

Factors Affecting Consumers' Responses to Direct-to-Consumer Advertising

by

Kirk R. Schueler

**A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Health Services Organization and Policy and Business Administration)
in The University of Michigan
2008**

Doctoral Committee:

Professor Richard P. Bagozzi, Co-Chair

Professor Dean G. Smith, Co-Chair

Professor Frank J. Ascione

Professor Kim S. Cameron

Professor Richard A. Hirth

Copyright Kirk R. Schueler

All rights reserved

2008

Acknowledgements

I would like to thank my dissertation committee for its helpful guidance and support; the many teachers that have instructed me, assisted me, and inspired me; my co-workers during my business career for making my many positions enjoyable and rewarding, and supporting my career transition to academia; and most of all my family for their encouragement, support, and love.

Preface

I decided to pursue academia as a second career based on my continual love of learning and teaching. During my first career in pharmaceuticals and health information technology, I routinely volunteered for opportunities to teach others and participate in workshops and learning opportunities. I approach this new opportunity with great enthusiasm.

My dissertation topic stems from my commitment to providing information to consumers to help them discuss potentially important conditions and treatments with their physicians. I was a pioneer in direct-to-consumer advertising of pharmaceuticals and worked with the Food and Drug Administration to define and refine the guidelines under which DTC developed over the years. I was able to demonstrate that DTC advertising increased prescriptions for the medications I managed but did not identify which consumer and message characteristics combined to generate discussions and resultant prescriptions.

There is considerable controversy about the benefits and drawbacks of DTC advertising. I am pleased to discover that my intention to improve or reinforce physician-patient relationships appears to be consistent with what happens. The research indicated that the vast majority of discussions occur when the consumer has a trusting relationship with his or her physician. My first ads were of the help-seeking type and there is some suggestion in the research that a return to help-seeking ads may be appropriate under some

circumstances. Educational communications from government agencies, health plans, and consumer interest groups can certainly follow such an approach.

We face many health concerns in the U.S. and other parts of the world. It is alarming that some forecasters predict that if the obesity epidemic continues on its current course that the generation growing up today will be the first to die before its parents. We need to change consumer behaviors. As marketers and marketing academicians, we need to identify the types of messages and message delivery mechanisms that can positively influence health behaviors. I hope that this research contributes to this goal and that I will have continuing opportunities to contribute further.

Table of Contents

Acknowledgements	ii
Preface	iii
List of Figures	vi
List of Tables	vii
List of Appendices	ix
Abstract	x
Chapter	
1. Introduction	1
2. Review of Literature	8
3. Methods	19
4. Findings, Conclusions, and Recommendations	33
5. Implications, Limitations and Future Research	70
Appendices	80
Bibliography	102

List of Figures

Figure

1 ANOVA Self-Relevance and Message Discussion Intent	37
2 ANOVA Self-Relevance and Ad Discussion Intent	37
3 Regulatory Focus, Self-Relevance, and Intent to Discuss Message	40
4 Regulatory Focus, Self-Relevance, and Intent to Discuss Ad	41
5 Ad Discussion Intent in relation to Perceived Benefits and Risks	44
6 Prevention-Focused Respondents' Ad Intent with Benefits and Risks	45
7 Promotion-Focused Respondents' Ad Intent with Benefits and Risks	46
8 Ad Discussion Intent in relation to Self-Relevance and Product Risks	48
9 Promotion-Focused Respondents' Ad Intent with Self-Relevance and Risks	49
10 High Self-Relevance Respondents' Ad Intent with Regulatory Focus and Benefits	50
11 High Self-Relevance Respondents' Ad Intent with Regulatory Focus and Risks	51
12 Message Discussion Intent in relation to Self-Relevance and Agreeableness	66
13 Ad Discussion Intent in relation to Self-Relevance and Openness to Experience	67

List of Tables

Table

1 Qualitative Phase Participant Demographics	21
2 Pre and Post Focus Group Questionnaire Responses	23
3 Demographics of Questionnaire Respondents in Experimental Phase	27
4 Demographics of Respondents for Regulatory Focus Examination	32
5 Pearson Product-Moment Correlations between Regulatory Focus and Intent Measures (N=524)	34
6 Pearson Product-Moment Correlations between Regulatory Focus and Intent Measures (N=282)	35
7 Pearson Product-Moment Correlations between Variables related to Hypotheses 1-3, (N = 282)	36
8 Multiple Comparisons - Self-Relevance and Message Intent	38
9 Multiple Comparisons - Self-Relevance and Ad Intent	39
10 Ad Discussion Intent at Range of Levels of Perceived Risk for Promotion-focused respondents	43
11 Comparison of Means between Promotion and Prevention–Focused at Different Benefit and Risk Combinations	47
12 Pearson Chi-Square relationships between Cholesterol Control Measures	59
13 One-way ANOVA between Variables related to Hypothesis 4	59
14 Pearson Product-Moment Correlations between Variables related to Hypotheses 5 and 6	60

15 Pearson Product-Moment Correlations between Variables related to Hypothesis 5 in respondents with High Self-Relevance	61
16 Descriptive Statistics for Big Five Personality Characteristics	62
17 Pearson Product-Moment Correlations between Variables related to Hypothesis 7	63
18 Pearson Product-Moment Correlations between Variables related to Hypothesis 9	65

List of Appendices

Appendix

A Pre Focus Group Questionnaire	80
B Focus Group Discussion Guide	82
C Post Focus Group Questionnaire	84
D Internet Questionnaire	86

ABSTRACT

Factors Affecting Consumers' Responses to Direct-to-Consumer Advertising

by

Kirk R. Schueler

Co-Chairs: Richard P. Bagozzi and Dean G. Smith

Pharmaceutical companies utilize Direct-to-Consumer (DTC) advertising to generate consumer discussions with physicians and increase prescriptions. The dissertation seeks to answer a question not fully addressed in the literature: which consumers respond to DTC by intending to discuss the message with their doctor and why?

Five hundred and twenty four respondents between the ages of thirty and fifty-five provided information about their opinion of DTC advertising, previous DTC-initiated discussion experience, personality characteristics, and health behaviors as well as information related to elevated cholesterol, treatment strategies, and level of concern.

The investigator evaluated nine hypotheses including that intent to discuss DTC messages with physicians would be significantly higher in individuals for whom the medical condition is highly self-relevant and whose regulatory focus is promotion, compared to those whose regulatory focus is prevention, with this difference most apparent when benefits and risks were both perceived as high. Other evaluated factors

include impact on discussion intent of consumers' proactivity in addressing their health, relationships with health professionals, and personality characteristics.

Self-relevance was measured as the level of concern with respondent's personal cholesterol level. Regulatory focus of respondents was determined using the eleven-item Regulatory Focus Questionnaire, and a health-specific question. Respondents were randomly assigned in a 2 (high or low self-relevance) x 2 (promotion or prevention) x 2 (message A or B) design to view a non-product written message with either promotion or prevention framing and one of two product-specific television advertisements. Intent to discuss messages and ads was measured on a 5-point scale from very low to very high.

Results indicate that high self-relevance is associated with higher discussion intent. Promotion-focused consumers are more responsive to benefit messages and tolerant of product risks. Prevention-focused consumers have lower discussion intent due to greater sensitivity to drug risks. Discussions are more likely when consumers take a proactive approach to health and have trusting physician and pharmacist relationships. Previous discussion experience predisposes one to future discussions. Personality characteristics are of limited significance with regard to discussion intent.

The results raise questions regarding the current FDA requirements for communication of risk information. Future research opportunities are identified.

Chapter 1

Introduction

Pharmaceutical companies spend billions of dollars annually on direct to consumer advertising (DTCA) for their products (Kaiser Family Foundation, 2003). While there is substantial information regarding factors that lead to consumers' responses to advertising in general (Percy & Rossiter, 1992; Vakratas & Ambler, 1999), there is very little information concerning the specific factors that affect consumers' responses to DTC ads and resulting decisions to initiate conversations with physicians.

This research seeks to answer this question: which consumers respond to DTC by intending to discuss the message with their doctor and why?

The regulated distribution of pharmaceutical products in the United States is based on whether they are "prescription" or "non-prescription" drugs. Prescription drugs must be prescribed by physicians because it is believed that a informed diagnosis of the condition treated is necessary and the use of the drug needs to be monitored because of safety concerns. Since physicians are responsible for diagnosis of health conditions and are authorized to prescribe drugs, pharmaceutical manufacturers have traditionally directed advertising and promotion of drugs to physicians and other health care professionals (Weissman et al, 2003).

The relationship between physicians and patients was traditionally paternalistic. Patients placed implicit trust in physicians to determine the patient's state of health and recommend lifestyle changes, surgical interventions, or medications where deemed useful to maintain or improve health status. Physicians often conducted diagnostic procedures

and selected treatment with minimal interactive dialogue with patients (Manchanda et al, 2005).

In the latter part of the twentieth century, however, overall levels of consumer education increased and many more information sources became available to consumers. People were encouraged to take a more interactive and proactive approach to life in general and their health, in particular. Mass media started to provide extensive coverage of health issues and the Internet emerged as an access point for vast amounts of information. An increasing number of medications became available over-the-counter, including some that had previously required a prescription. As part of this cultural transition, more consumers sought a less paternalistic and more interactive relationship with their physicians (Pines, 1999).

A large number of new prescription pharmaceutical products were introduced in the latter half of the twentieth century. Many of these new medications were for conditions where prescription treatments were either previously unavailable or largely unsatisfactory due to limited efficacy, bothersome side effects, or inconvenient dosing schedules. Promotion to physicians remained essential but it was recognized that the adoption of these new treatments would be rather slow if consumers were only made aware of these innovations if notified by their physician. Such opportunities would likely occur during irregularly scheduled appointments often prompted by an acute and unrelated concern. The combination of these factors led to the development of direct-to-consumer (DTC) advertising (Pines, 1999).

Direct-to-consumer advertising is any promotional effort by a pharmaceutical company to present prescription drug information to the general public in lay media (Wilkes, Bell, & Kravitz, 2000). There are three forms of DTC allowed by the Food and Drug Administration:

- 1) Help-seeking advertisements educate consumers about a disease or medical condition but do not mention a specific drug,

2) Reminder advertisements provide the name of the drug but not the use for the drug or information related to efficacy or safety,

3) Product-specific advertisements mention a drug's name and uses, and provide efficacy and safety/risk information (Wilkes et al, 2000).

The history of DTC has primarily been a progression from help-seeking to product-specific advertising. Product-specific television advertisements proliferated after the Food and Drug Administration issued a “draft guidance” in August, 1997 that defined how product-specific TV ads could meet requirements for adequate provision of risk information needed by the consumer to have an informed discussion with a physician (Pines, 1999). The final guidance was published in August, 1999 (FDA, 1999).

Expenditures for DTC advertising increased from \$12.3M in 1989 to \$1.17B in 1998, the year after the FDA's draft guidance (Pines, 1999). DTC expenditures for the first half of 2006 were reported as \$4.72B, \$2.91B for TV and \$1.5B for magazines (TNS Media Intelligence, 2006).

These large DTC expenditures are viewed positively by some observers and with concern by others. Positive claims include:

- consumers receive essential information that they would otherwise ignore, fail to receive or receive too late,
- large numbers of under-diagnosed and under-treated patients suffer from serious, yet treatable, medical conditions such as depression, AIDS, diabetes, and osteoporosis and can potentially receive information through DTC advertising that would lead to appropriate diagnosis and treatment,
- in order to achieve optimal health, consumers need to increase participation in the decision-making process by acquiring information about medical therapies, talking to their physicians about medical symptoms and conditions, and deciding with their doctors how to deal with illnesses and conditions,
- consumer benefits from information gained from DTC ads may come from consumption of the advertised brand but may also come from actions

discussed with their physician that do not involve using the advertised brand, such as taking an alternate drug, or non-drug actions such as lifestyle changes (Calfee, 2002).

Concerns expressed regarding the large expenditures on DTC advertising include:

- ads are predominantly for new drugs that are positioned as innovative but may not offer substantial benefits over other, less expensive medications,
- safety profiles are often poorly defined at the time drugs are initially promoted via DTC. This could expose consumers to unnecessary risks,
- the quality of ads is suspect since they are often not pre-reviewed by the FDA and frequently judged unacceptable by the FDA after airing,
- ads provide incomplete and misleading information,
- physicians may be influenced to prescribe drugs that may be unnecessary or suboptimal versus alternative approaches including lifestyle changes (Lexchin & Mintzes, 2002).

These varying positions appear to reflect different assumptions regarding the nature of the relationship between physicians and patients, the effect on that relationship of consumer queries about conditions and treatments, the motivations of consumers who respond to DTC ads, and consumers' ability to understand the benefit and risk information presented in DTC ads.

The inclusion of risk information in DTC ads presents a different dynamic than most categories of product ads that focus primarily, if not exclusively, on product benefits.

The Food and Drug Administration (FDA) mandates that product-specific DTC ads:

Present a fair balance between information about effectiveness and information about risk,

Include a thorough *major statement* conveying all of the product's most important risk information in consumer-friendly language,

Communicate all information relevant to the product's indication (including limitations to use) in consumer-friendly language (U.S. Department of Health and Human Services, 1999).

The most important risk information often concerns risks that are rare in occurrence. Consumers may have a range of reactions to such risk information. This dissertation will assess factors that might explain differential responses to risk information.

The primary dependent variable in the current study is respondent intent to discuss a message with their physician. Questions to address include: How does the inclusion of risk information affect consumer perceptions of the ads and intent to discuss them with their physician? Does the effect of risk information vary among consumers, and if so, does it vary along predictable dimensions? Are those dimensions specific constructs, broad personality characteristics, neither, or both?

One obvious determinant of discussion intent is self-relevance of message. Consumers are unlikely to respond to communications for conditions that they do not believe apply to them or that they do not feel susceptible to.

Some consumers have responded previously to DTC ads and initiated discussion with their physician. Does previous discussion experience predispose consumers to respond favorably to subsequent ads by initiating discussion or does it reduce the likelihood of future discussions? Presumably, the physician's reaction to the prior request for discussion influences future intent. A favorable outcome would likely encourage future discussion whereas a negative reaction or outcome would inhibit future discussion.

One potentially relevant construct, overall, and specifically related to reaction to perception of risk, is regulatory focus. Some people regulate themselves based on a promotion focus and others based on a prevention focus (Higgins, 1997). This construct

comes from the field of psychiatry. It has been broadly investigated within a number of fields, including marketing. A Google Scholar search yielded 3600 citations (4-28-2008). Higgins' 1997 article, *Beyond Pleasure and Pain*, was cited in 597 publications, as of April 28, 2008.

Characteristics of promotion-focused individuals include; independent, nurturing, guided by strong ideals, seek gains, sensitive to presence or absence of positive outcomes, seek to avoid errors of omission, have cheerful-dejected emotional range. Prevention-focused individuals, on the other hand, are characterized as interdependent, security-oriented, guided by strong oughts, seek to avoid losses, sensitive to absence or presence of negative outcomes, seek to avoid errors of commission, and have quiescent-agitated emotional range (Higgins, 1997).

The investigator hypothesizes that promotion-focused individuals will focus on the gains of ensuring that conditions are identified and appropriately addressed so that they can maintain health and productivity. Prevention-focused individuals are expected to seek to avoid the risks and negative consequences of health conditions for themselves and those important to them. Direct-to-consumer ads present another risk to avoid, the risk of the drug. Due to this dual risk evaluation for prevention-focused individuals, it is anticipated that they will be less responsive to DTC ads than promotion-focused individuals will, especially when benefits and risks are both perceived as high.

Investigations of regulatory focus sometimes indicate that people will make similar decisions but for different reasons (Higgins, 1997). Other investigations have shown that messages that are framed consistently with a person's inherent or primed regulatory focus are more persuasive than messages framed with the opposite regulatory focus (Aaker & Lee, 2001). This dissertation will evaluate whether in a situation where people would be inclined to take action to address a medical condition either based on a promotion or prevention focus, perceived risks associated with the treatment of the condition result in different actions, with promotion-focused people likely to seek treatment and prevention-focused people likely to avoid treatment.

The results of this study should provide insight for marketers, health professionals, regulators, interest groups, and consumers. If the majority of DTC respondents has trusting relationships with its physicians, reinforces those relationships when it responds to DTC ads, understands that lifestyle modifications should be the preferred approach to addressing health concerns with drugs added only when required, and understands the balance of benefits and risks of advertised drugs, we can conclude that DTC in general has a favorable impact. If, on the other hand, the majority of DTC respondents acts out of mistrust, damages relationships through inquiry, seek drugs in lieu of lifestyle modifications, and has an unbalanced view of drugs, overemphasizing benefits and minimizing risks, we must reconsider the appropriateness of DTC.

If DTC has a favorable impact and is to be continued, understanding what types of consumers respond to ads can help marketers better target their consumer audience and provide insight for health professionals regarding interactions with their patients. Finally, if the current approach to provision of risk information has undesirable effects, including discouraging prevention-focused respondents from discussing treatment with their physician, alternate approaches for communicating risk should be considered.

Chapter 2

Review of Literature

Consumer surveys related to DTC advertising have been conducted by the Food and Drug Administration, consumer publications, including *Prevention* and *Time* magazines, and third party organizations sometimes on behalf of groups such as the American Association of Retired Persons and the Kaiser Family Foundation. The results are quite consistent. An FDA survey conducted in 2002 found that 81% of respondents recalled seeing a prescription drug advertisement in the past three months (mostly on television), and most recalled seeing several advertisements (Aikin, Swasy, & Braman, 2004). Eighteen percent of those recalling seeing an ad said that DTC advertisements at some time had caused them to talk to their doctor about a specific medical condition or illness for the first time. About half of the time the drug in the ad that prompted the discussion was prescribed, one-third of the time a different brand was prescribed, in 15% of the instances an OTC product was recommended, and 15% of the time no therapy was recommended. In about 40% of cases, lifestyle or behavior changes were recommended, either along with or instead of drug treatment (Aikin et al, 2004). The sum of percentages exceeds 100%, indicating that multiple actions were recommended concomitantly for some patients.

A USA Today/Kaiser Family Foundation/Harvard School of Public Health collaborative study (2008) found 91% awareness of DTC ads. Thirty-two percent of respondents indicated they had a discussion with a physician about an advertised medication. On 82% of those visits, the doctor recommended a prescription drug, although the advertised drug

was prescribed only 44% of the time. Lifestyle/ behavior changes were recommended in 57% of visits.

These results indicate widespread awareness of ads, significant information seeking and a seemingly balanced response by physicians rather than automatically yielding to patient request. Physicians sometimes prescribe the advertised drug but often recommend lifestyle changes, OTC medication, or alternate drugs instead of or in addition to the advertised drug. Advertisements in magazines and newspapers include more detailed risk information than is possible on television. Specific technical information that also accompanies print advertising to physicians, referred to as a Brief Summary, is included, usually in a smaller font. The FDA survey included specific questions about this risk information. Forty percent of respondents said they read half or more of the information and 26% said they read a little (Aikin et al, 2004). Eighty-five percent of respondents said they would read all or almost all of the information if the ad were for a drug for which they had a particular interest. Eighty-six percent of those who at least skimmed the information said it provided sufficient information for them to ask their doctors about risks associated with the drug, even though only 35% thought the technical information was very clear (Aikin et al, 2004).

Despite the fact that TV ads are unable to include the amount of risk information that print ads carry, 90% of consumers in the FDA survey said they saw information in TV ads related to risks and side effects (the same % as saw benefits information), and eight-nine percent recalled information on who should not take the drug (Calfee, 2002). These numbers were not examples of “yea-saying” because only 10% of consumers indicated that they had seen information on over-dosage, which is rarely covered in TV ads (Calfee).

Another way that the impact of DTC ads has been studied is to determine expenditure levels for DTC advertising for specific drugs and drug classes and examine the changes in sales volume in those products and classes. Overall, the increase in sales of the top twenty-four most heavily DTC advertised drugs in 1999 was 41.7% versus the growth in

sales of all other drugs, which was 14.4% (Findlay, 2001). These correlation relationships are particularly strong for Lipitor (generic name atorvastatin), Prilosec (omeprazole) and Glucophage (metformin).

On the other hand, despite significant DTC expenditures for Pravachol (pravastatin), product sales stayed flat and market share declined. Other drugs also appeared to have insufficient returns from DTC investment to warrant continued expenditures, since in the first six months of 1999 DTC advertising was reduced or eliminated for 23 drugs (Findlay, 2001).

Rosenthal, Berndt, Donohue, Epstein, and Frank (2003) conducted an estimate of DTC impact by therapeutic class. An evaluation of the proton pump inhibitor category of anti-ulcer products estimated that the return on investment on DTC in 1999 was about 8.3 to 1 (\$252M sales increase related to \$30.4M DTC spending), whereas in the nasal spray category it was only 0.8 to 1 (\$26 million sales increase with \$32.2M DTC investment). Across all advertised classes, Rosenthal et al, 2003, estimate a \$2.6B increase in sales between 1999 and 2000 attributable to DTC spending which is an increase in sales of \$4.20 for each dollar spent on DTC. While this is significant, the growth associated with DTC spending represented only 12% of the total growth in prescription sales. This indicates that DTC is an important factor but not a primary driver of sales growth (Rosenthal et al, 2003).

An alternate experimental approach included examination of the impact of DTC advertising on outpatient visits to doctors' offices, time spent with physicians, and prescribing activity (Iizuka & Jin, 2003). This analysis found that DTC ads led to a large increase in the number of outpatient drug visits, a moderate increase for time spent with doctors, but no effect on doctors' specific choices among prescription drugs within a therapeutic class. These results suggest that DTC ads are primarily market expanding rather than market share-shifting (Iizuka & Jin, 2003).

Pharmaceutical companies continue to promote their drugs directly to physicians. Contact by salespeople with physicians is known as "detailing". It is possible to compare the

return on investment from detailing to the return on DTC expenditures. An examination was conducted for the cholesterol-lowering drug category (Wosinska, 2002). This study was specific to patients enrolled with Blue Shield of California and included the dynamic of a drug formulary that levied varying levels of patient payment based on patent and formulary status of the drugs received.

Patient payments were lowest for generics, higher for branded drugs on the formulary, and highest for drugs not on the formulary. Between 1996 and 1999, prescriptions dispensed for drugs to reduce cholesterol, a heavily DTC-advertised category, increased by 300% while enrollment doubled. The effect of DTC advertising was almost three times as large for formulary drugs as non-formulary drugs.

Conclusions included that DTC does influence the probability that an advertised drug will be prescribed, although not for drugs that are off formulary and DTC has significantly less impact on physician choice probabilities than physician advertising. The return on investment for detailing expenditures was five times that of DTC spending (Wosinska, 2002).

Additional insight was gained in a national telephone survey conducted by Harris Interactive that asked consumers to explicitly report health care experiences associated with direct-to-consumer advertising (Weissman et al, 2003). The authors sought to answer three questions: the types of conditions discussed with physicians, the actions taken by physicians, including tests and treatments, and outcomes of care. They found that approximately 86% of consumers recalled seeing one or more DTC ads in the previous 12 months and approximately 35% were prompted by a DTC ad to have a discussion with their physician. Nearly two-fifths of the discussions were about a prescription drug, approximately one in five was about a new health concern not previously discussed with a physician, and about one-third explored a possible change in treatment for an existing condition. The most common existing conditions discussed were allergies, arthritis, high cholesterol, diabetes, and asthma. New diagnoses were made for nearly one in four patients. The most common new diagnoses were allergies, gastrointestinal diseases, high cholesterol, arthritis, hypertension, diabetes, and

depression. In 20% of the cases, conditions raised by consumers were not confirmed (Weissman, 2003).

On 73% of the visits, a drug was prescribed, but only 43% of the prescriptions were for the advertised drug. In nearly one-fifth of visits, an OTC drug was recommended. Fifty-two percent of the visits included a suggested change in lifestyle including suggestions to quit smoking or drinking in about one-third of visits. Nearly a third of visits resulted in referral to a specialist, and in over half of cases, lab tests were ordered.

Nearly four out of five patients who received a prescription drug, and took it, indicated that their symptoms improved and they felt somewhat or much better after taking the drug. Among patients that underwent lab tests, 84% indicated that their test results improved. Among the 5% of all consumers who switched drugs, 28% said that the new drug was easier to take or remember to take, 8% said it was more difficult, and 64% said about the same. Those who switched to a DTC advertised drug were less likely to report that side effects were worse compared to those who were switched to a drug other than the DTC advertised drug (8% versus 22%). The authors found it reassuring that many visits were for clinically important conditions and resulted in new diagnoses, very few visits were for cosmetic or lifestyle drugs, health care actions went beyond the expected prescribing of drugs, and the authors failed to find large negative health consequences for patients (Weissman et al, 2003).

Based on numerous evaluations using a broad array of techniques, DTC advertising definitely increases patient visits. DTC appears to generate additional sales based primarily on existing physician preferences (and formulary constraints) rather than shifting sales only to brands that consumers specifically request. Physicians appear highly unlikely to prescribe a drug unless they are personally comfortable that it is an appropriate choice for a patient. Marketers of products that are not leaders within their class may be less pleased with this conclusion. The “fruits of their investments” may go more to their competitors than themselves. For example, within the Cox-2 inhibitor category, expenditures were high for Vioxx and Celebrex but Vioxx, the market

leader, was the primary beneficiary (Bradford, Klelt Nietert, Steyer, McIlwain, & Ornstein, 2006).

One category, non-sedating antihistamines, could support an alternative view, however. Claritin (loratadine) was both the market leader in terms of sales and easily the most DTC advertised brand but share was lost to other brands, particularly Allegra. It could be that in this case physicians believed that Allegra was an equivalent or superior drug and therefore it benefited from the market expansion in a preferential way despite a lower level of DTC spending (Iizuka & Jin, 2003).

The economic aspect of DTC advertising is controversial. From a societal perspective, the amount of expenditures on DTC might provide greater value if directed to other activities, including non-branded advertising (Avorn, 2003). Governments, insurers, employers, or patient groups (Avorn, 2003) could undertake such advertising.

The current study seeks to supplement the findings of previous DTC investigations by examining the characteristics and constructs that lead to high levels of responsiveness to DTC help-seeking messages and product-specific television advertisements. The primary examination involves the constructs of self-relevance and regulatory focus.

Self-relevance, or perceived health risk (Slovic, 1987) varies by individual. We can distinguish between perception of population risk and personal risk.

A significant perceived personal risk is hypothesized to be critical for one to deliberately process a DTC ad and decide to take action. Although algorithms and formulae are available to estimate risk, including risk of heart attack (Wilson et al, 1998), most people rely on intuitive risk judgments, typically called “risk perceptions”, which if strongly held, are not easily dislodged by subsequent conflicting information (Slovic, 1987). Risk perception is the belief that one is vulnerable to a disease (Rimal & Real, 2003).

Although various examinations of the role of perceived risk in predicting behavior have produced a range of results, there is reason to expect a significant relationship where higher perceived risk translates to high self-relevance and results in higher interest in related messages as well as greater intent to take action.

A recent study of the likelihood of purchase of meat after reports of Bovine spongiform encephalopathy (BSE) contamination in the United Kingdom demonstrated that risk perception had a strong negative influence on purchase likelihood (Yeung & Morris, 2006). In a study of over 6000 women in the United States, women with a high versus low perceived risk of breast cancer were significantly more likely to report routine mammography use (Gross, Filardo, Singh, Freedman, & Farrell, 2006).

Factors that affect a consumer's sense of vulnerability and perceived risk include family history, experience of signs and symptoms associated with a disease, and information learned from the media (Calnan & Johnson, 1985). Risk perception is an internal reaction, an attribute or predisposition of individuals based on history and prior behaviors (Rimal & Real, 2003).

Risk likely has both cognitive and affective components (Slovic, Finucane, Peters, & MacGregor, 2004). The cognitive component involves an analysis of the probability of harm. The affective component involves the amount of concern or worry that is associated with the potential harm. In the context of elevated cholesterol, for example, two individuals could both assess the probability of a heart attack in the next 10 years as 10% but one individual may view this probability as minor and another may consider the risk very significant and concerning.

Consumers attach much greater weight to affect-rich consequences than affect-poor outcomes (Rottenstreich & Hsee, 2001). Women with high versus low levels of worry about breast cancer were much more likely to engage in self-protective behaviors (McCaul, Schroeder, & Reid, 1996).

As mentioned in the introduction, a construct that explains different consumer reactions to risk is regulatory focus. In the context of elevated cholesterol, promotion-focused individuals would likely focus on the impact of risk to themselves, seek to achieve optimal cholesterol levels, and be sensitive to failing to take positive action to be healthy. Prevention-focused individuals would likely focus on impact of risk on their ability to fulfill family roles, respond in the sense of obligation, and seek to avoid taking actions

that increase the probability of negative outcomes. In terms of communication messages, promotion-focused individuals should respond more favorably to messages that communicate the ability for the individual to “take charge” and achieve positive health. Prevention-focused individuals should respond more favorably to messages that highlight risks associated with high cholesterol and ability to avoid those risks. Individuals have better recall and more favorable reactions to communication messages that are consistent with their personal regulatory focus (Aaker & Lee, 2001; Bosmans & Baumgartner, 2005). Correspondence of personal and message focus is known as regulatory fit (Higgins, 2000).

Another relevant differentiator between promotion-focused and prevention-focused individuals is that goal pursuit for promotion-focused people results in feeling eager whereas for prevention-focused goal pursuit, people become vigilant (Higgins, Friedman, Harlow, Idson, Ayduk, & Taylor, 2001). This is expected to result in greater pro-activity by promotion-focused respondents that will translate to higher intent to respond to messages and ads, irrespective of regulatory fit.

The review of the literature assists in raising several hypotheses.

Hypotheses related to self-relevance and regulatory focus are:

H1: Intent to discuss messages and ads will be significantly higher with greater self-relevance (concern about personal cholesterol level),

H2: Intent to discuss messages and ads will be significantly higher in general in promotion-focused respondents compared to prevention-focused individuals,

H3: Intent to discuss ads will be significantly higher in promotion-focused individuals compared to prevention-focused, particularly when product benefits and risks are both perceived as high.

H1 and H2 are based on anticipated main effects of higher self-relevance driving higher intent and promotion-focused individuals, with their eager disposition, being more responsive to messages and ads. H3 anticipates an interaction between perceived benefits

and risks where promotion-focused individuals will be risk tolerant when benefits are high and prevention-focused respondents will be risk averse, even when benefits are perceived as high.

A number of independent variables, suggested by prior work as well as new insights, are developed within the questionnaire. Related hypotheses depend on whether the perspective of DTC proponents or opponents is used. Proponents believe that DTC responders are responsible individuals who have trusting relationships with health professionals and for whom previous discussion experience is likely to be positive. DTC opponents believe that DTC responders are second-guessing health professionals, seeking medication in lieu of lifestyle modifications, and damaging their relationship by initiating discussions. Two versions of each hypothesis will be evaluated. Version A is consistent with proponents' views and version B with opponents' views:

H4A: Respondents who are proactive in seeking a healthy lifestyle, dieting and exercising, will have higher discussion intent levels than those who are not dieting or exercising.

H4B: Respondents who are proactive in seeking a healthy lifestyle, dieting and exercising, will have lower discussion intent levels than those who are not dieting or exercising.

H5A: Discussion intent will be higher in individuals with higher versus lower trust levels of physicians and pharmacists.

H5B: Discussion intent will be higher in individuals with lower versus higher trust levels of physicians and pharmacists.

H6A: Previous DTC-initiated discussion experience will correlate positively with intent to discuss messages and ads.

H6B: Previous DTC-initiated discussion experience will correlate negatively with intent to discuss messages and ads.

Responsiveness to DTC messages might be related to personality characteristics. The Big Five personality characteristics are Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. The generalizability of the model with these five factors has been demonstrated across unusually comprehensive sets of trait terms (Goldberg, 1990). These characteristics are valid across a broad range of cultures (McCrae & Costa, Jr., 1997).

Neuroticism has been associated with reports of unfounded (without a physiological basis) symptoms. People who score higher on neuroticism tend to be more self-focused and attentive to their health state (Feldman, Cohen, Doyle, Skinner, & Gwaltney, 1999), although they have been reported to exhibit an absence of positive health behaviors (Brook, Whiteman, Gordon, & Cohen, 1986).

Extraversion is associated with a tendency to be outgoing and sociable and to experience positive emotions linked to negative behaviors including substance abuse (Labouvie, & McGee, 1986) but is also associated with greater pursuit of positive behaviors such as compliance to exercise regime post myocardial infarction (Blumenthal, Sanders, Wallace, Williams, & Needles, 1982).

People scoring high on openness to experience pay more attention to bodily sensations and report more completely when ill (Feldman, et al, 1999). They are, however, more prone to sensation seeking and substance abuse (Brook, et al, 1986).

Agreeableness is a tendency to be tolerant and accepting and may be associated with better exercise and self-care, and less substance abuse (Booth-Kewley and Vickers, Jr., 1994).

Individuals who score high on conscientiousness tend to be more cautious about their health and eager to report illness so they may obtain an early diagnosis and treatment (Feldman, et al, 1999). They also engage in more health-protective behaviors such as physical fitness and are less likely than average to participate in risk-taking behaviors including substance abuse (Booth-Kewley & Vickers, Jr., 1994).

The 44-item Big Five Inventory Questionnaire (John, Donohue, and Kentle, 1991) measures the above characteristics and was incorporated in the quantitative phase of the study so that relationships between personality characteristics, health behaviors, and discussion intent could be examined.

Hypotheses regarding personality characteristics are:

H7: Neuroticism will negatively correlate with each of the other four characteristics (extraversion, openness to experience, agreeableness, and conscientiousness). The other four characteristics will positively correlate with each other.

H8: Extraversion, agreeableness, and conscientiousness will positively correlate with diet and exercise.

H9: Extraversion, openness to experience, agreeableness, and conscientiousness will positively correlate with intent to discuss messages and ads.

H7 and H8 are consistent with the findings of Booth-Kewley and Vickers, Jr. Intent to have a discussion is a positive health-seeking behavior and therefore extraversion, agreeableness, and conscientiousness should positively correlate with discussion intent. The personality characteristic of openness to experience is included in H9 as a hypothesized correlation based on dependent variable of discussion intent and the tendency for individuals who are high on openness to experience to report more completely when ill, as found by Feldman et al, 1999.

Chapter 3

Methods

The dissertation research consisted of a qualitative and a quantitative investigation. Focus groups were used to test concepts and gain insight. By themselves, they would not be likely to provide a broad enough range of respondent characteristics or scope of responses to draw meaningful conclusions. A questionnaire incorporating experimental approaches and extensive scales was used to reach a diverse and more representative sample with the opportunity to achieve statistical and practical significance.

The specific aims of the qualitative study were to:

- 1) Identify factors that differentiate how consumers respond to direct-to-consumer ads,
 - 2) Test the discriminate ability of a health-specific dichotomous question relative to regulatory focus,
 - 3) Present two TV commercials that were currently in use and have consumers describe their reactions and evaluation process,
 - 4) Develop refined hypotheses to test formally through quantitative research.
- These hypotheses were presented in Chapter Two.

The study focused on one medical condition, elevated cholesterol. The rationale for selecting this condition is:

- 1) Elevated cholesterol is a condition with high prevalence. Nearly 50% of the U.S adult population has total cholesterol levels in excess of 200 mg/dl and

approximately 1 in 6 adults have cholesterol levels greater than 240 mg/dl (American Heart Association, 2006). The National Cholesterol Education Program defines cholesterol levels between 200 and 240 as borderline high and above 240 as high (National Institutes of Health, 2001). Consumer education to make the public more aware of desirable cholesterol levels and available treatment options is a high priority.

- 2) Prevalence is similar across gender and race (American Heart Association, 2006).
- 3) Elevated cholesterol is one of the more frequent conditions discussed with physicians based on DTC advertising and more frequently newly diagnosed conditions subsequent to those discussions (Weissman et al, 2003).
- 4) Effective drugs are available to treat elevated cholesterol (National Institutes of Health).
- 5) Prescription growth based on DTC advertising has been demonstrated in the cholesterol-lowering drug category (Wosinska, 2002).
- 6) A number of pharmaceutical companies are currently using DTC advertising for their cholesterol-lowering drugs.

Subjects

The study focused on DTC advertising in the cholesterol-lowering category. In order to examine a range of consumer situations including “not aware of cholesterol level”, “aware but not addressing”, “aware and addressing through lifestyle changes only”, “aware and taking medication”, the study focused on an age range where risk awareness may have formed but overt cardiovascular disease is not yet prevalent necessarily. The incidence of cardiovascular disease is low under the age of 30, grows in the period up to 55 and increases substantially after age 55 (American Heart Association, 2006).

Therefore, the target age range for participants was 30 to 55. Individuals above 55 years of age were excluded because a significant portion may already have overt disease and likely already be under physician care. As mentioned earlier, prevalence of high cholesterol is similar across demographic characteristics other than age.

The “normal captive” subject pool of undergraduate students was not appropriate for this study. Incidence of heart disease and stroke is quite low in this group as is concern about these conditions. Recruitment from the community was employed through distribution and posting of flyers in the Ann Arbor, Michigan, area at places of worship, coffee shops, exercise facilities, grocery stores, libraries, community centers, and bulletin boards on the campus of the University of Michigan with emphasis on faculty rooms and graduate programs. An announcement was posted on Craig’s list and an e-mail was sent to graduate students from the School of Public Health. Recruiting proved difficult. Few people responded to the recruiting efforts. Three focus groups with seventeen participants were completed. Participants received a light meal and a \$20 VISA gift card for their participation.

Participant demographics are presented in Table 1.

Gender	Male 5, Female 12
Race/Ethnicity	Caucasian 10, African American 5, Hispanic 2
Age	30-34: 5, 35-39: 2, 40-44: 6, 45-49: 2, 50-55: 2

Table 1 Qualitative Phase Participant Demographics

The number and design of groups reflected the recommendations of Krueger and Casey (2000). A five-item questionnaire was designed by the investigator and administered prior to the discussion. It included a question to assess the participants’ regulatory focus, prevention or promotion (Appendix A – Pre Focus Group Questionnaire). Groups were exploratory and incorporated exposure to two existing DTC television ads for cholesterol lowering drugs, Lipitor and Vytorin (Appendix B – Focus Group Discussion Guide). These ads were selected based on differences in approach.

The Lipitor ad is serious and scientific and specifically refers to increased risk of heart attack and stroke related to elevated cholesterol and risk reduction through cholesterol lowering. The Vytorin ad is more whimsical and upbeat and does not refer to risk but rather focuses on the two components that contribute to elevated cholesterol, the food people eat and the body's production of cholesterol based on family history, and how Vytorin addresses both causes.

Both components of the study were completed prior to the controversy surrounding use of Dr. Jarvik as a spokesperson by Pfizer, and the release of clinical study results indicating that the two ingredients in Vytorin were not statistically superior to single agent medication in terms of reduction of artery occlusion (Kastelein, et al, 2008).

The focus groups were videotaped to facilitate subsequent analysis. Subjects also completed a five-question instrument after the group exercise (Appendix C- Post Group).

A single question was designed to discriminate between promotion-focused and prevention-focused participants as it relates to their approach to health:

“When you take some action to improve or maintain your health (diet, exercise, take supplement or drug), which of the two statements below better describes your reason for taking that action?

- a. I want to be healthy and able to attain important life goals
- b. I want to avoid illness and negative consequences for myself and others.”

The subjects were fairly evenly split between promotion (answer a) and prevention-focused (answer b) based on the question. Table Two summarizes responses to the pre and post-group questionnaires. In the pre-group question, nine participants indicated promotion focus and eight selected prevention. In the post-group question, specifically related to potential prescription drug use to reduce cholesterol, sixteen of seventeen participants were consistent in their description of their promotion or prevention focus. One participant who responded in a promotion manner to general approach to health indicated a prevention focus specific to potential drug use to reduce cholesterol. Overall, the high degree of consistency is seen as affirming the reliability of the question.

Saliency of elevated cholesterol, levels associated with risk, current concern, measures undertaken, and likelihood of taking action after viewing DTC ads were assessed.

Awareness of DTC ads, reactions to the two presented ads, and overall predictions of action and responses to potential physician reactions are displayed in Table 2.

Pre-Group

<u>Regulatory Focus</u>	<u>Cholesterol Level of Concern</u>	<u>Degree of Concern</u>	<u>Action</u>	<u>DTC Ad Awareness</u>
Promotion 9 (53%)	180 3 (18%)	Not at all 3 (18%)	Diet 2 (12%)	Yes 15 (88%)
Prevention 8 (47%)	210 7 (41%)	Mild 10 (59%)	Exercise 9 (53%)	No 2 (12%)
	240 5 (29%)	Moderate 4 (23%)	OTC 1 (6%)	
	300 1 (6%)	Very 0	Rx 0	
	NR 1 (6%)		None 5 (29%)	

Post-Group

<u>Commercial Preference</u>	<u>Action to be Informed</u>	<u>Approach with MD</u>	<u>Regulatory Focus</u>
Lipitor 4(24%)	Written Information 1(6%)	Discuss Condition 4(24%)	Promotion 8(47%)
Vytorin 13(76%)	Internet 4 (24%)	Accept MD Choice 7(41%)	Prevention 9 (53%)
	Pharmacist 1 (6%)	Request Brand 6 (35%)	
	Physician 11(64%)		

Table 2 Pre and Post Focus Group Questionnaire Responses

Promotion-focused individuals, as classified by the single question, preferred the Vytorin ad, seven to two, but prevention-focused individuals also preferred the Vytorin ad, six to two. Separate testing indicated that the Vytorin ad was classified as more promotion-focused than the Lipitor ad. This was not a clear opportunity to address regulatory fit.

The main reasons for preferring the Vytorin ad were:

- the message of two sources of cholesterol. Many participants were unaware of, or had not fully considered, the genetic component of risk. They were primarily considering that diet was the cause of high cholesterol and therefore, if they were diligent with diet and exercise, they could achieve and maintain desirable cholesterol levels. The Vytorin ad helped them understand that even with proper diet and exercise it is possible to have elevated cholesterol and require help to reduce it. This also reduced guilt in some – “it’s not all my fault that my cholesterol is high”.
- the inclusion of a diversity of people in the Vytorin ad made it easier for some people to relate to the ad whereas the Lipitor ad had a single person, a middle-aged white male.
- the inclusion of a variety of foods that people should avoid but have trouble resisting increased relevance of Vytorin ad for some participants.
- some participants preferred the more whimsical approach taken in the Vytorin ad, although others preferred the more serious and clinical setting and tone of the Lipitor ad.
- reactions to the Lipitor spokesperson, Dr. Robert Jarvik, were mixed. Some found him very credible but others drew negative associations with the artificial heart, felt he was not properly qualified, or was improperly promoting a drug.

The construct of self-relevance was not fully evaluable since none of the participants expressed a high perceived risk. Ad preference was high for Vytorin across risk levels (all three participants without concern preferred Vytorin ad, 7 of 10 with slight concern and 3 of 4 with moderate concern). There were no clear differences in post-group answers to other questions based on risk concern level.

As referenced earlier, participants did span the targeted age range (30 to 55), both genders were represented, and the group was ethnically diverse (Caucasian, African American, and Hispanic).

Participants tended to be very involved in decisions regarding their health. While physicians were universally viewed as important in diagnosing conditions and recommending treatments, participants were very prepared to question physicians and seek additional guidance and information from other sources. Individual experiences varied considerably. Some participants spoke of their physicians as being very willing to provide information and counseling whereas other physicians were described as rushed and uncomfortable with having their judgments questioned. Participants expect that if they were to ask a physician about a DTC ad that he or she would provide appropriate counsel that would consist of providing their expertise and advice about the condition and/or treatment of interest. If their physician was unwilling to discuss the issue or justify their treatment recommendations, participants suggested that they would change physicians. Willingness to interact is seen as essential. Participants would be very accepting of a recommendation different from that suggested in an ad as long as the physician explains why that recommendation is the best option for the patient.

Although participants expressed concern that many people are quick to seek “a pill for every ill”, the participants themselves were generally very reluctant to take drugs, particularly on a chronic basis. One participant was prescribed a cholesterol-lowering medication that effectively lowered her cholesterol. Her doctor subsequently indicated that the level was under control, so the subject stopped taking the medication. Another participant was prescribed medication for high blood pressure but only took two or three pills and avoids seeing the doctor based on concern of “hearing bad news”. Others were more open to medication but hoped that the physician would monitor them and adjust dose, try periods without drug use, or change regimen based on ongoing results. None of the patients indicated that their physicians were taking such an approach currently, unless specifically prompted to do so by the patient him or herself.

Participants appeared to be very sensitive to risk information in the ads. Even warnings that were not personally relevant, “do not take if pregnant or at risk of becoming pregnant”, raised concern about the dangers of the drug. A statement regarding the possibility of muscle weakness was extrapolated to weakening the heart, “since the heart is a muscle”. Confusion, misunderstanding or heightened visibility of rare side effects could all result in a reluctance to use drug therapy even when it may be very appropriate, and even necessary, from a medical professional’s point of view.

There is no question that drugs carry risks that must be weighed against the benefits of taking medications. It appears, however, that in these groups, participants overestimated risks and underestimated benefits associated with drug therapy. Therefore, ads may in some cases result in lower drug use than may be desired. This issue and alternative ways of communicating benefit-risk information are examined in the quantitative experiment.

The results of the focus group were used to inform the design of the quantitative portion of the study. Initially, a similar recruitment approach to that used for the focus groups was pursued in Ann Arbor, Michigan. Due to very slow recruitment and investigator concern about the lack of representativeness of the sample, local recruitment was abandoned and the investigator contracted with Zoomerang, a Market Tools Inc. Company, San Francisco, California, to recruit from their national panel. Targeted recruiting was conducted to ensure significant representation of African American and Hispanic populations in addition to Caucasians. Zoomerang maintains a sample of 2.5 million people and is the largest provider of online surveys.

A 120-item questionnaire was designed, conforming to guidelines from Patten (2001), and hosted using Qualtrics survey software, Provo, Utah. The questionnaire went through two rounds of pre-testing and refinement prior to fielding. Links were provided from the questionnaire for viewing of the Lipitor and Vytorin commercials. The questionnaire took approximately 25 minutes to complete. Participants were rewarded through receipt of points redeemable for cash or merchandise through Zoomerang. The investigator paid a

fee of \$2700 to Zoomerang for recruitment. Panel members received an e-mail with an invitation to participate in the study and a link to the survey at the Qualtrics site.

Two versions of the questionnaire were hosted, one featuring a written message with a promotion orientation and a link to the Lipitor ad and the other featuring a written message with a prevention orientation and a link to the Vytorin commercial. All other questionnaire elements were identical between the two versions of the questionnaire. Assignment to version was random. Several open-ended questions were included in the questionnaire. Participants whose responses to the open-ended questions were nonsense combinations of letters, or hostile or mocking in content were excluded from analysis (approximately 20% of responses, which is not atypical).

Five hundred and twenty four responses were analyzed. All respondents completed the full survey. The demographics of participants are displayed in Table 3. The questionnaire is Appendix D.

-
- Gender - Female 50.2%, Male 49.8%
 - Race - Caucasian 66.8%, African American 17.4%, Hispanic 10.5%, Asian 2.9%, Other 2.5%
 - Age - 30-34 10.7%, 35-39 16.6%, 40-44 19.8%, 45-49 23.1%, 50-55 29.8%
 - Education – didn't complete HS 0.4%, HS 10.1%, Some college 27.5%, Degree 32.1%, Some grad 7.4%, Grad degree 22.5%
 - Income - <\$30K 12.2%, \$30-50K 19.8%, >\$50 to 75K 23.9%, >\$75K to 100K 19.1%, >\$100K 25.0%
-

Table 3 Demographics of Questionnaire Respondents in Experimental Phase

The quantitative study was a combination of hypothesis-driven and exploratory goals and incorporated survey questions and experiments.

The first experiment involved the two DTC messages of a help-seeking type (no reference to specific medications) described in Appendix E. The messages were developed by the investigator, and designed to deliver a consistent core message regarding the prevalence of elevated cholesterol in the United States, importance of achieving a desired level, role of diet and exercise as primary treatment, and role of drugs to help achieve desired levels when diet and exercise are insufficient. Two different framing approaches were employed, one that was more promotion-focused and the other more prevention-focused. The classification of the two messages as promotion and prevention was confirmed in communication testing with a separate audience. The primary dependent variable is intent to discuss the message with a physician on a 1 to 5 scale with 1=very low and 5=very high. Respondents read one of the messages, randomly assigned, and subsequently provided their level of intent to discuss the message with their physician on the 1 to 5 scale. Intent ratings were distributed as follows: 34% very low, 19% somewhat low, 29% moderate, 11% somewhat high, and 7% very high, mean 2.37.

The second experiment involved two existing TV commercials, one for Lipitor (atorvastatin calcium), Pfizer, and one for Vytorin (ezetimibe/simvastatin), Merck/Schering-Plough. Respondents viewed one of the ads, randomly assigned, and provided their level of intent to discuss with their physician using the same scale. Intent ratings were distributed as follows: 40% very low, 21% somewhat low, 27% moderate, 7% somewhat high, and 6% very high, mean 2.17.

The distributions for the help-seeking messages and the product-specific TV ads are similar with intent levels somewhat higher for the help-seeking messages than the product-specific ads. No firm conclusion about the relative persuasiveness of the two message types can be drawn since different media were used.

There is a strong correlation between the two intent measures, $F(4,519) 148.022$, $r = .726$, $p < .001$.

Independent variables included:

DTC opinion, favorable or unfavorable towards DTC based on response to question with polar positions (-1=unfavorable, 1=favorable),

DTC-initiated discussion experience, previous discussions with physician based on DTC advertising in any category (three responses – no, once, and multiple times, coded as 0, 1, and 2 respectively),

MD trust, four-item scale – completely accurate (2), mostly accurate (1), mostly inaccurate (-1), completely inaccurate (-2), and dichotomized, Yes (1) and No (-1),

RPh trust, same four-item scale and clustering,

cholesterol level – do not know or self-reported level. Reported levels were aggregated into six levels ranging from below 200 to 300 and above,

self-relevance, degree of concern about personal cholesterol level (5-item scale, ranging from 0, not at all concerned to 4, very concerned and dichotomized to low, 0 and 1, and high, 2-4),

drug risk acceptability, three levels, unacceptable (-1), of concern but would not stop from trying (1), and acceptable considering benefits (2),

side effect frequency estimates, five levels from rare (1) to very frequent (5),

health-specific regulatory focus, dichotomous question used also in qualitative phase, coded as promotion (+1) or prevention (-1),

strength of response to health-specific question – a five level measure of strength of choice in dichotomous question from not strongly at all (1) to very strongly (5),

general regulatory focus, 11-item scale providing separate measures of prevention and promotion focus with ability to calculate net focus, coded as promotion (+1) or prevention (-1),

product benefits, 5-item scale from minimal (1) to very significant (5), based on TV commercial viewed,

product risks, same 5-item scale post ad viewing,

openness, personality factor from Big Five Inventory based on multiple questions, 44 in total for five factors, range of scores, and dichotomized to high (1) and low (0),

conscientiousness, same as above,
extraversion, same,
agreeableness, same,
neuroticism, same,
message, either promotion-framed (1) or prevention-framed (-1),
ad, either Vytorin (1) or Lipitor (-1).

Relationships between variables were assessed using Pearson product-moment correlation for continuous variables and Chi-Square for categorical variables, and between dependent and independent variables using one-way ANOVA, two-way ANOVA, and split file analysis combined with two-way ANOVA.

For the examination of regulatory focus, two measures were employed. A previously validated instrument, the Regulatory Focus Questionnaire (RFQ), an 11-item questionnaire developed by Tory Higgins and colleagues, 2001, was included. It consists of six items to determine promotion focus and five items to measure prevention focus. Three measures were calculated: promotion level, each respondent's mean score across the six promotion items, prevention level, each respondent's mean score across the five prevention questions; and net focus, promotion or prevention, subtracting prevention level from promotion level. Net focus is positive when promotion scale score is higher and negative when prevention scale score is higher. The investigator included the health-specific dichotomous question utilized in the qualitative phase of the research with an indication of strength of choice that combined to create a continuous variable. The question was designed as a "shortcut" that could be used by physicians to quickly determine a consumer/patient's regulatory focus and potentially tailor a communication approach. With the full panel of 524 respondents, the health-specific "shortcut" was a significant predictor of intent to discuss messages, $F(1,522) 4.328, p < .05$, and ads, $F(1,522) 4.370, p < .05$, based on ANOVA. The net focus based on the RFQ was not. There was only a 54% agreement between the two measures. A Chi-Square analysis of

the health-specific question and the net focus designation of promotion or prevention failed to achieve the conventional level of significance 2.777, $p < .10$.

Rather than suggest that a new, non-validated, determinant of regulatory focus is superior to a previously validated 11-item scale, a subset of 282 respondents that were classified identically, as either promotion or prevention, by the net focus from the RFQ and the health-specific question, was studied for the hypotheses related to regulatory focus. As mentioned above, a follow-up question to the health-specific question recorded the respondents' strength of choice. The dichotomous response was multiplied by strength to provide a continuous variable for use in analyses.

If the conventional scale was significant and the investigator's "shortcut" measure was not, this would be an inappropriate approach. Since the investigator's measure was significant, the subset where the Regulatory Focus Questionnaire and health-specific measure classified respondents consistently as either promotion or prevention is appropriate to examine. Potential explanations for the lack of correspondence between the two regulatory focus measures in the full panel are presented under Implications, Limitations and Future Research below.

The demographics of the 282 respondents for this investigation are shown in Table 4. They differ only slightly from the full panel.

-
- Gender - Male 53%, Female 47%
 - Race - Caucasian 66%, African American 16%, Hispanic 12%, Asian 4%, other 3%
 - Age - 30-34 10%, 35-39 16%, 40-44 22%, 45-49 21%, 50-55 30%
 - Education – did not complete high school 1%, high school 11%, some college 22%, college degree 33%, some graduate 9%, graduate degree 24%
 - Income - <\$30K 12%, \$30-\$50K 19%, >\$50 to \$75K 25%, >\$75K to \$100K 21%, >\$100K 24%
-

Table 4 Demographics of Respondents for Regulatory Focus Examination

Hypotheses 1, 2, and 3 were studied in this subgroup of 282 respondents. Since regulatory focus is not included in hypotheses 4 through 9, they were studied with the full panel of 524 respondents.

Chapter Four

Findings, Conclusions, and Recommendations

The investigation of the first three hypotheses relate to regulatory focus. Higgins' Regulatory Focus Questionnaire (Higgins, et al, 2001) was used to calculate separate scores for promotion and prevention focus as well as a net regulatory focus, characterizing respondents as either promotion or prevention-focused based on difference between average scores on the five prevention questions and on the six promotion questions, but with varying levels of strength of promotion or prevention. The Chronbach alpha coefficient for the RFQ was .799 indicating good internal consistency of the scale. The Chronbach alpha coefficient for the Promotion RFQ was .840 and for the Prevention RFQ was .803 indicating internal consistency for the two subscales. The health-specific dichotomous question also separated respondents into either promotion or prevention-focused. Respondents indicated the strength of their choice on the dichotomous health question using a 1 to 5 scale. The health-specific question response was multiplied by the strength score to provide a continuous variable labeled health-specific strength. The Pearson product-moment correlations between these measures and with discussion intent for messages and ads are presented in Table 5.

Measures	1	2	3	4	5
(1) Net focus based on RFQ					
(2) Promotion scale	.572***				
(3) Prevention scale	.693***	-.195***			
(4) Health-Specific Strength	.134**	.134**	-.048		
(5) Intent to Discuss Message	.066	.115**	-.023	.095*	
(6) Intent to Discuss Ad	.053	.093*	-.018	.109*	.726***

***p<.0005 **p<.01 *p<.05

Table 5 Pearson Product-Moment Correlations between Regulatory Focus and Intent Measures (N=524)

The RFQ is internally consistent. The Promotion and Prevention scales are highly negatively correlated with each other and positively with Net focus based on RFQ, as would be expected. The Promotion scale is positively and significantly correlated, but at lower levels, with the health-specific measure and both intent measures. The health-specific measure is positively and significantly correlated, at low levels, with both intent measures, but is not significantly correlated with the Prevention scale or Net focus.

Since the RFQ is a validated measure of regulatory focus, a subset of respondents that were identically classified as either promotion or prevention-focused by both the Net focus based on the RFQ and the health-specific strength was used for further analysis. The Pearson product-moment correlations for the measures within this subset of 282 respondents are presented in Table 6.

Measures	1	2	3	4	5
(1) Net focus based on RFQ					
(2) Promotion scale	.643***				
(3) Prevention scale	.677***	-.129*			
(4) Health-Specific Strength	.711***	.474***	.464***		
(5) Intent to Discuss Message	.123*	.108 ⁺	.056	.118*	
(6) Intent to Discuss Ad	.134*	.146*	.033	.116 ⁺	.779***

***p<.0005 **p<.01 *p<.05 ⁺p<.10

Table 6 Pearson Product-Moment Correlations between Regulatory Focus and Intent Measures (N=282)

The correlations between net focus and discussion intent measures are now significant but the significance levels are low. Due to the smaller sample size, similar correlations bear lesser statistical significance. The Prevention scale remains non-significant. These modest significance levels may indicate that regulatory focus is a weak predictor by itself but may be more significant in an interaction with one or more other factors.

The first three hypotheses involve the additional variables of self-relevance (concern about personal cholesterol level), and for ads, perceived product benefits and risks for whichever of the two ads was randomly assigned to participants.

The Pearson product-moment correlations for the variables within these hypotheses are presented in Table 7.

Measures	1	2	3	4	5	6
(1) Net focus based on RFQ						
(2) Health-Specific Strength	.711***					
(3) Self-Relevance	.031	-.003				
(4) Product Benefits	.052	.003	.152*			
(5) Product Risks	-.040	-.039	.027	-.277***		
(6) Intent to Discuss Message	.123*	.118*	.366***	.290***	-.071	
(7) Intent to Discuss Ad	.134*	.116 ⁺	.344***	.372***	-.088	.779***

***p<.0005 *p<.05 ⁺p<.10

Table 7 Pearson Product-Moment Correlations between Variables related to Hypotheses 1-3 (N=282)

Self-relevance is significantly and positively correlated with both intent measures. Product benefits are significantly and negatively correlated with product risks, and significantly and positively correlated with both intent measures. Regulatory focus and the health-specific strength measure are positively correlated with intent measures, although at modest significance levels.

H1: Intent to discuss messages and ads will be significantly higher with greater self-relevance (concern about personal cholesterol level).

H1 is supported. The correlations of self-relevance with message intent (.366) and ad intent (.344) are both highly significant, $p < .0005$. One-way ANOVA demonstrates significance of self-relevance for intent to discuss messages $F(3, 278) 15.950$, $p < .0005$ (Figure 1), and ads $F(3, 278) 13.089$, $p < .0005$ (Figure 2). In both cases, mild and moderate concern are not statistically significantly different from one another but all other comparisons are (Tables 8 and 9).



Figure 1 – ANOVA Self-Relevance and Message Discussion Intent

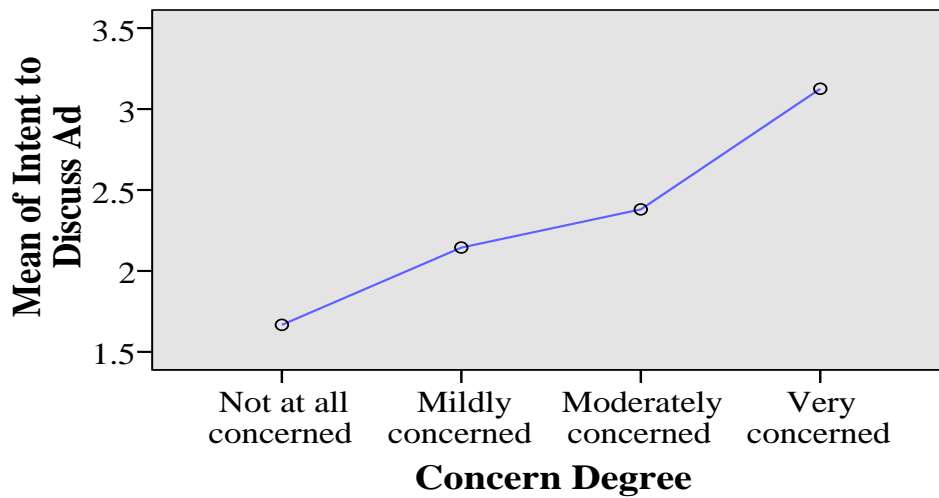


Figure 2 – ANOVA Self-Relevance and Ad Discussion Intent

Multiple Comparisons

Dependent Variable: Intent to Discuss Message
Tukey HSD

(I) Concern Degree	(J) Concern Degree	Mean	Std. Error	Sig.	95% Confidence Interval	
		Difference (I-J)			Lower Bound	Upper Bound
Not at all concerned	Not at all concerned					
	Mildly concerned	-.709(*)	.170	.000	-1.15	-.27
	Moderately concerned	-.833(*)	.213	.001	-1.38	-.28
Mildly concerned	Not at all concerned	.709(*)	.170	.000	.27	1.15
	Mildly concerned					
	Moderately concerned	-.124	.195	.920	-.63	.38
Moderately concerned	Not at all concerned	.833(*)	.213	.001	.28	1.38
	Mildly concerned	.124	.195	.920	-.38	.63
	Moderately concerned					
Very concerned	Not at all concerned	1.637(*)	.246	.000	1.00	2.27
	Mildly concerned	.928(*)	.231	.000	.33	1.52
	Moderately concerned	.804(*)	.264	.013	.12	1.49

* The mean difference is significant at the .05 level.

Table 8 Multiple Comparisons – Self-Relevance and Message Intent

The multiple comparisons in Tables 8 and 9 calculate 95% confidence intervals for each point estimate within the scale, “not at all concerned”, “mildly concerned”, “moderately concerned”, “very concerned”, and then test for significance at $p < .05$ between each of the points, indicated by an asterisk when significance is present. “Not at all concerned” is significantly different from all other points as is “very concerned”. The only comparison that is not significant is between “mildly” and “moderately concerned”. Those two measures are numerically different with intent higher at “moderately concerned” but their 95% confidence interval estimates overlap. None of the other confidence levels overlap,

which is a strong indicator that not only is self-relevance a highly significant predictor of intent overall but that there are significant differences between most points on the scale.

Multiple Comparisons

Dependent Variable: Intent to Discuss Ad
Tukey HSD

(I) Concern Degree	(J) Concern Degree	Mean	Std. Error	Sig.	95% Confidence Interval	
		Difference (I-J)			Lower Bound	Upper Bound
Not at all concerned	Not at all concerned					
	Mildly concerned	-.477(*)	.166	.022	-.91	-.05
	Moderately concerned	-.713(*)	.207	.004	-1.25	-.18
Mildly concerned	Not at all concerned	.477(*)	.166	.022	.05	.91
	Mildly concerned					
	Moderately concerned	-.236	.190	.599	-.73	.25
Moderately concerned	Not at all concerned	.713(*)	.207	.004	.18	1.25
	Mildly concerned	.236	.190	.599	-.25	.73
	Moderately concerned					
Very concerned	Not at all concerned	1.458(*)	.239	.000	.84	2.08
	Mildly concerned	.981(*)	.225	.000	.40	1.56
	Moderately concerned	.745(*)	.257	.021	-.141	-.08
Very concerned	Not at all concerned	1.458(*)	.239	.000	.84	2.08
	Mildly concerned	.981(*)	.225	.000	.40	1.56
	Moderately concerned	.745(*)	.257	.021	.08	1.41

* The mean difference is significant at the .05 level.

Table 9 Multiple Comparisons – Self-Relevance and Ad Intent

Mean intent values for messages (scale of 1=“very low”, 3=“moderate”, 5=“very high”) are 1.71 when “not at all concerned”, 2.42 and 2.54 at “minimal” and “moderate concern” and 3.34 at “high concern”.

Mean intent values for ads on the same scale are 1.67 when “not at all concerned”, 2.14 with “minimal concern”, 2.38 at “moderate” and 3.13 at “high concern”.

H2: Intent to discuss messages and ads will be significantly higher in general in promotion-focused respondents compared to prevention-focused individuals.

Discussion intent is correlated with regulatory focus at $p < .05$. Based on one-way ANOVA, intent is higher in promotion-focused respondents than prevention-focused respondents, but the differences are below traditionally accepted significance levels: messages $F(1,280) 3.199, p = .075$, ads $F(1,280) 2.113, p = .147$.

Based on the strong influence of self-relevance on intent, it is possible that self-relevance plays a moderating role on the relationship between regulatory focus and intent.

Self-relevance was separated into low (values 1 and 2) and high (3 and 4) and one-way ANOVAs for intent to discuss messages run separately. With low self-relevance, regulatory focus is non-significant $F(1,198) .080, p = .777$. With high self-relevance, however, regulatory focus is significant $F(1,80) 7.275, p = .009$. This relationship is strongly demonstrated using a two-way ANOVA (Figure 3).

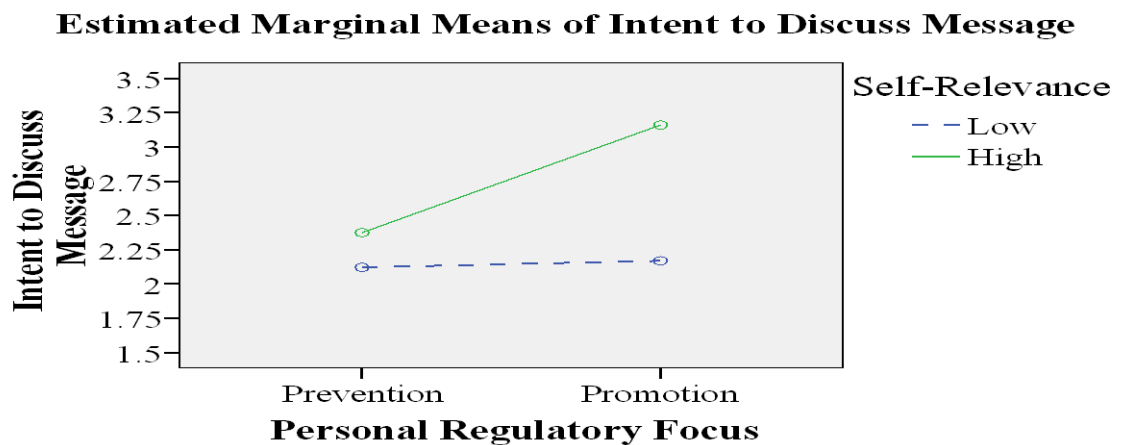


Figure 3 Regulatory Focus, Self-Relevance, and Intent to Discuss Message

Figure 3 demonstrates that self-relevance is highly significant $F(3,278) 14.884, p < .0005$, regulatory focus is significant $F(1,280) 6.671, p = .01$, and there is a significant interaction between self-relevance and regulatory focus $F(3,278) 5.234, p < .05$. Analysis of simple main effects indicates non-significance of regulatory focus with low self-relevance $F(1,198) .080, p = .777$, but a significant difference between prevention and promotion at high self-relevance $F(1,80) 7.275, p < .01$. Simple main effects analysis also indicates that there is no significant difference between intent at high and low self-relevance for prevention-focused individuals $F(3,110) 1.88, p = .137$, but there is a highly significant difference between intent at high and low self-relevance, for promotion-focused respondents, $F(3,164) 15.545, p < .0005$.

Therefore, we can conclude that intent to discuss messages is significantly higher in promotion-focused respondents compared to prevention-focused individuals, when self-relevance is high.

A similar pattern is observed for ads. Split analysis by high and low self-relevance demonstrates that with respect to intent to discuss ads, at low self-relevance, regulatory focus is non-significant $F(1,198) .146, p = .703$. With high self-relevance, however, regulatory focus is significant $F(1, 80) 8.280, p = .005$. Two-way ANOVA is presented in Figure 4.

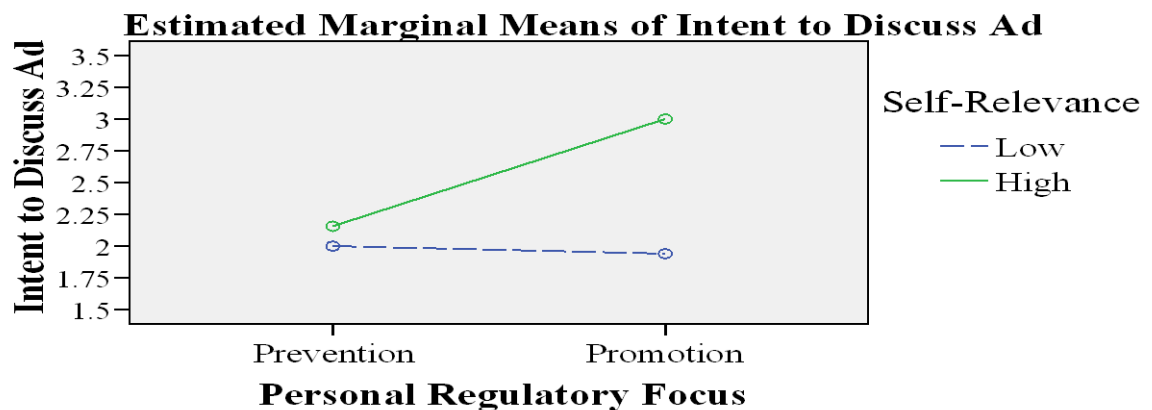


Figure 4 Regulatory Focus, Self-Relevance, and Intent to Discuss Ad

Figure 4 demonstrates that self-relevance is highly significant $F(3,278) 15.657, p < .0005$, regulatory focus is significant $F(1,280) 6.520, p = .011$, and there is a significant interaction between self-relevance and regulatory focus $F(3,278) 8.641, p < .005$. Analysis of simple main effects indicates that there is no significant difference between intent at high and low self-relevance for prevention-focused individuals $F(1,112) 0.455, p = .501$ but there is high significance between intent at high and low self-relevance for promotion-focused respondents $F(1,166) 28.872, p < .0005$. Main effects analysis also demonstrates non-significance of regulatory focus with low self-relevance $F(1,198) .146, p = .703$, but a significant difference between prevention and promotion at high self-relevance $F(1,80) 8.280, p = .005$.

Therefore, we can conclude that intent to discuss messages and ads is significantly higher in promotion-focused respondents compared to prevention-focused individuals when self-relevance is high.

H3: Intent to discuss ads will be significantly higher in promotion-focused individuals compared to prevention-focused, particularly when product benefits and risks are both perceived as high.

This hypothesis is specific to ads since messages do not include product-specific references or information. Using the full range of responses for product benefits and risks, two-way ANOVA demonstrates significance for product benefits in both promotion-focused and prevention-focused respondents, promotion $F(23,144) 5.753, p < .0005$, prevention $F(20,93) 2.538, p < .05$, but no significance for product risks in either promotion-focused or prevention-focused respondents promotion $F(23,144) .896, p = .468$, prevention $F(20,93) .667, p = .617$.

In promotion-focused respondents, the high significance of benefits is driven by those respondents rating benefits as very high indicating much higher mean intent level (3.24) than all other levels (means ranging from 1.43 to 2.14). In prevention-focused respondents, the only significant difference in mean ratings for benefits is between very significant (2.50) and minimal (1.00).

For product risks, there is an interesting pattern in promotion-focused respondents (Table 10). Intent levels are highest with minimal risks (as might be anticipated), but surprisingly, intent with perceived very significant risks is higher than the three intermediate categories.

Intent to Discuss Ad(d)

Tukey HSD

Product Risks	Subset		
	N	2	1
2	33	2.06	
4	16	2.06	
Moderate	79	2.08	
Very significant	21	2.67	2.67
Minimal	19		3.05
Sig.		.329	.750

Means for groups in homogeneous subsets are displayed.

Based on Type III Sum of Squares

The error term is Mean Square(Error) = 1.253.

a Uses Harmonic Mean Sample Size = 24.306.

b The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

c Alpha = .05.

d Personal Regulatory Focus = Promotion

Table 10 Ad Discussion Intent at Range of Levels of Perceived Risk for Promotion-focused respondents

Both product benefits and risks were transformed to low/high splits by combining the two lowest levels as “low” and three highest levels as “high”. Figure 5 presents the two-way ANOVA for high/low product benefits and risks in relationship to intent to discuss ad for all 282 respondents.

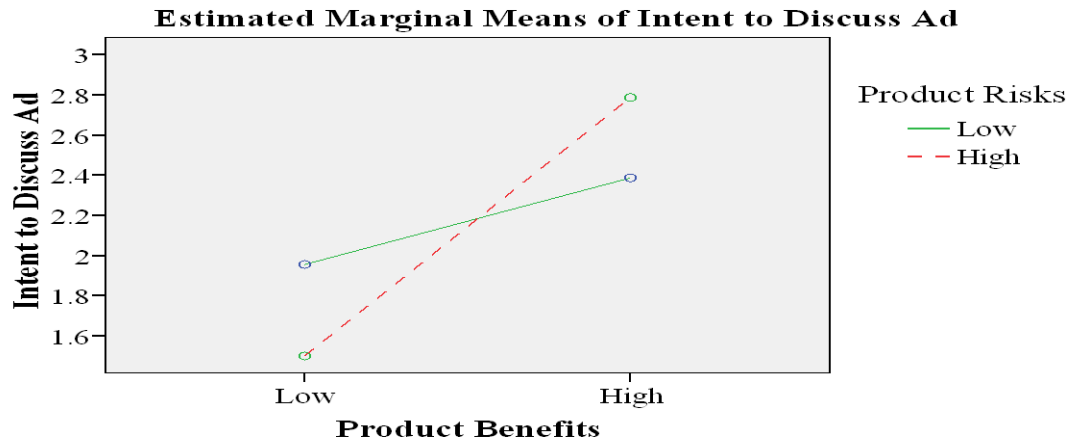


Figure 5 Ad Discussion Intent in relation to Perceived Benefits and Risks

Product Benefits are significant $F(1,280) 27.273, p < .0005$. Product Risks are not significant overall $F(1,280) .028, p = .867$. There is a significant interaction between Benefits and Risks $F(1,280) 6.766, p = .01$.

An analysis of simple main effects shows that at low risk, benefits are significant $F(1,214) 7.268, p < .01$. At high risk, benefits are highly significant $F(1,64) 20.523, p < .0005$. At low benefits, risks are significant $F(1,125) 6.305, p = .013$, specifically higher intent is seen with lower risk (mean of 1.96 versus 1.50). At high benefits, risks are not significant $F(1,153) 2.152, p = .144$, but mean intent is higher with high risks than low risks (2.79 versus 2.39). This appears to be counter-intuitive but may reflect a feeling among some respondents that higher risks mean higher potency, which is likely to translate to greater benefits (in this case, greater reduction of cholesterol). The content of the ads could support this view. Lipitor is highly effective for cholesterol reduction but Vytorin is generally somewhat more effective due to the combination of two medications. This combination does involve the combined risks of both medications, however.

Hypothesis 3 anticipates that we will see different patterns between promotion-focused and prevention-focused respondents. The patterns were assessed using two-way ANOVA with a split file by regulatory focus. Indeed, very different patterns are observed. Figure 6 shows the pattern for prevention-focused respondents. It is very different from the full group pattern seen in Figure 5. It could be described as more intuitive – intent is higher with low risk than high and somewhat higher at high benefits than low. Risk is significant $F(1,112) 3.938, p=.05$ but benefit fails to achieve significance $F(1,112) 2.743, p=.101$.

Estimated Marginal Means of Intent to Discuss Ad

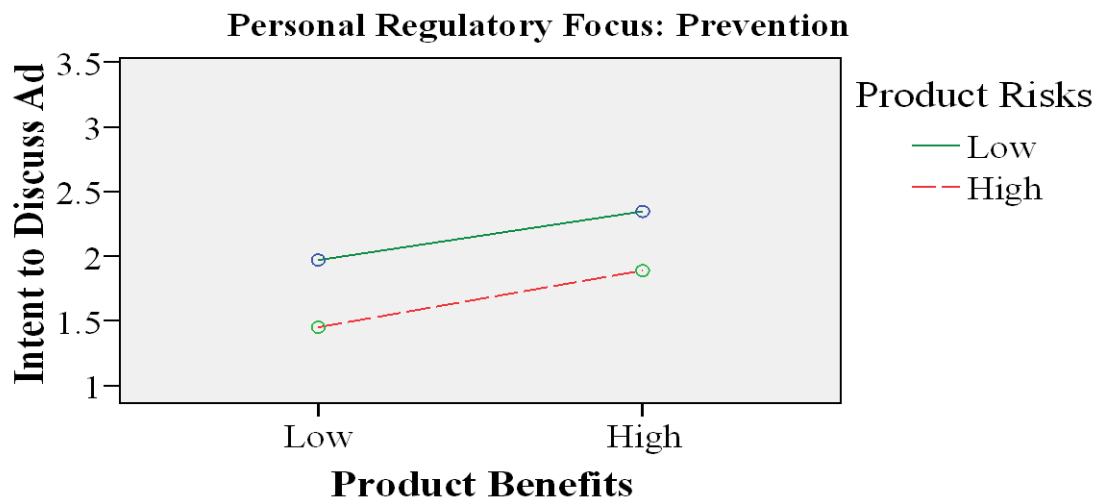


Figure 6 Prevention-Focused Respondents' Ad Intent with Benefits and Risks

The pattern for promotion-focused respondents is displayed in Figure 7 and is a more extreme version of the pattern seen in Figure 5.

Estimated Marginal Means of Intent to Discuss Ad

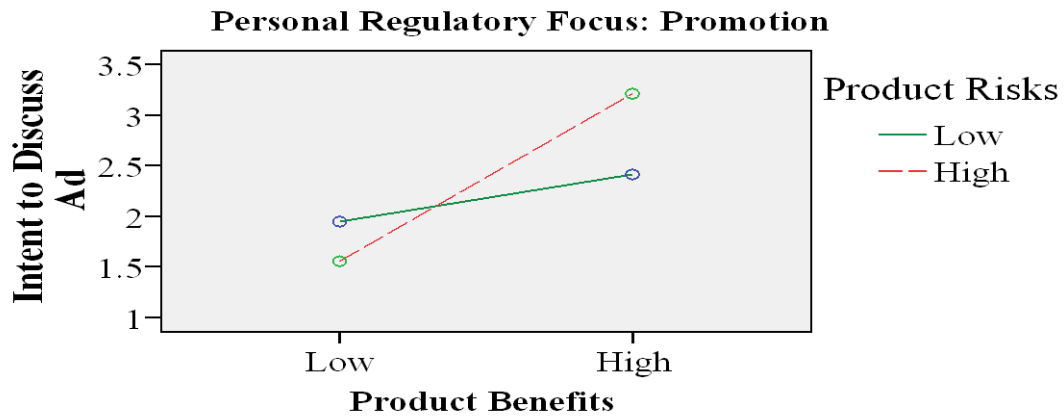


Figure 7 Promotion-Focused Respondents' Ad Intent with Benefits and Risks

For promotion-focused respondents, benefits are highly significant $F(1,166) 22.773$, $p < .0005$, risks are not significant $F(1,166) .835$, $p = .362$, and there is a significant interaction between benefits and risks $F(1,166) 7.140$, $p < .01$.

Analysis of simple main effects reveals that for promotion-focused respondents, product benefits are highly significant at high risk $F(1,35) 18.614$, $p < .0005$ with higher intent seen at high benefits (mean intent of 3.21 vs. 1.56). Product benefits are also significant at low risk $F(1,129) 4.873$, $p = .029$ (mean intent of 2.41 versus 1.95). Product risks are not significant when benefits are low, $F(1,72) 2.163$, $p = .146$, but are significant when benefits are high, $F(1,92) 5.426$, $p = .022$, with higher intent at higher risk (mean intent of 3.21 vs. 2.41).

The primary difference between the patterns for promotion and prevention-focused respondents is at high benefits and high risks, as predicted. This is illustrated by the comparison of means in Table 11. This analysis reinforces the point that at high benefit,

prevention-focused respondents were risk-averse (lower intent at high risk, $M = 1.89$, than low, $M = 2.35$) whereas promotion-focused respondents were risk-tolerant and potentially risk seeking (higher intent at high risk, $M = 3.21$, than low, $M = 2.41$).

	Risks	Low	High
Benefits			
High	Promotion	2.41	3.21
	Prevention	2.35	1.89
Low	Promotion	1.95	1.56
	Prevention	1.97	1.45

Table 11 Comparison of Means between Promotion and Prevention–Focused at Different Benefit and Risk Combinations

Recapping findings for the hypotheses, H1 was fully supported, self-relevance is a highly significant driver of intent to discuss messages and ads. H2 is supported with qualification. Self-relevance is an important moderator. When self-relevance is high, promotion-focused individuals have significantly higher levels of intent to discuss messages and ads with their physicians. H3 is fully supported. Promotion-focused respondents had significantly higher levels of intent to discuss product-specific ads than prevention-focused when benefits and risks were both perceived as high. Prevention-focused individuals are risk averse including when benefits are high. Promotion-focused respondents are risk tolerant and possibly risk seeking when benefits are high.

Relationships were examined further in an attempt to explain this differential impact of risk. As seen in H1 and H2, self-relevance plays an important role in motivating intent to have discussions. Self-relevance and benefits were examined in a 2-way ANOVA with intent to discuss ad as the dependent variable and using a split file for promotion and

prevention-focused respondents. For the combined group, only main effects were observed with no significant interactions. For promotion-focused, both self-relevance and benefits were highly significant, benefits $F(1,166) 11.737, p=.001$, self-relevance $F(1,166) 19.901, p<.0005$. For prevention-focused respondents, neither benefits nor self-relevance were significant, although benefits were only marginally beyond significance, benefits $F(1,112) 3.337, p=.070$, self-relevance $F(1,112) 0.685, p=.410$. Although it was anticipated that benefits and self-relevance would be more significant in promotion-focused respondents, the lack of significance with prevention-focused people provides some insight into the results with respect to H3. Additional insight was gained by evaluating self-relevance and risks relative to ad discussion intent. Combined, risks are not significant, $F(1,280) 0.024, p=.876$, self-relevance is significant $F(1,280) 25.641, p<.0005$, and there is an interaction $F(1,280) 4.701, p<.05$, as shown in Figure 8.

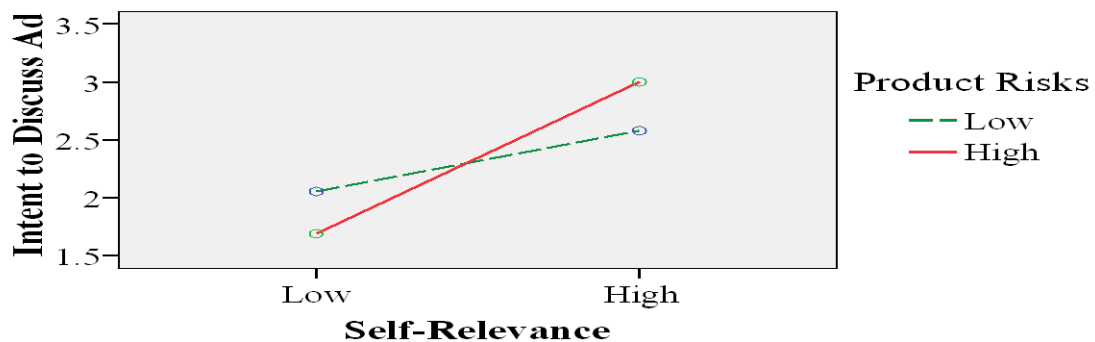


Figure 8 Ad Discussion Intent in relation to Self-Relevance and Product Risks

An analysis of simple main effects shows that at low self-relevance, product risks are significant, $F(1,198) 4.9623, p<.05$, with intent higher at low risks. At high self-relevance, product risks are not significant, $F(1,80) 1.374, p=.245$. With low product risks, self-relevance is significant, $F(1,214) 9.398, p<.005$, with higher intent at high self-relevance. With high product risks, self-relevance is highly significant, $F(1,64) 16.434, p<.0005$.

For the promotion-focused respondents, both self-relevance and risks are significant and an interaction is observed, self-relevance $F(1,164) 41.808$ $p < .0005$, risks $F(1,164) 4.808$, $p = .03$, and the interaction, $F(1,164) 11.275$, $p = .001$, as shown in Figure 9.

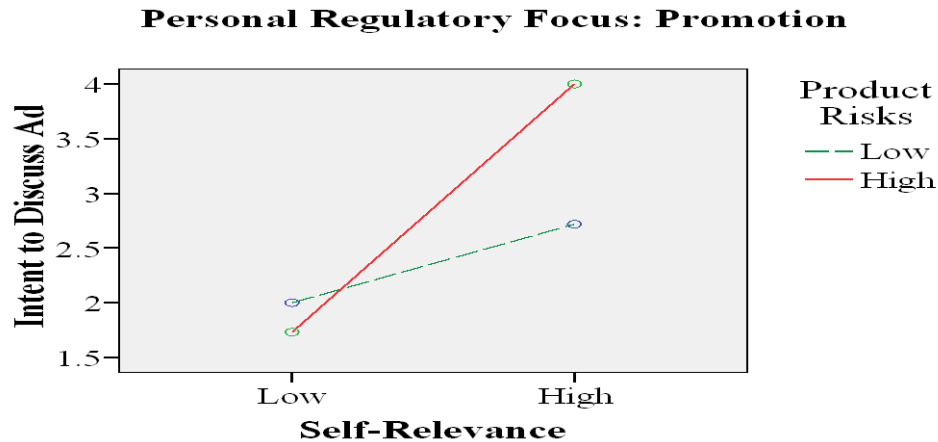


Figure 9 Promotion-Focused Respondents’ Ad Intent with Self-Relevance and Risks

Simple main effects demonstrate that at low self-relevance, product risks are not significant, $F(1,116) 1.225$, $p = .271$. At high self-relevance, product risks are significant, $F(1,48) 9.415$, $p < .005$, with higher intent at high risk ($M = 4.00$) than low ($M = 2.72$). This analysis indicates that high self-relevance (concern about cholesterol level) is associated with significantly higher acceptance of product risks in promotion-focused respondents.

This is not true in prevention-focused respondents. Self-relevance does not have a significant effect at either low risk $F(1,83) 2.357$, $p = .129$ or high risk $F(1,27) 1.249$, $p = .274$. Product risks approach significance at low self-relevance, $F(1,80) 3.697$, $p = .058$ and high self-relevance, $F(1,30) 3.274$, $p = .080$. Intent is higher with low risk ($M = 2.36$) than high risk ($M = 1.43$). Prevention-focused respondents were consistently risk averse.

Yet another way to examine the differences between promotion-focused and prevention-focused individuals and the differential impact of benefits and risks is to look specifically at the subset of respondents with high self-relevance. An examination of the differential response to product benefits is displayed in Figure 10. Product benefits have greater impact on promotion-focused individuals. Overall, product benefits are just above the conventional standard for significance, $F(1,81) 3.530, p=.064$. Regulatory focus is significant $5.305, p=.024$. The interaction is not significant.

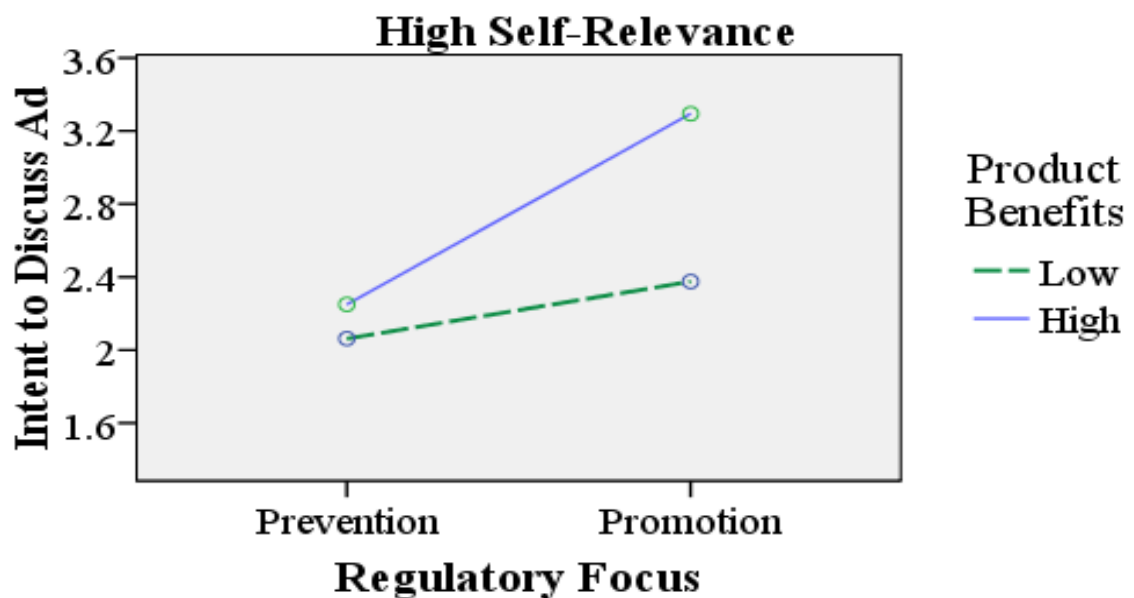


Figure 10 High Self-Relevance Respondents' Ad Intent with Regulatory Focus and Benefits

A simple main effects analysis shows that intent is higher with high benefits versus low in promotion-focused $F(1,48) 5.744, p=.020$ (M 3.29 vs. 2.38) but the difference is not significant in prevention-focused. When benefits are high, intent is significantly higher in promotion-focused than prevention-focused individuals, $F(1,48) 5.927, p=.019$ (M 3.29 vs. 2.25). This is consistent with the profile of promotion-focused people seeking gains.

An examination of the differential response to product risks is displayed in Figure 11. Product risks have greater inhibitory impact on intent in prevention-focused individuals. Overall, product risks are not significant, $F(1,81) 3.530, p=.064$. Regulatory focus is significant $19.377, p<.005$. The interaction is also significant, $11.063, p=.001$.

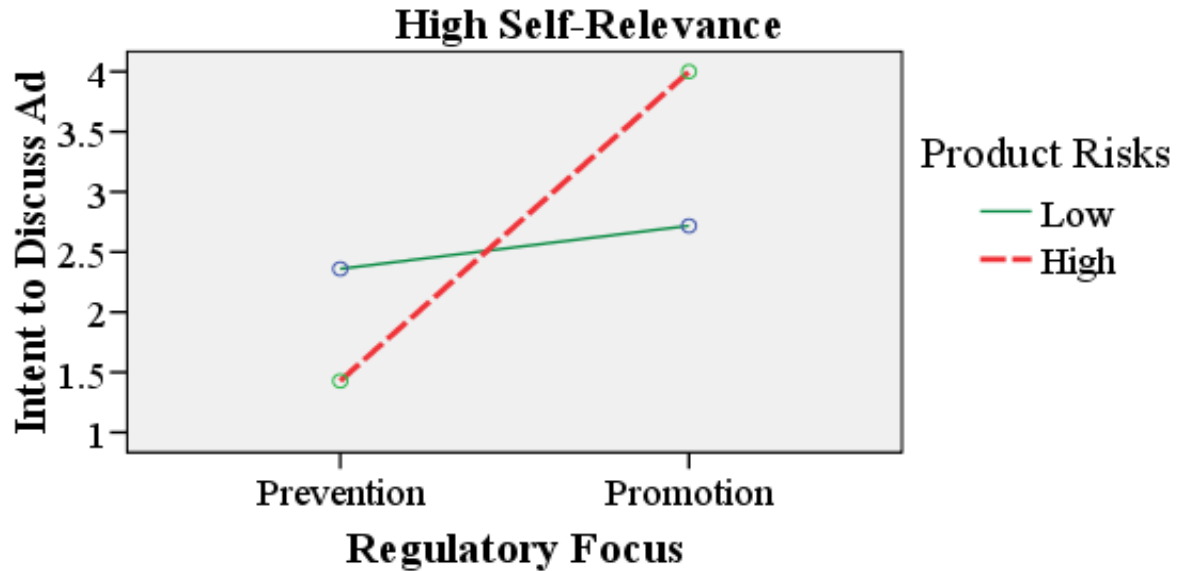


Figure 11 High Self-Relevance Respondents' Ad Intent with Regulatory Focus and Risks

A simple main effects analysis shows that intent is higher with low risks versus high in prevention-focused but above the conventional significance level $F(1,30) 3.275, p=.08$ (M 2.36 vs. 1.43). There is no significant difference in intent between promotion and prevention-focused individuals when product risks are low. When risks are high, intent is significantly higher in promotion-focused than prevention-focused individuals, $F(1,16) 38.634, p<.0005$ (M 4.00 vs. 1.43). This is generally consistent with the profile of prevention-focused people as avoiding losses and promotion-focused individuals seeking to avoid errors of omission. Promotion-focused individuals had higher intent at high risk than low $F(1,48) 9.415, p<.005$ suggesting a profile for promotion-focused people as at least risk tolerant, and perhaps risk seeking.

This comparison is particularly revealing. Prevention-focused people seek to avoid losses. This subgroup of respondents has high concern over its personal cholesterol level and recognizes that high cholesterol increases risk of heart attack and stroke. They should be receptive to action to reduce that risk. The perceived risk of treatment with the advertised drug, however, is inhibiting intent to discuss reduction of the risks of heart attack and stroke with physicians.

Within the questionnaire, respondents were asked to estimate the frequency of serious side effects for cholesterol-lowering drugs on the following scale: rare, less than 5%; very infrequent, 5 to 10%; somewhat infrequent, >10 to <25%; somewhat frequent, \geq 25% to <50%; very frequent, >50%. The reality is that serious side effects are in the rare to very infrequent range (prescribing information, Lipitor and Vytarin) but respondents overestimated the incidence of these effects. The distribution of responses was 8% rare, 22% very infrequent, 31% somewhat infrequent, 22% somewhat frequent, and 16% very frequent. This refutes the claims of DTC opponents who believe that consumers underestimate drug risks.

The managerial implications of these findings include:

- Promotion-focused individuals are more responsive to DTC ads and are therefore better targets for pharmaceutical companies. Media vehicles which appeal to promotion-focused themes and behaviors may provide a greater return-on-investment than vehicles that are more consistent with prevention-focused themes and behaviors,
- Prevention-focused consumers are more sensitive to risk information. Help-seeking ads, which avoid discussion of specific products and their attendant risks, may be more appropriate for this audience, particularly if the advertiser is the market leader or has a product that is rapidly gaining share.
- The differential response to risk between promotion and prevention-focused individuals may have implications for regulatory requirements for DTC ads. If

DTC ads lead to an overestimation of risk and overestimation is due to the mandatory reference to rare side effects, there may be perverse consequences. Prevention-focused individuals may be deterred from medications that may provide benefits to them and promotion-focused individuals may be attracted to medications with greater level of risk than is necessary. An alternative approach to warnings will be explored later in this dissertation.

- The single question to classify health-specific regulatory focus may be a potential “shortcut” for health professionals to use. Further experimentation may be worthwhile.

There were a number of criteria that helped define the differences between promotion-focused and prevention-focused respondents in this study that may be relevant to marketers and health professionals who seek to tailor their approach based on regulatory focus. Promotion-focused individuals were significantly different, based on Chi-Square analysis ($p < .05$), from prevention-focused in terms of greater extraversion, greater participation in exercise, more extreme side effect estimates (high and low), greater support of warnings change, and higher proportion male, Hispanic, Asian, in 35-39 age group, possessing a graduate degree, and with income greater than \$100,000.

Prevention-focused people were significantly different ($p < .05$) from promotion-focused people, with higher proportion female, African-American, in the 50-55 age group, and with income below \$30,000.

The second set of hypotheses relate to the broader investigation of respondents' overall attitudes toward DTC, cholesterol, health behaviors, and health professionals. An overview of findings on these dimensions will precede the examination of hypotheses four through six.

Respondents were asked to select which of two statements better reflected their opinion of direct-to-consumer advertising. Fifty-eight percent selected “Many people have diseases that they or their doctor are not aware of or are not treating well. Drug ads help these people seek necessary guidance from their doctor” and 42% chose “Most people are

aware of diseases they have and are well treated by their doctors. Drug ads are unnecessary and wasteful”. This indicates a majority opinion in favor of DTC but a significant minority failing to see value.

Two questions assessed prior reactions to DTC ads. Thirty-two percent of respondents indicated that one or more DTC ads had generated the intent to have a discussion with their doctor about the topic of the advertisement. Intent may not always translate into action, but in this case, 31% indicated they discussed an ad with their doctor – 21% once, and 10% more than once. The response to the second question was used as the variable, DTC-initiated discussion experience, which as will be shown, was a significant predictor of future intent to discuss messages. It can be inferred that previous discussions were a positive experience, since they encourage, rather than inhibit, future discussions.

The relationship between discussion experience and DTC opinion was assessed using Chi-Square. There is a highly significant relationship, 48.526, $p < .0005$, with more positive DTC opinion in those with discussion experience. Nearly 90% of those having more than one prior discussion were positive about the role of DTC. These results demonstrate that prior experience in bringing up a DTC ad with their physician appears to be favorable from the patient’s point of view.

One-way ANOVA demonstrates that DTC-initiated discussion experience is significantly higher with greater concern about personal cholesterol level, $F(1,523) 5.582$, $r = .173$, $p = .001$. Nearly 50% of respondents who are very concerned with their cholesterol level have responded to a DTC ad and initiated a discussion with their doctor.

Prescription drugs are sophisticated products for which physicians and pharmacists are well trained to understand and determine appropriate patient selection and counseling. To what extent do consumers feel that they receive the necessary information to utilize prescribed drugs? Questions were asked about the trust level of respondents’ regarding physicians and pharmacists related to drug information. A statement was provided with four levels of response, two each indicating trust or lack of trust. Specifically, the statement related to physicians was, “I trust my doctor to explain the benefits and risks of

any medication prescribed for me”, and the response options were: “Completely accurate”, “Mostly accurate”, “Mostly inaccurate”, and “Completely inaccurate”. Eighty-six percent of respondents indicated that the statement was mostly or completely accurate. The pharmacist-related statement was, “If my doctor does not explain a medication sufficiently, I can get the information I need from my pharmacist”. Eighty-two percent found this statement “mostly” or “completely accurate”. Due to the nature of the products advertised in DTC ads and the expertise required to evaluate them fully, these high levels of trust are reassuring that respondents were properly advised by health professionals in the vast majority of situations. It also points out the opportunities that these professionals, especially pharmacists (because they tend to be more available than physicians are), have to engage in meaningful discussions with consumers about prescription drugs.

Current regulations and guidelines regarding DTC ads require that substantial information be provided about the most significant risks associated with the advertised drug. Numerous investigations have been done to determine the adequacy of risk information provided (Kopp & Bang, 2000, Morris, Mazis, & Brinberg, 1989). Rationales for these measures appear to be that consumers need to receive this risk information and it cannot be assumed that health professionals will properly counsel patients. Inclusion of information about rare risks that may not be relevant to a particular patient may have a negative impact, however, on a consumer’s willingness to initiate a conversation or comply with a drug regimen recommended by their doctor. This possibility was raised for prevention-focused consumers in the first phase of the analysis.

Respondents were asked whether they would support a change to the communication of risk information in DTC commercials. They were provided with this alternative, “Would you support a change that would replace the current drug-specific warnings in each ad with a statement such as, “All drugs have risks as well as benefits. Discuss the specific risks and benefits of this medication with your doctor.”, in all ads? Fifty-four percent said yes. As might be expected, much higher levels of agreement were seen when MD trust was present versus absent, Chi-Square 8.142, $p < .005$, 58% vs. 39%; when RPh trust

was present, Chi-Square 5.590, $p < .05$, 58% vs. 43%, and with previous DTC-initiated discussion experience, Chi-Square 9.612, $p < .005$. Sixty-nine percent of respondents who had more than one prior discussion related to DTC supported the warnings change, compared to 64% with one discussion and 51% with none.

In order to explore issues in relation to a specific condition, respondents' behaviors and attitudes with respect to elevated cholesterol and its treatment were measured. Ninety-six percent of respondents said that "High levels of cholesterol in your blood increase the risk of heart attack and stroke" was definitely (73%) or possibly (23%) true.

Forty-nine percent of respondents indicated that they were aware of their personal cholesterol level. Of those who reported awareness, 73% indicated that their cholesterol level was below 200, 16% between 200 and 224, 6% between 225 and 249, 3% 250 to 299, and 2% 300 or above. These numbers are below the national averages but may be underreported. The respondents who were not aware of their level, may have higher levels. Nationally, 50% of people are above 200 and 16% are above 240 (National Institutes of Health, 2001).

In terms of the cholesterol level that would be of concern, respondents were given a range of possible values ranging from 150 to 300 in 25-point increments. Fifty-eight percent indicated they would be concerned at 200 or less, 34% at 225 or 250, and 8% at 275 or 300. These numbers are generally in line with the National Cholesterol Educational Panel guidelines that identify 200 as borderline elevated and 240 as moderately elevated.

Respondents were then asked, irrespective of whether they knew their current cholesterol level, whether they were concerned about it, on a four-point scale. 26% were not concerned at all, 42% mildly concerned, 19% moderately and 13% very concerned. This variable was designated as self-relevance, or concern about personal cholesterol level, and was a highly significant predictor of intent to have physician discussions, $r = .362$, $p < .0005$ for messages, and $r = .385$, $p < .0005$, for ads. Self-relevance was a significant element in the analysis of the smaller sample used to evaluate hypotheses 1 through 3.

Not surprisingly, side effect frequency was not a significant predictor of intent to discuss messages. No specific drugs are mentioned in the help-seeking messages. Side effect frequency was significant relative to intent to discuss ads, $F(1,523) 2.487, r=.128, p<.05$.

Another method was used to evaluate consumer perceptions of drug risks for cholesterol-lowering medications. Respondents were asked to indicate whether they found drug risks acceptable, considering benefits; of concern but go away if stop taking the drug so would not stop me from trying drug; or unacceptable. This is expected to be a more meaningful variable since different people will have different thresholds of acceptability for side effect frequency. The distribution of responses was 44% acceptable, considering benefits, 36% of concern but willing to try, and 20% unacceptable. Indeed, the measure was highly significant for messages $F(1,523) 10.853, r=.192, p<.001$ and ads $19.608, r=.260, p<.001$.

As might be expected, self-relevance moderates acceptability ratings. Twenty-nine percent of respondents who were not at all concerned, rated risks as unacceptable, 28%, of concern, and 43%, acceptable considering benefits. Only 18% of respondents who were very concerned rated risks unacceptable, 32% of concern, and 51% acceptable.

Although some people believe that viewing of ads results in an overestimation of the efficacy of drugs and underestimation of lifestyle actions, the study shows that consumers overestimate the efficacy of diet and exercise and underestimate the efficacy of prescription drugs. Respondents were asked to indicate the degree of cholesterol reduction that can be expected (change from baseline level over a period of time, such as a year, to new level where stabilizes) from each measure (diet, exercise, OTC supplements, and Rx drugs). The choices were: up to 10%, greater than 10% but less than 20%, between 20% and 40%, and over 40%. Most studies indicate that diet, exercise, and OTC supplements can each achieve approximately 10% reductions (Grundy et al, 2004). Drugs can achieve in excess of 40% (Grundy, et al). Respondents, however, were only realistic with expected reductions for OTC supplements. They anticipated that diet would be most effective followed by drugs and exercise, each with means between 25 and 27% expected reduction.

Important findings from this general evaluation include:

- Majority of respondents support DTC and slight majority overall would support a change to general drug warning with higher levels of support among respondents with previous DTC-initiated discussion experience
- Trust in physicians and pharmacists to provide drug information is high
- DTC responders are positive about previous DTC-initiated discussion experience with physicians
- Consumers overestimate the cholesterol-lowering potential of non-drug actions (diet, exercise) and underestimate the potential of prescription drug therapy
- Consumers overestimate the frequency of significant side effects with cholesterol-lowering medications.

With this information as background, hypotheses four through six will be evaluated.

H4A(B): Respondents who are proactive in seeking a healthy lifestyle, dieting and exercising, will have higher (lower) discussion intent levels than those who are not dieting or exercising.

Current actions being undertaken, at least in part to reduce cholesterol, were measured. Two-thirds of respondents indicated dietary measures (27% of those diet regularly), 61% exercise (35% regularly), 19% over-the-counter supplements (27% regularly), and 25% prescription medication (70% regularly). Only 28% of respondents indicated no current action to control their cholesterol level. These percentages indicate high compliance with lifestyle changes as first-line interventions. There was high use of multiple elements, 85% of dieters also exercise, 94% of exercisers also diet, 94% of users of OTC supplements diet and 89% exercise. Ninety-one percent of consumers taking Rx medication indicated that they also dieted, 88% exercised and 46% took OTC supplements. These are self-reported numbers and may be somewhat overstated but the pattern indicates that an appropriate approach to cholesterol reduction is being taken. The vast majority of respondents who indicated that they take medication also dieted and exercised, indicating that use of drugs is not associated with ignoring important lifestyle modifications.

There are significant positive relationships between each of the measures to control cholesterol. Pearson Chi-Square analysis demonstrating the relationships is presented in Table 12.

Actions	1	2	3	4
(1) Diet				
(2) Exercise	264.459 p<.0005			
(3) OTC Supplement	38.469 p<.0005	39.241 p<.0005		
(4) Rx Medication	45.477 p<.0005	55.271 p<.0005	84.756 p<.0005	

Table 12 Pearson Chi-Square relationships between Cholesterol Control Measures

The relationship between concern about cholesterol level and actions undertaken is quite logical. Each of the four actions is significantly associated with self-relevance/concern based on one-way ANOVA. Only OTC supplement use is non-significant relative to discussion experience. Each control measure is significantly associated with message and ad intent. Cholesterol control measures are treated as dependent variables relative to self-relevance and DTC-initiated discussion experience and independent variables relative to message and ad intent. Results are provided in Table 13.

Actions	Self-Relevance	Disc. Exper.	Message Intent	Ad Intent
(1) Diet	15.091 p<.0005	8.160 p<.0005	22.271 p<.0005	17.511 p<.0005
(2) Exercise	7.629 p<.0005	5.982 p<.005	19.472 p<.0005	12.388 p<.0005
(3) OTC Supplement	6.066 p<.0005	1.845 p=NS	7.190 p<.01	8.219 p<.005
(4) Rx Medication	13.887 p<.0005	10.017 p<.0005	20.714 p<.0005	17.547 p<.0005

Table 13 One-way ANOVA between Variables related to Hypothesis 4

These highly significant relationships indicate that respondents who are proactive in their approach to health use multiple approaches, are more likely to have had prior discussions based on exposure to DTC ads, and are more likely to seek future discussion with physicians in response to DTC messages and ads. This supports H4A and H4B is rejected.

H5A(B): Discussion intent will be higher (lower) in individuals with higher versus lower trust levels of physicians and pharmacists.

H6A(B): Previous discussion experience will correlate positively (negatively) with intent to discuss messages and ads.

Pearson product-moment correlations between MD trust, RPh trust, discussion experience, and intent to discuss messages and ads are shown in Table 14.

Measures	1	2	3	4	5
(1) MD Trust					
(2) RPh Trust	.308***				
(3) DTC-Initiated Discussion Experience	.041	.044			
(4) Intent to Discuss Message	.195***	.163***	.424***		
(5) Intent to Discuss Ad	.190***	.149**	.398***	.726***	

***p<.0005 **p<.01

Table 14 Pearson Product-Moment Correlations between Variables related to Hypotheses 5 and 6

H5A is supported and H5B rejected. MD trust is significantly correlated with intent to discuss messages, $F(3,520) 9.405$, $r=.195$, $p<.0005$ and ads, $F(3,520) 8.122$, $r=.190$, $p<.0005$. RPh trust is significantly correlated with intent to discuss messages, $F(3,520) 5.058$, $r=.163$, $p<.005$ and ads $F(3,520) 4.728$, $r=.149$, $p<.005$.

The Pearson product-moment correlations between MD and RPh trust and intent to discuss messages and ads are stronger for respondents with high self-relevance as shown in Table 15.

Measures	1	2	3	4
(1) MD Trust				
(2) RPh Trust	.329***			
(3) Intent to Discuss Message	.266**	.318***		
(4) Intent to Discuss Ad	.228**	.267**	.678***	

***p<.0005 **p<.005

Table 15 Pearson Product-Moment Correlations between Variables related to Hypotheses 5 in respondents with High Self-Relevance

H6A is supported and H6B rejected. DTC-initiated discussion experience is significantly correlated with intent to discuss messages, $F(2,521) 58.499, r=.424, p<.0005$ and ads, $F(2,521) 55.416, r=.398, p<.0005$.

Recapping conclusions related to hypotheses four through six, all three A versions, consistent with DTC proponent assumptions relative to consumers who respond to DTC and their relationships with physicians, are strongly supported. The B versions consistent with opponents' assumptions are rejected.

Individuals who are already proactively addressing health through diet, exercise, and other actions, are more responsive to DTC ads than those not taking such actions. Greater trust in physicians and pharmacists correlates with greater intent to discuss messages and ads. This may support a greater reliance on physicians and pharmacists to appropriately counsel patients regarding drug use, and ability to replace the current regulations requiring communication of serious but rare side effects with a more general warning statement.

Individuals who have previously responded to DTC ads by having a discussion with their physician are more likely to respond to DTC messages and ads with intent to have a discussion. This strongly implies that prior discussion experience was positive and reinforced or strengthened physician-patient relationships. This supports a view that DTC responders are responsible individuals seeking to achieve improved health through appropriate actions rather than some people's assumptions that DTC responders are those seeking medication as an easy solution in lieu of more difficult lifestyle modification.

Another area of exploration was the relationships between personality characteristics and other variables in the study. Specifically, the Big Five Personality Characteristics were evaluated (openness, conscientiousness, extraversion, agreeableness, and neuroticism) based on responses to the 44-item BFI inventory. The Chronbach alpha coefficient for each of the Big Five Inventory ranged from .807 to .858 and each item contributed. The possible and observed ranges, actual and standardized means (standardized by dividing score by number of questions), standard deviations and standardized equivalent, and Chronbach alpha of each component are displayed in Table 16.

Characteristic	Possible Range	Observed Range	Actual Mean	Standard Deviation	Standardized Mean	SD	Standardized Alpha
Openness	10-50	15-50	35.45	6.569	3.55	0.66	.828
Conscientiousness	9-45	18-45	36.20	5.177	4.02	0.58	.807
Extraversion	8-40	9-40	25.25	6.615	3.16	0.83	.855
Agreeableness	9-45	15-45	35.81	5.346	3.98	0.59	.807
Neuroticism	8-40	8-40	19.40	6.338	2.43	0.79	.858

Table 16 Descriptive Statistics for Big Five Personality Characteristics

H7: Neuroticism will negatively correlate with each of the other four characteristics (extraversion, openness to experience, agreeableness, and conscientiousness). The other four characteristics will positively correlate with each other.

H8: Extraversion, agreeableness, and conscientiousness will positively correlate with diet and exercise.

H9: Extraversion, openness to experience, agreeableness, and conscientiousness will positively correlate with intent to discuss messages and ads.

Pearson product-moment correlations were calculated to evaluate the relationships between the big five personality characteristics (Table 17).

Measures	1	2	3	4	5
(1) Openness					
(2) Conscientiousness	.351***				
(3) Extraversion	.330***	.279***			
(4) Agreeableness	.223***	.409***	.230***		
(5) Neuroticism	-.180***	-.458***	-.358***	-.390***	

***p<.0005

Table 17 Pearson Product-Moment Correlations between variables related to Hypothesis 7

H7 is supported. Neuroticism is negatively correlated with the other four characteristics. The negative correlations are at $p < .0005$ with conscientiousness, extraversion, agreeableness, and openness. The positive correlations between openness, conscientiousness, extraversion, and agreeableness are all highly significant at $.0005$. While this does not specifically relate to the topic at hand, responsiveness to DTC ads, the fact that these relationships are consistent with those observed elsewhere (Booth-

Kewley & Vickers, Jr., 1994) increases the credibility of other observed relationships.

Relationships between the personality characteristics and diet and exercise were evaluated using one-way ANOVA with diet and exercise as dependent variables. The only significant relationship with diet is for conscientiousness $F(26,497) 1.735, p=.014$. The only relationship that approaches significance with exercise is openness to experience $F(32,491) 1.451, p=.055$. Conscientiousness is also significant relative to OTC use $F(26,497) 1.698, p=.018$ and approaches significance with prescription drug use, $F(26,497) 1.492, p=.058$.

H8 is only partially supported. Conscientiousness is significant relative to diet but not exercise. Extraversion and agreeableness are not correlated with either measure.

The only correlations between any of the personality characteristics and prescription drug use that approaches significance is conscientiousness. This is a favorable finding in that drug use should be related to treatment need, which for elevated cholesterol, is not specific to personality characteristics. In the case of cholesterol medication, medication use is strongly correlated to self-relevance and significantly correlated with cholesterol level $F(6,512) 2.123, r=.131, p<.05$ which is consistent with a relationship between need and treatment. Some colleagues had predicted a significant relationship with drug use and neuroticism but it was not observed in this study. Indeed, there was not even a suggestion of a relationship $F(30,488) 0.584, p=.963$.

Pearson product-moment correlations were completed to evaluate the relationships between the big five personality characteristics, discussion experience and intent to discuss messages and ads (Table 18).

Measures	1	2	3	4	5	6	7
(1) Openness							
(2) Conscientiousness	.351***						
(3) Extraversion	.330***	.279***					
(4) Agreeableness	.223***	.409***	.230***				
(5) Neuroticism	-.180***	-.458***	-.358***	-.390***			
(6) Discussion Experience	.089*	.036	.116**	.018	.101*		
(7) Intent to Discuss Message	.065	.037	.053	.131**	.007	.424***	
(8) Intent to Discuss Ad	.086*	.071	.064	.130**	.064	.398***	.726***

***p<.0005 **p<.01 *p<.05

Table 18 Pearson Product-Moment Correlations between Variables related to Hypothesis 9

H9 is partially supported. All personality characteristics which were predicted to be positively correlated with intent measures are positively correlated, but only agreeableness achieves significance for message and ad intent at $p<.01$, and openness for ad intent at $p<.05$, but with modest correlations.

To illustrate relationships, the personality characteristics were dichotomized to low/high based on a median split and the low/high self-relevance variable was employed.

Figure 12 displays the results of a two-way ANOVA examining the relationship between self-relevance, agreeableness, and intent to discuss message and Figure 13 portrays self-relevance, openness to experience, and intent to discuss ad.

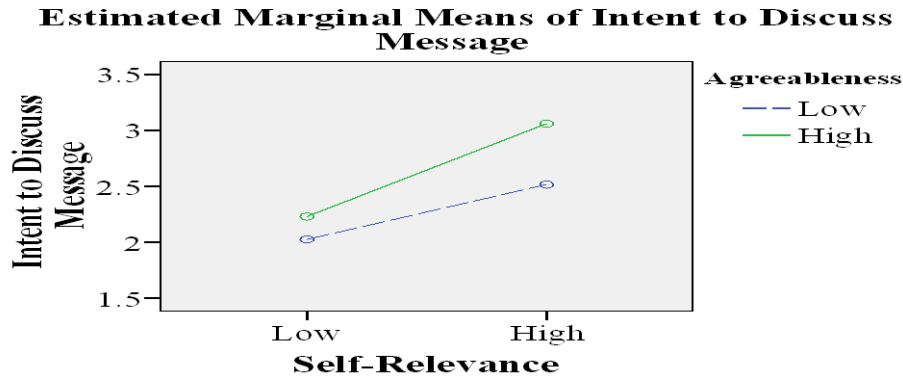


Figure 12 Message Discussion Intent in relation to Self-Relevance and Agreeableness

Self-relevance is highly significant $F(1,522) 32.616, p < .0005$. Agreeableness is significant $F(1,522) 4.574, p < .005$. The interaction is not significant. The difference between low and high openness to experience is not significant with low self-relevance ($p = .098$) but is significant at high self-relevance $F(1,162) 6.992, p < .01$.

As displayed in Figure 13, self-relevance is highly significant $F(1,522) 54.164, p < .0005$. Openness to experience is significant $F(1,522) 4.574, p < .05$. The interaction is not significant. The difference between low and high openness to experience is not significant with low self-relevance and slightly outside standard significance levels at high self-relevance $F(1,162) 3.370, p = .068$.

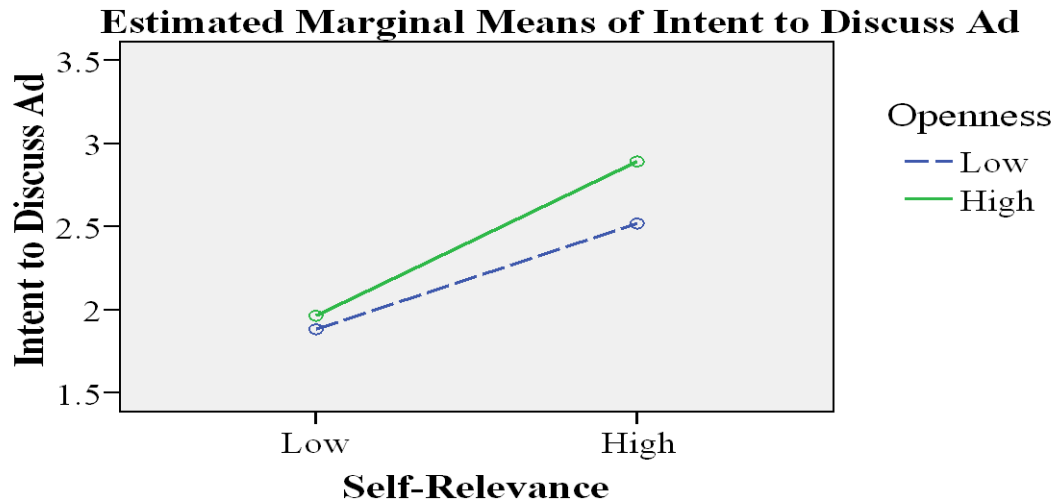


Figure 13 Ad Discussion Intent in relation to Self-Relevance and Openness to Experience

Recapping this section, H7 was supported. Neuroticism correlated negatively with the other four personality characteristics and they correlated positively with one another (Openness to Experience, Conscientiousness, Extraversion, and Agreeableness). H8 was partially supported. Only conscientiousness was significant relative to diet. An unpredicted nearly significant correlation with exercise was seen with openness to experience. H9 was also partially supported. Agreeableness was significantly predictive of intent to discuss messages and ads with physicians. Openness to experience was significant for ad intent but not message intent. Extraversion and conscientiousness were positively correlated but failed to achieve significance with either intent measure.

In summary, for the full study, the majority of respondents see value in DTC advertising. Those that have responded to an advertisement by initiating a conversation with their physician are receptive to do so again. They appear to have trusting physician relationships and positive feelings about the outcomes of prior discussions. Consumers that are already taking action to maintain or improve their health are more responsive to

DTC messages than those that are not currently proactive. Promotion-oriented consumers are more responsive to DTC ads than prevention-oriented consumers primarily due to greater tolerance (and perhaps even seeking) of product risks when product benefits are perceived as high, whereas prevention-oriented respondents were risk averse even when benefits were perceived as high.

Consumers overestimate the degree of cholesterol reduction that can be achieved with diet and exercise. They underestimate the reduction generated by drugs and tend to overestimate the frequency of side effects with prescription medications. The requirement to list significant side effects in product-specific ads, regardless of frequency, may contribute to these inflated frequency estimates and may result in avoidance of drugs that may be worthwhile by prevention-focused consumers and attraction to drugs with greater risk than necessary by promotion-focused consumers. If health professionals subsequently correct these misconceptions, and treatments are appropriately matched to individuals, this phenomenon may not present a problem. On the other hand, if consumers avoid discussions with health professionals and/or reduce compliance to recommended drug treatments due to these misconceptions, a general risk warning and greater reliance on physicians and pharmacists to discuss risks specific to individual patients may be appropriate.

These overall findings are contrary to claims of some critics of DTC who suggest that people who respond to DTC ads are distrustful of their physicians and weaken the relationship by requesting specific medications. The results also are contrary to beliefs that consumers are overly reliant on drugs and overestimate benefits while minimizing risks. These findings indicate that respondents to DTC are responsible individuals interested in maintaining optimal health and collaborating with their physicians to achieve this goal. These insights should influence the actions of regulators and legislators such that they act to facilitate and reinforce consumer-physician relationships.

This study provides significant insight into DTC responders. The results establish the profile of DTC responders as proactive individuals seeking to maintain or improve their health, who have trusting relationships with their physicians and pharmacists, are

comfortable discussing issues with their physicians, are sensitive to health conditions for which they are at risk, respond to product benefit information and are aware of product risks but accept the risks, at least for a trial phase, unless a threshold of unacceptability is crossed. DTC responders are focused on benefits of treatments but not ignorant of risks. They are responsive to DTC ads of both the help-seeking and product-specific types and appear to be responsive to physician recommendations.

This is a profile which most people would see as desirable and responsible. It does not raise concerns about DTC, in general. To the contrary, the results suggest that DTC can play a useful role in alerting consumers or reinforcing them relative to important health conditions and opportunities to manage those conditions in an appropriate manner, working in concert with their physicians.

Non-responders, on the other hand, are individuals who are less proactive about their health, less comfortable initiating discussions with their physicians and in some cases, less trusting of their physicians and pharmacists. They are more concerned with the risks of treatment. Health professionals should be sensitized to these types of individuals and seek to proactively discuss health conditions and concerns about taking medications.

Marketers should evaluate new approaches that can reach current non-responders to encourage them to increase their proactivity in working with health professionals and positively addressing their health.

Chapter 5

Implications, Limitations and Future Research

Over the course of the last twenty years, and especially over the last ten years, pharmaceutical companies have shifted part of their focus from advertising their products to physicians to also advertising them directly to consumers. A prescription product can only be acquired by a consumer when a physician prescribes it and a pharmacist dispenses it. So, why advertise drugs to consumers?

Many consumers have medical conditions that they are unaware of or are not addressing well. As many as 50% of people who have serious medical conditions including high blood pressure, elevated levels of cholesterol in their blood, and diabetes, are unaware of it. If these consumers see their doctors and share with their doctor their health experiences, doctors are likely to uncover these problems and help their patients appropriately address them. In many cases, drugs will be part of the treatment for these patients. Many consumers see a doctor on an infrequent basis, and then focused on a particular problem they are having at the time. The opportunity to uncover and address problems is delayed. One of the primary reasons that pharmaceutical companies advertise their products to consumers is to speed up this process. Of course, they are also seeking to make consumers aware of alternative treatments and increase sales of their medicines.

This practice is called direct-to-consumer advertising, which is often abbreviated as DTC advertising. It is a controversial practice for several reasons. Some people feel that it

interferes with the relationship between physicians and patients. Some feel that DTC increases health care costs. Some feel that consumers will be misled and overestimate the benefits and underestimate the risks of medications. Others feel that it serves a useful service by connecting consumers and physicians and that physicians, with the support of pharmacists and other health professionals, will ensure that appropriate diagnoses are made and treatments recommended. A number of surveys indicate that doctors who are approached by consumers who are motivated to ask questions based on seeing a DTC advertisement, treat those patients based on their normal patterns and experience, sometimes prescribing the advertised drug, but often prescribing an alternate drug or no drug, and frequently suggesting lifestyle modifications such as diet and exercise.

This study addressed the question: which consumers respond to direct-to-consumer advertising by intending to discuss the message with their doctor and why? The answers that were obtained to this question have a number of important implications.

The study focused on the medical condition of elevated blood cholesterol. Half of Americans have elevated cholesterol. One in six Americans have cholesterol levels above 240 mg/dl, which is associated with significant risk of heart attack and stroke. These percentages are similar for men and women and people across the range of races and ethnicities.

Survey participants were exposed to written DTC messages that did not mention a specific product but referred to drug therapy as an important way to reduce cholesterol when diet and exercise are not sufficient, and television commercials that were product-specific, either for Lipitor or Vytorin. Respondents rated their intent to discuss the message and ad on a five point scale from not at all likely to very likely.

Many investigations are conducted in undergraduate college students because they are readily accessible to university-based researchers. This study was not done in this population because the risks associated with cholesterol increase with age as buildup occurs in arteries. Heart attack and stroke risk is very low in people under thirty and concern about cholesterol is also very low.

Participants were between the ages of 30 and 55 where risks related to elevated cholesterol are more significant and concern is likely to be higher. People over 55 were not included because there is a higher likelihood of actually experiencing symptoms. The investigator sought to include people that were likely to be the audience targeted by the sponsors of DTC ads.

This was a very important strategy. It was hypothesized that intent to discuss messages would be higher in respondents with higher levels of concern about their cholesterol level, a variable referred to as self-relevance. This turned out to be a very strong predictor of intent to discuss messages with doctors. If a study group without a significant portion of people for whom the condition was of concern had been used, results would have likely been much less meaningful.

Direct-to-consumer advertising campaigns are frequently discontinued after a period of evaluation (Findlay, 2001). One of the reasons for discontinuance is lack of ability to shift market share. Another reason for discontinuance is that the number of people who are candidates for a drug are too small to justify advertising on a large scale. In the context of the variables studied here, there were too few consumers who had a high level of self-relevance.

Some of the other variables that were studied, including level of trust in physicians and pharmacists, were of much greater impact in respondents with higher levels of self-relevance, or concern about their cholesterol level. Investigators should ensure, therefore, that there is a good match between their respondent panel and the issue being studied, even if additional effort and expense is required to recruit such individuals.

People can take actions based on different motivations. One theory that helps explain and predict consumer behavior is regulatory focus. It differentiates how people regulate their behavior based on what they focus on. The two terms used are promotion and prevention. Promotion-focused people are driven more by personal goals and ideals, seek gains, are eager in pursuing those gains, and would not want to miss an opportunity to take positive action. Prevention-focused people are driven more by family or other group goals and

their wishes, seek to avoid losses, are vigilant in avoiding risks, and are reluctant to take actions they might later regret. This theory is sometimes useful to explain different reasons for taking similar actions. Two individuals may take action to control their cholesterol. One might be doing so based on a promotion-focused orientation, wanting to be proactive to ensure optimal health and opportunities for accomplishments. Another person might be controlling cholesterol based on a prevention-focused orientation, concerned about a possible heart attack or stroke and the emotional and financial hardship that it would cause for the family. A related concept is regulatory fit. It predicts that messages that are consistent in terminology with the motivations of the recipient will be more persuasive. This study identified an issue that might normally be overlooked. An action to address one area, in this case drug therapy to reduce elevated cholesterol, will be evaluated in its own right based on regulatory focus. In this case, drug therapy is associated with benefits and risks. Promotion-focused respondents were more responsive to benefits and were tolerant of risks. Prevention-focused respondents were less responsive to benefits and were risk averse. In this situation, regulatory focus was more powerful than regulatory fit.

Specifically in response to the product-specific ads, promotion-focused individuals had higher levels of intent than prevention-focused people. This was particularly true when the benefits and risks of the advertised product were rated as high. Promotion-focused respondents were more responsive to the high benefits (seeking gains) whereas prevention-focused people had much lower intent due to concern about the high product risks (avoiding losses). This is consistent with the effects that regulatory focus theory predicts.

Since promotion-focused and prevention-focused people have different motivations, and respond differently to messages, particularly relative to benefit and risk information, different strategies, message orientations, and media vehicles should be considered in order to reach them.. Promotion-focused people may be more likely to read magazines and watch television programs consistent with individual focus and achievement.

Prevention-focused people may prefer magazines and television programs with family focus and risk avoidance themes. This may suggest that different campaigns should be developed for each type of consumer unless it can be demonstrated that a majority of the target audience for a particular product or service are predominantly either promotion or prevention-focused.

Another important contribution of this research is to provide a profile of individuals who are more responsive to DTC ads. Within this study, higher discussion intent was seen in consumers who diet and exercise than those who do not. Greater intent was seen in consumers with trusting relationships with physicians and pharmacists than those with low trust relationships. These findings should be reassuring to those who assumed that responders were second-guessing their physicians and/or seeking a pill as an easier alternative to lifestyle modifications. If this responsible profile of consumers is an accurate representation, and the high trust in physicians and pharmacists is accurate, policies that place more emphasis on dialogue between consumers and health professionals to communicate relevant risk information may be appropriate.

The analysis of the study focused on variables in small groups. This approach is consistent with the design of the study and the nature of the hypotheses. A comprehensive evaluation of multiple variables in a modeling approach is possible using the data collected in this investigation. Several preliminary models were evaluated, which explain the results to a significant degree, based on statistical measures of model validity, including adjusted R^2 s of .425 to .513. The variables which are most frequently significant individually are self-relevance, DTC-initiated discussion experience, and in the case of ads, perceived product benefits. Variables of trust in physicians, trust in pharmacists, promotion versus prevention regulatory focus, diet, exercise, and drug risks were frequently significant in interaction with one or more of the individually significant variables. A more comprehensive multivariate investigation is a possible follow-up project.

The lack of significance for perceived product risks as an individual variable should not be interpreted as either a lack of awareness of product risks or lack of sensitivity to risks. Over 70% of respondents rated product risks as moderate to very significant. This was true in both promotion-focused and prevention-focused respondents. Over 20% of respondents rated the level of side effects with cholesterol lowering drugs as unacceptable. Side effect frequencies were generally overestimated.

Drug risk was not significant as an individual variable in large part due to different responses among subsets of the study respondents based on the concept of regulatory focus. Promotion-focused respondents were more willing to accept risks and prevention-focused individuals were less willing to accept risks. When you combine these two attitudes, response to risk is limited. Exploring this difference in attitudes provides insight that would be lost if these different behavioral patterns were not recognized and studied.

The findings in the study are very consistent for both intent to respond to written messages and intent to respond to television advertisements. Many of the levels of correlation and statistical significance are high which provides confidence for the findings. The examination of regulatory focus left some unresolved questions, however.

A conventional measure of regulatory focus, the Regulatory Focus Questionnaire, was used to form three variables: promotion strength, prevention strength, and net regulatory focus (subtraction of mean response to prevention questions from mean response to promotion questions to classify respondents as net promotion or prevention). Scores on the net measure and prevention strength were not significantly correlated with intent to discuss messages or ads with the full group of study respondents. Only the promotion strength variable was significantly correlated with intent. There was higher intent to discuss messages and ads in those respondents scoring high in promotion focus compared to those scoring low. The health-specific measure of regulatory focus that the investigator developed was significantly correlated with discussion intent, when self-relevance (concern about personal cholesterol level) was high. There was higher intent to discuss written messages and television ads in promotion-focused individuals compared to

prevention-focused respondents. The investigator-developed measure is previously untested, however. A subset of 282 respondents who were classified consistently, as either more promotion or prevention focused, by the Regulatory Focus Questionnaire and the health-specific measure, was used to evaluate the role of regulatory focus but the failure of the net and prevention elements of the Regulatory Focus Questionnaire to correlate with discussion intent with the full panel deserves further examination.

The health-specific question and a variable representing a median split of scores on the promotion portion of the Regulatory Focus Questionnaire were compared using Pearson Chi-Square analysis with the full panel of 524 respondents. Those respondents who were above the median on the promotion scale were more likely to be classified as promotion-focused by the health-specific question and those below the median to be classified as prevention (Pearson Chi-Square, adjusted for type of comparison, 8.396, $p < .005$). This indicates that the two measures had a good level of consistency in how they classified respondents. Similar analyses with the prevention scale and the health-specific question were not significant, indicating that those measures were inconsistent in how they classified respondents. It appears that responses to the prevention questions in the Regulatory Focus Questionnaire are responsible for the lack of correlations with intent measures for both the prevention and net scales.

One potential explanation for the lack of correlation between the health-specific question and the prevention and net components of the Regulatory Focus Questionnaire is that the questionnaire measures general regulatory focus whereas the health-specific question measures regulatory focus specific to health, which may be different in some individuals. The concept that individuals can have a situational regulatory focus that is different from their chronic regulatory focus has been supported previously (Van Dijk & Kluger, 2004).

A more compelling hypothesis is that the prevention scale does not properly classify respondents in the age group studied. Many of the prevention questions are based on experiences and behaviors during childhood that may be either incorrectly recalled or less relevant as people move into later stages of their lives. Indeed, Lockwood, Jordan, and Kunda, 2002, modified the prevention questions to be more relevant to their subject pool,

undergraduate students, and found the revised questionnaire to be more reliable.

This suggests additional research of two types. As it relates to the Regulatory Focus Questionnaire, modification of prevention questions so they measure the intended constructs based on life experiences appropriate to the life stage of the respondent panel should be pursued. The panel used in this investigation ranged in age from 30 to 55, whereas most previous use of the questionnaire was in undergraduate students who are generally in their late teens or early twenties.

Factor analysis is used to evaluate the contribution of individual questions to how the overall scale classifies people. A factor analysis of the five prevention questions indicated that the question that accounted for 56.63% of the variance in the classification of respondents as high or low in prevention focus was “I usually obeyed rules and regulations that my parents established.” Respondents chose from five possible responses ranging from “Does not describe me at all” to “Describes me very well”. Whether the answer to this question was appropriately recalled, properly recorded, or currently relevant to respondents between the ages of 30 and 55 is debatable. A contemporary version such as “I usually obey rules and regulations” might be more relevant.

The second research need is to examine the measure developed by the researcher and determine whether it or modifications of it, including using three or four questions so that reliability can be assessed, are significant in additional investigations. The intent of this simpler measure is to provide a tool that health professionals could use to determine a patient’s regulatory focus and then tailor their counseling and recommendations in terms that are in line with that focus, which might increase the likelihood that the advice would be followed. This hypothesis of greater compliance with tailored counseling should be tested.

One testing approach would be to use the question or questions to determine patients’ regulatory focus and then provide tailored counseling from a health professional. A confidential questionnaire could be administered by a separate person, immediately or shortly after receiving the counseling, to measure each patient’s intent level to follow the

recommendations. A more costly but more valid approach would be to track patient compliance with recommendations over time.

This investigation focused on a single medical condition, elevated cholesterol. It is possible that there are some elements of this condition, and available treatments, which limit generalizability of results to other conditions. Additional conditions and treatments should be examined to determine the consistency of observations and conclusions.

Further examination of promotion-focused consumers' attitudes toward risk is recommended. Are promotion-focused consumers highly risk tolerant or are they actually risk seeking? Do they equate greater risk with greater potency and therefore greater benefit? A variety of approaches could be used to explore this issue in detail.

The possibility of replacing product-specific warning statements with a general warning statement was raised in the study and consumer support was shown, a modest 54-46% overall, but as high as 69-31% in favor among multi-time DTC responders. A head-to-head investigation of the two approaches should be conducted to determine the impact on consumer risk perceptions and discussion intent levels.

There was also some suggestion that help-seeking ads may be equally or more effective compared to product-specific ads in generating consumer intent to initiate discussions with their physicians. Product information, including risk information that appears to reduce intent, could be replaced with increased educational content. A head-to-head evaluation of help-seeking versus product-specific DTC ads using the same media would help determine whether this approach would be appropriate. Since DTC tends to increase market size rather than shift market share of individual products, a focus on help-seeking ads might be a desirable approach for market leaders and products with rapidly increasing share. A potentially different pattern of consumer response based on regulatory focus should be included in this investigation. Due to prevention-focused consumers' sensitivity to risk information, help-seeking ads may be particularly appropriate for them.

Pharmaceutical companies need not sponsor such ads. Ads that are sponsored by local health organizations, government bodies, or consumer groups could be tested. There appears to be a lack of published evaluation of public service announcements. An evaluation of ad elements and approaches which more successfully achieve public health goals would be desirable. It has been shown, for example, that ads that try to “coerce” people into quitting smoking, are generally ineffective. Appealing to consumers who are currently interested in quitting smoking and suggesting ways to increase the likelihood of success are much more effective. In this case, self-relevance is not just being a smoker but being a smoker who is currently interested in quitting smoking.

Existing product ads were only used from the medium of television. Investigation of other media would also be appropriate.

Prescription drugs are one category of medical intervention that involves perceived risks as well as benefits. Other types of risk-bearing medical interventions could be examined. These other risk-bearing interventions include surgery, radiation therapy, and vaccination.

This study provides important insights that can influence future actions of marketers, regulators, health professionals, and other constituents.

Appendices

Appendix A

Pre Focus Group Questionnaire

1. When you take some action to improve or maintain your health (diet, exercise, take supplement or drug), which of the two statements below better describes your reason for taking that action?
(circle letter, a or b, next to response that is the more important reason)
 - c. I want to be healthy and able to attain important life goals
 - d. I want to avoid illness and negative consequences for myself and others

2. High levels of cholesterol in the blood increase the likelihood of having a heart attack in the future. Which of the cholesterol levels listed below would be the first where you would feel the level is too high?
(circle letter next to response where that level and all higher levels are too high)
 - a. 150
 - b. 180
 - c. 210
 - d. 240
 - e. 270
 - f. 300

3. How concerned are you currently about your cholesterol level?
(circle letter next to the response that most accurately reflects your concern)
 - a. not at all concerned
 - b. mildly concerned
 - c. moderately concerned
 - d. very concerned

4. What, if anything, are you doing to lower or maintain your cholesterol level?
(circle letter or letters for each response or responses that apply to you)
- a. follow a healthy diet
 - b. exercise regularly
 - c. take over-the-counter supplements
 - d. take a prescription medication
 - e. take more than one prescription medication
 - f. none of the above
5. Have you seen TV commercials for prescription drugs that lower cholesterol?
(circle a or b and if b, list any product names you remember)
- a. no
 - b. yes
- Product names I recall, if any _____

Appendix B

Focus Group Discussion Guide

- I. Welcome and Introduction
 - a. Purpose of Group and Reason for Videotaping
 - b. Ground rules for Discussion
 - c. Moderator Introduction
 - d. Participant Introductions

- II. Main Discussion Question Sequence
 - a. What do you do to achieve or maintain good health?
 - b. How would elevated cholesterol influence your health?
 - c. How would you describe your relationship with your physician(s)?
 - d. What would you do if your physician recommended that you lower your cholesterol?
 - e. What TV commercials, if any, have you seen for drugs to lower cholesterol?
 - f. What would determine whether a commercial for a drug to lower cholesterol would be of interest to you?
 - g. What would raise your interest to the point you would discuss with a physician?

- III. Review of Specific Direct-to-Consumer Ads
 - a. Lipitor
 - i. Seen before? (show of hands)
 - ii. Positive, negative, or neutral reaction (show of hands)
 - b. Vytorin
 - i. Seen before? (show of hands)
 - ii. Positive, negative, or neutral reaction (show of hands)
 - c. Which ad prefer and why?
 - d. If discuss with physician, how would topic be raised?
 - e. What expectations would you have of doctor?
 - f. How respond to different approaches by physician
 - i. Reluctance to discuss
 - ii. Says no need to worry
 - iii. Recommendation of lifestyle changes
 - iv. Prescription for drug in ad
 - v. Prescription for alternate drug?

- IV. Summary
- a. Overall, what message would be most likely to convince you to discuss a drug with your physician?
 - b. Thanks for participation
 - c. Fill out post-group questionnaire
 - d. Turn in and receive gift card
 - e. Wish safe trip home and thank again

Appendix C

Post Focus Group Questionnaire

1. Which of the two TV commercials did you prefer?
 - a. Lipitor (the first shown)
 - b. Vytorin (the second shown)
 - c. liked both equally
 - d. didn't like either

2. What, if anything, would you do if you saw a TV commercial that interested you in a prescription drug?
(circle letter or letters of any response or responses that apply to you)
 - a. seek more information from magazines or other written materials
 - b. seek information from the Internet
 - c. discuss with family or friends
 - d. discuss with pharmacist
 - e. discuss with physician

3. If you were to have a discussion with your physician based on a TV commercial, which of the following approaches would you be most likely to take?
 - a. discuss condition that drug treats but not mention specific drug
 - b. discuss condition and drug by name, if recalled, but rely on physician to recommend whatever treatment he or she feels is most appropriate
 - c. request specific drug and/or benefit presented in ad and expect physician to prescribe drug or provide specific reasons why it would not be appropriate
 - d. would not discuss with physician

4. If you were to discuss a prescription drug with your physician, which of the following reasons would be more important for considering taking the drug?
 - a. I want to be healthy and able to attain important life goals
 - b. I want to avoid illness and the negative consequences for myself and others

5. Do you feel that you had the opportunity to fully express your viewpoints in the group session?

- a. yes
- b. no, I'd like to add these thoughts

Appendix D

Internet Questionnaire

Thank you for participating in this study. The questionnaire has multiple sections. Please answer all questions based on your honest opinions. This will ensure that the results are meaningful and that recommendations are worthwhile. Thank you!

Section One

Here are a number of characteristics that may or may not apply to you. For example, how well does it describe you as someone who *likes to spend time with others*? Please write a number next to each statement to indicate the extent to which that statement describes you.

- 1 - Does not describe me at all
- 2 – Describes me a little
- 3 – Describes me moderately
- 4 – Describes me well
- 5 – Describes me very well

- | | |
|---|---|
| Q1. Is talkative ____ | Q15. Is ingenious, a deep thinker ____ |
| Q2. Tends to find fault with others ____ | Q16. Generates a lot of enthusiasm ____ |
| Q3. Does a thorough job ____ | Q17. Has a forgiving nature ____ |
| Q4. Is depressed, blue ____ | Q18. Tends to be disorganized ____ |
| Q5. Is original, comes up with new ideas ____ | Q19. Worries a lot ____ |
| Q6. Is reserved ____ | Q20. Has an active imagination ____ |
| Q7. Is helpful and unselfish with others ____ | Q21. Tends to be quiet ____ |
| Q8. Can be somewhat careless ____ | Q22. Is generally trusting ____ |
| Q9. Is relaxed, handles stress well ____ | Q23. Tends to be lazy ____ |

- Q10. Is curious about many different things ____ Q24. Is emotionally stable, not easily upset ____
- Q11. Is full of energy ____ Q25. Is inventive ____
- Q12. Starts quarrels with others ____ Q26. Has an assertive personality ____
- Q13. Is a reliable worker ____ Q27. Can be cold and aloof ____
- Q14. Can be tense ____ Q28. Perseveres until the task is finished ____
- Q29. Can be moody ____ Q37. Is sometimes rude to others ____
- Q30. Values artistic, aesthetic experiences ____ Q38. Makes plans and follows through with them ____
- Q31. Is sometimes shy, inhibited ____ Q39. Gets nervous easily ____
- Q32. Is considerate and kind to almost everyone ____ Q40. Likes to reflect, play with ideas ____
- Q33. Does things efficiently ____ Q41. Has few artistic interests ____
- Q34. Remains calm in tense situations ____ Q42. Likes to cooperate with others ____
- Q35. Prefers work that is routine ____ Q43. Is easily distracted ____
- Q36. Is outgoing, sociable ____ Q44. Is sophisticated in art, music or literature ____

This next set of questions relates to HOW FREQUENTLY specific events actually occur or have occurred in your life. Please indicate your answer to each question by circling the appropriate number below it.

Q45. I usually obeyed rules and regulations that my parents established.

1 2 3 4 5

Does not describe me at all Describes me moderately Describes me very well

Q46. Growing up, I rarely "crossed the line" by doing things that my parents would not tolerate.

1 2 3 4 5

Does not describe me at all Describes me moderately Describes me very well

Q47. I rarely got on my parents' nerves when I was growing up.

1 2 3 4 5

Does not describe me at all Describes me moderately Describes me very well

Q48. I am usually careful to stay out of trouble.

1 2 3 4 5

Does not describe me at all Describes me moderately Describes me very well

Q49. Growing up, I rarely acted in ways that my parents thought were objectionable.

1 2 3 4 5

Does not describe me at all Describes me moderately Describes me very well

Q50. When it comes to achieving things that are important to me, I usually perform as well as I ideally would like to perform.

1 2 3 4 5

Does not describe me at all Describes me moderately Describes me very well

Q51. I often do well at different things that I try.

1 2 3 4 5

Does not describe me at all Describes me moderately Describes me very well

Q52. I often accomplish things that get me "psyched" to work harder.

1 2 3 4 5

Does not describe me at all Describes me moderately Describes me very well

Q53. Compared to most people, I am typically able to get what I want out of life.

1 2 3 4 5

Does not describe me at all Describes me moderately Describes me very well

Q54. I feel that I have made progress toward being successful in my life.

1 2 3 4 5

Does not describe me at all Describes me moderately Describes me very well

Q55. I have a number of hobbies or activities in my life that capture my interest or motivate me to put effort into them.

1 2 3 4 5

Does not describe me at all Describes me moderately Describes me very well

Q56. When you take action to improve or maintain your health (diet, exercise, take supplement, take drug), which of the two statements below better describes your reason for taking that action? (Circle letter, a or b, next to response that is the *more important* reason)

- a. I want to be healthy and able to attain important life goals
- b. I want to avoid illness and negative consequences for myself and others

Q57. How strongly do you feel that the choice you made in the last question (a or b) is the better description of your reason for taking action to improve or maintain your health?

1 2 3 4 5
Not strongly at all Moderately strongly Very strongly

Section Two

Q58. High levels of cholesterol in the blood increase the risk of heart attacks and stroke. This statement is

- a. Definitely true
- b. Possibly true
- c. Neither true nor false
- d. Possibly false
- e. Definitely false

Q59. Your risk of heart attack and stroke depends on the level of cholesterol in your blood and the presence of other risk factors (family history, blood pressure, smoking, diabetes). Which level of cholesterol, of those listed, would be the first where you would feel the level is too high? (Circle the number that you first feel is too high for cholesterol)

- a. 150
- b. 175
- c. 200
- d. 225
- e. 250
- f. 275
- g. 300

Q60. How strongly do you feel that the cholesterol level you selected in Q59. is the first level of cholesterol where the risk of heart attack and stroke is too high?

1 2 3 4 5
Not strongly at all Moderately strongly Very strongly

Q61. Are you aware of your personal cholesterol level?

- a. Yes
- b. No

Q62. My cholesterol level is approximately (can say don't know if unsure of approximate cholesterol level) _____

Q63. Whether you know your specific level or not, how concerned are you currently about your cholesterol level?

- a. Not at all concerned
- b. Mildly concerned
- c. Moderately concerned
- d. Very concerned

There are a number of ways to reduce high cholesterol levels. The amount of reduction that can be achieved varies. Please indicate the amount of cholesterol reduction that you would expect from each method.

- 1- Up to 10% reduction from original cholesterol level
- 2- More than 10% but less than 20%
- 3- Between 20% and 40%
- 4- More than 40%

Q64. Diet _____

Q65. Exercise _____

Q66. Over-the-counter supplement _____

Q67. Prescription Medication _____

Q68. Combination of Medications _____

Q69. What, if any, actions are you taking to reduce or maintain your cholesterol level? Do not include actions taken only for other purposes such as losing weight or staying in shape. (circle the letter of any activity where cholesterol reduction is at least part of the reason for the activity and indicate frequency by circling number)

	Irregularly	Somewhat Regularly	Very Regularly
a. Diet	1	2	3
b. Exercise	1	2	3
c. Over-the-counter medication	1	2	3
d. Prescription medication	1	2	3
e. None			

Section Three

There are many ads for prescription drugs on TV, on the radio, and in magazines. The ads encourage people to discuss conditions they may have and treatment options with their doctors.

Q70. Do you feel that the number of ads for prescription drugs is

- a. About right
- b. Too high
- c. Too low

Q71. Ads for prescription drugs are required to balance the amount of information about benefits and risks. How well do you think this balance is being met?

- a. Balance of benefit and risk information is about right
- b. Too much focus on benefits and not enough on risks
- c. Too much focus on risks and not enough on benefits

Q72. Have you ever felt a desire or intended to discuss a disease or medication with your doctor based on seeing an ad?

- a. Yes
- b. No

Q 73. Have you ever actually discussed a disease or medication with your doctor based on seeing an ad?

- a Yes, indicate number of times _____
- b No

Q74. Which of the following statements do you agree with more?

- a. Many people have diseases that they or their doctor are not aware of or are not treating well. Drug ads help these people seek necessary guidance from their doctor.
- b. Most people are aware of diseases they have and are well treated by their doctors. Drug ads are unnecessary and wasteful.

Q 75. How strongly do you feel that the choice you made in the last question (a or b) is the better description of your opinion?

1	2	3	4	5
Not strongly at all		Moderately strongly		Very strongly

Section Four

Ads can describe a disease and its treatment without referring to a specific drug. You will see two messages about high levels of cholesterol. Please read each message and respond to the questions that follow.

Life presents many hazards and challenges. You do your best to avoid negative experiences for you and those you love. Half of Americans have high levels of cholesterol in their blood that increase their risk of heart attack and stroke. Cholesterol levels below 200 have low risk. Half of Americans have levels over 200. One in six has levels over 240 that place them at even greater risk. Diet and exercise can help some people reach healthy cholesterol levels. Many people can only get their level below 200 by also taking medication. Talk to your doctor about your cholesterol level and the best strategies for you to achieve and maintain a healthy level. You cannot have a risk-free life but you can reduce your risk of heart attack and stroke. Increase the likelihood that you will be there for those that need you.

Q76. The message is

- a. Very believable
- b. Somewhat believable
- c. Neither believable nor unbelievable
- d. Somewhat unbelievable
- e. Very unbelievable

Q77. My personal reaction to the message is

- a. Very positive
- b. Somewhat positive
- c. Neither positive nor negative
- d. Somewhat negative
- e. Very negative

Q78. In terms of liking the message, I

- a. Dislike the message a lot
- b. Dislike the message moderately
- c. Dislike the message a little bit
- d. Neither dislike nor like the message
- e. Like the message a little bit
- f. Like the message moderately
- g. Like the message a lot

Q79. The likelihood that I would discuss this message with my doctor is

- a. Very low
- b. Somewhat low
- c. Moderate
- d. Somewhat high
- e. Very high

Q80. The language in the ad is

- a. Consistent with the way I view life
- b. Inconsistent with the way I view life

Q81. Briefly explain your answer to Q80. Why is the language of the ad consistent or inconsistent with the way you view life?

The second version of the message is similar but put in a somewhat different way. Please read it and respond to the questions that follow.

You are an active person. You take charge in your life and are focused on achievement. There is much more you want to accomplish. Half of Americans have high levels of cholesterol in their blood that increase their risk of heart attack and stroke. Cholesterol levels below 200 have low risk. Half of Americans have levels over 200. One in six has levels over 240 that place them at even greater risk. Diet and exercise can help some people reach healthy cholesterol levels. Many people can only get their level below 200 by also taking medication. Talk to your doctor about your cholesterol level and the best strategies for you to achieve and maintain a healthy level. Make sure that you have the best chance for a long and healthy life of accomplishment.

Q82. The message is

- a. Very believable
- b. Somewhat believable
- c. Neither believable nor unbelievable
- d. Somewhat unbelievable
- e. Very unbelievable

Q83. My personal reaction to the message is

- a. Very positive
- b. Somewhat positive
- c. Neither positive nor negative
- d. Somewhat negative
- e. Very negative

Q84. In terms of liking the message, I

- a. Dislike the message a lot
- b. Dislike the message moderately
- c. Dislike the message a little bit
- d. Neither dislike nor like the message
- e. Like the message a little bit
- f. Like the message moderately
- g. Like the message a lot

Q85. The likelihood that I would discuss this message with my doctor is

- a. Very low
- b. Somewhat low
- c. Moderate
- d. Somewhat high
- e. Very high

Q86. The language in the ad is

- a. Consistent with the way I view life
- b. Inconsistent with the way I view life

Q87. Briefly explain your answer to Q86. Why is the language of the ad consistent or inconsistent with the way you view life.

Q88. Comparing the two messages I find that I

- a. Definitely like the first version better than the second version
- b. Like the first version somewhat better than the second version
- c. Like both versions about the same
- d. Like the second version somewhat better than the first version
- e. Definitely like the second version better than the first version

We would now like you to view two television ads for cholesterol-lowering medications and give us your reactions and opinions.

Please click on the link below to view the first ad. Hit the back button to return to the survey after viewing the ad.

<http://www.youtube.com/watch?v=kBfWybm0218>

Q89. The ad was for

- a. Caduet
- b. Crestor
- c. Lipitor
- d. Vytorin
- e. Zetia
- f. Don't recall

Q90. The ad is

- a. Very believable
- b. Somewhat believable
- c. Neither believable nor unbelievable
- d. Somewhat unbelievable
- e. Very unbelievable

Q91. My personal reaction to the message is

- a. Very positive
- b. Somewhat positive
- c. Neither positive nor negative
- d. Somewhat negative
- e. Very negative

Q92. In terms of liking the message, I

- a. Dislike the message a lot
- b. Dislike the message moderately
- c. Dislike the message a little bit
- d. Neither dislike nor like the message
- e. Like the message a little bit
- f. Like the message moderately
- g. Like the message a lot

Q93. The likelihood that I would discuss this message with my doctor is

- a. Very low
- b. Somewhat low
- c. Moderate
- d. Somewhat high
- e. Very high

Q94. The language in the ad is

- a. Consistent with the way I view life
- b. Inconsistent with the way I view life

Q95. Briefly explain your answer to Q93. Why is the language in the ad consistent or inconsistent with the way you view life?

Q96. My conclusion is that the benefits of the product are

1	2	3	4	5
Minimal		Moderate		Very Significant

Q97. My conclusion is that the risks of the product are

1	2	3	4	5
Minimal		Moderate		Very Significant

Please click on the link below to view ad B. Hit the back button after viewing to return to the survey.

<http://www.youtube.com/watch?v=LLce--j5f5M>

Q98. The ad was for

- a. Caduet
- b. Crestor
- c. Lipitor
- d. Vytarin
- e. Zetia
- f. Don't recall

Q99. The ad is

- a. Very believable
- b. Somewhat believable
- c. Neither believable nor unbelievable
- d. Somewhat unbelievable
- e. Very unbelievable

Q100. My personal reaction to the message is

- a. Very positive
- b. Somewhat positive
- c. Neither positive nor negative
- d. Somewhat negative
- e. Very negative

Q101. In terms of liking the message, I

- a. Dislike the message a lot
- b. Dislike the message moderately
- c. Dislike the message a little bit
- d. Neither dislike nor like the message
- e. Like the message a little bit
- f. Like the message moderately
- g. Like the message a lot

Q102. The likelihood that I would discuss this message with my doctor is

- a. Very low
- b. Somewhat low
- c. Moderate
- d. Somewhat high
- e. Very high

Q103. The language in the ad is

- a. Consistent with the way I view life
- b. Inconsistent with the way I view life

Q104. Briefly explain your answer to Q103. Why is the language in the ad consistent or inconsistent with the way you view life?

Q105. My conclusion is that the benefits of the product are

1	2	3	4	5
Minimal		Moderate		Very Significant

Q106. My conclusion is that the risks of the product are

1	2	3	4	5
Minimal		Moderate		Very Significant

Q107. Comparing the two ads I find that I

- a. Definitely like the Lipitor ad better than the Vytorin ad
- b. Like the Lipitor ad somewhat better than the Vytorin ad
- c. Like both ads about the same
- d. Like the Vytorin ad somewhat better than the Lipitor ad
- e. Definitely like the Vytorin ad better than the Lipitor ad

Q108. In terms of product benefits, I believe that

- a. Lipitor and Vytorin are equal
- b. Lipitor has greater benefits
- c. Vytorin has greater benefits

Q109. In terms of product risks, I believe that

- a. Lipitor and Vytorin have equal risks
- b. Lipitor has greater risks
- c. Vytorin has greater risks

Q110. Based on the ads, I believe that serious side effects with cholesterol-lowering medications are

- a. Very frequent, occur in 50% or more of patients
- b. Somewhat frequent, occur in at least 25% of patients but less than 50%
- c. Somewhat infrequent, occur in at least 10% of patients but less than 25%
- d. Very infrequent, occur in between 5 and 10% of patients
- e. Rare, occur in less than 5% of patients

Q111. The degree of risks associated with cholesterol-lowering drugs is

- a. Acceptable considering benefits
- b. Of concern but goes away if stop taking the drug so would not stop me from trying drug
- c. Unacceptable
- d. Don't know

Q112. I believe that the risk warnings in drug advertisements are

- a. Appropriate and easy to understand
- b. Difficult for consumers to evaluate but should be continued
- c. Very concerning and should be communicated by doctor not ads
- d. Don't know

Q113. I trust my doctor to explain the benefits and risks of any medication prescribed for me. This statement is

- a. Completely accurate
- b. Mostly accurate
- c. Mostly inaccurate
- d. Totally inaccurate

Q114. If my doctor does not explain a medication sufficiently, I can get the information I need from my pharmacist. This statement is

- a. Completely accurate
- b. Mostly accurate
- c. Mostly inaccurate
- d. Totally inaccurate

Q115. Would you support a change that would replace the current drug-specific warnings in each ad with a statement such as “All drugs have risks as well as benefits. Discuss the specific risks and benefits of this medication with your doctor” In all ads?

- a. Yes
- b. No

Classification Questions

This last section will help us identify similarities and differences in response based on gender, age, race, education, and income. This information will remain confidential.

Q116. Gender

- a. Male
- b. Female

Q117. Age

- a. 30-34
- b. 35-39
- c. 40-44
- d. 45-49
- e. 50-55

Q118. Race

- a. Caucasian
- b. African-American
- c. Hispanic
- d. Asian
- e. Other _____

Q119. Education

- a. Did not complete high school
- b. Completed high school but no college
- c. Some college but no degree
- d. Undergraduate college degree
- e. Undergraduate degree and some graduate study but not graduate degree
- f. Graduate degree

Q120. Annual Household income

- a. Less than \$30,000
- b. Between \$30,000 and \$50,000
- c. More than \$50,000 and up to \$75,000
- d. More than \$75,000 and up to \$100,000
- e. More than \$100,000

Bibliography

- Aaker, J.L., & Lee, A.Y. (2001). "I" Seek Pleasures and "We" Avoid Pains: The Role of Self-Regulatory Goals in Information Processing and Persuasion. *Journal of Consumer Research*, 28, 33-49.
- American Heart Association (2006). *Heart Disease and Stroke Statistics – 2006 Update*. Retrieved October 24, 2006, from <http://www.americanheart.org/presenter.jhtml?identifier=1928>.
- Aikin, K.J., Swasy, J.L., & Braman, A.C. (2004). *Patient and Physician Attitudes and Behaviors Associated with DTC Promotion of Prescription Drugs – Summary of FDA Survey Research Results*. Washington, D.C.: U.S. Department of Health and Human Services, Food and Drug Administration, Center for Drug Evaluation and Research.
- Avorn, J. (2003). Advertising and prescription drugs: promotion, education, and the public health. *Health Affairs*, W3-104-108, Web exclusive.
- Blumenthal, J.A., Williams, R.S., Wallace, A.G., Williams, R.B., Jr., & Needles, T.L. (1982). Physiological and Psychological variables predict compliance to prescribed exercise therapy in patients recovering from myocardial infarction. *Psychosomatic Medicine*, 44, 519-527.
- Booth-Kewley, S., & Vickers, Jr., R.R. (1994). Associations between major domains of personality and health behavior, *Journal of Personality*, 61, 281-298.
- Bosmans, A., & Baumgartner, H. (2005). Goal-Relevant Emotional Information: When Extraneous Affect Leads to Persuasion and When It Does Not. *Journal of Consumer Research*, 32, 424-434.
- Bradford, W.D., Klelt, A.N., Nietert, P.J., Steyer, T., McIlwain, T., Ornstein, S. (2006). How Direct-To-Consumer Television Advertising For Osteoarthritis Drugs Affects Physicians' Prescribing Behavior. *Health Affairs*. 25, 1371-1377.
- Brook, J. S., Whiteman, M., Gordon, A. S., & Cohen, P. (1986). Some models and mechanisms for explaining the impact of maternal and adolescent characteristics on adolescent stage of drug use. *Developmental Psychology*, 22, 460–467.
- Calfee, J.E. (2002), Public Policy Issues in Direct-to-Consumer Advertising of Prescription Drugs. *Journal of Public Policy and Marketing*, 21(2), 174-193.

- Calnan, M., & Johnson, B. (1985), Health, health risks and inequalities: an exploratory study of women's perceptions. *Sociology of Health and Illness*, 7(1), 55-75.
- Feldman, P.T., Cohen S., Doyle, W.J., Skoner, D.P., & Gwaltney, Jr., J.M. (1999), The Impact of Personality on the Reporting of Unfounded Symptoms and Illness, *Journal of Personality and Social Psychology*, 77(2), 370-378.
- Findlay, S.D. (2001). Direct-to-Consumer Promotion of Prescription Drugs, Economic Implications for Patients, Payers and Providers. *Pharmacoeconomics*, 19(2), 109-119.
- Goldberg, L.R. (1990). An Alternative "Description of Personality": The Big-Five Factor Structure. *Journal of Personality and Social Psychology*, 59(6), 1216-1229.
- Gross, C.P., Filardo, G., Singh, H.S., Freedman, A.N., & Farrell, M.H. (2006). The Relation Between Projected Breast Cancer Risk, and Mammography Use: Results from The National Health Interview Survey. *Journal of General Internal Medicine*, 21, 158-164.
- Grundy, S.M., Cleeman, J.I., Merz, C.N.B., Brewer, H.B., Jr., Clark, L.T., Hunninghake, D.B., Pasternak, R.C., Smith, S.C., Jr., Stone, N.J. (2004). Implications of Recent Trials for the National Cholesterol Education Program Adult Treatment Panel III Guidelines. *Circulation* 110, 227-239.
- Higgins, E.T. (1997). Beyond Pleasure and Pain. *American Psychologist*, 52, 1280-1300.
- Higgins, E.T. (2000). Making a Good Decision: Value From Fit. *American Psychologist* 55, 1217-123.
- Higgins, E.T., Friedman, R.S., Harlow, R.E., Idson, L.C., Ayduk, O.N., & Taylor, A. (2001). Achievement orientations from subjective histories of success: Promotion pride versus prevention pride. *European Journal of Social Psychology*, 31, 3-23.
- Iizuka, T. & Jin, G.Z. (2002). *The Effects of Direct-to-Consumer Advertising in the Prescription Drug Market*. Retrieved November 12, 2006, from <http://www.nber.org>.
- John, O.P. Donahue, G.M., & Kentle, R.L. (1991). The Big Five Inventory – Version 4a and 54. Berkeley, CA: University of California, Berkeley, Institute of Personality and Social Research.
- Kaiser Family Foundation (2003). *Impact of Direct-to-Consumer Advertising on Prescription Drug Spending*. Retrieved October 15, 2006, from www.kff.org.

- Kastelein, J.J.P., Akdim, F., Stroes, E.S.G., Zwinderman A.H., Bots, M.L., Stalenhoef, A.F.H., Visseren, F.L.J., Sybrands, E.J.G., Trip, M.D., Stein, E.A., Gaudet, D., Duivenvoorden, R., Veltri, E.P., Marais, A.D., & de Groot, E. (2008). Simvastatin with or without Ezetimibe in Familial Hypercholesterolemia, *New England Journal of Medicine*, 358:1431-1443.
- Kopp, S. & Bang, H-K. (2000). Benefit and Risk Information in Prescription Drug Advertising Review of Empirical Studies and Marketing Implications, *Health Marketing Quarterly*, 17, 39-56.
- Krueger, R.A. & Casey, M.A. (2000). *Focus Groups: A Practical Guide for Applied Research* (3rd ed.). Thousand Oaks, CA: Sage Publications, Inc.
- Labouvie, E.W., & McGee, C.R. (1986). Relation of personality to alcohol and drug use in adolescence. *Journal of Consulting and Clinical Psychology*, 54, 289-293.
- Lexchin, J., & Mintzes, B. (2002). Direct-to-Consumer Advertising of Prescription Drugs: The Evidence Says No. *Journal of Public Policy and Marketing*, 21, 194-201.
- Lockwood, P., Jordan, C.H., & Kunda, Z. (2002). Motivation by Positive or Negative Role Models: Regulatory Focus Determines Who Will Best Inspire Us. *Journal of Personality and Social Psychology*, 83, 854-864.
- Manchanda, P., Wittink, D.R., Ching, A., Cleanthous, P., Ding, M., Dong et al. (2005). Understanding Firm, Physician and Consumer Choice Behavior in the Pharmaceutical Industry. *Marketing Letters*, 16, 293-308.
- McCaul, K.D., Schroeder, D.M., & Reid, P.A. (1996). Breast Cancer Worry and Screening: Some Prospective Data. *Health Psychology*, 15, 430-433.
- McCrae, R.P., & Costa, Jr., P.T. (1997), Personality Trait Structure as a Human Universal, *American Psychologist*, 52, 509-516.
- Morris, L., Mazis, M. and Brinberg, D. (1989). Risk disclosures in televised prescription drug advertising to consumers. *Journal of Public Policy and Marketing*, 8, 64-80.
- National Institutes of Health (2001). *Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) Executive Summary*. Retrieved December 1, 2006, from http://www.nhlbi.nih.gov/guidelines/cholesterol/atp_iii.htm.

- Patten, M.L. (2001). *Questionnaire Research: A Practical Guide* (2nd ed.). Los Angeles: Pyrczak Publishing.
- Percy, L. and Rossiter, J.R. (1992). Advertising Stimulus Effects: A Review. *Journal of Current Issues and Research in Advertising*, 14, 75-90.
- Pines, W.L. (1999). A History and Perspective on Direct-to-Consumer Promotion. *Food and Drug Law Journal*, 54, 489-518.
- Rimal, R.N., & Real, K. (2003). Perceived Risk and Efficacy Beliefs as Motivators of Change: Use of the Risk Perception Attitude (RPA) Framework to Understand Health Behaviors. *Human Communication Research*, 29, 370-399.
- Rosenthal, M.B, Berndt, E.R., Donahue, J.M., Epstein, A.M., & Frank, R.G, (2003). *Demand Effects of Recent Changes in Prescription Drug Promotion*. Retrieved October 26, 2006, from <http://www.kff.org>.
- Rottenstreich, Y., & Hsee, C.K. (2001). Money, Kisses, and Electric Shocks: On the Affective Psychology of Risk. *Psychological Science*, 12(3), 185-190.
- Slovic, P. (1987). Perception of Risk. *Science*, 236, 280-285.
- Slovic, P., Finucane, M., Peters, E., & MacGregor, D. (2004). Risk as Analysis and Risk as Feelings: Some Thoughts about Affect, Reason, Risk, and Rationality. *Risk Analysis*, 24, 689-701.
- TNS Media Intelligence (2006). *Pharma Marketing News*, 5(9), 11.
- U.S. Department of Health and Human Services, Food and Drug Administration (1999), *Guidance for Industry: Consumer-Directed Broadcast Advertisements*: Retrieved March 5, 2008, from <http://www.fda.gov>.
- USA Today, Kaiser Family Foundation, and Harvard School of Public Health (2008), *The Public on Prescription Drugs and Pharmaceutical Companies*. Retrieved March 5, 2008, from <http://www.kff.org>.
- Vakratsas, D., & Ambler, T. (1999). How Advertising Works: What Do We Really Know? *Journal of Marketing*, 63, 26-43.
- Van-Dijk, D., & Kluger, A.N. (2004). Feedback Sign Effect on Motivation: Is it Moderated by Regulatory Focus? *Applied Psychology: An International Review*, 53, 113-135.

- Weissman, J.S., Blumenthal, D., Silk, A.J., Zapert, K., Newman, M., & Leitman, R. (2003). Consumers' Reports On The Health Effects Of Direct-To-Consumer Drug Advertising. [Electronic Version]. *Health Affairs*, W3-82.
- Wilkes, M.S., Bell, R.A., & Kravitz, R.L. (2000). Direct-to-Consumer Prescription Drug Advertising: Trends, Impact, and Implications. *Health Affairs*, 19(2), 110-128.
- Wilson, P.W.F., D'Agostino, R.B., Levy, D., Belanger, A.M., Silbershatz, H., & Kannel, W.B. (1998). Prediction of Coronary Heart Disease Using Risk Factor Categories. *Circulation*, 97, 1837-1847.
- Wosinska, M. (2002). *Just What the Patient Ordered? Direct-to-Consumer Advertising and the Demand for Pharmaceutical Products*. HBS Marketing Research Paper No. 02-04. Retrieved October 26, 2006, from <http://ssm.com>.
- Yeung, R.M.W., & Morris, J. (2006). An empirical study of the impact of consumer perceived risk on purchase likelihood: a modeling approach. *International Journal of Consumer Studies*, 30, 294-305.