perceived amount of exposure to mass media, professional interpersonal sources, non-professional interpersonal sources, and specialized medical materials for obtaining Rx and OTC drugs) were entered in the third block, and variables related to beliefs and attitude (skepticism toward DTCA and OTCA, the perceived information utility of DTCA and OTCA, the perceived trust in DTCA and OTCA, the perceived importance of DTCA and OTCA, and the attitude toward DTCA and OTCA in general) were entered in the fourth block. Dependent variables include the summated indices of DTCA and OTCA prompted behaviors and the summated indices of the number of sources used for drug information searches triggered by DTCA and OTCA.

Table 32. Hierarchical Regression Results for Predictors of Behavioral Outcomes of DTCA. Applying the Consumer Socialization Framework.

		Beta	
		DTCA prompted behaviors	Information search triggered by DTCA
Model1	Age	-.096	-.138*
	Gender (female)	-.082	-.065
	Race (White)	-.047	-.040
	Education	.003	-.029
	Income	-.045	-.093
	R ²	.022	.034#
Model2	Health status	.015	-.131*
	Chronic condition	.069	-.009
	Health insurance status	.010	.002
	Health consciousness	.070	.127*
	Knowledge about health and medicine	.178**	.089
	# of Rx drugs taken on a regular basis	.114	.116
	# of OTC drugs taken on a regular basis	.166**	.172**
	Involvement with Rx drugs	.156*	.129*
	Perceived Rx drug safety	.004	.070
	R ² change	.160***	.139***
Model3	Hours of media use	.050	-.015
	Mass media sources	.266***	.248***
	Professional interpersonal sources	.059	.016
	Non-professional interpersonal sources	.171**	.118#
	Specialized medical materials	.056	.107#
	R ² change	.159***	.122***
Model4	Skepticism toward DTCA	.123	.250*
	Perceived information utility of DTCA	.165	.125
	Perceived trust in DTCA	-.042	-.002
	Perceived importance of DTCA	.240**	.185*
	Attitude toward DTCA	.012	.121
	R ² change	.047**	.037**
	Total explained variance (R ²)	.387***	.332***
	Total explained variance (Adj. R ²)	.337	.277

#p<.10, *P<.05, **P<.01, ***P<.001
N=318

Predictors of DTCA Prompted Behaviors (H12a)

Table 32 provides a list of predictors of DTCA prompted behaviors and information searches triggered by DTCA. The results for the first and second blocks are the same as the results for the first and second blocks reported in the earlier section regarding Hypothesis 5a-b.

Thus, the statistics will be provided only for the third and the fourth blocks and results from the full regression model will be described in detail.

In predicting DTCA prompted behaviors (H12a), the first set of demographic variables did not explain a significant proportion. The second block of health-related characteristics accounted for a significant amount of the dependent variables, with knowledge about health and medicine, the number of OTC drugs taken on a regular basis, and involvement with Rx drugs being significant predictors. The third set of predictors related to exposure to socialization agents also explained a significant amount of DTCA prompted behaviors, after controlling for the effects of demographic and health-related characteristics (R^2 change = .159, $F(5,298)= 14.321$, $p<.001$), with the frequency of obtaining Rx drug information from mass media ($\beta= .266$, $p<.001$) and non-professional interpersonal sources ($\beta= .171$, $p<.01$) being significant predictors. The fourth block of belief and attitude variables also accounted for DTCA prompted behaviors, after controlling for the effects of demographic, health-related characteristics, and socialization agents (R^2 change = .047, $F(5,293)= 4.532$, $p<.01$), with the perceived importance of DTCA ($\beta= .240$, $p<.01$) being a significant predictor. Overall, the full regression equation explained 38.7% of the variance of DTCA prompted behaviors ($R^2=.387$, $F(24,293)= 7.716$, $p<.001$), with Rx ($\beta= .114$, $p=.075$) and OTC drug use ($\beta= .098$, $p=.052$), the frequency of obtaining Rx drug information from mass media ($\beta= .176$, $p<.01$) and non-professional interpersonal sources ($\beta= .143$, $p<.05$), and the perceived importance of DTCA ($\beta= .240$, $p<.01$) being significant. The results of the full regression model including all variables indicate that respondents who use a greater number of Rx and OTC drugs, who perceive higher levels of importance of DTCA, and who obtain Rx drug information from mass media and non-professional interpersonal sources more often were more likely to engage in behaviors prompted by DTCA.

Predictors of Drug Information Seeking Triggered by DTCA (H12b)

As shown in Table 32, in predicting regards to information searches triggered by DTCA (H12b), the first set of demographic variables did not explain a significant proportion. The second block of health-related characteristics accounted for a significant amount of the dependent variable, with health consciousness, number of OTC drugs taken on a regular basis, and involvement with Rx drugs being significant predictors. The third set of socialization variables also explained a significant amount of the information searches triggered by DTCA, after controlling for the effects of demographic and health-related characteristics (R^2 change = .122, $F(5,298)= 10.347$, $p<.001$), with the frequency of obtaining Rx drug information from mass media sources ($\beta= .248$, $p<.001$) being a significant predictor. The fourth block of belief and attitude variables also accounted for information searches triggered by DTCA, after controlling for the effects of demographic, health-related characteristics, and socialization variables (R^2 change = .037, $F(5,293)= 3.259$, $p<.01$), with skepticism toward DTCA ($\beta= .250$, $p<.05$) and the perceived importance of DTCA ($\beta= .185$, $p<.05$) being significant predictors. Overall, the full regression equation explained 33.2 % of the variance of the information searches triggered by DTCA ($R^2=.332$, $F(24,293)= 6.073$, $p<.001$), with OTC drug use ($\beta= .109$, $p<.05$), frequency of mass media use for obtaining Rx drug information ($\beta= .180$, $p<.05$), and skepticism toward ($\beta= .250$, $p<.05$) and importance of DTCA ($\beta= .185$, $p<.05$) being significant. The results of the full regression model indicate that respondents who use a greater number of OTC drugs, who perceive higher levels of skepticism toward and importance of DTCA, and who obtain Rx drug information from mass media sources more often were more likely to use a greater number of sources when searching for Rx drug information triggered by DTCA.

Table 33. Hierarchical Regression Results for Predictors of Behavioral Outcomes of OTCA. Applying the Consumer Socialization Framework.

		Beta	
		OTCA prompted behaviors	Information search triggered by OTCA
Model1	Age	-.076	-.128*
	Gender (female)	-.024	-.005
	Race (White)	-.048	-.037
	Education	.046	.062
	Income	.051	.072
	R ²	.019	.036#
Model2	Health status	.055	.003
	Chronic condition	.057	-.010
	Health insurance status	-.041	-.036
	Health consciousness	.033	.098#
	Knowledge about health and medicine	.159**	.242***
	# of OTC drugs taken on a regular basis	.168**	.171**
	# of Rx drugs taken on a regular basis	.079	.113
	Involvement with OTC drugs	.132*	.012
	Perceived OTC drug safety	.043	.023
	R ² change	.134***	.149***
Model3	Hours of media use	.031	-.029
	Mass media sources	.219**	.269***
	Professional interpersonal sources	.043	.094
	Non-professional interpersonal sources	.145*	.067
	Specialized medical materials	.021	.058
	R ² change	.099***	.113***
Model4	Skepticism toward OTCA	-.149	-.087
	Perceived information utility of OTCA	.002	.046
	Perceived trust in OTCA	-.129	-.131
	Perceived importance of OTCA	.088	.039
	Attitude toward OTCA	.047	.072
	R ² change	.017	.011
	Total explained variance (R ²)	.269***	.309***
	Total explained variance (Adj. R ²)	.206	.250

#p<.10, *P<.05, **P<.01, ***P<.001, N=304

Predictors of OTCA Prompted Behaviors (H13a)

Table 33 provides a list of predictors of OTCA prompted behaviors and information searches triggered by OTCA. The results for the first and second blocks are the same as the results for the first and second blocks reported in the earlier section regarding Hypothesis 6a-b. Thus, the statistics will be provided only for the third and the fourth blocks and results from the full regression model will be described in detail.

In predicting OTCA prompted behaviors (H13a), the first set of demographic variables did not explain a significant proportion. The second block of health-related characteristics accounted for a significant amount of the dependent variable, with knowledge about health and medicine, number of OTC drugs taken on a regular basis, and involvement with OTC drugs being significant predictors. The third set of predictors related to socialization agents also explained a significant amount of OTCA prompted behaviors, after controlling for the effects of demographic and health-related characteristics (R^2 change = .099, $F(5,284)= 7.487$, $p<.001$), with the frequency of obtaining OTC drug information from mass media ($\beta= .219$, $p<.01$) and non-professional interpersonal sources ($\beta= .145$, $p<.05$) being significant predictors. The fourth block of belief and attitude variables did not account for OTCA prompted behaviors, after controlling for the effects of demographic, health-related characteristics, and socialization variables (R^2 change = .017, $F(5,279)= 1.296$, $p=.266$). Overall, the full regression equation explained 26.9% of the variance of OTCA prompted behaviors ($R^2=.269$, $F(24,279)= 4.274$, $p<.001$), with OTC drug use ($\beta= .140$, $p<.05$), frequency of obtaining OTC drug information from mass media ($\beta= .177$, $p<.05$) and non-professional interpersonal sources ($\beta= .131$, $p=.056$) being significant predictors. The results of the full regression model indicate that respondents who use a greater number of OTC drugs and obtain OTC drug information from mass media and non-professional interpersonal sources more often were more likely to engage in behaviors prompted by OTCA.

Predictors of Drug Information Seeking Triggered by OTCA (H13b)

As shown in Table 33, in predicting information searches triggered by OTCA (H13b), the first set of demographic variables did not explain a significant proportion. The second block of health-related characteristics accounted for a significant amount of the dependent variable, with knowledge about health and medicine and number of OTC drugs taken on a regular basis being

significant predictors. The third set of socialization variables also explained a significant amount of the information searches triggered by OTCA, after controlling for the effects of demographic and health-related characteristics (R^2 change = .113, $F(5,284)= 9.163$, $p<.001$), with the frequency of mass media use for obtaining OTC drug information ($\beta= .269$, $p<.001$) being significant. The fourth block of belief and attitude variables did not account for the information searches triggered by OTCA, after controlling for the effects of demographic, health-related characteristics, and socialization variables (R^2 change = .011, $F(5,279)= .864$, $p=.505$). Overall, the full regression equation explained 30.9% of the variance of OTC drug information searches triggered by OTCA ($R^2=.309$, $F(24,279)= 5.205$, $p<.001$), with age ($\beta= -.149$, $p<.05$), knowledge about health and medicine ($\beta= .151$, $p<.05$), OTC drug use ($\beta= .130$, $p<.05$), Rx drug use ($\beta= .126$, $p=.064$), and frequency of obtaining OTC drug information from mass media sources ($\beta= .239$, $p<.01$) remaining significant. The results of the full regression model indicate that respondents who are younger, who use a greater number of OTC and Rx drugs, who are more knowledgeable about health and medicine, and who obtain OTC drug information from mass media sources more often were more likely to use a greater number of sources when searching for OTC drug information triggered by OTCA.

A Comparison of Predictors of Socialization Agents between DTCA and OTCA (RQ5)

With regard to the frequency of obtaining drug information from mass media sources, knowledge about health and medicine (+) was the strongest positive predictor for both Rx and OTC drugs. Age (-), health status (-), the number of OTC drugs taken on a regular basis (+), and involvement with drugs were also common predictors. For OTC drugs, health insurance status (+) and perceived OTC drug safety (-) were also significant predictors.

Regarding the frequency of obtaining drug information from professional interpersonal sources, predictors were different for Rx and OTC drugs. For Rx drugs, health status (-) was the strongest predictor, followed by involvement with Rx drugs (+), age (+), and perceived Rx drug safety (+). For OTC drugs, health insurance status (+) and knowledge about health and medicine (+) were the significant predictors.

Regarding the frequency of obtaining drug information from non-professional interpersonal sources, age (-) was the strongest predictor for both Rx and OTC drugs. For Rx drugs, knowledge about health and medicine (+) and the number of OTC drugs taken on a regular basis (+) were also significant predictors, whereas for OTC drugs, health consciousness (+) and involvement with OTC drugs (+) were also significant.

Regarding the frequency of obtaining drug information from specialized medical materials, knowledge about health and medicine (+) was the strongest predictor for both Rx and OTC drugs, followed by age (-) and number of OTC drugs taken on a regular basis (+). For Rx drugs, the number of Rx drugs taken on a regular basis (+) was another significant predictor, whereas for OTC drugs, involvement with OTC drugs (+), perceived OTC drug safety (-), and health insurance status (+) were also found to be significant.

For attitudinal variables, the frequency of obtaining drug information from mass media sources was the most consistent significant positive predictor, followed by involvement with drugs, perceived drug safety, and health consciousness for both DTCA and OTCA. For DTCA, education was another significant predictor consistently found to be significant throughout different attitudinal variables. The results indicate that consumers who obtain drug information from mass media sources frequently, are more involved with drugs, are more health conscious, and perceive drugs to be safe are more likely to hold positive perceptions of drug advertising. Consumers with lower levels of education showed more positive perceptions of DTCA.

Regarding behaviors prompted by DTCA and OTCA, knowledge about health and medicine (+), the number of OTC drugs taken on a regular basis (+), involvement with drugs (+), and the frequency of obtaining drug information from mass media (+) and non-professional sources (+) were found to be significant for both DTCA and OTCA. For DTCA, the perceived importance of DTCA as a health information source (+) was found to be the strongest predictor, whereas for OTCA, the frequency of obtaining drug information from mass media sources (+) was the strongest predictor.

Information search triggered by DTCA and OTCA, the frequency of mass media use for obtaining drug information, the number of OTC drugs taken on a regular basis (+), and age (-) were found commonly significant for both search behaviors. For drug information seeking triggered by DTCA, skepticism toward (+) and importance of DTCA (+) were the strongest predictors, with health status (-), health consciousness (+), and involvement with Rx drugs (+) being other significant predictors. For drug information seeking triggered by OTCA, knowledge about health and medicine (+) was also found to be significant.

CHAPTER 5

DISCUSSION

In this chapter, the major findings of the current study are summarized, and the importance of these findings in relation to the literature on DTCA and OTCA is discussed. This is followed by implications and limitations of the research and suggestions for future research.

Summary and Discussion of Findings

The summary and discussion of the findings are organized relative to the specific objectives of the current study, which were proposed in Chapter 1. Model 1 is based mainly on the hierarchy-of-effects model, and Model 2 is based on the consumer socialization framework.

Model 1 vs. Model 2

Objective 1: to determine if the two proposed models are meaningful for understanding both DTCA and OTCA; to determine which model more adequately explains the effects of DTCA and OTCA on attitudinal and behavioral outcomes.

Both of the models were meaningful to understanding consumers' responses to DTCA and OTCA. Model 1 explained behavioral outcomes slightly better than Model 2: the R square difference ranged from .001 to .057. Both models explained the behavioral outcomes of DTCA better than the outcomes of OTCA; 40% of the variance of DTCA prompted behaviors was explained by Model 1 and 38.7% by Model 2, whereas about 27% of the variance of OTCA prompted behaviors was explained by both models; 38.9% of the variance of information search triggered by DTCA was explained by Model 1 and 33.2% by Model 1, whereas 33.1% of the variance of information search triggered by OTCA was explained by Model 1 and 30.9% by

Model 2. Both models explained DTCA prompted behaviors better than the information searches triggered by DTCA. For behavioral outcomes of OTCA, the direction was opposite; both models explained the information searches triggered by OTCA better than OTCA prompted behaviors.

Regarding attitudinal variables, again, Model 1 did a better job explaining the attitudinal outcomes of both DTCA and OTCA than Model 2: the R square difference ranged from .048 to .165. Almost half of the variance of some attitudinal variables was explained by Model 1: 49.2% of the variance in the importance of DTCA as a health information source and 48.9% of the skepticism toward DTCA were accounted for by the linear combination of the variables in Model 1. Both models explained the attitudinal outcomes of DTCA better than the attitudinal outcomes of OTCA, except for the attitude toward advertising and the importance of advertising; both models explained the attitude toward OTCA better than the attitude toward DTCA (Model 1 $R^2 = .430$ for DTCA, $R^2 = .484$ for OTCA; Model 2 $R^2 = .331$ for DTCA, $R^2 = .351$ for OTCA); Model 2 explained more of the variance in the importance of OTCA than that of DTCA (Model 2 $R^2 = .327$ for DTCA, $R^2 = .380$ for OTCA).

Overall, Model 1 performed better than Model 2 in explaining attitudinal and behavioral outcomes, but the R square difference between Model 1 and Model 2 was larger for attitudinal variables than behavioral outcomes. Considering that the only difference between the two models in explaining attitudinal outcomes was the magnitude of the influence of the third set of variables, exposure to advertising or exposure to socialization agents (after controlling for the effects of audience demographics and health-related characteristics), the results indicate that consumers' exposure to DTCA and OTCA compared to consumers' exposure to socialization agents explain more variance in their attitudinal responses to DTCA and OTCA. However, the two models were similar in explaining the behavioral outcomes. Considering that the fourth block, attitudinal

variables, did not explain a significant amount of the behavioral outcomes (R^2 change range: from .024 to .047 for DTCA, and insignificant for OTCA), when the effects of the previous blocks (audience demographics, health-related characteristics, and exposure to advertising or socialization agents) were controlled, there might be situational factors that influence consumer behaviors after consumers are exposed to drug advertising, especially in the case of OTCA.

Exposure to, Perceptions of, and Attitude toward DTCA and OTCA

Objective 2: to determine if consumers' levels of exposure to, their perceptions of, and attitude toward DTCA and OTCA are different. If so, to examine where these differences originate by identifying out significant predictors that influence the process.

Exposure

Overall, respondents indicated moderate levels of exposure to and the amount of attention paid to DTCA and OTCA. The perceived amount of exposure was higher for DTCA than OTCA, but the number of brands that they remember seeing ads for was higher for OTC than Rx drugs. There was no difference in the amount of attention paid DTCA and OTCA.

The differences in explaining the perceived amount of exposure to DTCA and OTCA were that, in addition to age and knowledge about health and medicine, health status (-) was another significant predictor for DTCA, whereas income (+) and the number of OTC drugs currently taken on regular basis (+) was another significant predictor for OTCA. However, considering the small R square for both DTCA and OTCA ($R^2=.140$ for DTCA, $R^2=.177$ for OTCA), there could be other factors influencing the perceived amount of exposure to DTCA and OTCA such as exposure to advertising in general. The major factor may be advertising spending, which was higher for DTCA than OTCA.

The mean difference in the number of Rx and OTC brands consumers remember seeing ads for was not clearly explained by the current model (R^2 was less than .08 for both Rx and OTC). The percentage of consumers who did not know the listed brands was higher for Rx brands than OTC brands. One can presume that consumers might be more familiar with OTC brands listed in the questionnaire and were more likely to think that they might have seen the ads for these brands than the Rx brands listed in the questionnaire. Also, considering that the listed Rx brands were medicine for more serious diseases such as high cholesterol, depression, and asthma, whereas the listed OTC brands were treatments for minor illnesses such as cold and allergy, the respondents might not relate themselves to the ads for the listed Rx brands, because they might have never bought those listed Rx brands.

Attitude

With regard to beliefs and attitudinal variables, respondents in the current study held moderately positive perceptions of both DTCA and OTCA, indicated by all five attitudinal variables. There was no significant difference between consumers' perceptions of DTCA and OTCA in terms of information utility, trust, skepticism, and the perceived importance, except for attitude. The respondents of the current study were more positive about the perceived information utility and importance of DTCA and OTCA, compared to the previous findings (e.g., DeLorme et al., 2010a; Diehl et al., 2007; Huh et al., 2004a). The levels of consumers' skepticism toward DTCA and OTCA were neutral, which was consistent with findings from earlier studies (e.g., DeLorme, Huh, & Reid, 2009, 2010a; Diehl et al., 2007, 2009, 2010). Contrary to previous findings (Diehl et al., 2007, 2008), however, consumers' levels of skepticism toward pharmaceutical advertising were similar to their levels of skepticism toward advertising in general, and consumers held more positive attitudes toward OTCA than toward

advertising in general and more positive attitudes toward advertising in general than toward DTCA.

After controlling for the influence of audience demographic characteristics, involvement with drugs and perceived drug safety were the most consistently found significant predictors of all four belief variables for both DTCA and OTCA. After controlling for both demographic and health-related characteristics, the amount of attention paid to DTCA and OTCA was the most significant predictor of the belief variables in Model 1, whereas the perceived amount of exposure to mass media sources for obtaining drug information was the most significant predictor of the belief variables in Model 2. Even when all variables were considered together, the amount of attention paid to DTCA and OTCA from Model 1 and the perceived amount of exposure to mass media sources for obtaining drug information from Model 2 were the most influential in explaining the belief variables. This finding emphasizes the role of exposure variables, either direct exposure to drug advertising or exposure to drug information through mass media, in influencing consumer perceptions of DTCA and OTCA. The more one is exposed to drug advertising and the more one is exposed to drug information through mass media sources, the more one is likely to hold a positive perception of drug advertising. As mentioned in the results for H2, the perceived amount of exposure to and attention paid to drug advertising were also explained by the set of attitudinal variables; this means consumers may be more likely to pay attention to and be exposed to drug advertising, because they have a positive perception of it. This finding that consumer exposure to and attitudes toward drug advertising can predict each other was consistent with the previous finding (Yuan, 2008).

Speaking of a difference in the attitude toward DTCA and OTCA, attention paid to drug advertising (from Model 1) or the amount of exposure to mass media sources (from Model 2),

and involvement with drugs and perceived drug safety (from both Model 1 and 2) were the most consistently found significant variables of attitude toward DTCA and OTCA. Income and education were more influential variables in explaining the attitude toward DTCA, whereas health consciousness was a more influential predictor of the attitude toward OTCA, determined by both Models 1 and 2. This may imply that those who earn more and those with higher levels of education do not enjoy watching DTCA, whereas those who are more health conscious may enjoy watching OTCA because of their higher level of involvement with their health. In addition to these predictors, there may be other factors in influencing the differences in consumers' attitude toward DTCA and OTCA; for example, DTC ads contain longer risk information than OTC ads, which may result in negative emotional responses to DTCA.

Behavioral Outcomes

Objective 3: to determine the differences in the magnitude and characteristics of the effects of DTCA and OTCA on behavioral outcomes by examining the indirect effects of DTCA and both the direct and indirect effects of OTCA.

DTCA and OTCA Prompted Behaviors

Consumers acted similarly in terms of the number of behaviors they engaged in after they saw, read, or heard DTCA and OTCA. They engaged in at least one or two behaviors prompted by drug advertising. However, the nature of behaviors consumers engaged in was different for DTCA and OTCA. For DTCA, the majority of consumers have talked with their doctors about the advertised drug, followed by searching for more information about the drug. For OTCA, looking for an OTC brand in the store after seeing it on the ad was the number one behavior consumers engaged in, which indicates the direct effects of OTCA. The indirect effects of OTCA, such as talking with doctors, friends or relatives about the advertised drugs, were also found to

be common behavioral outcomes of OTCA. These findings were meaningful in that this study provided evidence for direct effects of OTCA in terms of purchase behaviors, which is contrary to previous studies' arguments that the direct influence of OTCA on purchase behaviors may be limited (e.g., DeLorme et al., 2010b).

The attention paid to and the amount of exposure to drug advertising (from Model 1) or the amount of exposure to mass media and non-professional interpersonal sources for obtaining drug information (from Model 2) were strong positive predictors of behaviors prompted by drug advertising (both DTCA and OTCA), which highlights the importance of exposure to drug advertising or socialization agents, such as mass media and non-professional sources, in influencing behavioral outcomes of drug advertising. The importance of exposure to DTCA in influencing drug information seeking and communication with doctors has been noted in previous studies (e.g., Huh & Becker; Yuan, 2008). Although not as influential as exposure to drug advertising, obtaining drug information from socialization agents was found to influence consumer behaviors to some degree. Attitudinal variables played a role in the context of DTCA only. The perceived importance of DTCA was found to influence consumer behaviors prompted by DTCA, even after the effects of the audience factors and exposure variables were controlled.

Drug Information Seeking Triggered by DTCA and OTCA

In regards to information searches, the Internet was the most common source consumers used for searching for further information, followed by doctors, pharmacists, and friends or relatives. In terms of the number of sources used when looking for further information after being exposed to DTCA or OTCA, respondents reported using a greater number of sources for Rx drugs than OTC drugs. This difference might be attributed to the finding that attitudinal predictors, such as skepticism toward and perceived importance of drug advertising, and some

health-related characteristics, such as health status, health consciousness, and involvement with drugs, were found to be significant only for information searches triggered by DTCA, whereas knowledge about health and medicine was found to be significant only for OTCA. Regardless of types of drugs (Rx or OTC), the number of OTC drugs taken on a regular basis (from both Model 1 and 2) and the amount of exposure to and attention paid to drug advertising (from Model 1) or the amount of exposure to mass media sources (from Model 2) were significant predictors of their search for further information. However, it is important to note that these findings pertain to the number of sources used for information searches triggered by drug advertising. The intensiveness and frequency of search using each source was not measured in this study. It is possible that consumers may visit their doctors more often to ask about advertised Rx drugs rather than OTC drugs. These possibilities were not examined in this study.

Notably, mass media sources exerted greater influence than interpersonal sources on the attitudinal and behavioral outcomes of both DTCA and OTCA in the current study. In contrast to the findings from Lee et al. (2007) that consumers' use of mass media sources influence their communication with doctors only through their use of interpersonal channels and attitude toward DTCA, the current study found a direct influence of the use of mass media sources on the behavioral outcomes of DTCA and OTCA, even after the effects of demographics, health-related characteristics, and attitudinal variables were controlled for. Also, the magnitude of the influence of mass media sources on both attitudinal and behavioral outcomes was greater than that of the influence of interpersonal sources and specialized medical materials. These findings suggest that consumers' learning process through mass media sources may be the basis of their responses to drug advertising.

Interestingly, the number of OTC drugs currently taken on a regular basis was a significant predictor of behaviors prompted by and information searches triggered by advertising in the context of DTCA as well as OTCA, even when all variables were considered. This finding may imply that consumers who take a greater number of OTC drugs might be looking for improvements or alternatives, paying more attention to DTCA, and thus, taking action based on DTCA more often.

Demographic and Health-Related Variables

Objective 4: to determine if any audience characteristics (demographic and health-related characteristics) influence how much advertising consumers are exposed to and how they respond to OTCA and DTCA.

Demographic Characteristics

Among the demographic characteristics, in predicting the exposure to drug advertising, age was the most consistently found negative predictor of the amount of exposure to DTCA and OTCA. No significant demographic predictor was found for the attention paid to and awareness of specific ads. With regard to attitudinal outcomes, education was most consistently found to be a significant predictor of consumer's beliefs of and attitudes toward DTCA. Those who had lower levels of education held more positive perceptions of DTCA. This finding provides support for strict regulatory oversight on DTCA since those who have less education are more positive about DTCA and, thus, they may be more likely to be misled by DTC ads. No statistically significant demographic variables were found for attitudinal outcomes of OTCA, except for the perceived importance of OTCA (education and age were negative predictors of the variable). Regarding the behavioral outcomes, only age was found to be a significant demographic predictor of information searches triggered by DTCA and OTCA. In other words,

younger consumers engaged more extensively in information seeking behaviors triggered by DTCA and OTCA. It is possible that younger consumers may use a variety of sources such as the Internet and their friends and family to gain further information after exposure to drug advertising, whereas older consumers may just go directly to their doctors to gain further information.

Previous studies showed mixed findings regarding the influence of gender and race on responses to drug advertising. Some studies found gender differences (e.g., Diehl et al., 2007) and racial differences (e.g., DeLorme et al., 2010a) in response to DTCA and OTCA, but other studies (e.g., Yuan, 2008) did not find gender and race to be significant predictors of consumer responses to DTCA. In the current study, no gender and racial differences were found in consumer exposure, beliefs and attitudes, or behavioral outcomes regarding DTCA and OTCA.

Health-Related Characteristics

Among health-related characteristics, knowledge about health and medicine was the most consistently found as the strongest predictor of the perceived amount of exposure to and attention paid to DTCA and OTCA. Involvement with drugs was another strong predictor of the attention paid DTCA and OTCA. With regard to the beliefs and attitude regarding DTCA and OTCA, involvement with drugs, perceived drug safety, and health consciousness, none of which have been examined frequently in previous studies, were consistently found to be significant predictors. This means that those who are more involved with drugs and their health and who perceive drugs to be safe are likely to hold more positive perceptions of drug advertising. In regards to behavioral outcomes, the number of OTC drugs currently taken on a regular basis was found to be the most consistently positive predictor of the behavioral outcomes of DTCA and OTCA, which is consistent with the finding that drug use can influence information searches

triggered by DTCA (e.g., Schommer et al., 2005). Knowledge about health and medicine and involvement with drugs were also influential in explaining behavioral outcomes.

Implications

The findings of the current study contribute to the body of DTCA and OTCA research in several ways. First, few studies have examined consumer responses to OTCA based on theoretical models. This study employs the two models to shed light on an understudied area of pharmaceutical advertising by examining of consumer responses to OTCA in relation to DTCA. Consumers reported that they were moderately exposed to OTCA, but less than DTCA; they were neutral in their skepticism toward OTCA, which was not different from skepticism toward advertising in general and toward DTCA; and showed a more positive attitude toward OTCA than advertising in general and toward DTCA.

Second, in this study, two proposed models, Model 1 based on the modified hierarchy-of-effects model and Model 2 based on the consumer socialization framework, were tested and compared in terms of their explanatory power. The findings suggest that both models were meaningful in understanding consumer responses to DTCA and OTCA. Among the predictors in the two models, perceived amount of exposure to and attention paid to drug advertising (from Model 1) and exposure to mass media sources (from Model 1) appear to exert the greatest influences on the attitudinal and behavioral outcome variables. These findings highlight the importance of exposure (either direct or indirect) to drug information and advertising on consumer purchase decision making process. Although Model 1 did a better job in explaining the attitudinal outcomes, there was little difference in explanatory power of the two models regarding behavioral outcomes. This finding implies that there might be other variables that explain the behavioral outcomes beyond exposure and attitudes such as price and quality

perceptions. Although the model based on the modified hierarchy-of-effects did a better job of explaining the attitudinal outcomes of DTCA and OTCA, it is important to note that the amount of exposure to socialization agents still significantly explained the attitudinal and behavioral outcomes regarding DTCA and OTCA, even after controlling for audience characteristics; this finding adds significant support for the role of consumer socialization agents in pharmaceutical advertising. Moreover, in predicting behavioral outcomes, when the two models were combined by adding the socialization agents before the exposure variables in Model 1, the R square did not increase greatly (R square change ranged between .011 and .033 for Model 1; R square change ranged between .034 and .066 for Model 2). Since combining the two models did not yield a more meaningful result, these findings suggest that in order to gauge the magnitude of the effects of drug advertising on consumer behaviors, one can use either model. One does not need to measure both exposure to drug advertising and socialization agents.

Third, this study included an extensive list of health-related characteristics and attitudinal variables. Previous models on DTCA were limited in terms of explanatory power (with the R^2 mostly below .20). By including a more comprehensive list of variables, the current models showed better explanatory power in clarifying consumer responses to DTCA and OTCA in terms of the attitudinal and behavioral outcomes (R^2 range: 0.268 -0.492).

Fourth, methodologically, most of the previous DTCA studies used secondary data to test DTCA models, and some of the measurement items in the secondary data were not adequate in testing the models. The current study used multiple-item measures that had already been validated by previous studies. Also, the measurement items for behavioral outcomes that were commonly used in the context of DTCA, such as communication with doctors, were modified to the OTCA context by including OTCA prompted purchase behaviors.

Fifth, the current study compared predictors of consumer responses to DTCA and OTCA, and found similarities and differences in the characteristics and magnitude of these predictors. For example, regardless of the drug category (Rx or OTC), the perceived amount of attention paid to DTCA and OTCA and the perceived amount of exposure to mass media sources played significant roles in explaining both attitudinal and behavioral outcomes. Skepticism toward, the perceived information utility of, and the perceived importance of drug advertising explained only the behavioral outcomes of DTCA, not the behavioral outcomes of OTCA.

This study also provides pharmaceutical marketers with useful implications. First, regardless of drug category (Rx or OTC), the majority of respondents indicated that after being exposed to drug advertising, they looked for more information about the product primarily on the Internet, followed by interpersonal sources (doctors, pharmacists, and friends, relatives, or neighbors). Information consumers get on the Internet may not be accurate or satisfy consumers' informational needs. The findings suggest that drug companies should disseminate detailed drug information over the Internet, in addition to providing doctors and pharmacists with the information. The findings also suggest that consumer support groups and government agencies should provide accurate drug information on their websites for consumers.

Second, the findings with regard to the amount of exposure to socialization agents provide some useful implications for media planning. When respondents were asked how often they receive information about drugs from different sources, professional interpersonal sources such as doctors and pharmacists were the sources from which they obtained drug information most often for both Rx and OTC drugs, which was consistent with previous research findings (Kim & King, 2009). In addition to these professional interpersonal sources, the respondents were more likely to use specialized medical materials and mass media to obtain Rx drug

information, whereas mass media and non-professional interpersonal sources were more likely to be used to receive OTC drug information. These findings imply that pharmaceutical marketers should promote their drugs through mass media, regardless of drug categories. For Rx drugs, media budgets should be invested more on specialized medical materials such as brochures and professional medical publications, whereas for OTC drugs, it might be more useful to direct larger portions of media budgets toward increasing word-of-mouth communications and maintaining brand loyalty among current consumers.

Third, the role of exposure to DTCA and OTCA in predicting attitudinal and behavioral outcomes should be noted by pharmaceutical marketers. The perceived amount of exposure to DTCA was higher than that of exposure to OTCA; this is in line with the fact that pharmaceutical companies spend more money on DTCA than on OTCA. This suggests that consumer's perceptions of the amount of DTCA they see is in line with reality. Moreover, the perceived amount of exposure to and attention paid to drug advertising were most consistently found to be significant predictors of attitudinal and behavioral outcomes. The results suggest that consumers' perceived amount of exposure to and attention paid to drug advertising helps them to form positive perceptions of drug advertising and engage in subsequent behaviors. The findings appear to justify substantial amounts of advertising spending of pharmaceutical marketers.

Finally, several audience characteristics should be taken into account when pharmaceutical marketers select target groups. For example, the number of OTC drugs people take on a regular basis was found to be a significant predictor of the behavioral outcomes of DTCA as well as the behavioral outcomes of OTCA. The findings suggest that pharmaceutical marketers should not overlook heavy users of OTC drugs as one of the target markets for Rx products.

Limitations

Despite many implications for scholars and practitioners, the current study, like all academic research, has several limitations. First, the sample used for this study, which was part of a consumer panel recruited by an online survey service company, was not a true probability sample and thus may not be representative of the U.S. population. In addition, it should be noted that respondents in this study are the ones who have daily access to the Internet. It is possible that those who have limited access to the Internet may show different responses to drug advertising compared to those who have daily access to the Internet. Since the focus of this study was on finding meaningful relationships and patterns between variables in the models, use of a nonprobability sample is justified. Nonetheless, readers should be careful in generalizing the findings of this study to the U.S. population. Also, caution is needed when interpreting results regarding racial differences in consumer responses to DTCA and OTCA, since the response options for race did not list separate categories for Latinos and Hispanics; responses from both White and Black respondents likely include responses from Latinos and Hispanics in this study.

Second, the models developed for this study were not tested specific to different types of mass media (e.g., TV, magazine, radio, Internet). Previous studies have found that consumers have varying levels of usefulness and credibility for different media on which drug advertising is placed (e.g., DeLorme et al., 2010a; Huh et al., 2004b). Thus, future studies should apply the proposed models to drug advertising placed in different types of media.

Third, the current study did not examine how consumers with certain diseases respond differently to advertising for different types of drugs (e.g., drugs treating life-threatening diseases vs. non-life-threatening diseases). Consumers who have certain diseases might pay more attention to, show a more positive attitude toward, and act more often based on the

advertisements for drugs treating their diseases. Thus, it might be useful to examine the relationship between the types of drugs advertised, types of conditions consumers have, and their responses toward drug advertising in future research.

Fourth, each belief variable could have influenced the behavioral outcomes, but might not have been identified as a significant predictor when all variables were entered together because of the multicollinearity among the belief variables (skepticism, utility, and trust). In addition, due to the complexity of the models, all possible mediation and moderation among the variables could not be examined. Given that the purpose of this study was to examine the predictors of consumer responses to DTCA and OTCA in terms of exposure and attitudinal and behavioral outcomes, hierarchical regressions were considered appropriate to test the models. Further analyses of the data using causal modeling techniques will provide insights into the mediating and moderating relationships of specific variables.

Fifth, some of the measures used in the study need to be improved for future research. For example, people's knowledge about health and medicine was measured with one item asking, "How knowledgeable would you say you are about health and medicine?" A multiple-item measure of consumers' knowledge about health and medicine would yield different results, particularly for the influence of knowledge about health and medicine on attitudinal and behavioral outcomes of DTCA and OTCA. Also, exposure to drug advertising was measured in terms of the perceived exposure, not the actual exposure. In addition, people's behavior prompted by drug advertising was assessed by an aggregated index of the number of different types of behavioral actions taken by consumers, which did not reflect the frequency of each behavioral type.

Finally, the current study was conducted through a self-report online survey. Because of the nature of the self-report survey, the findings might not reflect what consumers actually think or how they actually behave.

Future Research

Future research on consumer responses to DTCA and OTCA should continue in several ways. First, although the proposed models in the current study provided an understanding of the antecedents and consequences of DTCA and OTCA, both models explained the attitudinal and behavioral outcomes of DTCA better than the outcomes of OTCA. This suggests that there might be other variables influencing consumer processing of OTCA, such as brand loyalty, perceived quality, and price perception. Consumers who are loyal to specific OTC brands, who are more price conscious, and who perceive the quality of OTC brands to be equally great as the quality of Rx brands might have better perceptions of OTCA. These and many other variables that could explain consumer responses to OTCA should be examined.

Second, the scope of the current study was limited to DTCA and OTCA and Rx and OTC drugs in general. However, consumers might have different perceptions of advertising for various types of drugs, such as drugs treating life-threatening diseases vs. non-life-threatening diseases and private brands vs. national brands. Furthermore, the types of message strategies used in an advertisement could also influence consumer responses to the specific advertisement. Future research examining the role of drug types and message strategies in understanding consumer responses to specific drug ads would advance the body of knowledge on DTCA and OTCA.

Finally, how Rx-to-OTC switching influences consumer perceptions of those brands and their advertising should also be examined. More Rx drugs have been switched to OTC drugs in the past several years (DeLorme et al., 2010b). However, how and if this trend influences

consumer perceptions, attitudes, and behaviors regarding Rx and OTC drugs and drug advertising have not been examined. Future research should examine how and if the proposed models can be applied to the context of Rx-to-OTC switching.

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APPENDIX A
QUESTIONNAIRE

Consent Form

Responses to Prescription and Non-prescription Drug Advertising

You are invited to participate in a study that examines your opinions regarding prescription and non-prescription drug advertising. **In order to be eligible to take this survey, you must have taken a prescription drug in the last 6 months.**

Your response will involve answering a set of questions about prescription and non-prescription drug advertising. The entire study will take approximately 15-20 minutes to complete. Your involvement in the study is completely voluntary, and you may choose not to participate or to stop at any time without penalty or loss of benefits to which you are otherwise entitled.

Once you submit the survey, you will receive cash-equivalent points from Qualtrics. In addition, participants will potentially benefit from this study by getting the opportunity to consider the role of pharmaceutical advertising in a consumer behavior domain. Furthermore, the findings of this study will provide useful implications for marketers, medical professionals and public policy makers. There are no known risks or discomforts associated with this research.

Your participation will be confidential. Internet communications are insecure, and there is a limit to the confidentiality that can be guaranteed due to the technology itself. However, once the survey materials are received by the researcher, standard confidentiality procedures will be employed. The results of the research study may be published, but your name will not be used. In fact, the published results will be presented in a summary form only. Your identity will not be associated with your responses in any published format. All individually identifiable information from data will be removed once they have been encoded, no later than June 1, 2012.

This research is being conducted under the direction of Dr. Karen King, Professor, Department of Advertising and Public Relations, University of Georgia. If you have any questions about this research project, please feel free to send an e-mail to leemi2@uga.edu. You can print or save a copy of this consent page for your records.

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 629 Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu

By clicking "Yes" below, you are agreeing to participate in the above described research project. You can take this survey by March 1st, 2012.

I agree to participate.

Yes

Instructions: Please complete each of the following questions honestly and completely. All of your responses are completely confidential and for academic research purposes only.

In the last 6 months, have you taken a prescription drug, that is a drug you can only get with a doctor's prescription?

- Yes
- No

Instruction: Prescription Drugs

In this section, I ask a variety of questions about your opinions on prescription drug advertising. Please read the definition and answer the following questions.

A **prescription drug** is a drug that you can only get with a doctor's prescription from a pharmacist.

Approximately how many different prescription drugs are you currently taking on a regular basis?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7 or more

Please rate **prescription drugs** in general on the following attributes.

In my opinion, prescription drugs are generally...

Very unsafe Very safe

For me, prescription drugs in general (are)...

Important Unimportant
 Of no concern Of concern to me
 Means a lot to me Means nothing to me
 Matters to me Does not matter
 Significant Insignificant

In the past 6 months, have you seen, read, or heard any advertisements for **prescription drugs**?

- Yes
- No

In the past 6 months, how often did you see, read, or hear any advertisements for prescription drugs in any of the following ways?

	Never 1	2	3	4	Very often 5
on television	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
on the radio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
in a magazine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
in a newspaper	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
on the Internet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
in a letter, flyer, or announcement in the mail	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
in any other media sources. Please specify:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the past 6 months, have you seen, read, or heard any advertisements for the following brands?

	Yes	No	Do not know the brand
Abilify	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advair	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cymbalta	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lipitor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lypaca	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plavix	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trelopax	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

After seeing, reading or hearing ads for prescription drugs, have you done any of the following? Please check all that apply.

- I have talked with my doctor about an advertised prescription drug.
- I have talked with my friends or relatives about an advertised prescription drug.
- I have talked with my pharmacist about an advertised prescription drug.
- I have talked with a doctor about medical condition, illness, or other health concern of my own that I had not discussed with a doctor before.
- I have asked my doctor to prescribe an advertised prescription drug.
- I have searched for more information about an advertised prescription drug.
- Something else. Please specify: _____

Has an ad for a prescription drug ever caused you to look for more information, for example, about the drug or about your health?

- Yes
- No

If an ad for a prescription drug has ever caused you to look for more information, where or how have you looked for more information about the drug or about your health? Please choose all that apply.

- in a reference book
- in a magazine
- in a newspaper
- on the Internet
- by asking a friend, relative or neighbor
- by calling the 1-800 number in the ad
- by talking to a pharmacist
- by talking to your doctor
- by talking to a nurse
- by talking to a doctor other than your own doctor
- by making an appointment with a doctor
- by doing something else. Please specify: _____

Instruction: Non-Prescription Drugs

In this section, I ask a variety of questions about your opinions on non-prescription drug advertising. Please read the definition and answer the following questions.

A non-prescription drug is a drug that you can buy over the counter at a drug store or a pharmacy without a doctor's prescription; vitamins and nutritional supplements are NOT non-prescription drugs.

In the last 6 months, have you taken a non-prescription drug NOT including vitamins or nutritional supplements?

- Yes
- No

Approximately how many different non-prescription drugs are you currently taking on a regular basis?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7 or more

Please rate non-prescription drugs in general on the following attributes.

In my opinion, non-prescription drugs are generally...

Very unsafe Very safe

For me, non-prescription drugs in general (are)...

Important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Unimportant
Of no concern	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Of concern to me
Means a lot to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Means nothing to me
Matters to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Does not matter
Significant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Insignificant

In the past 6 months, have you seen, read, or heard any advertisements for non-prescription drugs?

- Yes
- No

In the past 6 months, how often did you see, read, or hear any advertisements for non-prescription drugs in any of the following ways?

	Never 1	2	3	4	Very often 5
on television	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
on the radio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
in a magazine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
in a newspaper	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
on the Internet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
in a letter, flyer, or announcement in the mail	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
in any other media sources. Please specify:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the past 6 months, have you seen, read, or heard any advertisements for the following brands?

	Yes	No	Do not know the brand
Advil	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aleve	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Claritin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dollsam	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marmax	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
NyQuil	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Zyrtec	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

After seeing, reading or hearing ads for non-prescription drugs, have you done any of the following? Please check all that apply.

- I have talked with my doctor about an advertised non-prescription drug.
- I have talked with my friends or relatives about an advertised non-prescription drug.
- I have talked with my pharmacist about an advertised non-prescription drug.
- I have looked for a non-prescription drug brand in the store after seeing it on an advertisement.
- I have started using a non-prescription drug brand after seeing it on an advertisement.
- I have searched for more information about an advertised non-prescription drug.
- Something else. Please specify: _____

Has an ad for a non-prescription drug ever caused you to look for more information, for example, about the drug or about your health?

- Yes
- No

If an ad for a non-prescription drug has ever caused you to look for more information, where or how have you looked for more information about the drug or about your health? Please choose all that apply.

- in a reference book
- in a magazine
- in a newspaper
- on the Internet
- by asking a friend, relative or neighbor
- by calling the 1-800 number in the ad
- by talking to a pharmacist
- by talking to your doctor
- by talking to a nurse
- by talking to a doctor other than your own doctor
- by making an appointment with a doctor
- by doing something else. Please specify: _____

General Health-Related Questions and Some Information about You

Are you currently covered by any form of health insurance?

- Yes
 No

Does your health insurance provide at least some coverage for medicines?

- Yes
 No

Are you or any of your immediate family members healthcare professionals (e.g., doctor, nurse, pharmacist, etc.)?

- I am.
 One or more of my immediate family members is/are.
 None of the above.

Please rate your level of agreement with the following statements.

	Strongly disagree				Strongly agree
	1	2	3	4	5
Living life in the best possible health is very important to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eating right, exercising, and taking preventive measures will keep me healthy for life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My health depends on how well I take care of myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I actively try to prevent disease and illness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do everything I can to stay healthy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

On average, about how many hours per week do you spend using each of the following media? (If you spend less than an hour, please answer using a fraction (e.g., 1/2). If you do not use the specific medium, please write "0".)

Reading newspapers	_____
Reading magazines	_____
Watching television	_____
Listening to the radio	_____
Using the Internet	_____

How often do you get information about prescription drugs from the following sources?

	Never 1	2	3	4	Very often 5
Print media (e.g., newspaper stories, magazine articles)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Broadcast media (e.g., television news stories, radio news stories)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescription drug advertising (e.g., newspaper ads, magazine ads, TV commercials, radio commercials)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet advertising (e.g., Internet ads, drug brand websites)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-advertising Internet sources (e.g., health-related websites such as WebMD)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Specialized medical materials (e.g., printed materials from drug companies, printed materials from pharmacies, package labels, professional medical publications)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-professional interpersonal sources (e.g., family, friends)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional interpersonal sources (e.g., doctors, pharmacists)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How often do you get information about non-prescription drugs from the following sources?

	Never 1	2	3	4	Very often 5
Print media (e.g., newspaper stories, magazine articles)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Broadcast media (e.g., television news stories, radio news stories)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-prescription drug advertising (e.g., newspaper ads, magazine ads, TV commercials, radio commercials)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet advertising (e.g., Internet ads, drug brand websites)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-advertising Internet sources (e.g., health-related websites such as WebMD)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Specialized medical materials (e.g., printed materials from drug companies, printed materials from pharmacies, package labels, professional medical publications)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-professional interpersonal sources (e.g., family, friends)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional interpersonal sources (e.g., doctors, pharmacists)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Instructions: Please answer the next few demographic questions for classification purposes only.

What is your age in years?

What is your gender?

- Male
- Female

Which one of these groups BEST describes you?

- White or Caucasian
- Black or African American
- Asian
- Native American or American Indian
- Native Hawaiian or Pacific Islander
- Multi or biracial
- I choose not to answer
- Other. Please specify: _____

What is the last grade that you completed in school?

- 8th grade or less
- Attended high school
- High school graduate
- Some college
- College graduate
- Some graduate school
- Grad/professional degree
- I choose not to answer.

Last year, that is in 2011, what was your total household income from all sources, before taxes?

- Less than \$15,000 (1)
- \$15,000-\$34,999 (2)
- \$35,000-\$54,999 (3)
- \$55,000-\$74,999 (4)
- \$75,000 or more (5)
- Do not know/not sure (6)
- I choose not to answer. (7)